US Army Corps of Engineers
Alaska District

Northeast Cape HTRW
Remedial Actions

Northeast Cape, St. Lawrence Island, Alaska

Remedial Action Report

FUDS No. F10AK096903

Contract No. W911KB-06-D-0007, Task Order 0007
and Contract No. W911KB-12-C-0003

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Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

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ACRONYMS AND ABBREVIATIONS

′	minutes
°	degrees
°F	degrees Fahrenheit
$\mu g/100\ cm^2$	micrograms per 100 square centimeters
AAC	Alaska Administrative Code
AC&WS	Aircraft Control and Warning Station
ADEC	Alaska Department of Environmental Conservation
ADF&G	Alaska Department of Fish and Game
ADNR	Alaska Department of Natural Resources
AHA	Activity Hazard Analysis
AK	Alaska Test Method
ANCSA	Alaska Native Claims Settlement Act
APP	Accident Prevention Plan
AST	aboveground storage tank
bgs	below ground surface
Bristol	Bristol Environmental Remediation Services, LLC
BTEX	benzene, toluene, ethylbenzene, and xylenes
CCV	continuing calibration verification
CDQR	Chemical Data Quality Report
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CLIN	Contract Line Item Number
CO	Contracting Officer
COC	chemical of concern
CPR	cardiopulmonary resuscitation
CQC	contractor quality control
CQCP	Contractor Quality Control Plan
CQCSM	Contractor Quality Control Systems Manager
CS	Contaminated Sites Laboratory Approved Program

ACRONYMS AND ABBREVIATIONS (continued)

DI	deionized
DO	dissolved oxygen
DoD	U.S. Department of Defense
DRO	diesel range organics
DU	decision unit
ELAP	Environmental Laboratory Accreditation Program
EMT	emergency medical technician
EPA	U.S. Environmental Protection Agency
FUDS	formerly used defense site
GRO	gasoline range organics
HDPE	high-density polyethylene
HPAH	high molecular weight polynuclear aromatic hydrocarbons
HSM	Health and Safety Manager
HTRW	hazardous, toxic, and radioactive waste
IDW	investigation-derived waste
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
LDU	lower decision unit
LPAH	low molecular weight polynuclear aromatic hydrocarbons
MDU	middle decision unit
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MNA	monitored natural attenuation
MOC	Main Operations Complex
MS	matrix spike
MSD	matrix spike duplicate
MW	monitoring well
MWH	Montgomery Watson Harza Americas, Inc.
NALEMP	Native American Lands Environmental Mitigation Program
NE Cape	Northeast Cape
NOM	naturally occurring materials

ACRONYMS AND ABBREVIATIONS (continued)

NS	Northland Services
ORP	oxygen-reduction potential
OSHA	Occupational Safety & Health Administration
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PLO	Public Land Order
PM	Project Manager
POL	petroleum, oil, and lubricants
PPE	personal protective equipment
PVC	polyvinyl chloride
QA	quality assurance
QAPP	Quality Assurance Project Plan
QAR	Quality Assurance Representative
QC	quality control
RA	removal action
Radome	Radar Dome
RCRA	Resource Conservation and Recovery Act
RI	remedial investigation
RRO	residual range organics
SOP	Standard Operating Procedure
SOW	Scope of Work
SS	Site Superintendent
SSHO	Site Safety and Health Officer
SSHP	Site Safety and Health Plan
SVOC	semivolatile organic compound
T&D	transportation and disposal
TAH	total aromatic hydrocarbons
TCLP	Toxicity Characteristic Leaching Procedure
TestAmerica	TestAmerica Laboratories, Inc.
TOC	total organic carbon

ACRONYMS AND ABBREVIATIONS (continued)

TSCA	Toxic Substances Control Act
UDU	upper decision unit
UFP	Uniform Federal Policy
USACE	US Army Corps of Engineers
USAF	U.S. Air Force
UST	underground storage tank
UTV	utility task vehicle
UVOST	Ultra-Violet Optical Screening Tool
VOC	volatile organic compound
WP	Work Plan

EXECUTIVE SUMMARY

This Remedial Action Report presents the results of a removal action (RA) performed at the Northeast Cape (NE Cape) Formerly Used Defense Site on Saint Lawrence Island, Alaska. Bristol Environmental Remediation Services, LLC (Bristol), and its team of subcontractors performed the work for the US Army Corps of Engineers (USACE), Alaska District, under the following contract numbers:

- W911KB-06-D-0007, Task Order 0007
- W911KB-12-C-0003

Base items in the Scope of Work (SOW) for the 2012 contract period include:

- Excavation and disposal of 6,782 tons (4,782 tons from contract W911KB-06-D-0007, Task Order 0007, and 2,000 tons from contract W911KB-12-C-0003) of petroleum, oil, and lubricants- (POL-) contaminated soils at the Main Operations Complex (MOC) sites 10, 11, 13, 15, 19, and 27. These sites encompass plumes A2, B1, B2, C, E1, E2, E3, E4, F, G2, and I1.
- Excavation and disposal of 2,000 tons of polychlorinated biphenyl- (PCB-) contaminated soils from Site 13 (Heat and Power Plant) and Site 31 (White Alice Communications Station).
- Continued monitored natural attenuation (MNA) of POL-contaminated sediment and surface water at Site 8.
- Continued MNA of groundwater from monitoring wells in the vicinity of the Main Operations Complex (MOC).
- Inclusion of work activities and associated results in the 2012 HTRW Remedial Action Report.

The SOW also includes the following base exercised options:

- Excavation and disposal of up to 600 additional tons of PCB-contaminated soil
- Excavation and disposal of 100 tons of arsenic-contaminated soil from Site 21 (Wastewater Treatment Tank)
- Excavation and disposal of 1 ton of drums, 100 gallons of drum liquids (50 tons from Site 10 and 50 tons from miscellaneous sites), and 50 tons of associated contaminated soil at the MOC, specifically Site 10

- Removal and disposal of 25 tons of miscellaneous metal debris, 1 ton of drums, and 100 pole stumps from tundra areas site-wide, where clearly identified
- Removal and disposal of an additional 10 tons of metal debris
- Soil sampling alongside the road leading to the former radar dome on top of Kangukhsam Mountain
- Sediment mapping and sampling at Site 28 (Drainage Basin)
- Phase I Removal of 140 bank cubic yards of sediment at Site 28 (Drainage Basin)
- Abandonment of three monitoring wells
- *MULTI INCREMENT*®[1] (MI) soil sampling for diesel range organics (DRO) and PCBs at the following bulk bag staging areas: Cargo Beach; Site 6; one area at the MOC across Cargo Beach Road from the Bristol refueling area (ISO tanks); one area adjacent to/on the northeast side of the ISO tanks; and the former construction camp location at Site 26
- 2013 mobilization/demobilization

Four contract modifications increased the SOW to include:

- Increased quantities at Site 10 by 1 ton of drums, 1,000 gallons of drum liquids, and 50 tons of soil
- PCB sampling of boulders at sites 13 and 31
- Up to 4,990 additional tons of POL-contaminated soil from the MOC
- Up to 2,400 additional tons of PCB-contaminated soil from Sites 13 and 31
- Additional analytical soil sampling at Site 10
- Confirmation soil sampling at Site 28 (up to 30 samples) following Phase I sediment removal actions

In 2012, Bristol excavated 4,884.73 tons of PCB-contaminated soil from sites 13 and 31; 8,594.91 tons of POL-contaminated soil (3,812.91 tons on Contract W911KB-12-C-0003) from multiple sites within the MOC; 102.72 tons of arsenic-contaminated soil from the former wastewater treatment tank at Site 21; and 59.40 tons of soil contaminated with ethylene glycol and tetrachloroethene (PCE). Bristol recovered over 1,000 gallons of

[1]*MULTI INCREMENT*® is a registered trademark of EnviroStat, Inc.

various liquids associated with buried drums from Site 10 and transferred the liquids into a total of 27 bung-top 55-gallon drums. Bristol located and removed 158 wooden poles and pole pieces, and approximately 15 tons of wooden and metal debris, consisting of wire, cable, and rusted drums, from various locations around the NE Cape project site. Bristol loaded the contaminated soil into a combined total of 1,373 bulk bags (9-cubic-yard geotextile containers) and containerized the debris and drums into Conex containers for shipment off-island.

During the 2012 field season, Bristol initiated a sediment mapping/sampling program at Site 28, followed by a Phase I Sediment Removal Operation in which 20.6 cubic yards (26.82 tons) of contaminated sediment was excavated and containerized. Two removal techniques were implemented and evaluated during the Phase I Sediment Removal operation, one that involved dredging and pumping contaminated sediments into a dewatering geotextile sediment collection tube, and the other involving excavation with heavy equipment.

Other tasks included MI sampling multiple decision units located at Cargo Beach, the former drum laydown area at Site 6, the MOC bulk bag staging areas, and the Site 28 Drainage Basin; collecting soil samples along the roadside that leads to the Site 34 Upper Camp/Radome area located near the top of Mt. Kangukhsam; groundwater, surface water, and soil sample collection and analysis for monitoring natural attenuation of diesel fuel contamination at the MOC and Site 8; and abandoning six monitoring wells located at the MOC, Site 9 Landfill, and along Cargo Beach Road just north of Site 10. Bristol utilized an on-site field laboratory for analyzing DRO, residual range organics (RRO), and PCB samples.

By season's end, Bristol had manifested and shipped 1,398 bulk bags off-island (including leftover bags from previous RAs), which were transferred to disposal facilities located in

Arlington, Oregon. Most wastes were nonhazardous; however, 11 arsenic-contaminated soil containers and 16 liquid-containing drums were classified as hazardous waste, as regulated by the Resource Conservation and Recovery Act; and 24 PCB-contaminated soil containers were classified as hazardous under the Toxic Substances Control Act. Thirty-three landing craft vessels were utilized for transporting freight, including bulk bags and Conex containers, on and off the island. The operating field season lasted from June 18 through October 4, 2012.

The remaining work on Contract W911KB-12-C-0003 includes the following:

- Excavation, transportation, and disposal of 3,177.09 tons of POL-contaminated soil from the MOC
- Excavation, transportation, and disposal of 115.28 tons of PCB-contaminated soil from sites 13 and 31
- Excavation, transportation, and disposal of 40.6 tons of contaminated soil from Site 10
- Removal of 1.62 tons of drums from Site 10
- Removal, transportation, and disposal of 119.4 bank cubic yards of sediment from Site 28
- Removal and disposal of 15.33 tons of miscellaneous debris
- Post-construction MI Sampling at Cargo Beach, Site 6, the MOC, and Site 28 staging areas
- Pre- and post-MI sampling at a bulk bag staging area adjacent to the fuel containment

1.0 INTRODUCTION

This Remedial Action Report presents the results of a removal action (RA) performed at the Northeast Cape (NE Cape) Formerly Used Defense Site on Saint Lawrence Island, Alaska. Bristol Environmental Remediation Services, LLC (Bristol), and its team of subcontractors performed the work for the US Army Corps of Engineers (USACE), Alaska District, under the following contract numbers:

- W911KB-06-D-0007, Task Order 0007
- W911KB-12-C-0003

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2.0 SITE DESCRIPTION

2.1 LOCATION

Saint Lawrence Island is located in the northern Bering Sea off the western coast of Alaska. NE Cape lies approximately 135 air miles southwest of Nome, Alaska (Figure 1). The project site, which originally encompassed 4,800 acres, falls between Kitnagak Bay to the northeast, Kangighsak Point to the northwest, and the Kinipaghulghat Mountains to the south (Figure 2). The site is located at 63 degrees (°) 20 minutes (′) north latitude and 168° 59′ west longitude, in Township 25 South, Range 54 West, Kateel River Meridian. The site is not connected to the surrounding communities by road and is only accessible via air, water, or all-terrain vehicle (USACE, 2009).

The bulk of the facilities were located in what is known as the Main Operations Complex (MOC), an area located approximately 1 mile south of the airstrip. A number of work sites discussed throughout this document, including Site 10, Site 13, Pad 98, and the aboveground storage tanks (ASTs) were located in the MOC. A gravel road known as Perimeter Road encircles the MOC and serves as the site's unofficial boundary. Figure 3 shows the location of the MOC, along with other major work sites discussed in this report.

2.2 CLIMATE

Saint Lawrence Island has a cool, moist, subarctic maritime climate, with some continental influences during winter when much of the Bering Sea is capped with ice pack. Winds and fog are common, and precipitation occurs approximately 300 days per year as light rain, mist, or snow. Annual snowfall is approximately 80 inches per year. Total annual precipitation is about 16 inches per year, and more than half falls as light rain between June and September. Summer temperatures average between 34 degrees Fahrenheit (°F) and 48°F, with a record high of 65°F. Winter temperatures range from

-2°F to 10°F, with an extreme low of -30°F (URS, 1985, in MWH, 2003a). Freeze-up normally occurs in October or November, and breakup normally occurs in June.

Winds are generally in a northerly to northeasterly direction from September to June and southwesterly in July and August. Winds exceeding 11 miles per hour occur 70 percent of the time. The average wind speed is 18 miles per hour. Gusts in the NE Cape area have measured as high as 110 miles per hour (USACE, 2002).

2.2.1 Weather Conditions during the Project Field Season

Weather conditions during the June through October 2012 field season were typical of a summer subarctic maritime climate. Variable winds, light precipitation or fog, and temperatures ranging from the mid-30s to the mid-50s were typical of the daily weather in lowland and lower mountain areas. Periodic, violent storms with high, sustained winds in excess of 50 miles per hour and high precipitation were encountered, as well as periods of clear, calm conditions.

Wind was often the most significant factor affecting work conditions during the 2012 field season and was, at times, responsible for knocking out the satellite communications system and halting work activities. High winds also complicated bulk bagging and lining operations due to the difficulty of handling the necessary materials under such conditions. August 15, 2012, produced the highest winds during the project, with winds reaching at least 76 miles per hour.

Bristol saw minor amounts of snow in late September and early October, with no significant accumulation around the work sites. Snow was common in the higher elevations, such as the valley containing the road that leads uphill to the old Radar Dome and Tram Station. Work progress was not affected by snowfall during the 2012 field season.

2.3 TOPOGRAPHY

The lower mountain area consists mainly of flat coastal plains that gradually turn into rolling tundra toward the base of the Kinipaghulghat Mountains. The mountains rise abruptly to a maximum elevation of approximately 1,850 feet above mean sea level. Elevations across the work areas ranged from sea level to approximately 300 feet above mean sea level. One of the project sites was located on a road near the former Radar Dome (Radome), where elevations ranged from approximately 1,730 feet to 1,820 feet above sea level.

2.4 GEOLOGY

Saint Lawrence Island consists of isolated bedrock highlands of igneous, metamorphic, and older sedimentary rocks surrounded by unconsolidated surficial deposits overlying a relatively shallow erosional bedrock surface. In the immediate vicinity of the lower mountain area south of the MOC, shallow, unconsolidated surficial materials overlie quartz monzonitic rocks of the Kinipaghulghat Pluton (Patton and Csejtey, 1980, in USACE, 2009). The pluton forms the mountainous work area south of the MOC, including Kangukhsam Mountain. The Suqitughneq River drainage in the Kinipaghulghat Pluton has created an erosional valley and alluvial fan of unconsolidated sediments. Granitic bedrock materials are exposed at the coast north of the site at Kitnagak Bay, suggesting that quartz monzonitic bedrock underlies the unconsolidated materials at a relatively shallow depth on a wave-cut erosional platform.

The unconsolidated materials exhibit an alluvial soil profile in areas that have not been disturbed by man. In general, silts near the surface, which overlie more sand-dominated soils, characterize the soil stratigraphy at the site. The silt may contain varying quantities of clay, sand, and gravel and may vary from zero to 10 feet in thickness. The silt is dark brown to dark green and sometimes exhibits a mottled texture. In some areas, the silt exhibits an aqua green or blue color. Dark brown silts are observed in outcrops. The sand at depth contains varying degrees of silt, gravel, and cobbles and varies from 2 feet to more than 20 feet in thickness. These deeper, coarse-grained materials are generally unsorted and are likely to be of glaciofluvial origin. The depth to bedrock at the lower elevation areas of the site is unknown (USACE, 2009).

Beach material is primarily cobble (1-inch stones), with some sand. Some areas have large boulders and rocks (USACE, 2002).

2.5 SURFACE WATER AND GROUNDWATER

Because of the relatively remote and undeveloped nature of Saint Lawrence Island, there are little data about regional groundwater (MWH, 2003). Bedrock materials south of the site (and underlying the unconsolidated deposits) are not expected to store and transmit significant quantities of groundwater. Typically, these types of granitic rocks are impermeable and transmit groundwater only through localized fractures and weathered soil zones at the surface. However, historical reports concerning water supply wells suggest that this deep, fractured bedrock aquifer supplied sufficient water to sustain the installation during operation (MWH, 2003). Multiple production wells accompanied by storage tanks used to supply the installation during its operation and were drilled to depths of 50 to 70 feet into a fractured bedrock aquifer. It is noted in the MWH report (2003) that the use of multiple water supply wells may indicate that groundwater availability was inconsistent and variable throughout this deep aquifer during different times of the year and that there are insufficient data to determine the aquifer's extent across the site.

The primary potential aquifer at the NE Cape site is the unconsolidated alluvial material that underlies the area. Select regions, consisting of those areas where blocks of the bedrock are breaking off to form talus fields flanking the Kinipaghulghat Mountains, are likely capable of transmitting large volumes of groundwater (MWH, 2003). The mountainous area to the south of the former installation provides an ideal recharge area for these unconsolidated materials, providing runoff from rain and snowmelt during the summer that permeates the broken bedrock, alluvial, and glacial deposits. Based on the topography and geology of the site, the regional groundwater flow direction is expected to be from the mountainous recharge area south of the site, flowing north, eventually discharging to the Bering Sea (MWH, 2003).

The shallow, subsurface groundwater observed and encountered across the MOC (and across the former installation) is suspected to consist of seasonally thawed water that is both spatially and temporally intermittent (MWH, 2003). Groundwater elevations observed in monitoring wells at the MOC ranged from approximately 60 to 74 feet above mean sea level and exhibited depths ranging from approximately 2 to 35 feet below ground surface (bgs), indicating a groundwater flow to the north-northwest. Water depths at the MOC are greatest to the south and become shallower progressing north to the Site 28 drainage basin. Refer to Section 6.10 for additional information from historical reports regarding well logs and hydrogeology of various sites at NE Cape.

Key factors influencing the flow of groundwater at the site are the permafrost and frozen soils, which render the unconsolidated materials effectively impermeable in some areas (MWH, 2003). The U.S. Geological Survey has classified Saint Lawrence Island as an area of moderately thick to thin permafrost (Ferrians, 1965). Although the depth of permafrost at Saint Lawrence Island is unknown, the base of permafrost on the mainland at Nome (135 air miles to the northeast) is estimated to be at a depth of 120 feet. The deeper, unconsolidated deposits at the site are probably permanently frozen, and the shallow soils represent the active layer where soils are thawed only during portions of the year. Frozen soils have a profound effect in retarding groundwater flow during most of the year.

In addition to the Bering Sea north of the NE Cape facility, surface water in the vicinity of the work area consists of small streams, small- to moderate-sized lakes, and marshy areas (MWH, 2003). Surface water generally flows northward from the more southerly located highland area. Small surface water bodies are common throughout the area. The primary stream drainage in the area, the Suqitughneq River, is fed by runoff from the prominent drainage of the Kinipaghulghat Mountain valley in the lower mountain area south of the former installation. Several smaller tributaries, originating from two small, unnamed lakes (MWH, 2003), feed this stream drainage as it flows north to Kitnagak Point. Surface water flow in the area is highly dynamic, changing significantly over time, both short- and long-term (MWH, 2003). Bristol observed significant changes in surface water characteristics at multiple locations across the site, most notably at a location directly south (uphill) from Site 26 where surface water runs through a culvert underneath the road that connects the MOC and Site 31. This drainage, which originated in the Kinipaghulghat Mountain valley, exhibited variable flow in late spring/early summer that lasted for days at a time but would run dry later into the summer during drier periods.

2.6 AIR QUALITY

Air quality in the area is good. There are minimal sources of air emissions at the site because of its remote nature. The occasional boat motor, vehicle engine, or fire has a negligible effect. Air emissions at the site increase during remedial action work because more equipment and vehicles are operating at the site. Winds are typical of the area and aid in dispersing emissions (USACE, 2002).

2.7 VEGETATION

The NE Cape area has several major habitat types, including moist tundra dominated by heaths, grasses, sedges, mosses, and lichens, with shrubs that include bearberry, dwarf birch, narrow-leaf Labrador tea, and willow. These plants typically grow in 1 to 3 feet of undecayed organic mat over saturated and frozen soil. Alpine tundra plants (dwarf, prostrate plants that include heaths and tundra species adapted to dry, thin soil conditions) grow on the slopes and exposed ridges of the nearby mountains. The NE Cape area has many low-lying areas with lakes, bogs, and poorly drained soils (USACE, 2002).

2.8 FISH AND WILDLIFE

Large mammals are generally not abundant on Saint Lawrence Island. Polar bears may be on the island any time during the year but are most often present when the ice pack is nearshore. Some years, polar bears become stranded on the island throughout the summer when the ice pack moves out earlier than usual. A population of approximately 1,000 reindeer inhabits the island. Arctic foxes, cross foxes, red foxes (less common), wolves (rarely), and several small mammals (tundra shrews, arctic ground squirrels, Greenland collared lemmings, red-backed voles, and tundra voles) also inhabit the island (URS, 1985, in MWH, 2003). Animals usually seen in or around the work sites are small mammals such as ground squirrels and foxes.

Marine mammals are present in the vicinity of the NE Cape area as seasonal migrants in the offshore and nearshore marine waters, at haul-out sites, and in association with the advancing and retreating ice pack. No haul-out sites are within the work area. During the summer, walrus, sea lions, and spotted seals may be present in offshore waters. During the ice season, ringed seals, bearded seals, walrus, and spotted seals can be found in nearshore and offshore leads and open water. Bowhead, gray, minke, killer, right, humpback, blue, and beluga whales inhabit offshore waters (USKH, 1993, in MWH, 2003).

The only breeding seabird colony known to exist at the NE Cape facility consists of about 60 glaucous gulls and 60 herring gulls at Seevookhan Mountain, approximately 5 miles southeast of the NE Cape site. Several other species of birds have been sighted in the vicinity of the NE Cape site, including common ravens, snow buntings, snowy owls, whistling swans, Lapland longspurs, jaegers, sand hill cranes, emperor geese, and gulls.

Ten primary species of fish reside in the streams and tundra ponds of Saint Lawrence Island. These include blackfish, nine-spined stickleback, grayling, whitefish, and Dolly Varden trout. Five of the six species of Pacific salmon occur around the island and rear in many of the larger drainages (MWH, 2003).

2.9 COMMUNITY PROFILE AND LAND USE

The nearest community on Saint Lawrence Island to the project site is the Village of Savoonga, approximately 60 miles northwest of the site, with a population of 671 people, according to the 2010 U.S. Census (U.S. Census Bureau, 2012). There are no permanent residents at the NE Cape site, but there is a small subsistence hunting and fishing camp in the area that is infrequently inhabited in the summer by residents of Savoonga and Gambell. Snow machine travel during the winter months provides residents of Gambell and Savoonga relatively easy access to the site. The NE Cape site property is currently owned jointly by the two local native corporations, Sivuqaq, Inc., in Gambell and Kukulget, Inc., in Savoonga. The island is accessible by boat, regularly scheduled airlines (to Gambell and Savoonga), and chartered air flights out of Nome. There is no regularly scheduled commercial access to the project site.

2.9.1 Subsistence Activities

Savoonga is a traditional Siberian Yup'ik village, with a subsistence lifestyle. Whale, seal, walrus, and reindeer compose 80 percent of islanders' diets. The economy is largely based upon subsistence hunting of walrus, seal, fish, and whale, with some cash income. Berries and edible plants are also harvested. Subsistence fishing for halibut takes place in the vicinity of NE Cape.

2.10 HISTORY

Saint Lawrence Island was established as a reindeer reserve by Executive Order on January 7, 1903. The U.S. Air Force (USAF) constructed an Aircraft Control and Warning Station (AC&WS) at NE Cape during 1950 and 1951 (USACE, 2009). The present project site was acquired by the USAF on January 16, 1952, under Public Land Order (PLO) 970, which removed 21,013 acres from the reserve. In 1952, the USAF AC&WS was formally activated by assignment of the 712th AC&WS Squadron and the 698th Security Squadron. The original site was designed to support 212 personnel. Throughout its existence, the NE Cape facility has been a surveillance station, providing radar coverage for the Alaskan Air Command and, later, for the North American Air Defense Command, as part of an Alaska-wide system constructed to reduce potential vulnerability to bomber attacks across the polar regions.

The White Alice Station area remained in operation with minimal military staff until 1972. All lands were then withdrawn from the military under PLO 5187 for classification under Section 17(d)(1) of the Alaska Native Claims Settlement Act (ANCSA) of 1971, which entitled local community village corporations to select and receive specific tracts of federal land. Interim Conveyance No. 203 (June 1979) conveyed unsurveyed lands of Saint Lawrence Island to Sivuqaq, Inc., and Savoonga Native Corporation, known today as Kukulget, Inc. Surveyed land, easements, and land-use permits effective before conveyance were excluded from the transfer.

In 1982, transfer of the White Alice Station area, south of the MOC, to the U.S. Department of the Navy was initiated. However, this transaction was not formally completed and was superseded by ANCSA. The Navy conducted an RA under its Comprehensive Long-Term Environmental Action Navy program. The action included removal of specified hazardous items and containerized hazardous and toxic waste.

In 2000, the White Alice Station was reclassified as a Formerly Used Defense Site- (FUDS-) eligible property. In response, the USACE included the area in the ongoing cleanup program for NE Cape (USACE, 2002).

2.10.1 Previous Studies and Actions

Environmental investigations and cleanup activities at NE Cape began in the mid-1980s, with the goal of locating and identifying areas of contamination and gathering enough information to develop a cleanup plan. Preliminary assessments were conducted by URS Corporation in 1985; and Ecology and Environment, Inc. in 1991, 1992, and 1993.

Remedial investigations (RIs) were initiated at NE Cape during the summer of 1994, when Montgomery Watson Harza Americas, Inc. (MWH), performed a Phase I RI. Soil, sediment, groundwater, and surface water samples were collected during the Phase I RI. Additional sampling was performed during subsequent investigations: Phase II RI conducted by MWH in 1996, 1998, and 1999; Phase III RI conducted by MWH in 2001 and 2002; and Phase IV RI conducted by Shannon &Wilson, Inc., in 2004. A feasibility study was conducted by USACE in March 2007, which summarized historical sampling results and RAs and evaluated a range of alternatives for complying with the criteria prescribed by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The studies divided the concerns among 34 separate sites. The results of the RIs showed that contaminants were present at some but not all sites (USACE, 2009).

Previous RAs include:

- URS Corporation, 1990: Removal of transformers, drums, tanks, and other containerized hazardous wastes
- Northwest Enviro Service, Inc., 1994: Removal of electrical transformers and their contents
- MWH, 1997: Removal of communication wires and cables from the tundra

- Nugget Construction Inc., 2000: Removal of building demolition and debris, drums, antenna poles, and a fuel pipeline
- Nugget Construction Inc., 2001: Removal of building demolition debris, polychlorinated biphenyl- (PCB-) contaminated soil, petroleum, oil, and lubricants-(POL-) contaminated soil, and miscellaneous debris
- Bristol Environmental & Engineering Services Corporation (Bristol Environmental and Engineering Services Corporation), 2003: Removal of building demolition debris, other miscellaneous debris, drums, tanks, communications poles, wires, cables, and fuel lines
- Bristol Environmental and Engineering Services Corporation, 2005: Demolition and removal of tramway towers, wires, and cables, metal poles, communications wire and cable
- Bristol Environmental Remediation Services, LLC, 2009: Removal of POL-containing drums, landfill cap construction at Site 7, trial study of in-situ chemical oxidation treatment of POL-contaminated soils at the MOC
- Bristol Environmental Remediation Services, LLC, 2010: Removal of POL-contaminated soils from Sites 1, 3, 6, and 32; PCB-contaminated soils from Sites 13, 16, 21, and 31; and arsenic-contaminated soils from Site 21; landfill cap construction at Site 9; and monitored natural attenuation (MNA) at Site 8
- Bristol Environmental and Engineering Services Corporation, 2011: Removal of POL-contaminated soil from the MOC and PCB-contaminated soil from Sites 13 and 31; MNA at Site 8 and in groundwater wells at the MOC; debris removal; and roofing tar removal

A Decision Document was produced by USACE in 2009 that presented the selected remedies for NE Cape in accordance with CERCLA, as amended by the Superfund Amendments and Reauthorization Act and the National Oil and Hazardous Substances Pollution Contingency Plan. Remedial actions were determined for each site of concern at NE Cape. Table 2-1 lists the selected remedies and their current status.

Tale 2-1 Decision Document Selected Remedies for Northeast Cape Sites

Decision Document Site Remedy	Status
No Further Action at sites 2, 4, 5, 12, 14, 17, 18, 20, 22, 23, 24, 25, 26, 33, and 34	Complete
Excavation and removal of petroleum-contaminated soils at Site 1 Airstrip	Completed in 2010
Excavation and removal of petroleum-contaminated soils at Site 3 Fuel Pumphouse	Completed in 2010
Excavation and removal of petroleum-contaminated soils at Site 6 Former Drum Field	Completed in 2010
Excavation and removal of petroleum-contaminated soils at Site 32 Lower Tramway	Completed in 2010
Excavation and removal of PCB-contaminated soils at sites 13, 16, 21, and 31	Partially complete. PCB-contaminated soils remain at sites 13 and 31
Excavation and removal of arsenic-contaminated soil at Site 21 Wastewater Treatment Tank	In progress
Excavation and removal of petroleum, metals, and PCB-contaminated sediment at Site 28 Drainage Basin, including removal of near-surface sediments from the narrow channel upgradient of the Suqitughneq River	In progress
Construction of sedimentation pond or other appropriate controls at Site 28 Drainage Basin	Planned
MNA of petroleum-contaminated sediment at Site 8 POL Spill Site	In progress
Capping of the Site 9 Housing and Operations Landfill	Completed in 2010
Chemical oxidation at the Main Operations Complex, with contingency remedy of MNA for groundwater, excavation and removal of petroleum-contaminated soils to a depth of 15 feet at sites 10, 11, 13, 15, 19, and 27, and land use controls	Chemical oxidation was initiated in 2009 and was unsuccessful; contingency is in progress
Land use controls to limit future drinking water uses for groundwater at the MOC (sites 10–22, 26, 27), designate areas not suitable for drinking water (sites 3, 4, 6, 7, 9), prevent construction of buildings on top of landfills, and manage potential future excavation and movement of soils above state cleanup levels	In progress

Table 2-1 Decision Document Selected Remedies for Northeast Cape Sites (continued)

Decision Document Site Remedy	Status
5-Year Reviews at sites with hazardous substances remaining above cleanup levels, as necessary until cleanup levels are met. Periodic reviews of POL-contaminated sites (e.g., Site 8) with residual contamination will be included in conjunction with evaluation of the MOC	To be determined
Periodic visual monitoring for 5 years of the capped area at the Site 9 Housing and Operations Landfill and Site 7 Cargo Beach Road Landfill for settlement and erosion	In progress
Additional visual monitoring, up to 30 years, may be conducted if deemed necessary based on the results of the site inspections	To be determined
Removal of dangerous poles, wires, and other miscellaneous debris from tundra areas site-wide, where clearly identified	In progress
Removal of partially submerged debris from streams in the vicinity of Site 9 Housing and Operations Landfill and Site 29 Suqitughneq River	Completed in 2010

Notes:

MNA = monitored natural attenuation
MOC = Main Operations Complex
PCB = polychlorinated biphenyl
POL = petroleum, oil, and lubricants

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3.0 CONTRACT SPECIFICATIONS

3.1 SCOPE OF WORK

Base items in the Scope of Work (SOW) for the 2012 contract period include:

- Excavation and disposal of 6,782 tons (4,782 tons from contract W911KB-06-D-0007, Task Order 0007, and 2,000 tons from contract W911KB-12-C-0003) of POL-contaminated soils at MOC sites 10, 11, 13, 15, 19, and 27. These sites encompass plumes A2, B1, B2, C, E1, E2, E3, E4, F, G2, and I1.
- Excavation and disposal of 2,000 tons of PCB-contaminated soils from Site 13 (Heat and Power Plant) and Site 31 (White Alice Communications Station).
- Continued MNA of POL-contaminated sediment and surface water at Site 8.
- Continued MNA of groundwater from monitoring wells in the vicinity of the MOC.
- Inclusion of work activities and associated results in the 2012 HTRW Remedial Action Report (Bristol, 2012a).

The SOW also includes the following base exercised options:

- Excavation and disposal of 600 additional tons of PCB-contaminated soil
- Excavation and disposal of 100 tons of arsenic-contaminated soil from Site 21 (Wastewater Treatment Tank)
- Excavation and disposal of 1 ton of drums, 100 gallons of drum liquids and 50 tons of associated contaminated soil at the MOC, specifically Site 10
- Removal and disposal of 25 tons of miscellaneous metal debris, 1 ton of drums, and 100 pole stumps from tundra areas site-wide, where clearly identified
- Removal and disposal of an additional 10 tons of metal debris
- Soil sampling alongside the road leading to the former radar dome on top of Kangukhsam Mountain
- Sediment mapping and sampling at Site 28 (Drainage Basin)
- Phase I Removal of 140 bank cubic yards of sediment at Site 28 (Drainage Basin)
- Abandonment of three monitoring wells
- MI soil sampling for diesel range organics (DRO) and PCBs at the following bulk bag staging areas: Cargo Beach, Site 6, one area at the MOC across Cargo Beach Road from the Bristol refueling area (ISO tanks), one area adjacent to/on the

northeast side of the ISO tanks, and the former construction camp location at Site 26

- 2013 mobilization/demobilization

Four contract modifications increased the SOW to include:

- Increased quantities at Site 10 by 1 ton of drums, 1,000 gallons of drum liquids, and 50 tons of soil
- PCB sampling of boulders at sites 13 and 31
- Up to 4,990 additional tons of POL-contaminated soil from the MOC
- Up to 2,400 additional tons of PCB-contaminated soil from sites 13 and 31
- Additional analytical soil sampling at Site 10
- Confirmation soil sampling at Site 28 (up to 30 samples) following Phase I sediment RAs

Descriptions of field investigation methods are included in Section 5.0; Section 6.0 details the task-oriented field activities under this SOW.

3.2 CONTRACT W911KB-12-C-0003

The USACE identified the work to be conducted as a series of Base and Optional Contract Line Item Numbers (CLINs). Optional CLINs identified unit-priced work performed in addition to that identified in the Base CLINs. The USACE awarded the Base and Optional CLINs to Bristol on March 30, 2012. The Base CLINs are summarized in Table 3-1, and Optional CLINs are summarized in Table 3-2.

Table 3-1 Base CLINs

Base CLINs	Description
0001	Project Management
0002	Planning Documents
0003	Chemical Data Quality
0004	Field Implementation
0005	HTRW RA Report
0006	Options

Notes:
CLINs = Contract Line Item Numbers
HTRW = hazardous, toxic, and radioactive waste
RA = removal action

Table 3-2 Optional CLINs

Item/Option	Description	Quantity per Option	Number of Options Available	Options Exercised
0006AA/Optional Task 4.6.1	Additional POL-Contaminated Soil removal	2,000 tons	2	2
0006AB/Optional Task 4.6.2	Additional PCB-Contaminated Soil	100 tons	20	20
0006AC/Optional Task 4.6.7	Site 28 Confirmation Soil Sampling	1 sample	30	30
0006AD/Optional Task 4.6.4	Arsenic-Contaminated Soil	10 tons	10	10
0006AE/Optional Task 4.6.10	Site 10 Drums, Drum Liquids	Lump Sum	1	1
0006AF/Optional Task 4.6.11	Miscellaneous Debris/Drums/Poles	Lump Sum	1	1
0006AG/Optional Task 4.6.12	Additional Miscellaneous Debris/Drums	1 ton	10	10
0006AH/Optional Task 4.6.13	POL Liquids	1 gallon	50	50
0006AJ/Optional Task 4.6.14	Post-use MI Sampling, Refueling Area	Lump Sum	1	0
0006AK/Optional Task 4.6.15	Additional Monitoring Well Abandonment	1 well	3	3

Table 3-2 Optional CLINs (continued)

Item/Option	Description	Quantity per Option	Number of Options Available	Options Exercised
0006AL/Optional Task 4.6.16	2013 Mobilization/Demobilization	Lump Sum	1	1
0006AM/Optional Task 4.6.17	Site 28 Sediment Sampling and Mapping	Lump Sum	1	1
0006AN/Optional Task 4.6.18	Site 28 Phase I Sediment Removal	1 bulk cubic yard	140	140
0006AP/Optional Task 4.6.19	Radar Dome Road Soil Sampling	Lump Sum	1	1
0006AQ/Optional Task 4.6.15	MI Sampling at Bulk Bag Staging Areas	Lump Sum	1	1
0006AR/Optional Task 4.6.21	Additional Site 10 Drums, Liquids and Soil	Lump Sum	1	1
0006AS/Optional Task 4.6.22	Site 13 & 31 Boulder PCB Sampling	Lump Sum	1	1
0006AT/Optional Task 4.6.23	Additional POL-Contaminated Soil	10 tons	200	200
0006AU/Optional Task 4.6.24	Additional PCB-Contaminated Soil	10 tons	100	100
0006AV	Site 10 Additional Analyses	1 Sample	39	39

Notes:

CLINs = Contract Line Item Numbers

MI = *MULTI INCREMENT®*

PCB = polychlorinated biphenyl

POL = petroleum, oil, and lubricants

3.3 CONTRACT W911KB-06-D-0007, TASK ORDER 0007

In 2012, Bristol completed tasks remaining from Contract W911KB-06-D-0007, Task Order 0007, including:

- Removal of 4,782 tons of DRO-contaminated soil at the MOC
- Removal of 1.27 tons of miscellaneous debris

These tasks were accomplished concurrently with tasks from Contract No. W911KB-12-C-0003 and are discussed in Section 6.0.

3.4 PROJECT MODIFICATIONS

There were four modifications to contract W911KB-12-C-0003. Table 3-3 briefly describes the modifications.

Table 3-3 Project Modifications

Modification	Description	Details
P00001	Exercised CLIN option 0006AA (Additional POL-Contaminated Soil)	Exercised options increased from 0 to 1 (2,000-ton increments)
	Exercised CLIN option 0006AB (Additional PCB-Contaminated Soil)	Exercised options increased from 6 to 7 (100-ton increments)
	Exercised CLIN option 0006AL (2013 mobilization/demobilization)	Changed from “Option” to “Exercised Option”
	Period of performance change to May 31, 2014	Period of performance extended due to exercising option 0006AL
P00002	Exercised CLIN option 0006AA (Additional POL-Contaminated Soil)	Total exercised options increased from 1 to 2 (2,000-ton increments)
P00003	Exercised CLIN option 0006AB (Additional PCB-Contaminated Soil)	Total exercised options increased from 7 to 20 (100-ton increments)
P00004	Exercised option 0006AC (Site 28 Confirmation Sampling)	Changed from “Option” to “Exercised Option”
	SUBCLIN 0006AR was added (Additional Site 10 Drums, Liquids, and Soil)	Added 1 ton of drums, 1,000 gallons of liquids, and 50 tons of soil

Table 3-3 Project Modifications (continued)

Modification	Description	Details
P00004	SUBCLIN 0006AS was added (Sites 13 & 31 Boulder Sampling)	Added PCB sampling of three boulders each from sites 13 and 31
	SUBCLIN 0006AT was added (Additional POL-Contaminated Soil)	Added up to 2,000 additional tons (10-ton increments exercised up to 200 times)
	SUBCLIN 0006AU was added (Additional PCB-Contaminated Soil)	Added up to 1,000 additional tons (10-ton increments exercised up to 100 times)
	SUBCLIN 0006AV was added (Site 10 Additional Analyses)	Added 39 analytical samples and select analyses to the scope of work at Site 10

Notes:

CLIN = Contract Line Item Number

PCB = polychlorinated biphenyls

POL = petroleum, oil, and lubricants

4.0 PROJECT PLANNING, KEY PERSONNEL, AND SUBCONTRACTORS

4.1 PROJECT PLANNING

Bristol received the contract award from USACE on March 30, 2012. Due to the short period of time between project award and the initiation of fieldwork, it was important that Bristol maintain a close working relationship and effective communication with USACE. Some elements in the planning documents were being prepared in conjunction with fieldwork activities, resulting in planning documents that essentially detailed some work elements after they had been completed in the field. The USACE's on-site Quality Assurance Representative (QAR) played a critical role in facilitating work efforts while planning documents were being finalized. The work plan was tentatively approved by the ADEC on July 13, 2012, and final approval was received (after the end of the 2012 field season) on November 14. The following sections describe the planning documents prepared for this project and the field activities that deviated from the planning documents.

4.1.1 Planning Documents

The following planning documents were prepared by Bristol, approved by the Alaska Department of Environmental Conservation (ADEC), and accepted by the USACE:

- Work Plan (WP)
- Quality Assurance Project Plan (QAPP)
- Contractor Quality Control Plan (CQCP)
- Storm Water Pollution Prevention Plan
- Site Safety and Health Plan (SSHP)
- Accident Prevention Plan (APP)
- Waste Management Plan
- Final WP Uniform Federal Policy (UFP) QAPP Addendum
- Site 28 Technical Memorandum Addendum

Draft planning documents were submitted to USACE on May 29, 2012, with final planning documents following on July 25, 2012. The Final WP UFP QAPP Addendum, incorporating changes resulting from comments that were received following the submission of final planning documents, was submitted on August 22, 2012. An addendum to the Site 28 Technical Memorandum, regarding sediment mapping/sampling activities and recommendations for sediment removal at the Site 28 Drainage Basin was submitted on August 28, 2012. Planning documents were produced in a manner similar to this RA Report, in which the bulk of 2012 fieldwork, applicable to two separate contracts, was described within a single set of documents.

4.1.2 Permits and Regulatory Notifications

Federal and state permits required for this project were included in the WP. Copies of the permits and letters are provided in Appendix A. The following permits and regulatory notifications, including the Quarry Operating Agreement, apply to the 2012 activities on Saint Lawrence Island for the NE Cape hazardous, toxic, and radioactive waste (HTRW) RA project:

- On July 13, 2012 the ADEC sent the USACE tentative approval of the 2012 NE Cape HTRW Removal Actions Work Plan by email. The final 2012work plan was submitted on July 25. On November 14, 2012, ADEC sent a letter to the USACE with final approval of the 2012 NE Cape HTRW Removal Actions Work Plan. A copy of the letter is located in Appendix B.
- Material Supply and Quarry Operating Agreement between Bristol and Kukulget, Inc., effective June 15, 2012.
- The Alaska Department of Natural Resources (ADNR), Division of Mining, Land & Water "Letter of Entry for state tidelands within Kitnagak Bay, Saint Lawrence Island," dated May 18, 2009, granted the USACE authorization to enter state tidelands for the express purpose of conducting barge landings for the continued assessment and cleanup of the NE Cape.
- State of Alaska Department of Environmental Conservation, Division of Water, Wastewater Discharge Authorization Program, 2009DB0004-0216.

- Alaska Department of Fish and Game (ADF&G) Fish Habitat FH09-III-0102 permit was issued on April 22, 2009, for equipment stream crossing, Northeast Cape White Alice Site Removal Action (Saint Lawrence Island), Township 25 South, Range 54 West, Quangeghsaq River.
- ADF&G Fish Habitat FH09-III-0103 permit was issued on April 22, 2009, and Amendment 1, issued on June 5, 2009, for placing of riprap in, performance of maintenance activities in, and water withdrawal (up to 3,000 gallons per day) from the Suqitughneq River, Northeast Cape White Alice Site Removal Action (Saint Lawrence Island), T25S, R54W.
- ADNR, Division of Mining, Land & Water, Temporary Water Use Authorization Permit TWUP A2012-63 dated June 12, 2012.
- Department of the Army Right of Entry for Environmental Assessment and Response for Saint Lawrence Island, Alaska Property Identification Number DACA85-8-08-0134 between the USACE, Kukulget Incorporated, and Sivuqaq Incorporated, dated June 17, 2008.

4.2 KEY OFFICE PERSONNEL

4.2.1 Project Manager (PM), Greg Jarrell

Greg Jarrell, the PM, is responsible for ensuring that project tasks are completed on schedule and within budget, recommending and justifying project modifications, implementing methods of tracking materials and resources, coordinating work with subcontractors, and complying with normal safety procedures and regulatory requirements.

4.2.2 Health and Safety Manager (HSM), Clark Roberts, CIH

Clark Roberts, Certified Industrial Hygienist (CIH), reviewed Bristol's Safety and Health Program for this project. As the HSM, he monitors project compliance with Bristol's Corporate Safety and Health Program. Mr. Roberts works with Bristol's Site Safety and Health Officers (SSHOs) assigned to individual projects to develop and implement effective APPs and SSHPs. He is based in Bristol's San Antonio, Texas, office. For this project, Mr. Roberts is responsible for the following:

- Reviewing and editing the APP and SSHP
- Being available for emergencies
- Providing consultation as needed to ensure that the APP and SSHP are fully implemented
- Coordinating any modification to the APP and SSHP with the Site Superintendent (SS), SSHO, and USACE Contracting Officer (CO)

4.2.3 Project Chemist, Marty Hannah

Marty Hannah has responsibility for quality aspects related to the collection and chemical analysis of all samples on the project, as delegated by the PM. His primary role in the office is to provide oversight to the data development and review process and oversight of all subcontracting laboratories. Mr. Hannah was responsible for setting up the field laboratory.

4.2.4 Regulatory Compliance Manager / Transportation and Disposal (T&D) Coordinator, Tyler Ellingboe

Tyler Ellingboe serves as the Regulatory Compliance Manager and oversees all activities related to collecting, manifesting, transporting, and disposing of hazardous materials and wastes for Bristol. He worked closely with the Bristol environmental field crew to ensure wastes were properly identified.

Mr. Ellingboe also serves as the T&D Coordinator and is responsible for ensuring proper manifesting, placarding, and tracking of waste streams.

4.2.5 Occupational Physician, Alexander T. Baskous

The Occupational Physician designated by Bristol for the NE Cape HTRW Remedial Actions project is Alexander T. Baskous. Dr. Baskous was familiarized with the project hazards and the project scope. He determined medical surveillance protocols and reviewed examination/test results performed in compliance with Title 29 Code of Federal Regulations, Part 1910.120(f) (29 CFR 1910.120[f]) and 29 CFR 1926.65(f), Medical

Surveillance. Dr. Baskous is board certified in Occupational Medicine, with an M.D. and Master of Public Health from Harvard University. He is the Director of the Northwest Segment of the American College of Occupational and Environmental Medicine, a Diplomate of the American Board of Family Practice, and is on the active staff of both Providence Alaska Medical Center and Alaska Regional Hospital in Anchorage, Alaska.

4.3 KEY FIELD PERSONNEL

4.3.1 Site Superintendent and SSHO, Charles (Chuck) Croley

As SS, Chuck Croley was responsible for management of scheduling, coordination, and execution of Bristol's on-site activities in accordance with the contract specifications. He reported directly to the PM. For a period of time between August 31 and September 5, 2012, Maze Thompson acted as SS while Chuck Croley was away from the site on break. During this time, Eric Barnhill acted as SSHO.

The SSHO was responsible for overall planning and compliance with safety and health requirements. He conducted daily safety meetings and addressed worker safety concerns. The SSHO was responsible for communicating safety issues and concerns and reporting safety incidents to the PM. The SSHO was also responsible for the following:

- Being present on site on a full-time basis for the duration of field activities
- Assisting with on-site training and representing the HSM during the day-to-day on-site implementation and enforcement of the APP and the SSHP
- Performing a daily safety and health inspection and documenting results on the Daily Safety Inspection Log
- Ensuring site compliance with specified safety and health requirements; federal, state, USACE Engineer Manual 385-1-1, and Occupational Safety & Health Administration (OSHA) regulations; and all aspects of the APP and SSHP, including but not limited to Activity Hazard Analyses, air monitoring, use of personal protective equipment (PPE), decontamination, site control, Standard Operating Procedures (SOPs) used to minimize hazards, safe use of engineering controls, the Emergency Response Plan, confined space entry procedures, the spill containment program, and preparation of records

- Stopping work if unacceptable health or safety conditions existed, and taking necessary action to reestablish and maintain safe working conditions
- Consulting with and coordinating any modifications to the APP and SSHP with the HSM, the SS, and the CO
- Serving as a member of Bristol's quality control (QC) staff on matters relating to safety and health, conducting accident investigations, and preparing accident reports
- Reviewing results of daily QC inspections and documenting safety and health findings in the Daily Safety Inspection Log
- Recommending corrective actions for identified deficiencies, in coordination with site management and the HSM, and overseeing the corrective actions

4.3.2 Contractor Quality Control System Manager (CQCSM), Russell James

Russell James was responsible for management of contractor quality control (CQC) and had the authority to act in all CQC matters for the project. He worked with the PM to implement the CQCP to ensure that project quality objectives were met. Mr. James was the primary point of contact for environmental and regulatory matters in the field and was the liaison with the QAR.

4.3.3 Laboratory Analysts

Bristol subcontracted TestAmerica Laboratories, Inc. (TestAmerica), to provide two laboratory analysts on site in the field laboratory throughout the duration of fieldwork. They were responsible for overseeing soil extractions, operating the gas chromatographs, and supplying the field team with field laboratory sample results.

4.3.4 ADEC-Qualified Sampler / AK-CESCL, Eric Barnhill

Eric Barnhill was the ADEC-Certified Environmental Sampler for collection and processing of environmental samples. Mr. Barnhill was also the on-site Certified Erosion and Sediment Control Lead (CESCL). Eric Barnhill also served as SSHO while Chuck Croley was off site on break.

4.3.5 First-Aid / Cardiopulmonary Resuscitation (CPR) / Medical Personnel

All Bristol full-time employees who perform fieldwork are required to maintain certification in first aid/CPR. These personnel received training in universal precautions and the use of PPE, as required by the OSHA bloodborne pathogen standard 29 CFR 1910.1030. At least two of these staff members were available at all times to render first aid, if required, at the NE Cape site. In addition, Bristol maintained an emergency medical technician (EMT III) on site during the majority of fieldwork. The EMT III and all necessary medical supplies were stationed in a trailer dedicated for use as the on-site medical facility.

4.3.6 Site Workers and Subcontractors

A variety of on-site workers contributed to, or provided support for, the project's various tasks, including heavy equipment operators, craft laborers, surveyors, and medical personnel. Multiple subcontractors were utilized during the course of work and are listed in Table 4-1. Planning and safety documents were made available to all site workers, including subcontractors and craft laborers. Site workers were supplied with the information, instructions, and emergency response actions contained in the APP and SSHP and were responsible for complying with the rules, regulations, and procedures therein.

Table 4-1 Major Subcontractors

Subcontractor	Assignment
Bering Air	Aircraft charters
ECO-LAND, INC.	Surveying
Fairweather, LLC	Infirmary and emergency medical services
Global Services, Inc.	Camp services
Northland Services, LLC	Marine transportation
Security Aviation	Aircraft charters
TestAmerica Laboratories, Inc.	Fixed-based analytical testing laboratory
Waste Management, Inc.	Solid, RCRA and TSCA soil disposal

Notes:
RCRA = Resource Conservation and Recovery Act
TSCA = Toxic Substances Control Act

4.3.7 Site Visitors

Visitors arrived periodically throughout the duration of the project in 2012. The majority of visitors included local residents of the villages of Savoonga and Gambell who stopped by the site while hunting and fishing. On July 31, 2012, a Security Aviation flight arrived with Carey Cossaboom (USACE PM), Greg Jarrell (Bristol PM), Bill Burke (Bristol Federal Services Manager), and Curtis Dunkin (ADEC) to discuss multiple aspects of the project, with particular attention devoted to Site 28, the PCB- and POL-contaminated soil removal sites, and the Radar Dome Road sampling site. Another site visit was conducted on September 4, 2012, when Carey Cossaboom (USACE PM), Ron Broyles (USACE Contracting Officer's Representative), and Steve Johnson (Bristol Chief Executive Officer) visited the site and discussed project details.

Bristol maintained a visitor signature sheet, requiring all visitors to log their arrival to and departure from the NE Cape site. All visitors were briefed on the safety protocols of the site as well as general camp guidelines.

5.0 LOGISTICS AND FIELD INVESTIGATION METHODS

5.1 MOBILIZATION / DEMOBILIZATION

Preparations for mobilization began in April 2012 with the staging of specialized equipment, materials, and shipping containers (Conexes) in Alaska and in the continental United States. Items purchased outside of Alaska were consolidated in Seattle, Washington, and transported by Northland Services (NS), to Anchorage, Alaska, in May 2012. Freight was loaded onto NS barges at the Port of Anchorage in early May 2012. The barges departed Anchorage in mid-May for Nome, Alaska.

Bering Air made reconnaissance flights to NE Cape prior to mobilization. The purpose of the flights was to assess whether the sea ice in Kitnagak Bay would allow the landing craft to land at Cargo Beach and to assess the condition of the airstrip. Based on the observations made during these flights, Bristol mobilized to NE Cape on June 18, 2012.

Landing craft were used for hauling freight between Nome and Cargo Beach. The first landing craft arrived at Cargo Beach on July 7, 2012. The Cargo Beach landing location is marked on Figure 3, along with all other NE Cape work sites utilized during the project. Photographs of the beach landing operations and other site activities are displayed in the photograph log presented in Appendix C.

Five crew members from Global Services, Inc., and a satellite installation technician from Satellite Alaska arrived on June 20, 2012. Global Services was responsible for construction of the camp, while the satellite communications system, including telephone and internet connections, was installed and established on site by Satellite Alaska. Bristol maintained three phone lines during the course of fieldwork: one line dedicated to Bristol's business operations; one line dedicated for use by USACE; and another line, referred to as the "morale phone," made available for personal use by the on-site field crew. Camp construction was completed by July 6, 2012, and the setup crew departed the site.

Additional personnel and subcontractors arrived between July 3 and July 6, 2012. By July 6, 2012, Bristol had completed improvements to the roads and setup of the NE Cape infrastructure. Removal work, under the 2011 contract (W911KB-06-D-007), began on July 12, 2012, during which time there were approximately 30 personnel in camp. Miscellaneous debris and pole removal operations were initiated on June 26, 2012, prior to the ADEC's tentative approval of the Work Plan.

Personnel demobilization began in mid-September 2012. By September 23, 2012, only essential personnel were on site for the deconstruction of the camp and winterization of equipment. Field activities were completed and all personnel were off site by October 4, 2012.

Several landing craft arrived throughout the duration of the project to transport bulk bags and supplies off-island; the first arrived on July 8, 2012. Thirty-three landing craft arrived at NE Cape between July 8 and October 3, 2012, to transport soil and supplies off-island.

Heavy equipment, camp components, and vehicles were left at the site over winter in an effort to reduce mobilization/demobilization costs associated with barge transportation and increase the length of the working field seasons in 2012 and 2013. Based on Bristol's experience with overwintering equipment between 2011 and 2012, mobilization efforts were conducted at least 10 days earlier than could be done if the schedule was dependent on ice conditions and landing craft schedules. Weather and shipping schedules would typically dictate a demobilization date of September 15, but since the equipment is allowed to remain on site through the winter, working dates can be extended into early October.

5.2 TEMPORARY CONSTRUCTION CAMP

The temporary construction camp was set up on an existing gravel pad adjacent to the airstrip and was designed to house approximately 40 people. Living quarters consisted of

12 individual Weatherport tents, each capable of housing four people. Two trailers were on site, one of which was used for the field laboratory; the other was maintained as the medical facility.

Camp facilities included shared sleeping quarters; a medical dispensary; a recreation room; a dining facility; showers, laundry, and toilet facilities; a food storage container; satellite telephone and television system; and offices for Bristol, subcontractors, and USACE personnel. An EMT III was on site at all times in order to provide emergency medical services. The camp was fully operational between July 6 and September 24, 2012.

5.3 AIR SUPPORT

Security Aviation, of Anchorage, Alaska, and Bering Air, of Nome, Alaska, provided air support services during the 2012 summer season. A Cessna Conquest, owned and operated by Security Aviation, was used to transport USACE personnel to the site in order to comply with U.S. Department of Defense (DoD) Directive 4500.53 and the DoD Commercial Review Board. Passenger flights for non-USACE personnel were typically made using King Air, Beechcraft, or Navajo aircraft, owned and operated by Bering Air out of Nome, Alaska. Over 50 round-trip flights were chartered during the 2012 summer season.

5.4 FIELD SURVEY

ECO-LAND, Inc., was on site throughout the duration of field activities in 2012. The survey crew was utilized on a daily basis for multiple activities. ECO-LAND's activities included but were not limited to:

- Delineating the boundaries of the POL plumes at the MOC
- Surveying excavation extents, groundwater elevations, and decision unit (DU) boundaries
- Surveying monitoring wells and sample locations

- Delineating sediment, vegetation, and water boundaries within the Site 28 Drainage Basin
- Providing volume estimates of soil overburden stockpiles at the MOC

Horizontal survey points reference the North American Datum of 1983, Alaska State Plane Zone 9, and are recorded in U.S. survey feet. Vertical control references the North American Vertical Datum of 1988.

5.5 EQUIPMENT

Major equipment consisted of tracked excavators, heavy loaders, pickup trucks, rock trucks, road maintenance equipment, and utility task vehicles (UTVs). The equipment was serviced, maintained, and repaired on site by a heavy-equipment mechanic.

5.6 TRANSPORTATION ROUTES

Approximately 5.5 miles of gravel roads connect the various work areas at the site and require a small amount of work each year to maintain their functionality. Maintenance generally consists of grading and adding minor amounts of fill. The section of road that leads south past the borrow area becomes a bulldozer trail that continues up the valley and onto the top of the Kinipaghulghat mountains. This trail tends to get washed out each year and has to be reworked by Bristol's bulldozer to allow for UTV access to the Radome Site at the top of Mt. Kangukhsam.

There are four stream crossings, consisting of three culverts and one bridge, within the work areas at NE Cape. Bristol did not have to perform any maintenance on the bridge or culverts during operations in 2012.

Bristol frequently works to maintain the airstrip during field operations. Maintenance activities consist of grading and compacting the airstrip.

5.7 BACKFILL AND BORROW MATERIAL

Borrow material used at the project site was obtained at the borrow area located approximately 2,000 feet south-southeast of the former White Alice antenna array. A total of 7,200 cubic yards of material was removed during field operations in 2012. The material was used primarily for backfill and road repair.

The initial depth to POL contamination was based on results from a 2010 UVOST investigation, when a number of POL-contaminated soil plumes were identified and mapped. The UVOST-delineated plumes can briefly be described as subsurface areas where the UVOST determined that DRO or residual range organics (RRO) concentrations exceeded the site-specific cleanup level of 9,200 milligrams per kilogram (mg/kg). Overburden material (soil overlying the UVOST-delineated plume that does not exceed site-specific cleanup levels) that was excavated from POL soil removal sites was stockpiled in the northwestern section of the MOC (Figure 11) and used as backfill in POL excavations. The stockpiled overburden was only used as backfill if field laboratory results indicated that DRO/RRO concentrations were below 7,360 mg/kg (80percent of the site-specific cleanup level of 9,200 mg/kg). Soil from all overburden stockpiles was analyzed in the field laboratory for DRO/RRO concentrations prior to being used as backfill. If field laboratory results indicated that DRO/RRO concentrations exceeded 7,360 mg/kg, then the soil was not used for backfill and was instead containerized at Pad 98 (Figure 11).

5.8 HEALTH AND SAFETY

Health and Safety plays a fundamental role in all of Bristol's jobs, without exception. Upon arrival, the crew began setting up the medical trailer and communications systems. The EMT III arrived on July 5, 2012. A medical professional was on site throughout the duration of the project. Safety meetings were conducted on a daily basis, and all on-site personnel were encouraged to take a proactive role in addressing safety concerns and questions. Frequent communication regarding safety issues was maintained with the USACE QAR, the Bristol SS/SSHO, CQCSM, and PM.

Field personnel, subcontractors, government personnel, and visitors were provided a briefing by the SS/SSHO directly upon arrival. Part of Bristol's safety routine involved the daily Toolbox Safety Meetings, which were held each morning before the start of work. These meetings were about project-related work to be performed each day at the NE Cape site. Safety topics were chosen that were relevant to the day's activities or to general project safety. Safety meeting topics included weather conditions, footing conditions, equipment safety, housekeeping, and PPE. Bristol's subcontractors were completely integrated into the health and safety program. Key subcontractor involvement with all parties included complying with one SSHP that applied to all workers. All workers, including subcontractor workers, attended the mandatory daily Toolbox Safety Meetings.

Minimum safety gear for all personnel included hard hat, reflective vest, steel-toe boots, safety glasses, and work gloves. Additional PPE was incorporated on a site-specific basis. For example, Tyvek coveralls, boot covers, and/or washable boots were required for those personnel working at the PCB-contaminated sites (sites 13 and 31); dry suits or chest waders and gloves were donned when performing work in the shallow waters of Site 28; flame-resistant clothing was worn during welding or cutting operations that produced flame or spark.

The Bristol SSHO performed safety and health walk-through inspections each day at the various work sites. The purpose of these inspections was to stay abreast of current site activities and conditions, look for existing or potential site safety issues/concerns, ensure appropriate use of PPE, and reinforce safe work practices. The daily safety inspections also provided topics/information for incorporation into the daily Toolbox Safety Meeting to keep the subject matter relevant to NE Cape conditions. Bristol incorporated an incentive program into the health and safety program. Each week, the SSHO would present a member, or members, of the field team with an award for outstanding safety practice.

In all, Bristol developed 14 Activity Hazard Analyses (AHAs) for specific tasks and operations at NE Cape. The AHAs were presented in the SSHP and are as follows:

- Barge-loading operations
- Barge-unloading operations
- Contaminated sediment removal and disposal
- Debris removal and staging
- Drum removal
- Excavation less than 4 feet in depth
- Excavation greater than 4 feet and backfilling
- Fueling of vehicles and equipment
- POL and PCB soil removal disposal
- Pole removal
- Site restoration
- Surface soil sampling
- Subsurface soil sampling
- Wire removal

Bristol invested over 19,500 employee-hours through October 2012 for this project on Contract No. W911KB-12-C-0003. Work performed from June through October 2012 under Contract No. W911KB-06-D-0007, Task Order 0007, has consisted of approximately 3,243 employee-hours. There were no lost-time accidents during the 2012 field season.

5.9 SOIL CONTAINERIZATION AND BULK BAGGING OPERATIONS

The majority of the work performed during the 2012 HTRW Remedial Action involved excavating, packaging, sampling, and transporting contaminated soils. To accomplish these tasks, Bristol relied heavily on the use of excavators, heavy loaders, and bulk bags.

Contaminated soil that was excavated from the various work sites was loaded into triple-layered bulk bags, geotextile bags capable of holding approximately 9 cubic yards of material and rated for up to 24,000 pounds. The bulk bags can be described as an outer woven material containing two inner linings consisting of an impermeable plastic liner and a felt fabric. Both the felt fabric and the woven outer material can be opened and closed via zippered openings. Prior to soil containerization, each bag was placed into a loading frame, a support structure that served to hold the bag open in an upright position while soil was transferred into the bag. A series of straps formed a type of webbing around the bottom and sides of the bulk bags and served as the lift and support structure for bag hauling. These straps attached to a lift frame that was installed onto the forks of a heavy loader. The lift frame consisted of a steel support structure with a series of Crosby clip-hooks (eye/hoist-hooks) attached.

The bulk bags were installed into a loading frame and filled with contaminated soil. The bags were then zipped shut and pulled from the loading frames by heavy loader. The bags were marked, using a fluorescent paint marker, with a distinct ID corresponding to their respective sites and waste characterization sample groups. The bags were then weighed and transported to an available staging area (figures 7, 8, and 9). Upon their arrival at the Cargo Beach staging area, the bags were loaded onto shipping flats (i.e., metal pallets or skids), two per flat, and staged for off-island shipping. Essentially, the bagging operation utilized a two- to four-person labor crew, science personnel, and equipment operators.

Section 5.12.5 provides information regarding waste characterization sampling of the bulk bag contents.

5.10 WASTE HANDLING AND DISPOSAL

During the 2012 field season, Bristol excavated more than 13,000 tons of contaminated soil, which was loaded into triple-layered, U.S. Department of Transportation-approved bulk bags and staged for subsequent transport off-island. In addition to contaminated soil, Bristol loaded Conex containers with miscellaneous metal and wooden debris and wooden poles encountered throughout the site. In total, 1,373 bulk bag containers were filled between July 12 and September 21, 2012. Table 5-1 lists the weights of all soil excavated and handled during the 2012 field season.

Bristol shipped 1,398 bulk bags loaded with PCB-, POL-, and arsenic-contaminated soil off-island on 33 separate landing craft voyages between July 8 and October 3, 2012. Twenty-four of these bulk bags were manifested as hazardous waste due to the soils having PCB concentrations in excess of the Toxic Substances Control Act (TSCA) regulatory limit of 50 mg/kg, and 11 bulk bags were manifested and disposed of as hazardous waste due to arsenic concentrations that exceeded the Resource Conservation and Recovery Act (RCRA) regulatory limit of 5 milligrams per liter (mg/L).

A total waste analysis based on the in-situ arsenic soil results was used in lieu of the Toxicity Characteristic Leaching Procedure (TCLP) analysis on arsenic-contaminated soil from Site 21. The hazardous determination for the arsenic-contaminated soil was accomplished by dividing the total arsenic in the soil concentration by 20 (reflecting the weight ratio of solid sample to acetic acid in the TCLP). If this maximum theoretical leachate concentration is lower than the characteristic level for the constituent, the waste cannot exhibit the toxicity characteristic for that constituent, and the TCLP need not be run. For example, if the total arsenic result of 190 mg/kg and the Rule of 20 is applied (divide by 20), then the sample would have a theoretical TCLP value of 9.5 mg/L which exceeds the RCRA regulatory limit of 5 mg/L. This required the Site 21 soil to carry the D004 RCRA code for arsenic and classified the soil as hazardous waste.

There are currently 427 bulk bags containing contaminated soil staged at the NE Cape site, which will be transported to the disposal facility during the 2013 field season. It should be noted that some of the bags shipped in 2012 consisted of the 451 bulk bags remaining from 2011 removal activities, all of which contained non-regulated soils.

Table 5-1 2012 Excavation Amounts

Site	Weight (tons)	Containers
MOC POL on Contract W911KB-06-D-0007/Task Order 0007	4,782	494
MOC POL on Contract W911KB-12-C-0003	3,812.91	387
Site 13 (including 16 hazardous bags) PCB	2,181.15	211
Site 31 (including 8 hazardous bags) PCB	2,703.58	261
Site 21 Arsenic Excavation	102.72	11
2012 PCB Excavation Totals	4,884.73	472
2012 POL Excavation Totals	8,594.91	881
Site 10 Excavation	59.4	6
Site 28 Sediment Excavation	26.82	3
2012 Combined PCB and POL Excavation Totals	13,479.64	1,353
2012 Combined PCB, POL, and Arsenic Excavation Totals	13,582.36	1,364
2012 Combined Totals, All Excavated Material	13,668.54	1,373

Notes:
MOC = Main Operations Complex
PCB = polychlorinated biphenyl
POL = petroleum, oil, and lubricants
Containers = 9-cubic-yard bulk bags

Aside from contaminated soil, Bristol was responsible for removing a number of other wastes, including the following:

- Twenty-seven 55-gallon drums of liquids recovered from buried drums located at Site 10, 16 of which contained substances classified as hazardous wastes regulated by RCRA.
- Laboratory wastes including hexane, acetone, methylene chloride, and sulfuric acid. Bristol shipped two containers of laboratory wastes off-island in 2012: one 55-gallon drum containing a hexane/acetone mixture and a 5-gallon container of sulfuric acid.
- Miscellaneous metal and debris that were collected during the field season were loaded into three Conex shipping containers and transported to a disposal facility.
- Two drums discovered at the MOC during POL excavations, each of which contained approximately 10 gallons of POL liquid. The drums were packed into two 85-gallon overpack containers that currently remain on site.
- One 5-gallon jerrican containing field laboratory waste was rejected by the designated treatment, storage, and disposal facility (US Ecology Idaho, Inc.). The drum in question (spent mixed solvent) was inadvertently mischaracterized due to miscommunication in the field. The drum in question was rerouted to an alternate disposal facility (Clean Harbors Aragonite, LLC) for final disposal.

Wastes were classified in accordance with 40 CFR 261; 40 CFR 761; and 40 CFR 61. Each hazardous waste type was evaluated to identify all applicable treatment standards in 40 CFR 268, Land Disposal Restrictions. Wastes shipped off-island were placarded in accordance with 49 CFR 172, Subpart F. Labels and placards were affixed to all sides of TSCA-regulated PCB bulk bags, RCRA-regulated arsenic-contaminated soils bags, and the Conex container used for shipping the RCRA-regulated waste drums. Waste manifests, bills of lading, and certificates of disposal have been provided to USACE. Waste profiles are provided in Appendix D.

Table 5-2 lists the wastes shipped off-island in 2012 and their associated treatment. This table also includes those soils that were excavated in 2011 but shipped in 2012. Wastes shipped off site in 2012 are not exclusive to those wastes generated during the 2012 field season because 451 bulk bags remained on-island following the 2011 removal actions. A total of 799 POL-contaminated soil bulk bags, 564 PCB-contaminated soil bulk bags, 11 arsenic-contaminated soil bulk bags, and 24 TSCA-regulated bulk bags containing PCB-contaminated soil were shipped off site, in addition to 27 drums filled with liquid wastes and four Conex containers with debris, drums, and poles. Hazardous soil manifest numbers and bag weights are presented in Table 5-3; hazardous liquids and their associated regulated wastes are shown in Table 5-4.

Table 5-2 2012 Waste Disposal Summary

Waste Type	Final Treatment/Disposal	Disposal Facility	Approximate Disposal Quantity
Miscellaneous Debris	Disposal in Subtitle D Landfill	Columbia Ridge Recycling & Landfill - Arlington, OR	20.67 tons
PCB-Contaminated Soil, <50 ppm PCBs	Disposal in Subtitle D Landfill	Columbia Ridge Recycling & Landfill - Arlington, OR	5,839.43 tons
POL-Contaminated Soil, Non-RCRA	Disposal in Subtitle D Landfill	Columbia Ridge Recycling & Landfill - Arlington, OR	7,966.96 tons
PCB-Contaminated Soil, TSCA, >50 ppm	Disposal in Subtitle C Landfill	Chemical Waste Management of the Northwest - Arlington, OR	254.14 tons
Arsenic-Contaminated Soil, RCRA	Disposal in Subtitle C Landfill	Chemical Waste Management of the Northwest - Arlington, OR	102.72 tons
Liquid-Containing Drums from Site 10	Disposal in Subtitle C Landfill	Chemical Waste Management of the Northwest - Arlington, OR	27 55-gallon drums; approximately 1,350 gallons

Notes:
< = less than
> = greater than
OR = Oregon
PCB = polychlorinated biphenyl
POL = petroleum, oil, and lubricants
ppm = parts per million
RCRA = Resource Conservation and Recovery Act
TSCA = Toxic Substances Control Act

Table 5-3 Hazardous Waste Soil Containers

Bag ID	Manifest No.	Weight (lbs)	Contents	Date Shipped	Destination
13-H01	002038675JJK	23,880	PCB Soil	9/9/2012	CWMN, Arlington, OR
13-H02	002038677JJK	20,760	PCB Soil	9/9/2012	CWMN, Arlington, OR
13-H03	002038678JJK	20,300	PCB Soil	9/9/2012	CWMN, Arlington, OR
13-H04	002038671JJK	19,900	PCB Soil	9/9/2012	CWMN, Arlington, OR
13-H05	002038682JJK	20,820	PCB Soil	9/9/2012	CWMN, Arlington, OR
13-H06	002038683JJK	20,860	PCB Soil	9/9/2012	CWMN, Arlington, OR
13-H07	002038684JJK	22,060	PCB Soil	9/9/2012	CWMN, Arlington, OR
13-H08	002038685JJK	20,020	PCB Soil	9/9/2012	CWMN, Arlington, OR
13-H09	002038686JJK	22,120	PCB Soil	9/9/2012	CWMN, Arlington, OR
13-H10	002038687JJK	20,480	PCB Soil	9/9/2012	CWMN, Arlington, OR
13-H11	002038688JJK	21,160	PCB Soil	9/9/2012	CWMN, Arlington, OR
13-H12	002038689JJK	21,240	PCB Soil	9/9/2012	CWMN, Arlington, OR
13-H13	002038690JJK	20,660	PCB Soil	9/9/2012	CWMN, Arlington, OR
13-H14	002038691JJK	20,660	PCB Soil	9/9/2012	CWMN, Arlington, OR
13-H15	002038692JJK	20,540	PCB Soil	9/9/2012	CWMN, Arlington, OR
13-H16	002038693JJK	19,260	PCB Soil	9/9/2012	CWMN, Arlington, OR
31-H01	002038672JJK	21,220	PCB Soil	9/9/2012	CWMN, Arlington, OR
31-H02	002038673JJK	21,180	PCB Soil	9/9/2012	CWMN, Arlington, OR
31-H03	002038674JJK	21,800	PCB Soil	9/9/2012	CWMN, Arlington, OR
31-H04	002038676JJK	20,880	PCB Soil	9/9/2012	CWMN, Arlington, OR
31-H05	002038694JJK	21,920	PCB Soil	9/9/2012	CWMN, Arlington, OR
31-H06	002038679JJK	24,580	PCB Soil	9/9/2012	CWMN, Arlington, OR
31-H07	002038680JJK	20,660	PCB Soil	9/9/2012	CWMN, Arlington, OR
31-H08	002038681JJK	21,320	PCB Soil	9/9/2012	CWMN, Arlington, OR
21-01A	002038696JJK	17,160	Arsenic Soil	9/9/2012	CWMN, Arlington, OR
21-01B	002038697JJK	16,360	Arsenic Soil	9/9/2012	CWMN, Arlington, OR
21-01C	002038698JJK	18,900	Arsenic Soil	9/9/2012	CWMN, Arlington, OR
21-01D	002038699JJK	20,240	Arsenic Soil	9/9/2012	CWMN, Arlington, OR
21-01E	002038700JJK	21,460	Arsenic Soil	9/9/2012	CWMN, Arlington, OR
21-06	002038701JJK	15,880	Arsenic Soil	9/9/2012	CWMN, Arlington, OR

Table 5-3 Hazardous Waste Soil Containers (continued)

Bag ID	Manifest No.	Weight (lbs)	Contents	Date Shipped	Destination
21-07	002038702JJK	18,340	Arsenic Soil	9/9/2012	CWMN, Arlington, OR
21-08	002038703JJK	18,440	Arsenic Soil	9/9/2012	CWMN, Arlington, OR
21-09	002038704JJK	19,320	Arsenic Soil	9/9/2012	CWMN, Arlington, OR
21-10	002038705JJK	17,720	Arsenic Soil	9/9/2012	CWMN, Arlington, OR
21-11	002038706JJK	21,620	Arsenic Soil	9/9/2012	CWMN, Arlington, OR

Notes:
CWMN = Chemical Waste Management of the Northwest
lbs = pounds
PCB = polychlorinated biphenyl

Table 5-4 Hazardous Waste Liquids

Manifest No.	Container Type	Regulated Waste(s)	Date Shipped	Destination
004376112 FLE	55-gallon Drum	Ethylene Glycol, Tetrachloroethylene	9/20/2012	CWMN, Arlington, OR
004376112 FLE	55-gallon Drum	Benzene	9/20/2012	CWMN, Arlington, OR
004376112 FLE	55-gallon Drum	Benzene	9/20/2012	CWMN, Arlington, OR
004376112 FLE	55-gallon Drum	Arsenic	9/20/2012	CWMN, Arlington, OR
004376112 FLE	55-gallon Drum	Flammable Liquid, MEK, Methanol	9/20/2012	CWMN, Arlington, OR
004376112 FLE	55-gallon Drum	Flammable Liquid, MEK, Methanol	9/20/2012	CWMN, Arlington, OR
004376112 FLE	55-gallon Drum	Flammable Liquid, MEK, Methanol	9/20/2012	CWMN, Arlington, OR
004376112 FLE	55-gallon Drum	Flammable Liquid, Tar, Diesel	9/20/2012	CWMN, Arlington, OR
004376112 FLE	55-gallon Drum	Flammable Liquid, Tar, Diesel	9/20/2012	CWMN, Arlington, OR
004376112 FLE	55-gallon Drum	Flammable Liquid, Tar, Diesel	9/20/2012	CWMN, Arlington, OR
004376112 FLE	55-gallon Drum	Flammable Liquid, Diesel, Ethylene Glycol	9/20/2012	CWMN, Arlington, OR

Table 5-4 Hazardous Waste Liquids (continued)

Manifest No.	Container Type	Regulated Waste(s)	Date Shipped	Destination
004376113 FLE	55-gallon Drum	Arsenic, Petroleum Hydrocarbons	9/20/2012	CWMN, Arlington, OR
004376113 FLE	55-gallon Drum	Lead, Petroleum Hydrocarbons	9/20/2012	CWMN, Arlington, OR
004376113 FLE	55-gallon Drum	Lead, Petroleum Hydrocarbons	9/20/2012	CWMN, Arlington, OR
004376113 FLE	55-gallon Drum	Lead, Petroleum Hydrocarbons	9/20/2012	CWMN, Arlington, OR
004376113 FLE	55-gallon Drum	Lead, Petroleum Hydrocarbons	9/20/2012	CWMN, Arlington, OR
004785942 FLE	5-gallon Jerrican	Flammable Liquid, Spent Mixed Solvent	9/20/2012	Clean Harbors Aragonite, LLC, Aragonite, UT

Notes:
CWMN = Chemical Waste Management of the Northwest
MEK = methyl ethyl ketone

5.11 DECONTAMINATION

Decontamination is of significant importance as it relates to activities involved in the investigation or remediation of contaminated sites. Decontamination procedures are instituted to protect the environment and personnel and to maintain the quality and integrity of environmental samples. Bristol incorporated decontamination procedures during all sampling events and set up protocols for decontaminating heavy equipment that were utilized in excavation operations.

For groundwater and surface water sampling, Bristol used new tubing for each monitoring well or surface water sample location. The tubing was discarded following each sample collection. A Monsoon downhole pump, when used, was decontaminated between each well by disassembling the pump and cleaning it in an Alconox solution, followed by a rinse with tap water and deionized (DI) water. The YSI water quality meter and accessory flow-through cell were cleaned in a similar fashion with Alconox and a double rinse.

New nitrile gloves were donned for every sample collected on site. Reusable sampling equipment such as stainless steel spoons and trowels were washed in an Alconox solution, followed by a rinse of potable water and DI water.

Excavators working on PCB-contaminated soil sites were decontaminated using a dry-brush technique prior to moving off site. Dry-brushing involved removing gross soil particles from all parts of the equipment that came into contact with PCB-contaminated soils. When an excavator was utilized for soil sampling, its bucket was given a thorough dry brushing between samples. Excavator tracks were cleaned by shovel or other mechanical means without the use of water before moving off site.

Excavators working on POL-contaminated sites were brushed clean of gross materials prior to moving off site. The excavator bucket was dry-brushed to remove gross soil particles following arsenic-contaminated soil removal operations at Site 21 (the excavator tracks did not enter the excavation).

5.12 ENVIRONMENTAL SAMPLING

Bristol collected numerous samples from different media during the project for a variety of reasons. Soil samples were collected from bulk bags for waste characterization purposes. Confirmation soil samples were collected from excavations at the MOC, Site 21, Site 10 and Site 31 to determine contaminant concentrations, if any, remaining in soil following a removal effort. Soil, sediment, groundwater, and surface water samples were collected from the MOC, Site 8, and Site 28 to help further characterize the sites, monitor for natural attenuation, and monitor impacts from construction activities. Surface water samples were collected from Site 28 streams to monitor the impact of construction activities on contaminant concentrations in surface waters. Surface water samples were also collected from impoundments to determine whether contained waters were within discharge criteria. Soil samples were collected along the road at the former Radar Dome site. All samples were collected in accordance with ADEC Draft Field Sampling Guidance (ADEC, 2010), and Bristol's WP (2012a), and associated SOPs.

5.12.1 Field Laboratory Soil Sample Collection from POL Sites

Following POL excavations, field laboratory samples were collected every 10 feet along excavation sidewalls and floors using stainless steel spoons or trowels and were placed into Ziploc bags. When excavation conditions prevented safe entry into an excavation, samples were collected from the bucket of an excavator. Bags were marked with a unique sample ID and submitted to the on-site field laboratory for DRO/RRO analysis.

Judgmental samples were collected from subsurface horizons most likely to be contaminated, such as the groundwater interface, tops of confining layers (or bottoms of relatively porous layers), or depths at which a nearby Ultra-Violet Optical Screening Tool (UVOST) probe indicated relatively high concentrations of POL contamination. UVOST technology was employed in 2010 to delineate the extent of DRO contaminated soil and is discussed in further detail in Section 6.4. Field laboratory extraction and analysis steps followed the SOP prepared for NE Cape, which is provided in Appendix E.

5.12.2 Field Laboratory Soil Sample Collection from PCB Sites

Field laboratory samples for PCB analysis were collected from excavations at sites 13 and 31. These samples were collected in Ziploc bags using stainless steel spoons and were promptly submitted to the field laboratory. Samples were collected with the aid of an excavator bucket when excavation conditions prevented safe entry. The excavator bucket was decontaminated between samples as described in Section 5.11. Samples collected from the excavator bucket were collected from soil not directly in contact with the bucket's surfaces. As with confirmation samples, extensive field laboratory samples were collected at the same frequency and using the same methods as confirmation samples. Samples were collected using a 25-square-foot grid consisting of 5-foot by 5-foot square grid sections at sites 13 and 31 during excavation activities. The grid lines were marked every 5 feet using marking paint, and the individual sampling sites within the grid were marked with pin flags. Samples were collected from each grid, marked with a unique sample ID, and submitted to the on-site field laboratory for analysis.

5.12.3 Confirmation Soil Sample Collection from POL Sites

Confirmation sampling protocols commensurate with the ADEC draft Field Sampling Guidance (2010) were followed. Samples were collected at a rate of one per 20 linear feet along sidewalls. Two floor samples were collected for the first 250 square feet of excavation floor, plus one for each additional 250 square feet. The majority of the POL sites were excavated to depths beneath groundwater. Samples collected from flooded excavation floors were collected at a rate of 1 sample per 1,600 square feet of excavation floor area. This sampling frequency was determined in the field and was collected under the direction of USACE, following conversations with ADEC. Confirmation samples from flooded excavations or excavations not safe to enter were collected with the aid of an excavator bucket. Samples were collected from the bucket by the sampler, who donned a new pair of nitrile gloves prior to collecting each sample. The excavator bucket was decontaminated between each sample. Samples were collected into appropriately sized glass jars, labeled with a unique ID and necessary analytical notes, and shipped under chain of custody to TestAmerica.

ADEC correspondence and monthly status reports are included in Appendix B.

5.12.4 Confirmation Soil Sample Collection from PCB Sites

Confirmation samples at PCB-contaminated sites (sites 13 and 31) were collected as described in the approved WP (Bristol, 2012a), every 5 feet along the excavation floor and sidewalls (one sample per 25 square feet), using stainless steel spoons and trowels. The environmental sampling crew referred to the ADEC Draft Field Sampling Guidance (2010) and the U.S. Environmental Protection Agency's (EPA's) *Field Manual for Grid Sampling of PCB Spill Sites to Verify Cleanup* (1986) for guidance. Sample collection from the excavator bucket was employed in areas where an excavation was deemed unsafe for entry. Samples were collected into pre-cleaned 4-ounce glass jars that were subsequently labeled and shipped under chain of custody to TestAmerica.

5.12.5 Waste Characterization Sample Collection

Waste characterization samples were collected from all wastes that were shipped off-island. Soil samples were collected from bulk bags that were loaded with POL-, PCB-, and arsenic-contaminated soils, as well as ethylene glycol- and tetrachloroethene-(PCE-) contaminated soils excavated from Site 10.

Analytical results from the field laboratory were used to characterize POL- and PCB-contaminated soils. Each POL and PCB waste characterization sample consisted of a composite of seven discrete samples collected with a stainless steel scoop from each of a series of seven bulk bags. The discrete sample, or aliquot of the composite, was collected from each side of an individual bulk bag and placed into a stainless steel bowl, where the soil was homogenized. The homogenized soil from seven bulk bags was then placed into a Ziploc bag, given an ID that corresponded to the group of bags from which the sample was collected, and submitted to the field laboratory.

Waste characterization samples for bulk bags containing soil from locations where field laboratory results indicated PCB concentrations equal to or exceeding 50 mg/kg were not composited with other bags but were submitted to the field laboratory as discrete samples.

The arsenic waste characterization samples consisted of a composite from as many as six bulk bags. The composited arsenic samples were collected using a stainless steel scoop, placed into pre-cleaned, 4-ounce glass jars, and shipped under chain of custody to TestAmerica for arsenic analysis.

Each bulk bag containing soil from the Site 10 excavations was sampled for waste characterization purposes. The samples were collected into pre-tared, 4-ounce jars, preserved with methanol, and shipped under chain of custody to TestAmerica for volatile organic compounds (VOCs) analysis. Soils in this area were being removed due to concentrations of PCE, so waste characterization samples were analyzed for this chemical of concern (COC).

At Site 10, Bristol recovered buried drums containing liquid that was ultimately transferred into 27 bung-top drums. A representative sample was collected and analyzed to represent liquids with similar characteristics. Analytical methods were chosen for each sample based on a combination of historical site information, physical characteristics of the liquid, and any identifying marks or labeling observed on the recovered drums. Representative waste characterization samples were collected from the new bung-top drums into 8-ounce jars using a drum thief. The jars were labeled and shipped under chain of custody to TestAmerica. Analyses included DRO/RRO, PCBs, total halogens, flashpoint, corrosivity, glycol, VOCs, semivolatile organic compounds (SVOCs), and metals. The toxicity characteristic leaching procedure (TCLP) extraction method was utilized for the VOCs, SVOCs, and metals analyses. Please refer to Table F, located in Appendix F, for the Site 10 drum liquid waste characterization results.

5.12.6 Water Sample Collection

Surface water samples were collected using a clean, non-preserved, 1-liter amber jar, which was slowly dipped into the water source and then used to fill the appropriate sample containers for the specified analyses.

Surface water samples from Site 8 were collected using a peristaltic pump. Surface water was pumped directly into sample containers while water quality parameters were measured using a YSI water quality meter submerged directly into the water. Turbidity measurements were recorded using a Hach 2100P Field Turbidimeter.

Groundwater samples were collected from monitoring wells within the MOC and are discussed in Section 6.1.

5.12.7 PCB Concrete Wipe-Sample Collection

PCB wipe-samples were collected as described in *Wipe Sampling and Double Wash/Rinse Cleanup as Recommended by the Environmental Protection Agency PCB Spill Cleanup Policy* (Smith, 1991). Samples from the concrete were collected at a rate of one sample per 250 square feet of exposed concrete. Field and sampling procedures consisted of the following, as determined by TSCA requirements and 40 CFR 761.125:

- The sample location was prepared by cleaning the area. Cleaning consisted of dry brushing followed by pressure washing. Once the area had air dried, it was brushed again prior to sample collection.
- The sample area was measured and marked with indelible marker to comprise an area that was 10 centimeters wide by 10 centimeters long.
- A piece of cotton gauze was folded and coated with 5 milliliters of hexane solvent. The sampler wore two layers of nitrile gloves and changed the gloves between sample locations.
- The sample was collected by wiping the gauze twice across the entire sample area, first from left to right and then from top to bottom.
- The gauze was then placed into a sampling vial, upon which the sample ID was marked. The vial was capped.

Wipe samples were analyzed by the field laboratory and TestAmerica, with PCB results reported in micrograms per 100 square centimeters (µg/100 cm^2). Correlation samples were collected at a rate of 10 percent and submitted to TestAmerica for analysis. Correlation samples were collected from an area directly adjacent to a concrete wipe sample collected for field laboratory analysis.

5.12.8 MI Sample Collection

Refer to Section 6.3 for a description of MI Sampling activities and procedures.

5.13 FIELD LABORATORY

Bristol utilized an on-site field laboratory for screening soils to aid in excavation activities. The laboratory was capable of analyzing soils for DRO/RRO using Alaska Test Method (AK)102/103 and for PCB soils and wipes using a modified EPA Method 8082. Bristol utilized the field laboratory to the maximum extent possible. A total of 464 POL samples and 735 PCB samples were analyzed during the 2012 field season.

Field screening results from the on-site laboratory were used to direct the excavation of contaminated soil but were not used to determine whether site cleanup levels had been achieved. The field screening laboratory was not certified for any analyses. If mobile laboratory concentrations were greater than 80 percent of site cleanup levels of 9,200 mg/kg for DRO and RRO, or 1 mg/kg PCB, then the excavation was expanded and additional field laboratory samples were collected. Once the excavation was believed to be complete based on field screening results below 80 percent of cleanup levels, confirmation samples were collected and submitted to TestAmerica to confirm that the remaining soil was below site cleanup levels.

If field screening samples collected from a PCB excavation were less than 0.8 mg/kg, discrete confirmation samples were collected on 5-foot spacings and sent to TestAmerica. PCB excavation samples were analyzed discretely in order to identify areas with PCB concentrations above cleanup levels. Waste characterization and wipe-samples were also submitted to the field laboratory for PCB analysis. Refer to Section 6.5.7 for discussion of wipe sample results. The off-site disposal facilities accepted field laboratory results for waste disposal purposes.

Field laboratory sample locations with DRO results exceeding 7,360 mg/kg (80 percent of the site-specific DRO/RRO cleanup level of 9,200 mg/kg) were further excavated and resampled. When POL field-screening values indicated concentrations below 7,360 mg/kg, confirmation sampling commenced. Field screening locations, confirmation sample locations, and the excavation limits, were surveyed by ECO-land.

5.13.1 POL Analysis

The POL screening samples were analyzed for DRO and RRO using a gas chromatograph equipped with dual flame-ionization detectors and procedures outlined in Appendix D of the ADEC Underground Storage Tank Procedures Manual for AK102 and AK103 (ADEC, 2002). Field laboratory results were used to indicate site locations that either required further excavation or were tentatively thought to have reached cleanup goals. Confirmation samples were collected at locations where field laboratory results indicated concentrations below cleanup levels.

5.13.2 PCB Analysis

The PCB screening samples were analyzed as Aroclors using a gas chromatograph equipped with dual electron capture detectors and procedures outlined in EPA Method 8082. Samples were extracted using a rapid extraction method outlined in the SOP for PCBs Field Testing for Soil and Sediment Samples (EPA, 2002). The screening method used in the field was slightly modified from the EPA field testing method; a 1:1 hexane acetone solvent mixture was used instead of a 10:8:2 mixture of hexane, methanol, and water. Water was added after sonication to facilitate the separation of the hexane from the acetone. When water was added to the initial extract, the solvents physically separated, leaving the hexane as the top layer, which contained the PCBs. The method was also modified in the field because organic materials were present at the sites. The addition of both diatomaceous earth and sodium sulfate to the samples produced emulsions in the sample extracts, so samples were air dried in weigh dishes after the initial sample weight was recorded, to minimize potential for emulsions. All other extraction and analysis steps followed the SOP prepared for NE Cape provided in Appendix E.

6.0 TASK-ORIENTED FIELD ACTIVITIES

All fieldwork was performed in accordance with the prepared planning documents, except as noted in Section 6.12, Deviations from the Planning Documents. This section describes the procedures implemented in accomplishing the SOW during the 2012 field season. The following subsections will detail the work performed at each site in order to accomplish those objectives set forth in the SOW. References will be made to analytical data tables, provided in Appendix F. Pertinent field personnel notes and other field documentation are included in Appendix G. It should be noted that while silica-gel-treated DRO and RRO results are discussed, the ADEC has not approved the use of silica gel results for demonstrating that site-specific cleanup goals have been met.

6.1 MOC MNA GROUNDWATER SAMPLING, RESULTS, AND DISCUSSION

Bristol was scoped with collecting groundwater samples from monitoring wells within the MOC, analyzing the results, and comparing the results with historical data to determine whether natural attenuation is occurring in groundwater at the site. The following sections describe the history of this site and detail the results of the groundwater sampling efforts in 2012.

6.1.1 Description and History

The MOC at the NE Cape installation contained the majority of the site's infrastructure and has been historically partitioned into various sites. Sites within or near the MOC include sites 10, 11, 13, 15, 16, 19, and 27. Site 11 historically contained three 400,000-gallon ASTs, one of which was punctured in the late 1960s leading to a large release of diesel fuel. In addition to the large ASTs at Site 11, other potential contaminant sources include Site 13, the former Heat and Power Plant, which contained a variety of ASTs, underground storage tanks (USTs), diesel generators, and power transformers; Site 15, where a fuel pipeline break resulted in a diesel fuel spill; the Site 16 Paint and Dope

Storage building, which was originally a flammable liquids storage facility with an AST; Site 19, the site of a former auto maintenance building; and Site 27, an equipment and vehicle refueling area consisting of a small shed and concrete valve box attached to a buried fuel pipeline that was connected to the large ASTs at Site 11 (USACE, 2009). The MOC's infrastructure, including buildings, tanks, and piping, were demolished and transported off site during removal actions from 2000 to 2005 (USACE, 2009). Primary sources of contamination include the ASTs, USTs, and associated piping that contained fuel products; secondary sources include residual subsurface fuel-contaminated soil resulting from historical spills. Electrical transformers, 55-gallon drums, and other miscellaneous activities have contributed to contamination at the site (USACE, 2009). The COCs historically observed in soil at the MOC include DRO, PCBs, and naphthalene. The COCs observed in groundwater from monitoring wells within the MOC are DRO, benzene, and arsenic.

Beginning in 2010, USACE initiated a program to monitor natural attenuation in groundwater at the MOC. Ten wells were initially selected for the monitoring program, but after physical evaluation, it was determined that only nine wells were suitable for the MNA sampling program. The 10 wells were initially selected based on historical results, their physical proximity to the MOC, and their ability to monitor groundwater that passes under the MOC and other known contaminant areas. Bristol collected groundwater samples and MNA parameter data from the nine wells within the MOC beginning in 2010 and completed a third round of sampling and data collection in 2012. The monitoring wells (MWs) selected by the USACE for sampling and monitoring include MW88-1, MW88-4, MW88-5, MW88-10, MW10-1, 17MW1, 22MW2, 20MW1, and 26MW1. Refer to Figures 4 and 5 for the locations of the monitoring wells and concentrations of contaminants in groundwater above cleanup levels. Refer to Appendix H for additional information from historical reports regarding historical well logs and hydrogeology of various sites at NE Cape.

In 2010, three wells contained contaminant concentrations exceeding cleanup levels: MW88-4, MW88-5, and MW88-10. All three wells exceeded the groundwater cleanup level of 1.5 mg/L for DRO at 3.3 mg/L, 12 mg/L, and 1.6 mg/L, respectively. Well MW 88-5 also contained concentrations of benzene and RRO at 0.0093 mg/L and 1.6 mg/L, respectively exceeding the respective cleanup criteria of 0.005 mg/L and 1.1 mg/L. In 2011, monitoring wells MW88-4 and MW88-5 contained DRO concentrations of 2.3 mg/L and 7.5 mg/L, respectively. MW88-4 contained benzene and arsenic concentrations of 0.0094 mg/L and 0.011 mg/L, respectively. MW88-5 contained benzene and RRO concentrations of 0.020 mg/L and 2.0 mg/L, respectively. DRO in MW88-10, which exhibited concentrations in excess of cleanup level in 2010 at 1.6 mg/L, did not exceed cleanup levels in 2011.

6.1.2 Field Activities

Groundwater monitoring wells were sampled with a Monsoon positive pressure submersible pump using a low-flow sampling protocol in accordance with Section IV of the ADEC Draft Field Sampling Guidance (ADEC, 2010). Ice plugs were present in wells 26MW1 and 88-1 above the groundwater table at 7 feet and 3 feet below the top of the well casing, respectively. The ice plugs were melted with a heated steel rod and removed prior to sampling. Frozen wells were thawed using a heated steel rod that was cleaned and decontaminated between wells. The heated rod did not enter the water table. Water quality parameters, including temperature, pH, dissolved oxygen (DO), conductivity, and oxygen-reduction potential (ORP), were collected using a YSI 556 meter with flow-through cell; turbidity measurements were taken using a Hach portable turbidimeter; and water level measurements were taken using a water level meter. Water quality parameters were measured, recorded, and monitored during a period of time prior to sample collection when water was being purged from the monitoring wells. Once the water quality parameters stabilized, groundwater samples were collected directly from ⅛-inch, Teflon-lined, high-density polyethylene (HDPE) tubing into the appropriate collection vessels. Purge water and investigation-derived waste (IDW) from wells with no historical evidence of contamination were collected into 5-gallon buckets and treated with granular activated carbon prior to being discharged onto the ground. Purge water treated and discharged in this manner was done so within 20 feet of the monitoring well's location. IDW from wells that historically contained contaminant concentrations in excess of cleanup levels (MW88-4 and MW88-5) was contained within 5-gallon buckets and disposed of in POL-contaminated soil bulk bags following receipt of analytical sample results. Copies of the groundwater purging and sampling field forms are provided in Appendix G.

6.1.3 Results

Nine primary water samples and one field duplicate sample were collected from the selected monitoring wells in the MOC from July 8 to July 10, 2012. Groundwater samples were submitted for analysis of benzene, toluene, ethylbenzene, and xylenes (BTEX), PCBs, gasoline range organics (GRO), DRO, RRO metals (total and dissolved), polynuclear aromatic hydrocarbons (PAHs), and methane and were shipped under chain of custody to TestAmerica in Tacoma, Washington, for analysis. Hach kits were used in the field laboratory to collect the natural attenuation parameters for manganese, ferrous iron, sulfate, nitrate, and alkalinity. The natural attenuation parameters from 2010, 2011, and 2012 are presented in Table F1, located in Appendix F. Figure 4 shows the potentiometric groundwater surface with the locations of the monitoring wells that were sampled at the MOC. Groundwater levels were measured on July 4, 2012, and indicate groundwater flow was predominantly north/northwest.

Figure 5 shows the groundwater monitoring wells that were sampled at the MOC. Occurrences of contaminant concentrations in excess of cleanup levels are presented on the figure. Full laboratory analytical results for MOC groundwater monitoring wells are presented in Table F2, located in Appendix F. Three wells contain contaminant concentrations exceeding cleanup levels: MW88-4, MW88-5, and MW88-1. The wells' concentrations of DRO at 2.0 mg/L, 4.6 mg/L, and 1.9 mg/L, respectively, exceeded the cleanup level of 1.5 mg/L. MW88-5 also exceeded the benzene cleanup criterion of 0.005 mg/L, with a concentration of 0.0064 mg/L. MW88-4 contained arsenic at a concentration of 0.011 mg/L, above the cleanup criterion of 0.010 mg/L. Wells MW-88-4 and MW88-5 were decommissioned after sampling was completed in 2012 to facilitate further POL soil removal. The well decommissioning is further discussed in Section 6.10.

Table 6-1 includes sample results for COCs that have exceeded cleanup criteria from the 2004, 2010, 2011, and 2012 sampling events. A comparison of the 2012 groundwater sample results with past results showed that the three wells that historically contained concentrations of DRO exceeding cleanup levels (MW88-4, MW88-5, and MW88-10) exhibited lower concentrations of DRO during the 2012 sampling event than in previous years. Graph 1 in Appendix F shows the DRO concentrations in wells MW88-1, MW88-4, MW88-5, and MW88-10 over a period of time. These wells demonstrated the greatest decrease in DRO concentrations between 2010 and 2011, with the exception of well MW88-1. MW88-5 showed the most dramatic decrease in DRO, possibly due to point source removal of the J1A plume to the east during removal activities in 2011. While DRO detections occurred in 2010 and 2011, MW88-1 exceeded cleanup criteria for DRO for the first time in 2012. Factors such as changes in sampling methodology, variable water column elevation, purge volume, and turbidity at time of sampling do not present a clear cause of the change in DRO concentrations. Graph 2 in Appendix F shows benzene concentrations from wells MW88-1, MW88-4, MW88-5, and MW88-10 from 2004 to

2012, along with the water level measured in MW88-4. The benzene concentration appears to correlate directly with water elevation; an increase in benzene in the four wells in 2011 coincided with higher water elevations in all four wells.

Table 6-1 Current and Historical Groundwater Sample Results for Select Monitoring Wells

	Matrix	Water	Water	Water	Water	Water	Water
	Method	8260B	AK101	AK102	AK103	6020	6020
	Analyte	Benzene	GRO (C6–C10)	DRO (nC10–<nC25)	RRO (nC25–nC36)	Arsenic-Dissolved	Lead-Total
	Cleanup Level	0.005	1.3	1.5	1.1	0.01	0.015
	Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Well ID	Year						
88-4	2004	**0.0337**	1.25	**3.89**	**1.46**	--	0.00502
	2010	0.0024	0.24	**3.3**	0.43	0.0085	0.002
	2011	**0.0094**	0.4	**2.3**	0.55	**0.011**	0.0013 J
	2012	0.0048	0.31	**2.0**	0.24	**0.011**	0.0019 J
88-10	2004	ND (0.0004)	0.0357	1.38	ND (0.549)	--	**0.0376**
	2010	ND (0.00015)	ND (0.044)	**1.6**	0.036 J	ND (0.0004)	0.0015 J
	2011	ND (0.00045)	ND (0.044)	0.54	0.15	ND (0.0038)	0.00083 J
	2012	ND (0.00045)	ND (0.044)	0.50	0.064 J	ND (0.004)	0.00076 J
88-5	2004	**29.7**	**1.5 J**	**11.3**	**2.28**	--	0.012
	2010	**0.0093**	0.19	**12**	**1.6**	0.0028	0.0029 J
	2011	**0.020**	0.24	**7.5**	**2.0**	0.0052	0.0019 J
	2012	**0.0064**	0.16	**4.6**	0.58	0.0055	0.0021

Table 6-1 Current and Historical Groundwater Sample Results for Select Monitoring Wells (continued)

	Matrix	Water	Water	Water	Water	Water	Water
	Method	**8260B**	**AK101**	**AK102**	**AK103**	**6020**	**6020**
	Analyte	Benzene	GRO (C6–C10)	DRO (nC10–<nC25)	RRO (nC25–nC36)	Arsenic-Dissolved	Lead-Total
	Cleanup Level	0.005	1.3	1.5	1.1	0.01	0.015
	Unit	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Well ID	**Year**						
88-1	**2004**	ND (0.0004)	0.0141 J	ND (0.345)	0.168 J	--	0.001 B
	2010	ND (0.00015)	ND (0.05)	0.75	0.037 J	ND (0.0004)	ND (0.0029)
	2011	ND (0.00045)	ND (0.044)	0.74	0.26	ND (0.0038)	0.0016 J
	2012	ND (0.00045)	ND (0.044)	**1.9**	0.15	ND (0.004)	0.00041 J

Notes:
-- = not sampled
< = less than
AK = Alaska Test Method
B = analyte detected in method blank at less than 10 times the sample concentration
BOLD = sample result exceeds cleanup level
DRO = diesel range organics
GRO = gasoline range organics
J = result is an estimate
mg/L = milligrams per liter
ND = non-detect; limit of detection in parentheses
RRO = residual range organics

MNA parameters are presented In Table F1, located in Appendix F. MW88-4 and MW88-5, which contained concentrations of DRO exceeding cleanup criteria, had the lowest DO concentrations. Additionally, MW88-4 and MW88-5 contained the highest concentrations of ferrous iron, alkalinity, and methane. Ferrous iron, methane, and alkalinity are metabolic by-products of microbial respiration. The wells with the lowest contaminant concentrations had comparatively high DO, suggesting that in wells containing higher concentrations of DRO, microbes have depleted oxygen to aerobically degrade DRO. The high concentrations of methane in MW88-4 and MW88-5 indicate ongoing anaerobic degradation of DRO by methanogenic microbes. These factors are an indication that natural attenuation is likely occurring, and the 2012 MNA results are consistent with MNA results from the 2010 and 2011 sampling events. Graph 3 shows analyte trends for DRO, RRO, benzene, and arsenic in well MW88-4, as well as water elevations taken immediately prior to the sampling event. The water elevation is displayed on Graph 1 and may help explain the increased benzene concentration between 2010 and 2012. The benzene concentration was shown to increase with water levels in MW88-4. Benzene has a greater solubility in water compared to DRO, RRO, and arsenic, therefore, benzene concentrations may be impacted by fluctuations in groundwater elevation more than other COCs.

Graph 1 in Appendix F illustrates the DRO reduction in MW88-4 since the 2004 sampling event, with DRO concentrations reported at 3.89 mg/L in 2004 and 2.0 mg/L in 2012. The 2012 results for MW88-4 still exceed the ADEC groundwater cleanup level of 1.5 mg/L. The DRO source soil was removed from the areas upgradient of MW88-4 in 2011 and 2012. While DRO concentrations are shown to be decreasing in MW88-4, well MW88-1 has shown an increase in DRO from 2011 to 2012, from 0.74 mg/L to 1.9 mg/L. The increase in DRO at well MW88-1 is not fully understood, but disturbance in sub-surface groundwater flows due to removal activities at the MOC may be a contributing factor. While there is a general decrease in COCs across the MOC monitoring wells, more information and sampling results are needed after removal activities are completed to determine whether MNA is a viable method for reaching cleanup goals.

Bristol recommends continued groundwater sampling and MNA at the site and the installation of additional monitoring wells to replace MW88-4 and MW88-5. Refer to section 6.10.2 for further discussion regarding monitoring well abandonment.

6.2 SITE 8 PIPELINE BREAK MNA SAMPLING, RESULTS, AND DISCUSSION

6.2.1 Description and History

Site 8 (Figure 6) is a wetland with dense, grassy surface vegetation (i.e., thick tundra mat) that slopes southward and narrows toward the Suqitughneq River. A spring is located at the lower end of the site near the Suqitughneq River.

Historically, a fuel pipeline extended from the Site 3 fuel pumphouse (near Cargo Beach) to the three large ASTs located at Site 11 in the MOC. The fuel pipeline has since been removed, but anecdotal evidence suggests a break in the pipeline occurred near the location of Cargo Beach Road and the Airport Access Road (Shannon & Wilson, 2005). Figure 6 shows the approximate location of the pipeline break.

Two soil samples were collected at Site 8 in 2004. The first sample (04NE08SD103) was located approximately 50 feet below the historical pipeline break just outside of what is now referred to as the middle decision unit (MDU); the second sample (04NE08SD102) was located 100 feet below the break in the current lower decision unit (LDU). Historical (2004) results indicated that DRO was present at concentrations of 6,700 mg/kg and 19,500 mg/kg in samples 04NE08SD103 and 04NE08SD102, respectively. In 2004, surface water samples were also collected near the Site 8 drainage's confluence with the Suqitughneq River, but contaminants (BTEX and PAH compounds) were not detected (Shannon & Wilson, 2005). The selected remedy for this site as stated in the USACE Decision Document (2009) is natural attenuation. The relatively high organic carbon content of the soil promotes stabilization of the fuel components and minimizes the potential for contaminant migration. The heavily vegetated area helps promote the natural breakdown of DRO (USACE, 2009).

In 2010, a multiyear study commenced for MNA, during which three DUs were created. Samples were collected from sediment and surface water within each DU with the intention of studying the changes in COC concentrations (in sediment) over time and to analyze the MNA parameters (in surface water) to determine whether natural attenuation could be occurring under the observed conditions. The upper decision unit (UDU) is upgradient of the source; the MDU encompasses the source area (the area of the pipeline break); and the LDU is the downgradient unit nearest the Suqitughneq River. DUs consisted of equally sized rectangular areas 40 feet wide by 100 feet long, which were divided into 40 interior cells (10 feet square). Each year, eight cells within each DU were chosen using a random number generator to serve as the soil and surface water sample locations for the MNA study. If a cell did not contain water, it was excluded from the MNA study for that year and another cell was randomly selected. In 2010, three cells were excluded from sampling and three different cells were selected by random number generation as replacements for the originally chosen cells that were dry. In 2011 and 2012, all randomly selected cells contained water. The sediment from the eight cells within each DU was homogenized and sent to the analytical laboratory for analysis of DRO/RRO, total organic carbon (TOC), and PAHs to determine whether COCs existed above cleanup levels and whether the COCs were being reduced by natural processes.

In addition to sediment analysis, surface water quality parameters and MNA parameter data were recorded for each cell (eight from each DU), and one sample from each selected cell was shipped to the analytical laboratory for methane analysis. MNA parameters include methane, manganese, ferrous iron, sulfate, alkalinity, nitrate, turbidity, temperature, pH, specific conductance, DO, and ORP. Historical and 2012 sediment analytical results are presented in Table F3 of Appendix F. Historical surface water MNA parameters are presented in tables F4 and F5 (Appendix F).

In addition to samples collected from the DUs, surface water samples from two discrete locations downgradient of the suspected pipeline break location (shown in Figure 6), were collected and analyzed for DRO/RRO and PAHs to monitor for any contaminant migration. One of the surface water samples was collected from near the site's confluence with the Suqitughneq River (near historical surface water sample 04NE08SW101), and the other was collected near historical sediment sample 04NE08SD103. Historical surface water sampling results from these two locations have not exceeded cleanup levels for any COCs. The surface water quality criteria for total aqueous hydrocarbons (TAqH) and TAH (the sum of BTEX results) were not obtained because the necessary analyses were not included in the SOW.

In 2010, the first year of the MNA study, sediment sample 10NC08SB01 from the LDU contained 2-Methylnaphthalene at a concentration of 1.2 mg/kg, which exceeded the sediment cleanup level of 0.6 mg/kg. Samples collected from the MDU contained concentrations of 2-Methylnaphthalene, DRO, and RRO in excess of the cleanup levels. One primary sample (10NC08SB02) and one duplicate sample (10NC08SB03) were collected from the MDU. Sample 10NC08SB02 contained 2-Methylnaphthalene and DRO at concentrations of 7.5 mg/kg and 7,100 mg/kg, respectively. The duplicate sample 10NC08SB03 contained concentrations of 2-Methylnaphthalene, DRO, and RRO at 7.6 mg/kg, 9.3 mg/kg and 5.3 mg/kg, respectively. Site-specific cleanup levels for 2-Methylnaphthalene, DRO, and RRO are 0.6 mg/kg, 3,500 mg/kg, and 3,500 mg/kg, respectively. These two samples from the MDU were also analyzed for DRO and RRO following a silica gel cleanup (ADEC, 2006). In both samples, DRO and RRO concentrations following silica gel cleanup were lower than the reported concentrations without the silica gel cleanup.

Following silica gel cleanup in sample 10NC08SB02, DRO concentrations decreased from 7,100 mg/kg to 6,700 mg/kg; RRO concentrations decreased from 3,300 mg/kg to 1,300 mg/kg. Following silica gel cleanup in sample 10NC08SB03, DRO concentrations decreased from 9,300 mg/kg to 8,500 mg/kg; RRO concentrations decreased from 5,300 mg/kg to 2,100 mg/kg (below the cleanup level of 3,500 mg/kg). However, it is worth noting that the DRO/RRO concentrations following silica gel cleanup have a potentially low bias due to analysis outside of holding time. Additionally, the RRO concentrations without silica gel cleanup in sample 10NC08SB03 were qualified as having a potentially high bias. Sediment sample 10NC08SB04, collected in the UDU in 2010, contained an RRO concentration of 6,300 mg/kg (qualified as having a potentially high bias), which exceeded the site-specific cleanup level of 3,500 mg/kg. The UDU is not considered to have been impacted by the POL pipeline break.

In 2011, sediment analytical results from all DUs (with and without silica gel cleanup) were below cleanup levels.

6.2.2 Field Activities

Sampling procedures in 2012 were the same as those in 2010 and 2011. A random number generator was used each year to select the eight cells from which surface water and sediment samples would be collected. Only MNA parameter data were collected from the surface waters within the Site 8 DUs; these samples were not collected to determine concentrations of COCs. The MNA water samples were collected from Teflon-lined HDPE tubing and silicone tubing inserted into a peristaltic pump; water quality parameters were collected using a YSI 556 multi-parameter meter and a Hach 2100P field turbidimeter. Surface water samples were analyzed on site with a Hach DR890 portable spectrometer for natural attenuation parameters, including dissolved manganese, ferrous iron, sulfate, and nitrate. Alkalinity was analyzed using Hach test strips.

Surface water samples were shipped under chain of custody to TestAmerica in Tacoma, Washington, for methane analysis. The actual analysis was performed by TestAmerica-Savannah, Georgia, an ADEC- and Environmental Laboratory Accreditation Program- (ELAP-) accredited laboratory. The measured natural attenuation and water quality parameters for 2012 are presented in Table F6 (Appendix F).

Surface water samples were collected from each previously sampled cell within the DUs and analyzed in the fixed-base laboratory for methane. Surface water sample results for two discrete surface water sample locations were collected and the data are presented in Table F7 in Appendix F. These surface water samples were submitted to TestAmerica for DRO/RRO and PAH analyses. The sample locations are the same as the locations that were sampled in 2010 and 2011.

Soil samples were collected from the same randomly selected cells within each DU using a T-handled auger with a 4-inch-diameter core barrel. The upper vegetative mat was removed to expose the underlying soil, which was augured down to a depth of approximately 1 foot bgs. Soil was collected from the bottom of the auger using a gloved hand and placed into a stainless steel bowl. The eight samples were then homogenized, and a sample was taken from the mixture. A field duplicate was collected from the LDU composite after homogenization. The samples were shipped to TestAmerica and analyzed for DRO/RRO (with and without silica gel extraction), PAHs, and TOC.

6.2.3 Results

Results for sediment samples collected in 2010, 2011, and 2012 are presented in Table F3 (Appendix F). The 2011 sediment sample results indicated that all analytes (regardless of silica gel treatment) were below site-specific and ADEC cleanup levels in all three DUs. In 2012, primary sediment sample 12NC08SS001 and duplicate sample 12NC08SS002, collected from the LDU, contained 2-Methylnaphthalene in concentrations of 1.7 mg/kg and 1.9 mg/kg, respectively; these concentrations exceeded the cleanup level of 0.6 mg/kg specified in the 2009 Decision Document. No other compounds were detected in concentrations that exceeded site-specific cleanup levels or evaluation criteria based on National Oceanic and Atmospheric Administration Screening Quick Reference Tables (SQuiRTs). DRO concentrations ranged from 290 mg/kg in the UDU to 2,900 mg/kg in the LDU; all DRO and RRO results were below the site-specific cleanup level of 3,500 mg/kg. RRO concentrations in soil ranged from 2,100 mg/kg to 2,700 mg/kg. RRO concentrations decreased following silica gel extraction, with concentrations ranging from 570 mg/kg to 1,900 mg/kg.

Surface water sample results from the two discrete surface water sample locations are presented in Table F7, located in Appendix F. These surface water samples were collected on August 23, 2012, and submitted to TestAmerica for DRO/RRO and PAH analyses. The sample locations correspond to the locations that were sampled in 2010 and 2011. Results for TAH and TAqH could not be calculated. DRO and RRO concentrations did not exceed the ADEC groundwater criteria presented in 18AAC75.341, Table C.

Site 8 surface water quality and MNA parameters from all DUs were collected on August 28, 2012. No petrogenic sheen was noted in any of the surface waters within the DUs. MNA parameters for the years 2010, 2011, and 2012 are presented in Tables F4, F5, and F6, respectively (Appendix F).

The UDU is located upgradient of the source area and is intended as a background unit for MNA parameters. The average DO concentration in the UDU is historically higher than the middle or lower DUs. The average DO concentration in the UDU in 2012 was 2.56 mg/L, with a range of 1.22 to 3.89 mg/L. Methane was detected in all of the surface water samples, with concentrations ranging from 0.0017 mg/L to 0.540 mg/L. The average methane concentration for surface water samples collected within the UDU was 0.193 mg/L.

The analytical results for Site 8 sediments are presented in Table F3 (Appendix F). No fuel odor or sheen was noted during soil sample collection in the UDU. All analyses for sediment sample 12NC08SS004, collected in the UDU, were below cleanup levels for PAHs and below site-specific cleanup levels of 3,500 mg/kg for DRO and RRO. The DRO concentration was 290 mg/kg, and the RRO concentration was 2,700 mg/kg. Following silica gel cleanup, the DRO concentration was reduced to 220 mg/kg and the RRO concentration decreased to 1,900 mg/kg, which implies that biogenic (natural) material could be contributing to the DRO and RRO results. Three PAHs (benzo[g,h,i] perylene, fluorine, and phenanthrene, were detected in the UDU in 2012 but at concentrations less than the limit of quantitation of the analytical instrument (J flagged). TOC in the UDU background area was reported at 63,000 mg/kg, or 6.3 percent, of the dry soil mass, which is reasonably expected, based on the high amount of vegetation and seasonal organic deposition into the wetland area. It is believed that the UDU has not been impacted by any petrogenic constituents and the organic carbon in the UDU is totally attributable to natural vegetation decomposition.

The MDU is situated directly below the approximate location of the pipeline break. Surface water DO concentrations in 2012 averaged 2.81 mg/L and ranged from 0.44 mg/L to 4.98 mg/L. Methane was detected in all of the surface water samples collected in the MDU, ranging from 0.0006 mg/L to 1.800 mg/L, with an average concentration of 0.319 mg/L.

A fuel odor was noted during soil sample collection in the MDU. Soil sample 12NC08SS003, collected in the MDU, was below cleanup levels for all analytes. DRO concentrations in sample 12NC08SS003 were not significantly reduced following silica gel cleanup and RRO concentrations were reduced by roughly 30percent following silica gel cleanup, suggesting that biogenic interference may be contributing to the RRO results. The TOC was reported at 80,000 mg/kg in sample 12NC08SS003. Graph 4 and sample results on Table F3 illustrate the reduction of DRO and RRO concentrations in the MDU between 2010 and 2012, with DRO concentrations in 2012 at roughly 10 percent of the concentration reported for 2010. While it is not believed that biodegradation has occurred at such a fast rate, the results indicate that DRO concentrations reported in 2011 and 2012 are below site-specific cleanup levels. Three PAHs (1-Methylnaphthalene, 2-methylnaphthalene, and naphthalene) were detected in the MDU in 2012, but their results were also below cleanup levels. Graph 5 illustrates the reduction of concentrations of 8 PAHs that were detected above the analytical limit of quantitation during two of the three years of sampling in the MDU. PAH results that were reported below the limit of quantitation (J flagged) or non-detect in two of the three years were excluded from Graph 5. The only PAH to historically exceed cleanup levels, 2-Methylnaphthalene, showed greater than 95 percent reduction in concentration between 2010 and 2012. Such a reduction in concentration is not expected through natural attenuation.

The LDU is downgradient of the MDU, adjacent to the Suqitughneq River. DO had an average concentration of 1.22 mg/L, with a range of 0.39 to 2.36 mg/L. The DO concentrations are sufficient for aerobic degradation of petroleum hydrocarbons and natural organic materials. Methane concentrations in samples collected from the LDU ranged from 0.001 mg/L to 0.620 mg/L, with an average of 0.202 mg/L.

No fuel odor was noted during soil sample collection in the LDU. Soil sample 12NC08SS001 and duplicate sample 12NC08SS002, collected in the LDU, contained 2-Methylnaphthalene at 1.7 mg/kg and 1.9 mg/kg, respectively; these concentrations exceeded the site-specific cleanup level of 0.6 mg/kg. DRO and RRO were detected, but not at concentrations exceeding site-specific cleanup levels. The DRO concentrations were reduced by roughly 10 percent when they were subjected to silica gel cleanup and the RRO concentrations were reduced by roughly 73 percent when subjected to silica gel cleanup. Thirteen PAH compounds were detected in the two samples, but only 2-Methylnaphthalene exceeded cleanup criteria. TOC concentrations for samples 12NC08SS001 and 12NC08SS002 were 110,000 mg/kg and 120,000 mg/kg, respectively.

None of the natural attenuation parameters taken at Site 8 varied significantly between the three DUs. Most results for manganese, ferrous iron, sulfate, and nitrate were near or less than the manufacturer-stated method detection limits, so their results are not definitive for assessing MNA. It is believed that much of the water present at the site is attributable to snowmelt and rain, which may explain the relatively low concentrations of MNA parameters at the site. The DO levels indicate that conditions are amenable for oxidative degradation of hydrocarbons, as well as naturally occurring materials (NOM) that are present at the site. TOC results in all DUs support the presence of NOM at concentrations far exceeding DRO concentrations. It should be noted that TOC results may be biased due to the analytical method not being able to distinguish between anthropogenic and petrogenic carbon. The organic carbon present far exceeds the DRO and RRO concentrations, so the potential bias is believed to be minimal. No petrogenic sheen or stressed vegetation was noted in any locations throughout Site 8. Plated biogenic sheen, which broke up when disturbed, was observed in all DUs. The most useful evaluation of MNA at this site as a selected remedy is the reduction of COCs because the MNA data do not indicate any clear trends. Since 2010, concentrations for all compounds, except 2-Methylnaphthalene from samples collected in the LDU, have been below cleanup levels. Surface water analyses have never exceeded water quality evaluation criteria at Site 8.

6.3 MI Sampling of Bag Staging Areas

6.3.1 Description and History

There are a number of locations across the former installation that Bristol has frequently used as staging areas for loaded bulk bags. Following discussions with ADEC, it was decided that the staging areas should be sampled to ensure that contaminants from the bulk bags are not being spread to these staging areas. Bristol sampled 12 DUs across four bulk bag staging areas, including six DUs at Cargo Beach, four DUs at Site 6, one DU at the

MOC, and one DU at Site 26. The DUs described here were sampled to provide a baseline for contaminant concentrations. Each DU will be sampled again at project completion to document any impacts related to RA activities.

6.3.2 Field Activities and Results

Rectangular DUs were constructed in the field using fiberglass measuring tapes and assistance from the on-site surveyors. Each DU was subdivided into equally sized cells from which sample increments were collected. A dice roll determined the location within each cell where the MI sample was collected. Bristol sampling personnel collected MI samples within each DU with a stainless steel ice cream scoop from a predetermined location within each cell and combining soil aliquots in a one-gallon Ziploc bag. One Ziploc bag was filled for each DU, except for a replicate sample being collected in triplicate for field QC.

6.3.2.1 Cargo Beach MI Sampling

Six DUs were constructed at Cargo Beach (Figure 7). The DUs covered a total linear area of approximately 1,300 feet in length running parallel to the shoreline. The three easternmost DUs were approximately 240 feet long by 60 feet wide and encompassed an area of approximately 14,400 square feet. The three westernmost DUs were slightly smaller, with areas ranging from approximately 6,300 square feet to 11,500 square feet. The DUs were divided into 40 cells, the dimensions of which are shown in Figure 7. A representative soil sample (sample increment) was collected from each cell and placed into the bag containing the other increments from the DU, to create a single MI sample, and packaged within a double-lined Ziploc bag. The sample container was labeled and shipped to TestAmerica for DRO and PCB analysis. One MI sample was analyzed per DU, for a total of six primary samples. DU 6 was sampled in triplicate for quality assurance/quality control (QA/QC) purposes. The sample results from the DUs at Cargo

Beach are presented in Table F8 (Appendix F). Soil analytical results indicated that concentrations of COCs did not exceed ADEC cleanup levels.

6.3.2.2 Site 6 MI Sampling

Four DUs were sampled at Site 6 (Figure 8). The four DUs covered an area of approximately 28,700 square feet. The two smaller units covered an area of approximately 6,480 square feet each, with dimensions 108 feet long by 60 feet wide. The larger DUs covered an area of approximately 7,920 square feet, with dimensions 132 feet long by 60 feet wide. The smaller DUs were divided into 45 cells and the larger DUs were divided into 55 cells, measuring 12 feet wide by 12 feet long, from which MI samples were collected. The samples were packaged, labeled, and shipped to TestAmerica for DRO and PCB analyses. Sample results for Site 6 DUs are presented in Table F9. One sample was analyzed per DU, for a total of four samples, none of which exceeded cleanup levels for DRO or PCBs.

6.3.2.3 Bag Staging Area at the MOC MI Sampling

One DU (12NCBGSS09) was divided into 49 cells, measuring 8 feet wide by 8 feet long, at the MOC and an MI sample was collected for DRO and PCBs analysis. The DU covers an area of approximately 3,025 square feet, with all sides measuring 55 feet in length. The results for sample 12NCBGSS09 are presented in Table F10 in Appendix F. Cleanup levels were not exceeded in this sample. Another DU (12NCBGSS14) was sampled at Site 26, the former construction camp, located approximately 465 feet south of the DU that was sampled in the MOC. This DU was divided into 36 cells, measuring10 feet wide by 10 feet long, and covered an area of approximately 3,600 square feet, with squared sides measuring 60 feet each. This DU was sampled in triplicate and is represented by Sample IDs 12NCBGSS14, 12NCBGSS15, and 12NCBGSS16. The samples were analyzed by

TestAmerica for DRO and PCBs, and the results are presented in Table F10 (Appendix F). None of the analyses from the samples collected within this DU exceeded cleanup levels.

The DUs that were sampled in 2012 were located in areas where bulk bags were staged; however, they do not encompass the entirety of all bag staging areas. The extent of bags being staged at Site 26 covered a much larger area than was covered by the one DU located there. Bulk bags being staged at Site 26 covered an area of approximately 33,000 square feet during 2012 RA activities. Bristol was unable to collect MI samples from a bulk bag staging area located adjacent to the fuel containment/refueling area due to the site's use as an active bag staging area. There was not a time during 2012 operations when bags were not located at the site for any period of time that would allow for MI sampling to commence. Sampling will commence in this area as soon as conditions allow; all MI sampling is planned to be completed in 2013.

6.4 POL-Contaminated Soil Removal at the MOC

6.4.1 Description and History

Refer to Section 6.1.1 for a brief history and description of the MOC. The primary COCs in soil at the MOC are DRO and PCBs (PCBs are discussed in Section 6.5). Data were collected by Bristol in 2010 using UVOST technology as a means to plan and guide POL excavation activities at the MOC. As a result of this investigation, Bristol delineated ten plumes (identified as plumes A through J), spanning sites 11, 13, 15, 17, and 27, where the UVOST indicated that DRO existed at concentrations exceeding the site-specific cleanup level of 9,200 mg/kg. During the 2011 field season, Bristol excavated 8,091 tons of POL-contaminated soil from plumes J1A and A1 and from visibly stained soil located in the footprint of the former ASTs at Site 11. During RA activities in 2012, Bristol excavated POL-contaminated soil from plumes A1, E2, E3, E4, G1, G2, and H. Figure 11 shows the POL plumes, as delineated by the UVOST, as well as the locations and extents of excavations from POL-contaminated soil removal efforts. Bristol excavated and loaded a total of 8,594.91 tons of POL-contaminated soils into 881 bulk bags during field operations at NE Cape in 2012. Of the 8,594.91 tons of POL-contaminated soil removed in 2012, 4,782 tons were removed under Contract No. W911KB-06-D-0007, Task Order 0007 and 3,812.91 tons were removed under Contract No. W911KB-12-C-0003. An additional 3,177.09 tons of POL-contaminated soils remain to be excavated under Contract No. W911KB-12-C-0003 in 2013.

All soil excavated from POL plumes was loaded into rock trucks and transported to a concrete foundation located at Pad 98 (Figure 11), where the soil containerization process was implemented as described in Section 5.9. Nearly all POL-contaminated soils were transported to Pad 98, where they were stockpiled and loaded directly into bulk bags. However, an attempt was made on a few loads of soil to mechanically separate large-diameter rocks from smaller-diameter soil particles. A mechanical rock screening plant (screen plant) was on site to sort out rocks with diameters exceeding 2 inches in an effort to maximize removal of DRO-contaminated soil while minimizing the weight of transported material. The use of the screen plant was limited due to the high moisture content of the silty-clay matrix surrounding the larger rocks. It was not possible to efficiently and effectively separate the fine material from the larger material using the screen plant.

Once a bag was filled, a waste characterization sample was collected as described in Section 5.12.5.

6.4.2 Field Activities

6.4.2.1 <u>POL-Contaminated Soil Removal from Plume A1</u>

Following the 2011 soil removal efforts, one confirmation sample at the A1 excavation (11NCMOCSS068) contained DRO in concentrations that exceeded the cleanup level.

Prior to backfilling the excavation, the sidewall where sample 11NCMOCSS068 was located was draped with a liner to distinguish the boundary between clean fill and the DRO-contaminated soil. At the start of removal activities in 2012, the lined sidewall was re-located by the field team, and sample location 11NCMOCSS068 was located and staked by the survey crew.

Ten feet of overburden was removed adjacent to the liner, outside of the 2011 excavation extent, in order to access the contaminated layer of soil. Overburden material was stockpiled on a liner located in the northwestern section of the MOC (Figure 11). DRO-contaminated soil was excavated from approximately 10 feet bgs to the target depth of 15 feet bgs and transported to the concrete pad (Pad 98) for containerization. The excavation extended, from historical sample 11NCMOCSS068, a length of approximately 25 feet and was approximately 20 feet wide. Figure 12 shows the 2011 and 2012 excavation extents at A1, as well as the 2012 confirmation sample locations.

Soil samples from the newly exposed sidewall were collected and submitted to the field laboratory for DRO/RRO analysis. Field laboratory results indicated that cleanup levels had been achieved at 80percent of the actual cleanup level specified in the Decision Document. Following the receipt of field laboratory results, five primary confirmation samples and a field duplicate were collected, three from the sidewall (12NCMOCSS001, 12NCMOCSS002, and 12NCMOCSS003) and two from the excavation floor (12NCMOCSS027 and 12NCMOCSS028). The confirmation samples were collected utilizing the aid of an excavator bucket and were shipped to TestAmerica for DRO/RRO analysis. Confirmation soil sample results are presented in Table F11, located in Appendix F. All confirmation samples were below the site-specific cleanup level of 9,200 mg/kg.

The excavation was backfilled in lifts of approximately 1 foot. The deeper portions of the excavation were backfilled using an excavator that compacted (tamped) the 1-foot lifts with its bucket. A bulldozer was used for backfill and compaction once the conditions could safely accommodate such actions. Contaminated soil removal is considered to be complete at plume A1.

6.4.2.2 POL-Contaminated Soil Removal from Plume H

Excavation on the H plume was initiated in 2011, but groundwater elevations in test pits at the time indicated that the contaminated layer existed deeper than 2 feet below groundwater. Bristol did not continue with POL excavations in 2011, choosing instead to revisit the site in 2012 and reassess conditions to determine whether contaminated soil removal was feasible. In 2012, additional test pits were excavated and groundwater elevations were measured by the survey crew. Variable groundwater elevations were observed between adjacent test pits in the H plume vicinity. As excavation extents expanded at the H plume, the groundwater elevation dropped and stabilized to levels lower than those observed during 2011 RA activities, thus allowing for excavation of contaminated soil horizons. Table 6-2 shows the groundwater elevations observed in the H plume measured over the course of the first 19 days of POL soil removal activities. Original ground surface elevations prior to excavation in the vicinity of the final extents of the H excavation range from approximately 75 to 80 feet above sea level.

Table 6-2 H Plume Groundwater Elevations

Date	Groundwater Elevation above Mean Sea Level
7/21/2012	70.54 feet
7/23/2012	67.53 feet
7/25/2012	67.39 feet
7/28/2012	67.6 feet
8/5/2012	68.4 feet
8/8/2012	68.6 feet

Bristol's UVOST guided dig plan (Table 4-2 of the 2012 WP) indicated that the contaminated zone was located between 6 and 12 feet bgs within the H plume boundaries. Commensurate with the plan, Bristol considered soil shallower than 6 feet to be clean overburden (soil containing DRO and RRO concentrations less than 9,200 mg/kg), which was stockpiled on a liner with similarly clean overburden from other POL excavations. Soil located deeper than 6 feet bgs was loaded into a rock truck and hauled to Pad 98 for containerization. Soil was excavated to a final depth of 2 feet below groundwater, which was approximately 10 feet bgs. The final lateral extent of the excavation was determined by the collection of sidewall samples that were submitted to the field laboratory for DRO/RRO analysis. Samples collected for field laboratory analysis were collected from soil directly above the groundwater interface. The final extents of the H plume excavation are shown in Figure 13.

After field laboratory results indicated DRO and RRO concentrations less than site-specific cleanup levels, Bristol proceeded with the collection of confirmation samples. Confirmation sample results are presented in Table F12, located in Appendix F. Twelve primary confirmation samples were collected from the sidewalls of the excavation, and 10 samples were collected from the floor, for a total of 22 primary confirmation samples and four duplicate samples collected from the H plume excavation. Concentrations of

DRO and RRO from all confirmation sample locations were less than the site-specific cleanup level of 9,200 mg/kg.

The excavation was completely backfilled in 1-foot lifts, each track-walked with a bulldozer for compaction. Contaminated soil removal is considered to be complete at plume H.

6.4.2.3 POL-Contaminated Soil Removal from Plume G

The G plume was investigated in 2011 in a manner similar to that of the H plume and, like the H plume, contained groundwater at levels that would allow for only minimal contaminated soil removal. The decision was made to revisit the site in 2012 and reassess conditions. Groundwater conditions at plume G2 were more conducive to removal efforts in 2012 than those observed in 2011; thus, soil removal efforts were initiated.

Refer to Figure 14 for information regarding excavation extents and confirmation sample locations. The UVOST estimated DRO-contaminated soil extent at the G2 plume was excavated and hauled to Pad 98 following the removal of approximately 8 feet of clean overburden. The first collection of sidewall sample results analyzed in the field laboratory contained concentrations of DRO above site-specific cleanup levels. This forced the excavation to expand beyond the UVOST-based boundaries for G2, into plume G1 and beyond. The UVOST-delineated plume indicated that contamination existed down to a depth of 15 feet, but due to groundwater levels during the 2012 field season, soil was only removed down to 11–12 feet bgs (2 feet below groundwater). Several iterations of excavation followed by sample collection and field laboratory analysis occurred before confirmation samples were collected from the excavation floor (below groundwater) and sidewalls. After field laboratory analysis indicated DRO and RRO concentrations below cleanup levels, confirmation samples were collected from those locations. Confirmation sample results are presented in Table F13 (Appendix F).

Forty-four primary confirmation samples and four field duplicate samples were collected from locations within the G plume excavation, of which eight contained DRO concentrations that exceeded site-specific cleanup levels. Samples 12NCMOCSS033, 12NCMOCSS037, 12NCMOCSS039, 12NCMOCSS048, 12NCMOCSS050, 12NCMOCSS069, 12NCMOCSS070, and 12NCMOCSS160 exceeded site-specific cleanup levels for DRO. Sample locations 12NCMOCSS033, 12NCMOCSS037, and 12NCMOCSS039 were collected from the excavation floor at a depth of approximately 12 feet bgs (2 feet below groundwater). Because soil in the vicinity of these three samples is located 2 feet below groundwater and deeper, no additional soil was removed from these locations. Additional removal of soil from sidewall sample locations 12NCMOCSS048 and 12NCMOCSS050 was performed. Soil from these locations was excavated, and additional confirmation samples were collected.

Soil containing DRO concentrations in excess of site-specific cleanup levels remains at the G plume and is represented by sidewall samples 12NCMOCSS069, 12NCMOCSS070, and 12NCMOCSS160. Samples 12NCMOCSS069 and 12NCMOCSS070 both contained DRO concentrations of 12,000 mg/kg; sample 12NCMOCSS160 contained a DRO concentration of 9,200 mg/kg. It is recommended that the soil from these three locations be removed in 2013.

The G excavation was partially backfilled, in areas where confirmation sample results indicated DRO and RRO concentrations below site-specific cleanup levels, using a combination of stockpiled overburden material and borrow material. The excavation was backfilled in 1-foot lifts, which were compacted by the tracks of a bulldozer. Areas of the excavation that were not backfilled were sloped and surrounded with bulk bags to reduce the physical hazard presented by an open excavation.

6.4.2.4 POL-Contaminated Soil Removal from Plume E

The E plume (E1 through E4) was one of the larger plumes delineated by the UVOST in 2010, with an estimated area of 17,500 square feet. Excavation activities were initiated on plume E4 and progressed into E3 and portions of E2 and E1 before 2012 project end. Contamination still exists in the E plume and is recommended for removal in 2013. Figure 15 shows the extents of the E plume excavation and all confirmation sample locations.

Groundwater levels dictated the depths to which soil could be excavated from the various E plumes. Excavation depths reached 2 feet below groundwater across the entirety of plumes E4 and E3, equating to depths ranging from approximately 3 feet bgs to 10 feet bgs. The E2 plume was excavated down to 2 feet below groundwater in all locations, except for an area covering approximately 2,500 square feet in the southeastern section of the excavation. This 2,500 square feet area was excavated to a depth of 8 feet bgs, while the remainder of the E2 excavation depths ranged from 7 feet to 11 feet bgs.

Twenty-eight primary confirmation samples and five duplicate samples were collected from locations along the floor and sidewalls of the E plume, and their results are presented in Table F14, located in Appendix F. Five confirmation sample locations, 12NCMOCSS090, 12NCMOCSS117, 12NCMOCSS128 (duplicate sample 12NCMOCSS129), 12NCMOCSS140, and 12NCMOCSS146 contained DRO concentrations of 15,000 mg/kg, 21,000 mg/kg, 72,000 mg/kg (duplicate sample concentration of 110,000 mg/kg), 41,000 mg/kg, and 13,000 mg/kg, respectively. These samples were all collected from the excavation floor at a depth of 2 feet or more below the groundwater level and are not planned for additional removal in 2013. Confirmation samples collected from the eastern sidewall of the E excavation all resulted in DRO concentrations below site-specific cleanup levels. Excavation activities in 2013 will expand the E excavation laterally to the south and west, including removal of soils located in the E1 plume. The northern extent of the E plume is bounded by Site 28, the remedy for which will consist of sediment removal (discussed in Section 6.11).

Confirmation samples have not been collected from the boundary between the E plume and the sediment removal area located directly to the north, but this boundary will be sampled along with all sidewalls within the E plume in 2013.

One confirmation sample, 12NCMOCSS136, was collected from an approximately 2,500-square-foot section of exposed floor and submitted to TestAmerica for analysis. DRO concentrations in this sample were less than the site-specific cleanup level of 9,200 mg/kg. However, the appropriate number of samples was not collected for confirmation purposes. This area was not submerged in water and requires the collection of approximately 10 additional confirmation samples to comply with the ADEC Draft Field Sampling Guidance (2010). Additional confirmation samples will be collected in 2013 during excavation efforts at the E plume.

Backfill was placed in 1-foot lifts and track-walked with a bulldozer for compaction. The edges of the excavation on the south and western sides, in areas that were not backfilled, were surrounded with bulk bags to mitigate the physical hazard presented by an open excavation.

6.4.2.5 MOC Water Impoundment

Saturated soils removed from below groundwater were dewatered by allowing the soils to drain on a liner, which was surrounded by a berm, in the area of the former bulk fuel tanks. Saturated soils from POL excavations were placed on this liner in an attempt to dewater them, but very little water drained from the saturated stockpile (less than 100 gallons). After a few days on the liner, the soils were loaded into a rock truck via excavator arm, moved to the concrete foundation at former Building 98, and mixed with dry soils. This mixture was then loaded into bulk bags.

The dewatering area was sloped such that water collected in its northeast corner. This water was then treated by being pumped through a water scrubber into a water impoundment area. The water-scrubbing material is made from a natural fiber, cellulose material that selectively absorbs hydrocarbons while repelling water. Water remained in the impoundment area until samples were collected and shipped to TestAmerica. Upon receipt, the analytical results were compared to limitations set forth in the State of Alaska Wastewater General Permit 2009DB0004 and discharged under authorization number 2009DB0004-0216. Sample results are presented in Table F15 (Appendix F). Since the treated water was below criteria set forth in the permit, it was discharged to the ground surface. Soils did not drain well on the liner, and most of the water that collected in the impoundment area was rainwater.

6.4.2.6 MOC Surface Water Monitoring

Surface water samples were collected from three locations (MOCSW01, MOCSW02, and MOCSW03) located adjacent to the MOC in Site 28 (Figure 11), at three times throughout the course of work: before, during, and following MOC soil removal activities. Samples were collected on July 6, August 8, and September 13, 2012, the results of which are presented in Table F16 (Appendix F). At the time of the July 6, 2012, sampling event, MOC soil removal activities had not yet commenced for the season. By August 8, 2012, excavation of the E plume was underway within 150 feet of sample location MOCSW01. By the third sampling event, POL excavation activities had ceased. Samples were collected as described in the WP (Bristol, 2012a) from surface waters in close proximity to the MOC excavations and were analyzed by TestAmerica for DRO/RRO. Water quality parameters and turbidity were also measured and recorded. Samples collected from location MOCSW01 contained concentrations of DRO that ranged from 4.9 mg/L to 7.0 mg/L. Samples collected at location MOCSW03 contained DRO concentrations that ranged from 2.2 mg/L to 3.1 mg/L. Numerical surface water cleanup levels for GRO, DRO and RRO were not defined in the 2009 Decision Document, which denotes the cleanup levels as “no sheen”. Total aromatic hydrocarbon (TAH) and TAqH results are specified as 0.01 mg/L and 0.015 mg/L, respectively. TAH and TAqH analyses were not included as part of the SOW, but will be analyzed in 2013. The highest concentrations of DRO, represented by sample locations MOCSW01 and MOCSW03, were observed during removal actions and contained concentrations of 7.0 mg/L and 3.1 mg/L, respectively. DRO concentrations from sample location MOCSW02 ranged from 0.60 mg/L to 1.0 mg/L throughout the three sampling events, with the highest concentrations observed in the pre-excavation sampling period. RRO concentrations were highest in sample location MOCSW01 and ranged from 1.8 mg/L to 4.0 mg/L. The highest RRO concentrations were observed in the sampling event that occurred during excavation activities. Sample location MOCSW02 contained RRO concentrations ranging from 0.20 mg/L to 0.33 mg/L, with the highest concentrations observed in the pre-excavation sampling event. Concentrations of RRO in samples collected from location MOCSW03 ranged from 0.31 mg/L to 0.68 mg/L and exhibited the highest concentrations during the sampling event that took place during excavation activities. Concentrations of DRO from locations MOCSW01 and MOCSW03 were not significantly higher during excavation activities, compared to results observed prior to excavation, and were lowered throughout the course of work at location MOCSW02. No significant impacts were observed.

6.5 PCB-Contaminated Soil Removal at Sites 13 and 31

Bristol was originally scoped to remove 2,600 tons of PCB-contaminated soil from Sites 13 and 31 under Contract No. W911KB-12-C-0003. The area of excavation for Site 13 is shown on Figure 16 and the area of excavation for Site 31 is shown on Figure 17. As contract limits were reached, optional quantities were exercised in the amount of 1,400 additional tons. When these additional quantities were reached, a modification was made to the contract to allow for the removal of up to 1,000 additional tons of PCB-contaminated soil from these two sites (5,000 tons total). Upon completion of the field season, Bristol had excavated 4,884.73 tons of PCB-contaminated soil from sites 13 and 31 and loaded it into 472 bulk bags. Of the 4,884.73 tons, 254.14 tons (24 bulk bags) of TSCA-regulated PCB-contaminated soils with concentrations exceeding 50 mg/kg were excavated and transported off site during the 2012 removal action. It was not possible to remove all PCB-contaminated soil during Bristol's time at NE Cape this season. By season's end, each site contained one sample location with PCB concentrations exceeding the cleanup level of 1 mg/kg. Site 13 had one sample (12NC113SS231) with an Aroclor 1260 concentration of 1.6 mg/kg; Site 31 had one sample (12NC31SS199) with an Aroclor 1260 concentration of 1.3 mg/kg. Each of these confirmation soil sample locations containing PCB concentrations in excess of cleanup levels will be excavated in 2013.

6.5.1 Site 13 Description and History

Site 13, which encompasses former Building 110, historically contained the heat and power facilities for the installation and is shown on Figure 16. Sources of contamination from this site consist of transformers, diesel generators, ASTs, USTs, and piping (MWH, 2003). The site has been investigated and sampled multiple times since 1994 and contained DRO and PCBs in subsurface soils with concentrations that exceeded cleanup levels (USACE, 2009). Several phases of PCB-contaminated soil removal have occurred at this site, including excavation efforts performed by Bristol in 2010 and 2011.

Sixty-eight confirmation sample locations containing PCB concentrations in excess of the cleanup level remained upon completion of PCB removal activities in 2011. The 2012 removal efforts focused on these 68 locations.

6.5.2 Site 13 Field Activities

Fixed-laboratory analytical sample results and field laboratory results from the 2011 removal efforts at Site 13 were used to guide the initial soil removal activities in 2012. Sixty-eight confirmation sample locations from the 2011 effort were re-located by the survey crew, and excavation commenced in those areas.

Excavation activities consisted of an iterative process of soil removal/containerization, followed by the collection of soil samples that were submitted to the field laboratory for PCB analysis. Areas slated for removal were excavated to approximately 1.5 to 2.0 feet below existing ground surface, and discrete samples were collected on a 5-foot spacing and submitted to the field laboratory for analysis. Results provided by the field laboratory guided the excavation. Additional soil was removed from sample locations where PCB concentrations exceeded the on-site laboratory action level of 0.8 mg/kg. Refer to Section 5.13 for more information regarding field laboratory analysis.

Soils were loaded directly into bulk bags at Site 13 (Section 5.9 details the containerization process) and staged at one of the bulk bag staging areas described in Section 6.3. A total of 2,181.15 tons of PCB-contaminated soil, consisting of 211 bulk bags, was excavated from the site by the time field efforts were ended for the season.

6.5.3 Site 13 Results

Throughout the course of removal activities at Site 13, 215 primary confirmation samples and 22 field duplicate samples were collected as described in Section 5.12.4 and submitted to TestAmerica after field laboratory results were reported at less than 0.8 mg/kg for PCBs. Results are presented in Table F17 (Appendix F). Twenty-nine samples contained PCB concentrations that exceeded the cleanup level of 1 mg/kg. Soil from 28 of these 29 confirmation sample locations was subsequently removed following receipt of sample results. Sample 12NC13SS231 contained a PCB concentration of 1.60 mg/kg and represents the only location remaining at Site 13 with PCB concentrations in excess of the cleanup level; the location for 12NC13SS231 is shown in red on Figure 16. Time constraints did not allow for the removal of additional soil from this sample location. Additional soil removal will be conducted in 2013 in order to remove the remaining PCB-contaminated soil.

The confirmation sample locations and results depicted in Figure 16 represent the state of the remaining in-situ soils at Site 13. The northwest corner of the excavation at Site 13 has encroached into POL plume A2, and the south-central portion of the Site 13 excavation has entered the B plume. None of the remaining soil within the A2 plume, based on confirmation sample results, contain PCB concentrations that exceed the cleanup level; thus, POL-contaminated soil removal efforts may commence in this area in 2013. To date, soils removed from this location have been contaminated with PCBs or co-contaminated with PCBs and POLs. POL contamination will drive future removal efforts at the A2 plume since POLs will be the only remaining COC. The one remaining location where PCB concentrations exist above the cleanup level is, 12NC13SS231, which is within the boundary of the B plume. PCBs remain the primary COC in this location and will be excavated and analyzed in a fixed-base laboratory to confirm that all PCBs have been removed prior to excavating the POL-contaminated soil. Once analytical sample results confirm that PCBs have been removed to concentrations below cleanup levels, the POL-contaminated soils can be excavated.

Before personnel left the site, the sidewalls of the excavation were sloped to remove any physical hazards associated with an open excavation. Sidewalls adjacent to areas where PCB or POL contamination was still above cleanup levels were not sloped, nor was backfill or a liner placed atop these areas. Bulk bags were placed around the perimeter of the excavation to mitigate possible entry by persons or animals over the winter.

6.5.4 Site 31 Description and History

Site 31 is the former White Alice Complex and is located uphill to the southeast of the MOC, it is shown in Figure 17. The site formerly contained four large antennas, an electronics building (Building 1001), an auto maintenance shop, storage shed, and seven ASTs (MWH, 2003). The antennas, buildings, and ASTs were removed from the site during previous actions; only the concrete antenna/building foundations remain. PCBs were historically detected in soil and on concrete at Site 31. PCB-contaminated soil removal efforts took place in 2005, 2010, and 2011 in an attempt to bring the PCB contamination in soils below the cleanup level of 1 mg/kg. A total of approximately 118 tons of PCB-contaminated soil was removed in 2005; 640 tons of PCB-contaminated soil was removed in 2010; and 1,419 tons of PCB-contaminated soil was removed from the site in 2011. Confirmation soil samples collected in 2011 indicated that PCBs remained in soils at concentrations ranging from 1 mg/kg to 250 mg/kg.

At the end of the 2011 field season, the excavation at Site 31 was lined and filled with material to hold the liner in place over winter.

6.5.5 Site 31 Field Activities

2012 operations at Site 31 began with removal of the liner and re-location of confirmation soil sample locations from samples collected in 2011 containing PCB concentrations in excess of the cleanup level. There were 58 locations from 2011 that were initially slated for excavation in 2012. Soils were loaded directly into bulk bags at Site 31 (Section 5.9 details the containerization process) and staged at one of the bulk bag staging areas described in Section 6.3. Similar to PCB excavation activities at Site 13, soil removal was followed by sample collection and field laboratory analysis for PCB concentrations. Each excavation effort removed a 25-square-foot area of soil approximately 1.5 to 2.0 feet below the existing ground surface, and discrete samples were collected on a 5-foot spacing for submission to the field laboratory. Results provided by the field laboratory guided the excavation. Additional soil was removed from sample locations where PCB concentrations exceeded the on-site laboratory action level of 0.8 mg/kg. Refer to Section 5.13 for more information regarding field laboratory analysis.

A total of 2,703.58 tons of PCB-contaminated soil, consisting of 261 bulk bags, was excavated from the site by the time field efforts were ended for the season. Before Bristol personnel left the site, the excavation sidewalls adjacent to areas with sample results below cleanup levels were sloped to remove physical hazards and bulk bags were placed adjacent to the excavation to serve as a barrier in order to prevent entry into the excavation by people or animals. Sidewalls adjacent to areas where PCB contamination was still above cleanup levels were not sloped, nor was backfill or a liner placed atop these areas.

6.5.6 Site 31 Results

Confirmation sample results are presented in Table F18 (Appendix F). Throughout the course of excavation activities at Site 31, 225 confirmation samples, consisting of 198 primary samples and 26 duplicate samples, were collected and submitted to TestAmerica for PCB analysis. Only one location (12NC31SS199) remains where PCB congener Aroclor 1260 was detected in excess of the cleanup level, at a concentration of 1.3 mg/kg. Sample location 12NC31SS199 will be re-located in 2013, and additional soil will be removed. The location for sample 12NC31SS199 is shown in red on Figure 17.

6.5.7 PCB Concrete Wipe Samples

Through the course of operations in 2010 and 2011, small chunks of concrete and large portions of what appeared to be concrete headers, footers, and foundation pieces were unearthed and removed from the excavations at sites 13 and 31. In order for these concrete pieces to be used as backfill, they were sampled for PCBs to confirm that they did not contain PCB concentrations in excess of cleanup levels. To accomplish this task, loose pieces of concrete and portions that remained in the ground were wipe-sampled and submitted to the field laboratory.

The PCB wipe sampling followed EPA-recommended methods for determining the presence of PCBs on smooth surfaces (Smith, 1991). Refer to Section 5.12.7 for additional information regarding sample collection. Results from the concrete wipe samples are presented in Table F19 of Appendix F. Five samples collected from exposed concrete that had contacted PCB-contaminated soil were submitted to the field laboratory for PCB analysis. Two wipe samples were collected and submitted to TestAmerica for PCB analysis to serve as a comparison against the field laboratory results. The two samples submitted to TestAmerica were collected directly adjacent to two samples that were also submitted to the field laboratory. All of the concrete wipe samples yielded results lower than the cleanup level of $10 \mu g/100cm^2$. Once Bristol received the sample results, field personnel used the loose pieces of concrete as backfill material.

6.5.8 Boulder Sampling from PCB Excavations

During the course of PCB-contaminated soil removal, large-diameter boulders exceeding 1 foot in diameter were set aside and not loaded into bulk bags with the surrounding soil. Representative samples were collected and submitted to TestAmerica for PCB analysis to ensure that these rocks did not contain PCB concentrations that exceeded the cleanup level of 1 mg/kg.

Three boulders were collected at various locations from each of the PCB excavations, resulting in six boulders combined across the two sites. The boulders were wrapped in plastic bags and placed inside a tote for shipping, under chain of custody, to Alaska Testlab in Anchorage, where they were crushed to less than 3/8-inch diameter. The crushed pieces were placed into pre-cleaned jars and shipped to TestAmerica for PCB analysis.

Sample results for the boulders collected from the PCB excavations are presented in Table F20 (Appendix F). Seven samples, consisting of six primary samples and one duplicate sample, were submitted to TestAmerica for PCB analysis. PCBs were not detected in any of the samples. Boulders recovered in PCB excavations will be used as fill in their associated excavation.

6.6 SITE 21 ARSENIC EXCAVATIONS

6.6.1 Site 21 Description and History

Site 21, shown in Figure 18, is located west of the MOC Perimeter Road and contained the wastewater treatment system for the Housing and Operations Complex. The infrastructure consisted of a concrete settling tank with attached piping enclosed in a wooden utilidor that discharged to the tundra approximately 450 feet to the west (USACE, 2009). The infrastructure was removed in 2003 and soil confirmation samples were collected after the removal of the piping and utilidor from locations along the piping run and at the inlet and outfall lines.

PCBs, arsenic, and chromium have previously been identified as COCs at this site; however chromium in soils exists in the trivalent state and the concentrations do not pose a potential risk to residents (USACE, 2009). Arsenic was detected in groundwater at concentrations exceeding the cleanup level in 1994 but was subsequently eliminated as a COC in groundwater. USACE concluded that the arsenic resulted from the presence of sediments within the groundwater sample. PCB contamination was removed by Bristol in 2010, so the primary remaining COC at the site consists of arsenic contamination in soils located near the outfall of the former discharge pipe. The source of the arsenic contamination is unknown.

Arsenic-contaminated soil removal actions were performed by Bristol in 2010 and 2011, resulting in the removal of approximately 32 tons of soil. Confirmation sample results collected from the resulting excavation that indicated arsenic concentrations remained in soils above the site-specific cleanup level of 11 mg/kg. For 2012, Bristol was scoped to remove 100 tons of arsenic-contaminated soil from those areas in the existing excavation where arsenic concentrations existed above the cleanup level.

6.6.2 Site 21 Field Activities

Following 2011 excavation efforts at Site 21, eight samples exceeded the 11 mg/kg cleanup level, with arsenic concentrations ranging from 22 mg/kg to 180 mg/kg. The 3-foot-deep excavation was flooded with water from the surrounding tundra and was left open. Bristol easily located the excavation and former sample locations in order to continue removal efforts in 2012.

Soil removal was conducted in two phases, with the initial round conducted on August 15, 2012, during which time 47.06 tons of arsenic-contaminated soil was removed. The excavation was extended approximately 3 feet in all directions, and soil was removed to a depth of approximately 2 feet below the groundwater level. Eleven primary confirmation samples were collected from the excavation, consisting of 10 sidewall samples and one floor sample, the results of which are presented in Table F21 (Appendix F). Three of the sidewall samples, 12NC21SS001, 12NC21SS005, and 12NC21SS010, contained arsenic concentrations in excess of the site-specific cleanup level.

The second round of excavation was initiated on September 4, 2012, and an additional 55.66 tons of soil was removed from area totaling approximately 400 square feet at locations corresponding to samples 12NC21SS001, 12NC21SS005, and 12NC21SS010. Four confirmation samples were collected from the sidewalls, and one sample was collected from the floor of the newly excavated areas.

Contaminated soil was containerized in bulk bags directly from the excavation at Site 21 as described in Section 5.9. Water from the excavated soil was allowed to drain from the excavator bucket over the excavation prior to placing the soil in the bulk bag in an effort to reduce weight and maintain the bulk bag integrity during transport and shipment. Eleven bulk bags were filled with contaminated soil, for a total of 102.72 tons of arsenic-contaminated soil excavated from the site. The bulk bags were sampled for waste characterization purposes, as described in Section 5.12.5, and these results are presented in Table F22, located in Appendix F. Several of the bulk bags were determined to show hazardous characteristics based on in-situ soil results as described in Section 5.10. Bulk bags were staged at the bag staging sites, shown in Figure 3, before ultimately being shipped off-island for disposal.

6.6.3 Site 21 Results

Confirmation sample results are presented in Table F21 (Appendix F). Eleven primary confirmation samples were collected following the first round of soil removal, one from the excavation floor (approximately 3 feet bgs) and 10 from the sidewalls. The samples were submitted to TestAmerica for arsenic analysis. Three sidewall samples, 12NC21SS001, 12NC21SS005, and 12NC21SS010, contained arsenic in concentrations exceeding the site-specific cleanup level of 11 mg/kg. Following the second round of excavation in which these three sample locations were excavated and resampled, five additional primary confirmation samples were collected, one from the excavation floor and four from the sidewalls. Confirmation sidewall samples 12NC21SS017, 12NC21SS018, 12NC21SS019, and 12NC21SS020 all contained arsenic in concentrations exceeding the site-specific cleanup levels. Arsenic concentrations from all samples collected within the Site 21 excavation ranged from 3.3 mg/kg to 320 mg/kg, with the highest concentration detected in sample 12NC21SS018.

None of the floor samples contained arsenic in concentrations exceeding the site-specific cleanup level of 11 mg/kg. In 2011, all eight samples exceeded the 11 mg/kg cleanup level, with arsenic concentrations ranging from 22 mg/kg to 180 mg/kg. The highest concentrations of arsenic in soil occurred in a red/brown silty-peat located directly below the vegetative layer. The 2012, floor samples from approximately 3 feet bgs consisted of a grayish brown to dark brown silty peat. It is recommended that additional soil be removed from the Site 21 excavation at locations corresponding with confirmation sample locations 12NC21SS017, 12NC21SS018, 12NC21SS019, and 12NC21SS020 to remove remaining arsenic contamination at the site.

Surface water sample results for total and dissolved arsenic are presented in Table F23, located in Appendix F. One surface water sample and a QC duplicate were collected from the water within the Site 21 excavation and submitted to TestAmerica for arsenic analysis. Arsenic was not detected above the most stringent surface water quality criteria of 0.01 mg/L in either sample. The primary and duplicate total arsenic results were 0.0052 mg/L and 0.0049 mg/L, respectively. The dissolved arsenic results were non-detect for both the primary and duplicate samples.

6.7 SITE 10 DRUM REMOVAL AREA

6.7.1 Description and History

Site 10 (Figure 19) consists of a wide gravel area along the access road directly east of the former ASTs at Site 11. An area of surface soil contamination was documented in 1994 along the western edge of the gravel pad at the Site 10 Buried Drums site. The maximum concentration of DRO was 26,500 mg/kg. Additional surface soil samples were collected in 1996, and the maximum DRO result was 17,000 mg/kg. Soil borings were completed in 2004 and demonstrated that subsurface soils are not significantly impacted; the maximum DRO result was 619 mg/kg. Approximately 10 drums, one of which contained POL liquids, were exposed during excavation activities on the J1A plume during 2011 removal actions, and the drums and their respective contents were removed and disposed of.

Anecdotal evidence at the time suggested that additional liquid-containing drums existed at Site 10.

The entire extent of buried drums at Site 10 was not known before the 2012 field season, and Bristol was scoped to investigate the site, determine the extent of buried drums, and remove 1 ton of drums, 100 gallons of associated liquids, and up to 50 tons of contaminated soil. A contract modification increased the available quantities by 1 ton of drums, 1,000 gallons of drum liquids, and 50 tons of soil. The total contracted quantities for the site consist of 2 tons of drums, 1,100 gallons of drum liquids, and 100 tons of contaminated soil.

6.7.2 Field Activities

Bristol utilized a labor crew to investigate the site using a metal detector in an initial attempt to delineate the extent of buried drums. The field team marked the ground in all areas where the metal detector indicated the presence of metallic anomalies underground. An excavation was initiated to investigate the metallic anomalies marked on the ground, and the buried drums were unearthed. Empty drums were removed from the excavation and placed on a liner located adjacent to the dig site. These empty drums were crushed and loaded into a Conex for shipping and disposal. Drums containing liquid were pumped in situ into new bung-top 55-gallon drums.

A variety of liquids were encountered within the drums and consisted of new and used oil, oil/water mixtures, tar, diesel fuel, ethylene glycol (antifreeze), and alcohols. The physical properties of the drum liquids ranged from colorless, low-viscosity alcohol to black, highly-viscous tar/oil. Photographs 61 and 62, located in Appendix C, show the various liquids encountered and recovered from Site 10.

After the liquid contents were transferred to new drums, the recovered waste drums were placed on a liner, where they were eventually cut into pieces and loaded into overpack containers for disposal.

Two excavations were opened at Site 10 (Figure 19), one located at the western extent of Site 10, downhill from the gravel pad (Excavation A), and a second excavation (Excavation B) located on the west side of the gravel pad, uphill and directly southeast of Excavation A. The two excavations are within 20 feet of each other. During drum removal activities, some soil from the excavations was loaded into a rock truck and hauled to a lined area at Site 11 where it was stockpiled. Soil samples were collected from this stockpile and from locations within the excavations. Results are discussed in the following section.

A total of 27 drums were filled with liquids recovered from Site 10, loaded into a 20-foot Conex container, and shipped off site for disposal. In addition to liquid wastes, 59.4 tons of soil contaminated with ethylene glycol and PCE was removed from the excavation, loaded into six bulk bag containers, and staged at one of the bulk bag staging sites. This containerized soil corresponds to Site 10 stockpile sample location 12NC10SS036 (duplicate 12NC10SS037) and will be shipped off-island for disposal in 2013. The PCE- and ethylene-glycol-contaminated soil remains on the island; it was determined to be non-hazardous based on reported concentrations. The site was armored with bulk bags on the roadside (south side) of the excavation at the end of removal activities. Sample results are discussed in Section 6.7.3.

6.7.3 Results

Following the drum removal, 37 soil samples correlating to 29 locations within the excavation and four locations from the stockpiled soils were collected and submitted to TestAmerica to be analyzed for GRO, DRO/RRO, PCBs, VOCs, SVOCs, ethylene glycol, and RCRA 8 metals, plus nickel, vanadium, and zinc. Sample results are presented in Table F24 (Appendix F), and sample locations are shown in Figure 19. Sample results indicate concentrations of arsenic, ethylene glycol, PCE, and DRO exceeding cleanup levels. Methylene chloride was detected in all samples, including three of four trip blanks, and was determined to be a laboratory contaminant and not representative of soil conditions at Site 10. Sample 12NC10SS009, located in Excavation A, contained an arsenic concentration of 14mg/kg, in excess of the site-specific cleanup level of 11 mg/kg. Samples 12NC10SS028 and 12NC10SS030, and its duplicate sample 12NC10SS032, collected from Excavation B, contained ethylene glycol in concentrations of 350 mg/kg, 15,000 mg/kg, and 16,000 mg/kg, respectively, exceeding the cleanup level of 190 mg/kg. Sample 12NC10SS030, located in Excavation B, contained a PCE concentration of 0.025 mg/kg, exceeding the cleanup level of 0.024 mg/kg. Sample 12NC10SS036 and duplicate sample 12NC10SS037, collected from one location within the Site 10 soils stockpiled at Site 11, contained ethylene glycol at concentrations of 39,000 mg/kg and 40,000 mg/kg, respectively. Sample 12NC10SS036 and duplicate sample 12NC10SS037 also contained PCE at concentrations of 0.160 mg/kg and 0.130 mg/kg, exceeding the cleanup level of 0.024 mg/kg. Three samples from three locations within Excavation A, 12NC10SS001, 12NC10SS002, and 12NC10SS011, contained DRO in concentrations of 10,000 mg/kg, 11,000 mg/kg, and 11,000 mg/kg, respectively, exceeding the site-specific cleanup level of 9,200 mg/kg.

Soils represented by samples 12NC10SS036 and 12NC10SS037 were containerized for eventual off-site disposal. Six locations remain at Site 10 with contaminant concentrations exceeding cleanup levels; those areas consist of three locations in Excavation A with DRO-contaminated soil, one location within Excavation A containing arsenic-contaminated soil, one location within Excavation B containing ethylene glycol-contaminated soil, and one location in Excavation B containing ethylene glycol and PCE contaminated soil. Bristol recommends that soil from these sample locations be removed during future RAs and additional confirmation samples be collected.

The northern half of Excavation B was not sampled during the 2012 field efforts. Bristol recommends collecting additional soil samples from the floor and sidewalls of Excavation B to be submitted for a similar analytical suite to that of 2012.

6.8 Removal of Miscellaneous Debris, Drums, and Poles

6.8.1 Description and History

Debris removal efforts are ongoing at NE Cape. Miscellaneous debris, consisting of metal roofing, wire, rusted drums, and marston matting, has been identified in multiple areas associated with the installation. Bristol has removed miscellaneous debris from across the site since 2009. In 2011, Bristol removed approximately 33 tons of debris from the island. Wooden telephone and electrical poles were a part of the site's infrastructure and were cut flush with the ground in 2005 by BEESC. Many of the poles have since frost-jacked and present as physical hazards. Pole removal efforts have historically been employed, but additional poles remained in the ground at select locations across the site.

6.8.2 Field Activities

Bristol was scoped to remove 25 tons of miscellaneous metal debris scattered throughout the NE Cape site, 1 ton of drums, and 100 pole stumps. Poles were gathered as one of Bristol's first field tasks upon arrival at the site, while debris was gathered concurrently with all other field operations. Pole removal operations (shown in Figure 20) were performed by a small crew that first located the poles and then proceeded to remove them with an excavator. When possible, the poles were pulled out of the ground using the excavator bucket and attached thumb. At times when the pole could not be pulled out with the excavator, the ground surrounding the pole was excavated in order to gain access to the buried portion of the pole. A total of 158 poles and pole pieces were removed from at least 110 locations across the site. Some poles still remain in the ground in at least 20 locations where they pose little to no risk of physical hazard. The wooden poles in these locations did not appear to have frost-jacked during the winter seasons and only protruded above the ground surface a few inches. The locations of these remaining poles are shown in Figure 20.

Much of the debris, consisting of wire, antenna components, and rusted drums, was recovered from various locations within Site 28 and the surrounding tundra. Additional debris was recovered from POL and PCB excavations at the MOC and consisted of metal piping, corrugated steel culvert components, and miscellaneous metal. Marston matting was removed from the borrow source area and consolidated into Conex containers for disposal. Approximately 15.3 tons of debris was loaded into two Conex shipping containers; 158 wooden poles and pole pieces, weighing 28.45 tons, were loaded into two containers; and 1.3 tons of rusted drums were collected from the site and shipped to Columbia Ridge Landfill for disposal.

6.9 RADAR DOME (RADOME) ROAD

6.9.1 Description and History

The Radome Road leads to what is known as Site 34, the former Upper Camp. The site is located at the top of Mt. Kangukhsam and consists of an area that formerly contained a substation transformer pad, one fuel AST, one water AST, a Radome (Building 221) and a quarters building. All structures have been removed from the site, except for the former building foundations, and over 600 drums were removed from an abandoned drum field (MWH, 2003). Historical soil sampling results from an area adjacent to the former transformer pad indicated the presence of PCBs in soil at a maximum concentration of 1.4 mg/kg (USACE, 2009). The USACE Decision Document (2009) determined that the PCBs at this site do not pose a risk to human health or the environment and selected the site for "No Further Action."

During a Restoration Advisory Board meeting in 2011, a citizen of Savoonga reported an anomalous lack of vegetation along both sides of the road/trail at the top of Kangukhsam Mountain that leads to the location of the former Radome. As a result, the decision was made to investigate the area for any stressed vegetation and to collect soil samples to determine whether contamination in soil may be a factor in causing the vegetation to appear stressed.

6.9.2 Field Activities

Bristol investigated the site twice prior to collecting soil samples at the Radome Road (Figure 21) to determine areas fitting the description where vegetation appeared stressed. The CQCSM visited the site once with the USACE QAR on July 30, 2012, and again with the ADEC NE Cape PM and USACE QAR on August 1, 2012, to look for stressed vegetation along the road. During both site visits, it was concluded that vegetation along the Radome Road was consistent with vegetation in the general area at the top of Mt. Kangukhsam. The area can be described as a rocky area located approximately 1,700 feet above sea level, with little soil development. Lichens dominate the vegetation along the rocky surface, with mosses and grasses growing in areas with relatively thicker soil development. The decision was made in consultation with USACE and ADEC to collect six samples along the side of the road leading approximately 700 feet southeast of the former Radome. One sample was collected from an undisturbed area uphill of these six sample locations to represent background/natural conditions.

Three samples locations, shown in Figure 21, were chosen on one side of the Radome Road, and three sample locations were also chosen directly across the road from the first, making a total of six paired samples. Bristol collected soil samples from approximately

4 to 6 inches bgs and submitted the samples to TestAmerica for analysis of GRO, BTEX, DRO/RRO, PAHs, PCBs, and RCRA 8, metals plus nickel, vanadium, and zinc.

6.9.3 Results

Confirmation sample results are presented in Table F25, located in Appendix F. Eight confirmation samples, corresponding to seven sample locations (one background location) and a duplicate sample, were collected from the Radome Road site. None of the samples resulted in analyte concentrations in excess of cleanup levels. Sample results from locations along the side of the road did not differ significantly from the background sample. Bristol recommends no further action at this site.

6.10 MONITORING WELL ABANDONMENT

6.10.1 Description and History

Three monitoring wells (MW88-4, MW88-5 and ICOMW01) were situated in the footprint of the E plume excavation area at the MOC, and several monitoring wells exist at the NE Cape site in conditions that limit or prevent groundwater sampling or pose physical hazards. Wells located at Site 9, the former Housing and Operations Landfill, were surrounded by a protective casing that had frost-jacked above the ground and could serve as a potential hazard for personnel visiting the area during winter. As a result, Bristol was tasked to abandon the wells to protect groundwater and remove the physical hazards associated with the wells. Wells MW88-4 and MW88-5 were part of the MOC groundwater MNA monitoring plan and were sampled in 2012 prior to abandonment. Historical boring logs and well descriptions from previous work by other contractors is contained in Appendix H.

6.10.2 Field Activities

On August 17, 2012, the following three monitoring wells were decommissioned in preparation for the excavation of the E plume: ICOMW01, MW88-4, and MW88-5. On

September 6 and 7, 2012, the following three monitoring wells, selected by USACE, were decommissioned: 9-1, 9-3, and 26MW3. The decommissioned well locations are presented on Figure 22.

Monitoring wells 88-4 and 88-5 were constructed from 2-inch-diameter polyvinyl chloride (PVC) pipe and extended 15.31 feet and 14.85 feet bgs, respectively. The wells were completed as flush mounts, and the monuments were constructed from 6-inch-diameter steel casing set in cement. The well monuments were removed, and the well caps were knocked out using a steel rod. The well casings were filled with granular bentonite to 10 feet bgs before attempting to pull the wells. The bottom of the wells were filled with bentonite to 10 feet bgs, as POL soil removal activities in E plume were planned to go to 10 feet bgs. The well casings were then completely removed using an excavator. Soil in the wells' vicinity was excavated to a depth of approximately 10 feet during E plume soil removal actions.

Monitoring well ICOMW01 was constructed from 2-inch diameter PVC pipe, extended 18.38 feet deep, and did not contain a monument or outer protective casing. Personnel filled the casing with granular bentonite to 10 ft bgs before attempting to pull the well. The well casing was completely removed using an excavator. Soil in the vicinity of ICOMW01 was excavated to a depth of approximately 10 feet during E plume soil removal actions.

Monitoring wells 9-1 and 9-3 were constructed from 2-inch diameter PVC pipe and extended 6.10 feet and 8.32 feet bgs, respectively. These stick-up wells were completed with a 6-inch-diameter steel protective casing set in cement. Both wells were severely frost-jacked and protruded several feel feet above their protective casings to a level that exposed the screens. The well monuments were removed, and the bottoms of the wells were knocked out using a steel rod. The well casings were filled with granular bentonite from the base of the wells to the surface before being completely removed by hand. Table 6-3 shows the depth to bentonite at 0 feet bgs for wells 9-1, 9-3, and 26MW3, which illustrates that the wells were completely filled with bentonite from the bottom to the surface. No removal activities are currently planned for the areas surrounding these wells.

Monitoring well 26MW3 was constructed from 2-inch-diameter PVC pipe and extended 38.95 feet deep. The well was completed as a flush-mount, with a monument constructed from 6-inch-diameter steel casing set in cement that was frost-jacked 1.6 feet aboveground. The concrete monument and protective casing had been pushed out of the ground by the PVC and were hanging from the frost-jacked well casing. A metal rod was heated using a propane flame and lowered into the casing to remove several feet of ice located approximately 6 feet bgs. Following breakup of the ice, the well monument was discarded and the bottom of the well was knocked out using this steel rod. The well casing was filled with granular bentonite to the ground surface before the well casing was completely removed by an excavator.

All wells were decommissioned in accordance with applicable ADEC guidance (ADEC, 2009). The well casings were filled with granular bentonite to the depths specified in Table 6-3, and the casings and monuments were completely removed from the ground. All direct pathways to the water table resulting from the installation of these six wells have been successfully closed and have been rendered less permeable than the surrounding soils. No further action is required for these six wells with regards to abandonment. Future monitoring wells may be installed after removal activities have been completed at the MOC.

Table 6-3 Well Abandonment Results

Monitoring Well ID	Well Depth (ft.)	Stick up (ft.)	Diameter (inches)	Depth to bentonite (ft. bgs)	Decommissioning method	Notes
ICOMW01	18.38	10	2	10	Granular Bentonite	No monument present
MW 88-4	15.31	flush	2	10	Granular Bentonite	None
MW 88-5	14.85	flush	2	10	Granular Bentonite	None
9-1	6.10	3.91	2	0 (filled to surface)	Granular Bentonite	Casing loose and frost jacked
9-3	8.32	6.55	2	0 (filled to surface)	Granular Bentonite	Casing loose and frost jacked
26MW3	38.95	1.60	2	0 (filled to surface)	Granular Bentonite	Frozen, thawed for abandonment

Notes:
bgs = below ground surface
ft. = feet

6.11 SITE 28 SEDIMENT MAPPING AND PHASE I SEDIMENT REMOVAL

Please refer to the Site 28 Phase I Sediment Removal Report (Bristol, 2012b) for detailed information regarding field efforts performed at Site 28.

6.12 DEVIATIONS FROM THE PLANNING DOCUMENTS

Differing site conditions and unforeseen circumstances necessitated some deviations from the work stated to be performed in the planning documents. Details of the significant deviations from the planning documents follow:

- Methane analysis in water, which had been scheduled for and approved for analysis at TestAmerica-Denver, was analyzed at TestAmerica-Savannah, Georgia, without USACE approval. TestAmerica-Savannah is an ADEC Contaminated Sites Laboratory Approved Program (CS) and DoD ELAP-accredited laboratory. TestAmerica-Savannah's certifications are presented in Appendix I. The results are usable for project purposes.
- Confirmation floor samples collected from flooded excavations were collected at a rate of one sample per 1,600 square feet after discussions between the USACE Project Delivery Team and the ADEC NE Cape PM. The WP stated that samples

would be collected in accordance with the ADEC Draft Field Sampling Guidance (2010) at a rate of two samples per 250 square feet, plus one additional sample for each additional 250 square feet. Because the excavations were limited to specified depths at particular areas or the presence of 2 feet of water above the excavation, a modified sampling protocol was agreed upon where one sample would be collected per 1,600 square feet of excavation floor in order for evaluation of the contaminant concentrations below the surface water. Correspondence with ADEC (sent from the ADEC to the USACE on August 28, 2012) is located in the Correspondence section of Appendix B and serves as ADEC's approval of the proposed sampling frequency.

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7.0 CHEMICAL DATA COLLECTION, ANALYSIS, AND REVIEW

7.1 PRIMARY LABORATORIES

TestAmerica-Tacoma was Bristol's primary analytical laboratory for the project and analyzed the majority of the project samples. Terri Torres, the Client Service Manager, acted as the program Laboratory QA Officer for the project. Due to capacity issues at TestAmerica-Tacoma, some analyses were subcontracted to TestAmerica-Denver, which is also DoD ELAP- and ADEC CS-certified for sample analyses.

Ethylene glycol samples were submitted to TestAmerica-Savannah for analysis. TestAmerica-Savannah is an ADEC CS- and DoD ELAP-accredited laboratory. Ethylene glycol was not listed as a COC prior to the discovery of waste barrels at Site 10. TestAmerica-Savannah also analyzed methane in water samples from Site 8 and the MOC wells due to capacity issues at TestAmerica-Denver, which had been approved for all analyses, along with TestAmerica-Tacoma.

One set of water samples was submitted to SGS laboratories for quick-turnaround analysis due to capacity issues at TestAmerica. SGS was approved as a project laboratory prior to sample collection and submittal. The approval letter is in Appendix B.

7.2 CHEMICAL DATA QUALITY REVIEW

AECOM has reviewed the project laboratory data and included the findings in the Chemical Data Quality Review (CDQR) report (Appendix J). Sample analytical result tables, presented in Appendix F, are flagged in accordance with the CDQR and QAPP.

The sample summary sheet and ADEC laboratory checklists are included in Appendix J. The ADEC Certificates of Approval for Contaminated Sites Analysis and DoD-ELAP certifications are included in Appendix I.

The following data qualifiers are used in this document:

- B – Method blank contamination with a potential high bias
- J – Positive result is less than the limit of quantitation and is considered an estimate
- MH – Analyte result is considered an estimate due to matrix effects, biased high
- ML – Analyte result is considered an estimate due to matrix effects, biased low
- MN – Analyte result is considered an estimate due to matrix effects, bias uncertain
- QH – Analyte result is an estimate due to a quality control failure, biased high
- QL – Analyte result is an estimate due to a quality control failure, biased low
- QN – Analyte result is an estimate due to a quality control failure, bias uncertain
- R – Rejected result; result is not usable, and the R replaces the chemical result

This Report evaluates the analytical data generated from the NE Cape remedial actions, which were conducted from July through September 2012. An assessment of the analytical data was made to determine whether the program objectives and data quality goals were met. The assessment reviewed sample receipt conditions, extraction and analytical procedures, sampling procedures, and correspondence to method criteria and project DQOs. The following conclusions were drawn based on this assessment:

- Sample receipt conditions were acceptable based on the temperatures of the samples upon receipt and CoC correspondence of the submitted sample set. There were instances where the information on the container labels did not match the CoC. For these instances, the laboratory made a determination as to which information to use and provided documentation in the laboratory report case narratives. Amber bottles were received broken for two samples; however, the laboratory was able to proceed with analysis using the remaining bottles.
- Holding times were met with the following exceptions noted below. Results exceeding hold times were QL qualified.
  - Site 10 soil samples for acetone and methylene chloride required reanalysis due to method blank contamination at greater than one-half the limit of quantitation (LOQ) and a continuing calibration verification (CCV) exceedance for acetone. Reanalysis of 19 soil samples was performed outside of established holding time. The methylene chloride and acetone detections are believed to

be due to laboratory contamination; the results are presented with B flag qualifiers.

- One trip blank result for trichlorofluoromethane was reanalyzed due to an initial calibration exceedence and the reanalysis was performed outside hold time.
- Three Bulk Bag Area MI samples were prepared outside of hold time for DRO analysis due to miscommunication between Bristol and the laboratory.
- DRO/RRO results for one Radar Dome Road soil sample was re-extracted outside of hold time due to low surrogate recoveries.
- Eight waste drum samples were analyzed or extracted beyond holding time for VOCs, SVOCs, DRO, and RRO, and four waste drum samples were analyzed beyond holding time for glycols.

- Extraction and analytical procedures were acceptable based on method blanks, laboratory control sample/laboratory control sample duplicates (LCS/LCSDs), matrix spike/matrix spike duplicates (MS/MSDs), and surrogates, except as noted below:
  - Detected results were qualified as estimated with a high bias (QH) due to high surrogate recoveries as follows:
    - Detected GRO in one trip blank sample
    - Detected RRO in three soil samples and two bulk waste soil samples
  - Detected results were qualified as estimated with a high bias (QH) due to high LCS and/or LCSD recoveries as follows:
    - Detected anthracene in two soil samples
    - Detected acenaphthylene in two soil samples
  - Results were qualified as estimated with a low bias (QL or ML) due to low surrogate recoveries as follows:
    - All VOC results for one soil sample
    - GRO results for six soil samples
  - Results were qualified as estimated with a low bias (QL) due to low LCS recoveries as follows:
    - cis-1,3-Dichloropropene results for 18 soil samples and three trip blank samples

- Results were qualified as estimated with an unknown bias (QN) due to LCS/LCSD RPD, or laboratory duplicate RPD exceedences are as follows:
  - PCB-1260 results for three soil samples
  - Methane for one water sample
  - Cadmium for one soil sample
  - Mercury results for two soil samples
- The following results were B qualified due to associated method blank contamination at a concentration <10x the sample concentration:
  - 1,2,4-Trimethylbenzene results for 16 soil samples and three trip blanks
  - Methylene chloride results for18 soil samples and two trip blanks
  - n-Propylbenzene results for 10 soil samples and three trip blanks
  - Naphthalene results for 11 soil samples and two trip blanks
  - p-Isopropyltoluene results for five soil samples
  - m,p-Xylene results for 25 soil samples, nine drum waste samples, and three trip blanks
  - o-Xylene results for 15 soil samples and three trip blanks
  - the Ethylene glycol result for one waste sample
  - DRO results for 26 soil samples, one water sample, and five waste samples
  - RRO results for 27 soil samples
  - Cadmium results for two soil samples
  - Nickel results for one waste sample and barium results for two waste samples
- Samples were qualified due to either high (MH) or low (ML) MS/MSD recoveries to indicate potential bias due to a matrix effect. Qualification was limited to the spiked samples since associated LCS/LCSD results were in control. An MN qualifier was used to indicate a matrix effect with an unknown bias when both a high and low MS/MSD recovery were observed or for a high MS/MSD RPD, unassociated with bias. Qualified results were:
  - 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, and naphthalene results for one bulk waste soil sample were MH qualified
  - DRO, DRO with silica gel, and RRO results for one soil sample were MH qualified
  - Three RRO soil results were MH qualified
  - PCB-1260 results for five soil samples were ML qualified
  - PCB-1260 results for six soil samples were MH qualified
  - Two PCB-1260 results were MN qualified
  - Barium, chromium, and vanadium were MH qualified in one soil sample

  - One zinc result was MH qualified
  - One zinc result was MN qualified
  - Mercury was ML qualified in one waste sample

- Sample qualifiers were assigned based on information in the laboratory narratives as follows:
  - The acetone result for one bulk waste sample was QH qualified due to a high CCV recovery
  - Carbon disulfide results for six bulk waste samples and one trip blank were QL qualified due to a low CCV recovery
  - Four PCB-1254 and three PCB-1260 results were MN qualified because they shared peaks, and quantitation was an estimate
- Multiple sample results were reported when sample concentrations exceeded the calibration range of the instrument, or were re-extracted and/or re-analyzed as summarized below:
  - Acetone and methylene chloride results for extraction batch 580-118819 were re-analyzed due to detects in the method blank and an acetone CCV exceedence. Results for the re-analysis were used and results from the initial run were not reported. The reruns met analytical control criteria but were analyzed outside of hold time.
  - PCB-1260 results for samples 12NC13SS104, 12NC13SS105, 12NC13SS123, and 12NC31SS019 were reported from both the secondary column during undiluted analysis and the primary column during 10x dilution analysis. Results from the dilution analysis were used since the undiluted results exceeded the calibration range of the instrument.
  - PCB samples 12NCMOCWA001 through -010 (Work Order No. 580-33899-1) were re-extracted and re-analyzed due to low recoveries in the MS/MSD. The MS/MSD recoveries were in control for the re-extracted batch. The results for both data sets were not detected and the preferred results are the original data set.
  - DRO/RRO sample 12NCRDSS04 was re-extracted due to low surrogate recoveries and the re-extraction was performed five days outside of hold time. Surrogates were in control for the re-extraction and the re-extraction results were reported.
- Field QC results met QAPP criteria with the following exceptions:
  - Imprecision was observed in field duplicate samples for:

  - Methyl tert-butyl ether in three soil duplicate pairs
  - 2-Methylnaphthalene, fluorene, and naphthalene in one water field duplicate pair
  - DRO in five soil duplicate pairs
  - RRO in two soil duplicate pairs
  - PCB-1260 in seven soil duplicate pairs
  - DRO in one triplicate set
  - Zinc (total and dissolved) in one water duplicate pair

- In all cases, the majority of duplicate sample results met the control criteria, and the qualification as estimated with an unknown bias (QN) was limited to the field duplicate pair or triplicate set, as applicable.
  - The following results were B qualified due to associated trip blank contamination at a concentration <10x the sample concentration:
    - Methylene chloride results for 19 soil samples
    - Toluene results for three water samples
    - Styrene results for two soil samples
    - GRO results for 11 soil samples

Based on this review, the analytical data generated from the NE Cape remedial action at sites 8, 10, 13, 21, 31, and the MOC, as well as the Bulk Bag Area samples, Radar Dome Road samples, and the drum samples, are complete, correct, consistent, and compliant with method procedures and QC requirements, and are usable as qualified. The methylene chloride and acetone sample results for Site 10 soil (Table F24) are presented for review; however, the results should be deemed suspect and believed likely not present based on the presence of these analytes in all Site 10 samples at similar concentrations reported in trip blanks and method blanks. The results were not rejected. With the exception of the Site 10 soil results previously described, the sample results are usable for project purposes and objectives.

7.3 ANALYTICAL METHODS FOR SOIL AND SEDIMENT

Table K1, presented in Appendix K, details each analyte, analytical method, and associated cleanup levels for soil and sediment.

7.4 ANALYTICAL METHODS FOR GROUNDWATER AND SURFACE WATER

Table K2 in Appendix K presents the analytes associated with each analytical method and their corresponding cleanup levels.

7.5 ANALYTICAL METHODS FOR WASTES

Waste characterization samples were collected for all wastes that were shipped off-island. Waste characterization samples collected from bulk bags containing POL and PCB soils were analyzed in the field laboratory, with the exception of one work order at the end of the field season, while other analyses were performed by TestAmerica. Waste characterization matrices and analytical methods are listed in Table 7-1.

Table 7-1 Analytical Methods for Wastes

Sample	Parameter	Analytical Method
POL Soils	DRO/RRO	AK 102/103
PCB Soils	PCBs	EPA 8082
Arsenic	Metals – Arsenic only	EPA 6020
Site 10 Soil Waste Characterization	VOCs	EPA 8260B
Liquid Waste Characterization	Flashpoint, Metals, Ethylene Glycol, PCBs, VOCs, SVOCs, Halogens, DRO/RRO, pH	1020A, 6010B, 8015B, 8082, 8260B, 8270C, 9056A, AK102/103, 9045C

Notes:
AK = Alaska Test Method
DRO = diesel range organics
EPA = U.S. Environmental Protection Agency
PCBs = polychlorinated biphenyls
POL = petroleum, oil, and lubricants
RRO = residual range organics
SVOCs = semivolatile organic compounds
VOC = volatile organic compounds

7.6 CLEANUP AND WASTE DISPOSAL CRITERIA

Waste disposal criteria were based on the following regulations:

- Title 18 of the Alaska Administrative Code, Chapters 60 – Solid Waste Management; 62 – Hazardous Waste; 75 – Oil and Other Hazardous Substances Pollution Control; and 78 – Underground Storage Tanks (18 AAC 60, 62, 75, and 78)

- 29 CFR 1910 and 1926 – Health and Safety for General Industry and Construction
- 33 CFR 138 – Financial Responsibility for Water Pollution
- 40 CFR 60, 61, 260–270, 279, 300–303, and 761 – EPA –RCRA; CERCLA; and TSCA
- 46 CFR 150, 151, and 153 – U.S. Coast Guard, Department of Homeland Security
- 49 CFR 171–178 – Hazardous Materials Transportation

Cleanup levels are presented in Tables K1 and K2 of Appendix K. The referenced criteria for soil, sediment, surface water, and groundwater are derived from the following sources and regulations:

- Northeast Cape FUDS, St. Lawrence Island, Alaska, Decision Document (USACE, 2009).
- Cleanup levels for soil and sediment not listed in the SOW were obtained from 18 AAC 75.341, Table B1, Method 2 – Soil Cleanup Levels for Migration to Groundwater.
- Cleanup levels for groundwater were obtained from 18 AAC 75.345, Table C, Groundwater Cleanup Levels.
- LPAH and HPAH values for sediment were obtained following Washington State Administrative Code WAC 173-204-520 Table III (1995). The WAC cleanup levels were stated in Table 1 of the 2009 NE Cape Decision Document (USACE, 2009).

7.7 PCB CORRELATION STUDY

Select PCB soil samples were collected from Site 31 and split between the field lab and the fixed-base lab, TestAmerica. Field samples chosen for the correlation study included 31-150, 31-156, 31-196, 31-204, and BW31-40. Additionally, the Bristol field lab analyzed a sample that was provided by the USACE and contained a known PCB concentration. The Bristol field lab extracted and analyzed the sample and provided the sample results to the USACE. Details regarding the PCB correlation study are provided in Appendix L.

8.0 COMMUNITY SUPPORT

Fieldwork in 2012 at NE Cape directly aided the local community's financial and public health. Bristol employed six members of the Savoonga community throughout the majority of the field efforts. Additionally, the presence of the NE Cape camp facilitated logistical support for a Native American Lands Environmental Mitigation Program (NALEMP) project at the Native Village of Northeast Cape. The crew working on this NALEMP project was able to receive support from the Bristol NE Cape field team, especially regarding mobilization, demobilization, food, and lodging. The presence of the Bristol crew helped to ensure the success of the NALEMP project's field efforts.

The construction camp contained a mess hall and a medic facility that were often visited by the local community. Visitors were able to access medical personnel and medicine maintained on site. During its time at NE Cape, the crew and construction camp played an integral role in the emergency care of a local individual, providing shelter and communications with Nome for a speedy evacuation. The satellite communication system enabled visitors, including those hunting or fishing for subsistence, to contact family members and friends back home to provide updates on their status and condition. Finally, the NE Cape camp facilities provided one additional safe haven for anyone who might get caught in poor conditions while away from home.

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FIGURES

Drawing: \\BEESC-JOBS\BERS\JOBS\34120057 2012 NE CAPE\ACAD-ENVIRO\FIGURES-NECAPE-NOV2012\FIGURE-1.DWG - Layout: 34120057-FIG1-NOV12
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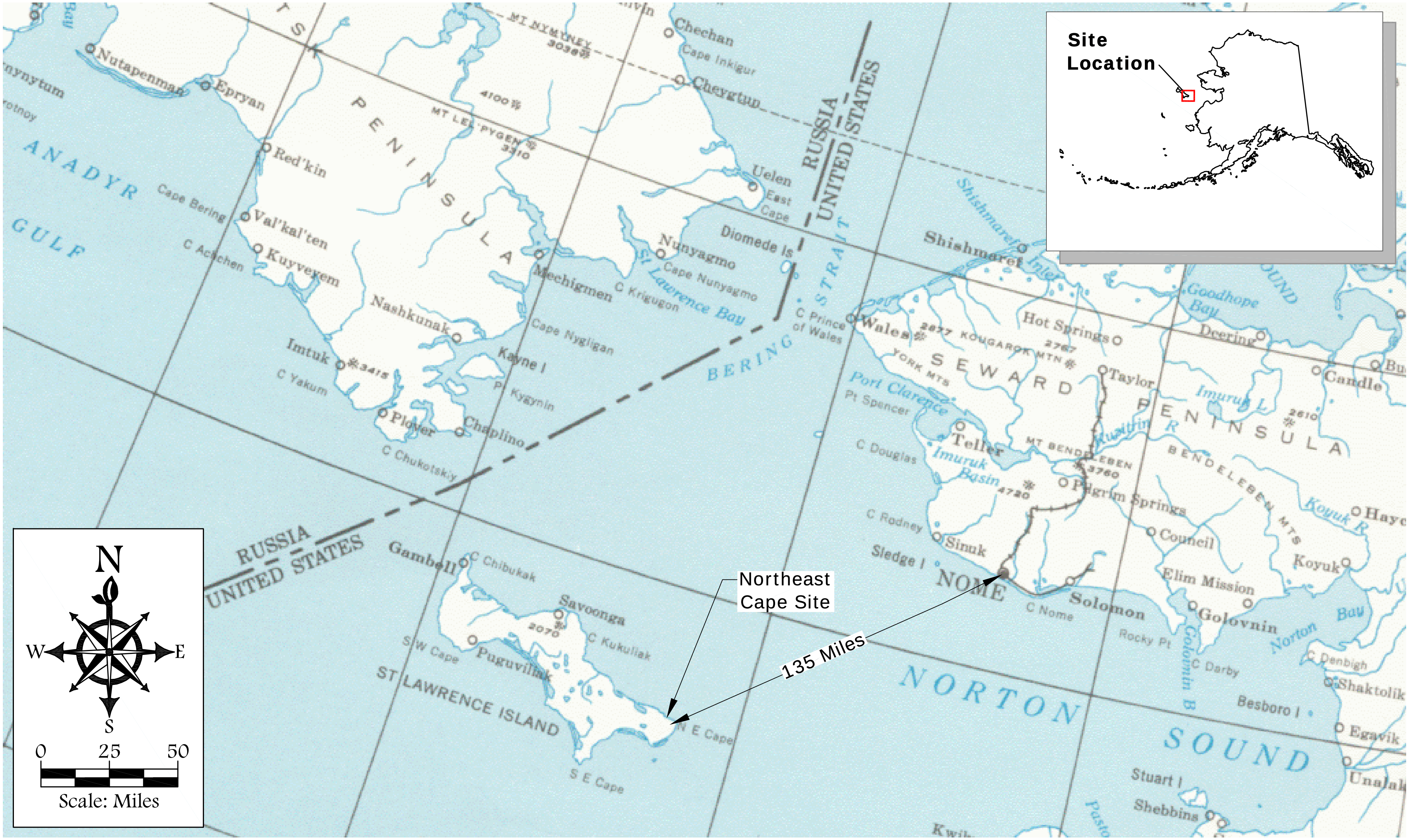

Source: USGS National Atlas Sheet Number 42-43

FIGURE 1
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA
NORTHEAST CAPE HTRW REMEDIAL ACTIONS
VICINITY MAP

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83		DATE	11/19/12
PROJECTION: STATE PLANE AK 9		DWN.	MTG
Project No. 34120057		SCALE	SHOWN
		APPRVD.	GJ

Legend:

HTRW Hazardous, Toxic, and Radioactive Waste

Legend:

HTRW Hazardous, Toxic, and Radioactive Waste

FIGURE 2
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA
NORTHEAST CAPE HTRW REMEDIAL ACTIONS
LOCATION MAP

Bristol ENVIRONMENTAL REMEDIATION SERVICES, LLC Phone (907) 563-0013 Fax (907) 563-6713	DATUM: NAD 83 PROJECTION: STATE PLANE AK 9 Project No. 34120057	DATE 11/19/12 DWN. MTG SCALE SHOWN APPRVD. GJ

Drawing: \\BEESC-JOBS\BERS\JOBS\34120057 2012 NE CAPE\CAD-ENVIRO\FIGURES-NECAPE-NOV2012\FIGURE-2.DWG - Layout: 34120057-FIG2-NOV12
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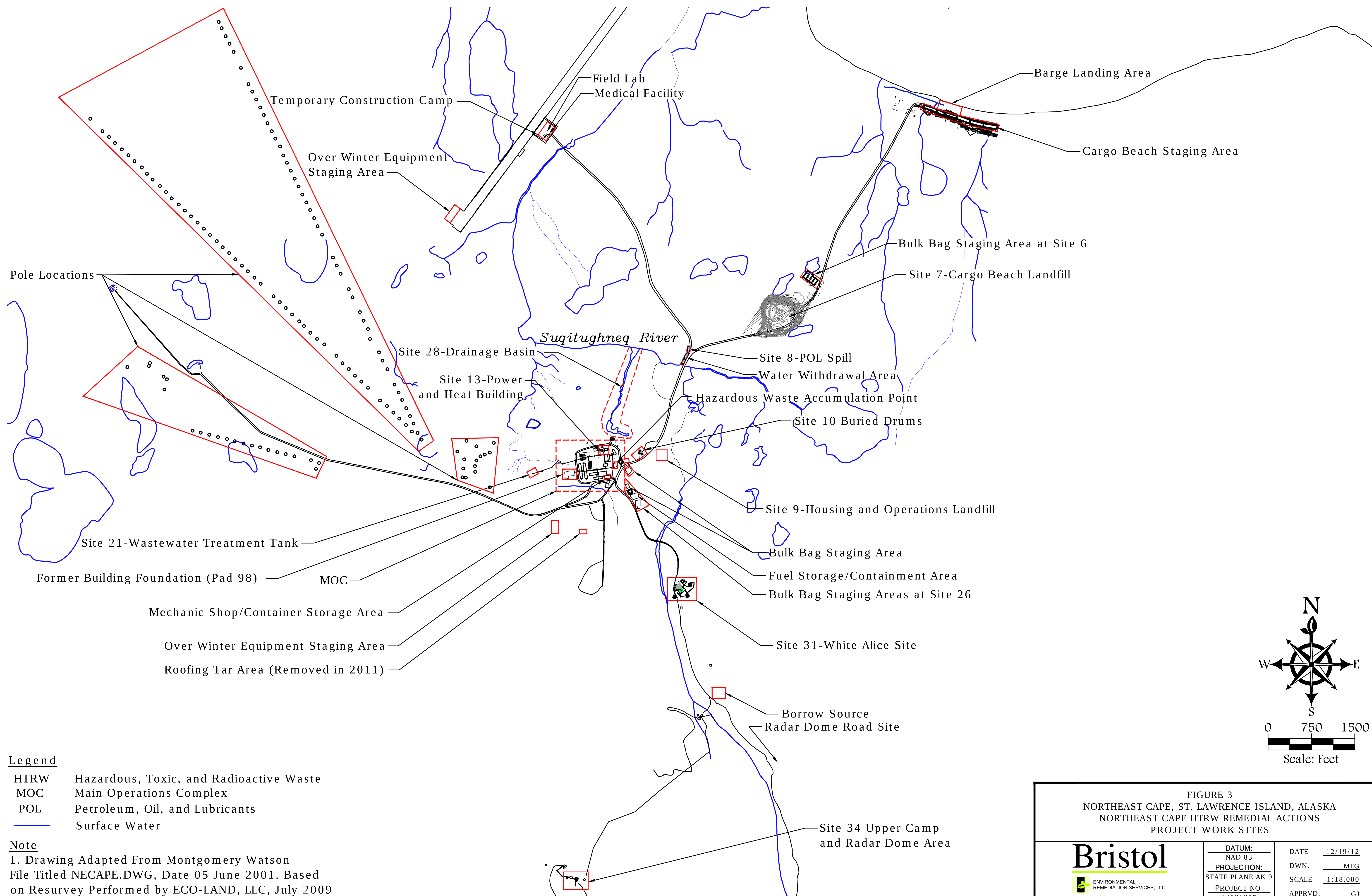


Legend

HTRW	Hazardous, Toxic, and Radioactive Waste
MOC	Main Operations Complex
POL	Petroleum, Oil, and Lubricants
———	Surface Water

Note

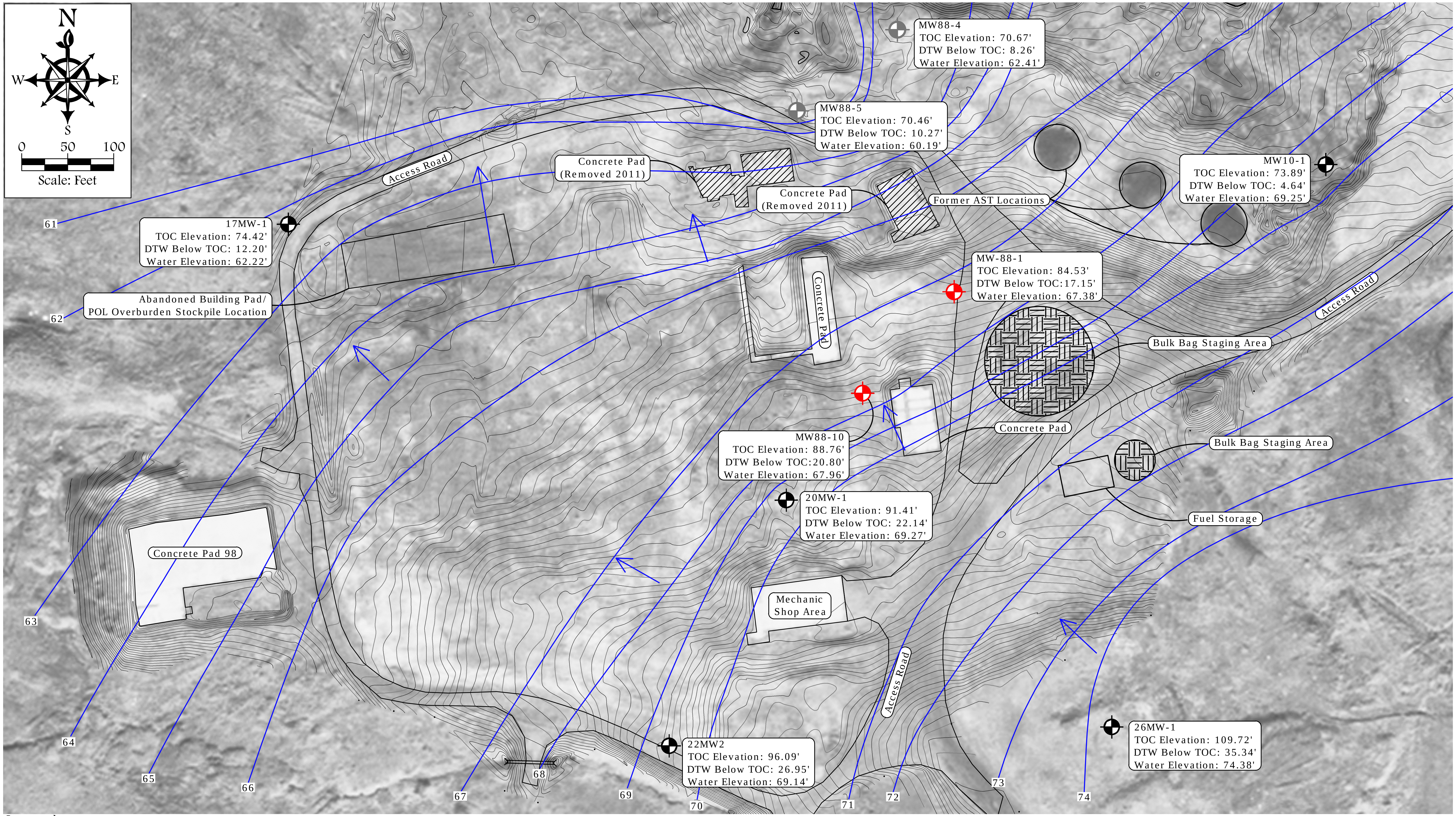
1. Drawing Adapted From Montgomery Watson File Titled NECAPE.DWG, Date 05 June 2001. Based on Resurvey Performed by ECO-LAND, LLC, July 2009

FIGURE 3
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA
NORTHEAST CAPE HTRW REMEDIAL ACTIONS
PROJECT WORK SITES

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34120057

DATE 12/19/12
DWN. MTG
SCALE 1:18,000
APPRVD. GJ



Legend

- Monitoring Well Location
- Wells with Historical or Current Contaminant Concentrations Exceeding Cleanup Levels
- Monitoring Well Location Abandoned in 2012
- Secondary Topographic Contours
- 73 Primary Topographic Contours and Ground Elevation
- Groundwater Contour
- Groundwater Flow Direction

Notes:

'	Foot/Feet
AST	Aboveground Storage Tank
DTW	Depth to Water
HTRW	Hazardous, Toxic, and Radioactive Waste
POL	Petroleum, Oil, and Lubricants
TOC	Top of Casing

-Water elevations are from 2012.
-Groundwater elevation data was collected on 7/04/2012.
-Topo units are in feet, elevations are based on the North American Vertical Datum of 1988.

FIGURE 4
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
MOC POTENTIOMETRIC SURFACE MAP

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83		DATE	12/19/12
PROJECTION: STATE PLANE AK 9		DWN.	MTG
PROJECT NO. 34120057		SCALE	1"=100'
		APPRVD.	GJ

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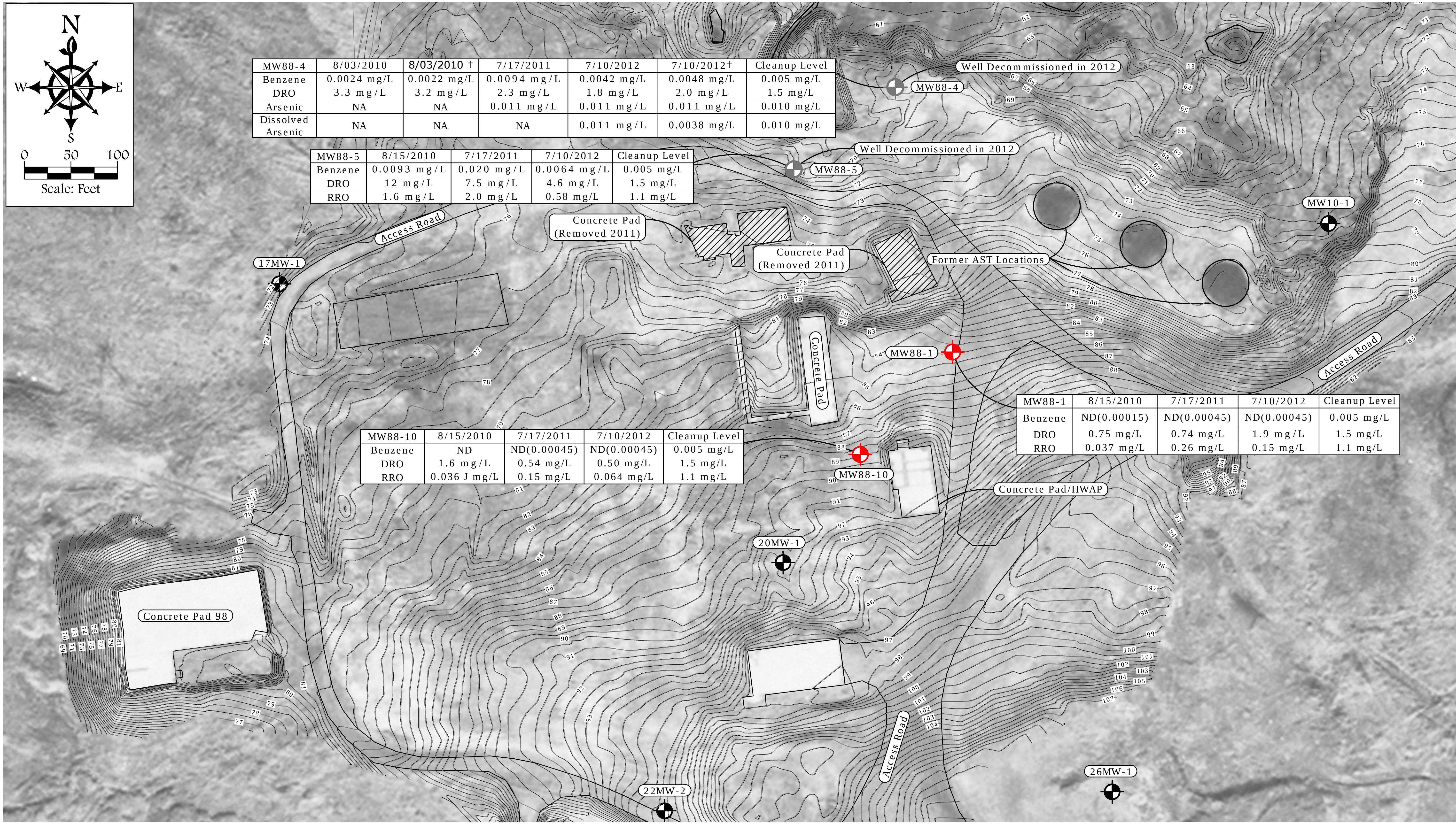

MW88-4	8/03/2010	8/03/2010 †	7/17/2011	7/10/2012	7/10/2012†	Cleanup Level
Benzene	0.0024 mg/L	0.0022 mg/L	0.0094 mg/L	0.0042 mg/L	0.0048 mg/L	0.005 mg/L
DRO	3.3 mg/L	3.2 mg/L	2.3 mg/L	1.8 mg/L	2.0 mg/L	1.5 mg/L
Arsenic	NA	NA	0.011 mg/L	0.011 mg/L	0.011 mg/L	0.010 mg/L
Dissolved Arsenic	NA	NA	NA	0.011 mg/L	0.0038 mg/L	0.010 mg/L

MW88-5	8/15/2010	7/17/2011	7/10/2012	Cleanup Level
Benzene	0.0093 mg/L	0.020 mg/L	0.0064 mg/L	0.005 mg/L
DRO	12 mg/L	7.5 mg/L	4.6 mg/L	1.5 mg/L
RRO	1.6 mg/L	2.0 mg/L	0.58 mg/L	1.1 mg/L

MW88-1	8/15/2010	7/17/2011	7/10/2012	Cleanup Level
Benzene	ND(0.00015)	ND(0.00045)	ND(0.00045)	0.005 mg/L
DRO	0.75 mg/L	0.74 mg/L	1.9 mg/L	1.5 mg/L
RRO	0.037 mg/L	0.26 mg/L	0.15 mg/L	1.1 mg/L

MW88-10	8/15/2010	7/17/2011	7/10/2012	Cleanup Level
Benzene	ND	ND(0.00045)	ND(0.00045)	0.005 mg/L
DRO	1.6 mg/L	0.54 mg/L	0.50 mg/L	1.5 mg/L
RRO	0.036 J mg/L	0.15 mg/L	0.064 mg/L	1.1 mg/L

Legend

- Monitoring Well Location
- Wells with Historical or Current Contaminant Concentrations Exceeding Cleanup Levels
- Monitoring Well Location Abandoned in 2012
- Secondary Topographic Contours
- 73 Primary Topographic Contours and Ground Elevation
- ' Foot/Feet

AST	Aboveground Storage Tank
HTRW	Hazardous, Toxic, and Radioactive Waste
POL	Petroleum, Oil, and Lubricants

Notes:

†	Duplicate Sample
mg/L	Milligrams Per Liter
DRO	Diesel Range Organics
DTW	Depth to Water
J	The Analyte was Identified; The Quantitation is an Estimate
NA	Not Analyzed
ND	Not Detected
RRO	Residual Range Organics

-Topo units are in feet, elevations are based on the North American Vertical Datum of 1988.

FIGURE 5

Northeast Cape, St. Lawrence Island, Alaska

Northeast Cape HTRW Remedial Actions

MOC MONITORING WELL LOCATIONS AND SELECT SAMPLE RESULTS

Bristol

ENVIRONMENTAL REMEDIATION SERVICES, LLC

Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83

PROJECTION: STATE PLANE AK 9

PROJECT NO. 34120057

DATE 12/19/12

DWN. MTG

SCALE 1"=100'

APPRVD. GJ

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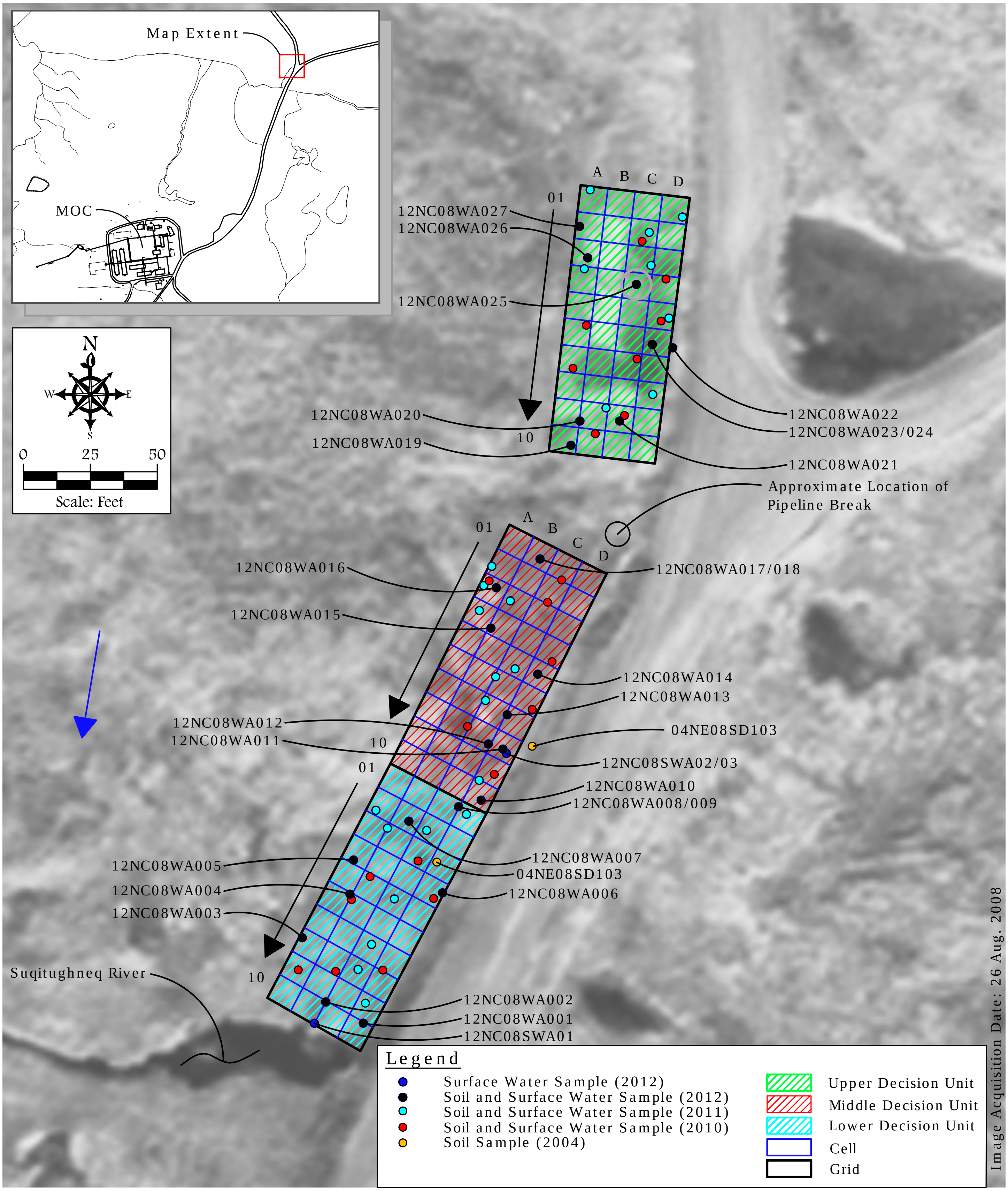

Note:
2012 sampling grids were determined using a random number generator.

Grid size = 40' x 100'
Cell size = 10' x 10'
D = duplicate
MOC = main operations complex
HTRW = hazardous, toxic, and radioactive waste
= grid row unit
= down gradient direction

Drawing: \\BEESC-JOBS\BERS\JOBS\34120057 2012 NE CAPE\ACAD-ENVIRO\FIGURES-NECAPE-NOV2012\FIGURE-6.DWG - Layout: FIG6-NOV12
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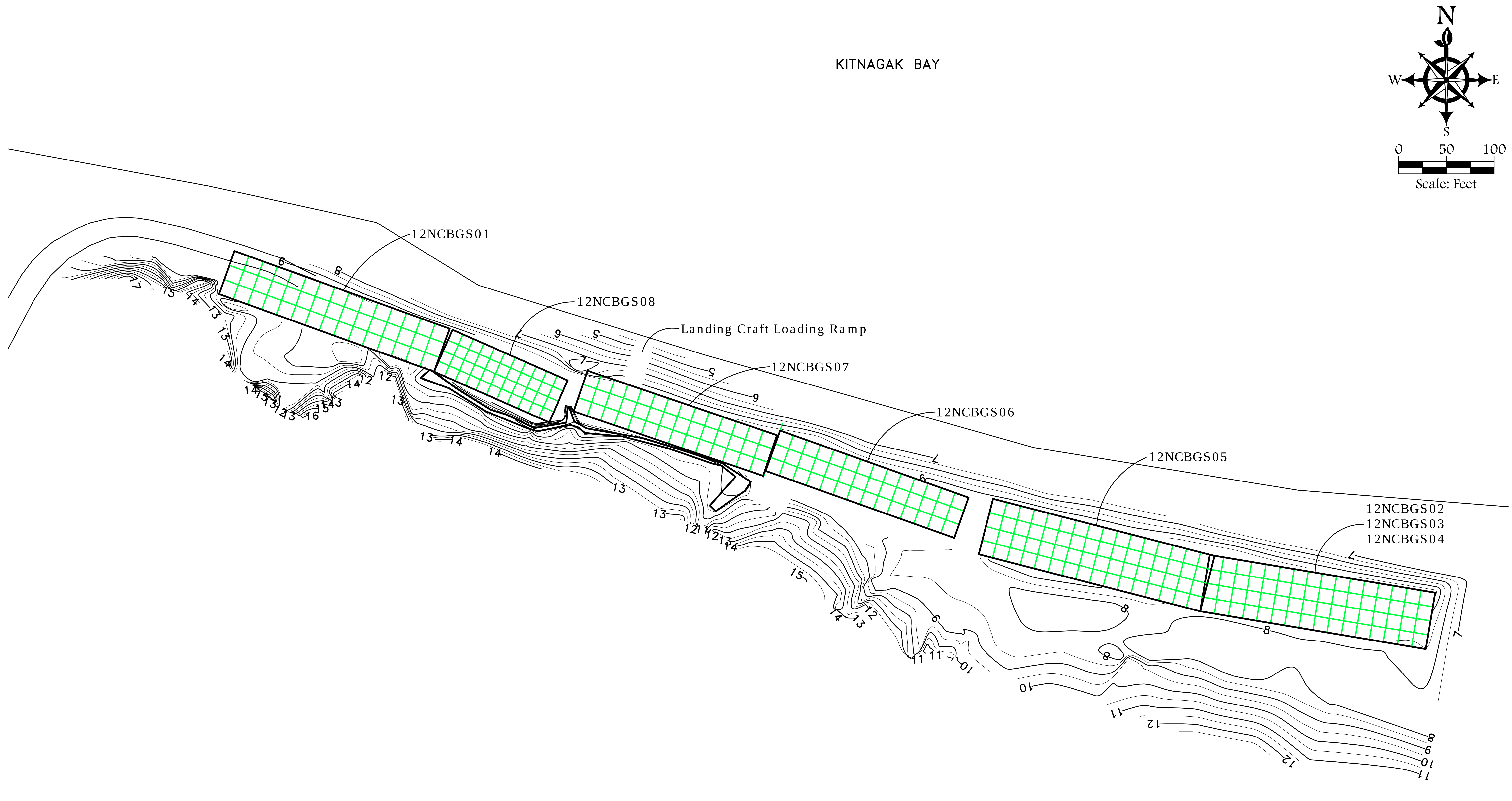
FIGURE 6
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
SITE 8 NATURAL ATTENUATION MONITORING AREA

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM:	NAD 83
PROJECTION:	STATE PLANE AK 9
Project No.	34110008
DATE	12/19/12
DWN.	MTG
SCALE	1"=50'
APPRVD.	GJ



Legend

MI *MULTI INCREMENT®*

MI Decision Unit

Notes:

1. Drawing adapted from Montgomery Watson file titled NECAPE.DWG, Date 05 June 2001. Based on resurvey performed by ECO-LAND, LLC, July 2009
2. Topo units are in feet, elevations are based on the North Vertical Datum of 1988.

FIGURE 7
NORTHEAST CAPE, ST. LAWRENCE ISLAND, ALASKA
NORTHEAST CAPE HTRW REMEDIAL ACTIONS
CARGO BEACH MI SAMPLING AREAS

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM:	NAD 83
PROJECTION:	STATE PLANE AK 9
PROJECT NO.	34120057
DATE	12/19/12
DWN.	MTG
SCALE	1"=100'
APPRVD.	GJ

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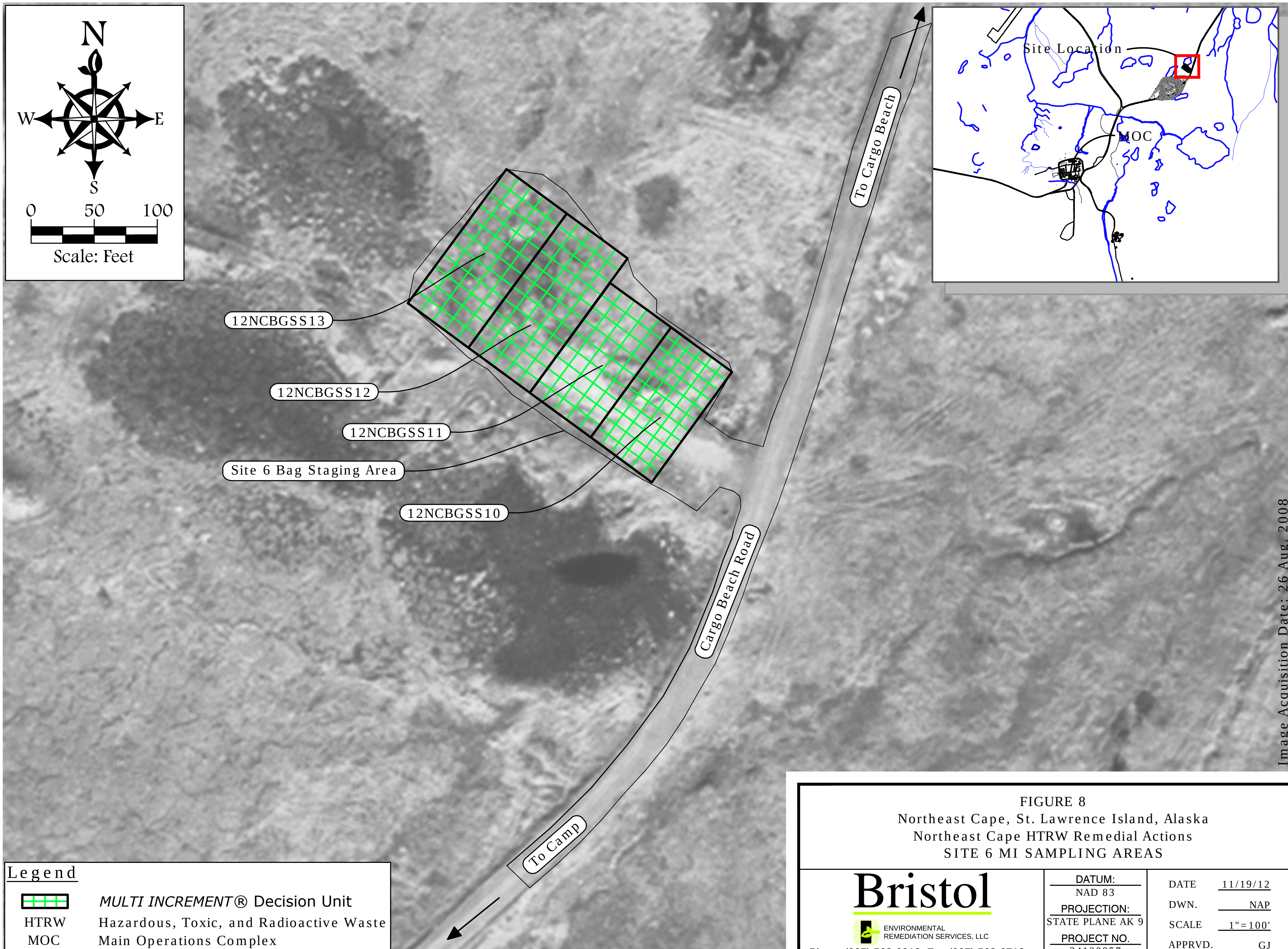


Legend

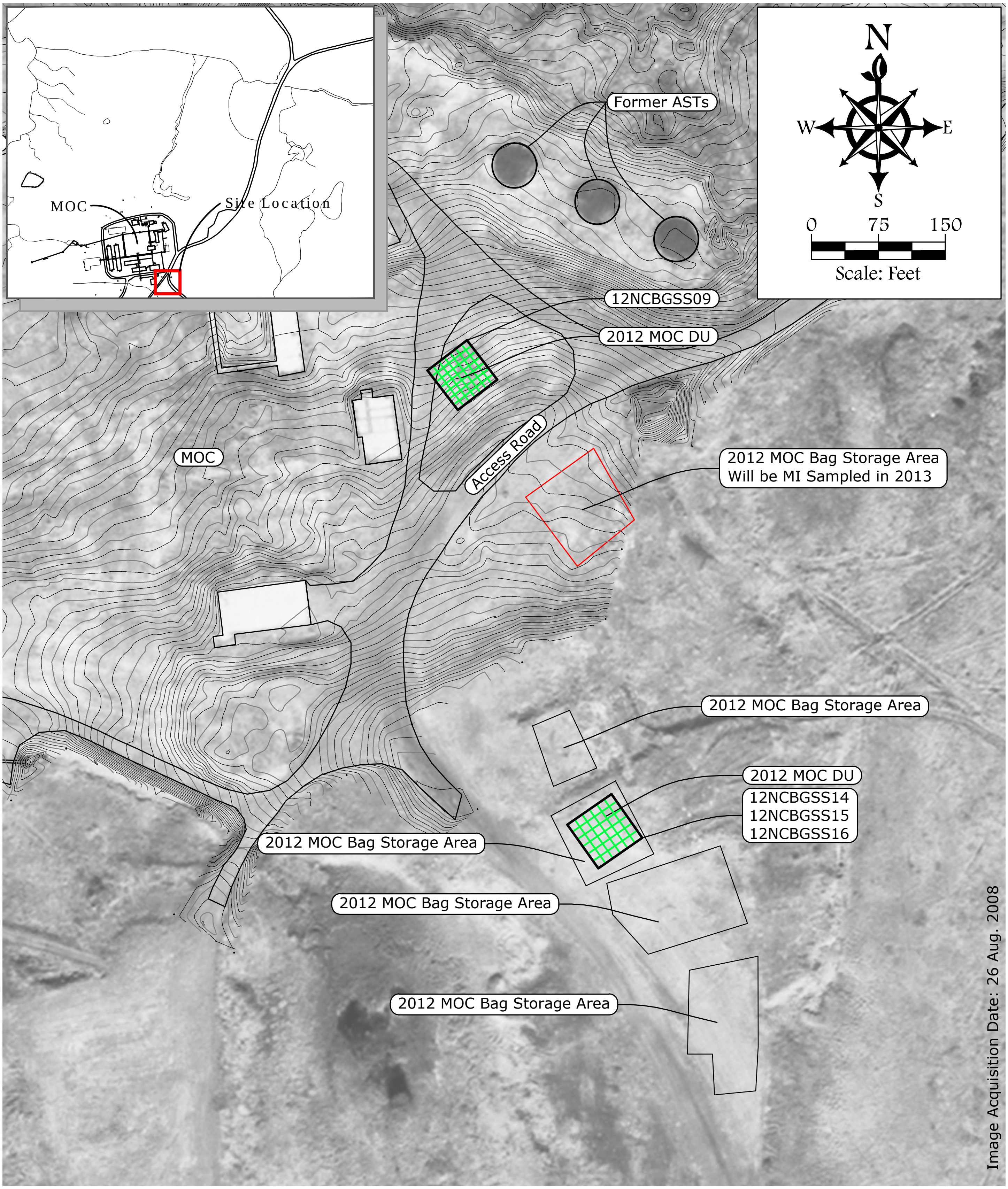
	MULTI INCREMENT® Decision Unit
HTRW	Hazardous, Toxic, and Radioactive Waste
MOC	Main Operations Complex

FIGURE 8
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
SITE 6 MI SAMPLING AREAS

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34120057

DATE	11/19/12
DWN.	NAP
SCALE	1"=100'
APPRVD.	GJ



Legend

MULTI INCREMENT® Decision Unit

Area not MI Sampled in 2012 Due to Bags Being Stored/Overwintered

Notes:

AST	Aboveground Storage Tank
DU	Decision Unit
MI	*MULTI INCREMENT*®
MOC	Main Operations Complex
HTRW	Hazardous, Toxic, and Radioactive Waste

-2012 Bag Storage Area DUs will MI Sampled Post-Construction in 2013

FIGURE 9
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
MOC MI SAMPLING AREAS

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
Project No. 34120057

DATE	12/20/12
DWN.	NAP
SCALE	1" = 150'
APPRVD.	GJ

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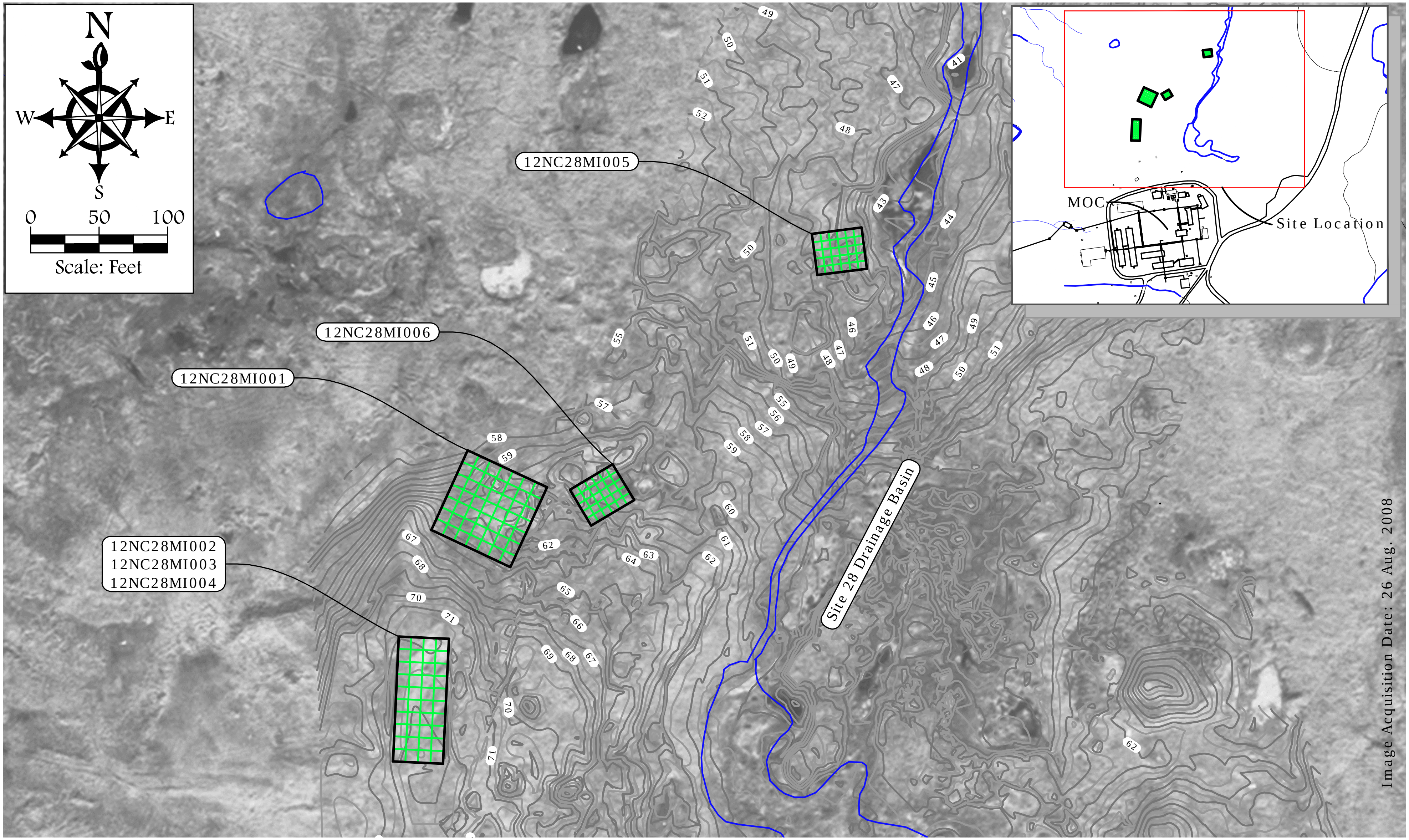
User: MGARCIA May 14, 2013 - 11:50am Xrefs: XREF-FIGURE-8.DWG TOPO-XREF.DWG - Images: EASTCAPE-STLAWRENCE_ORTHO_MOSAIC_AK83-9F.TIF



Legend

MULTI INCREMENT® Decision Unit

Surface Water

Notes:

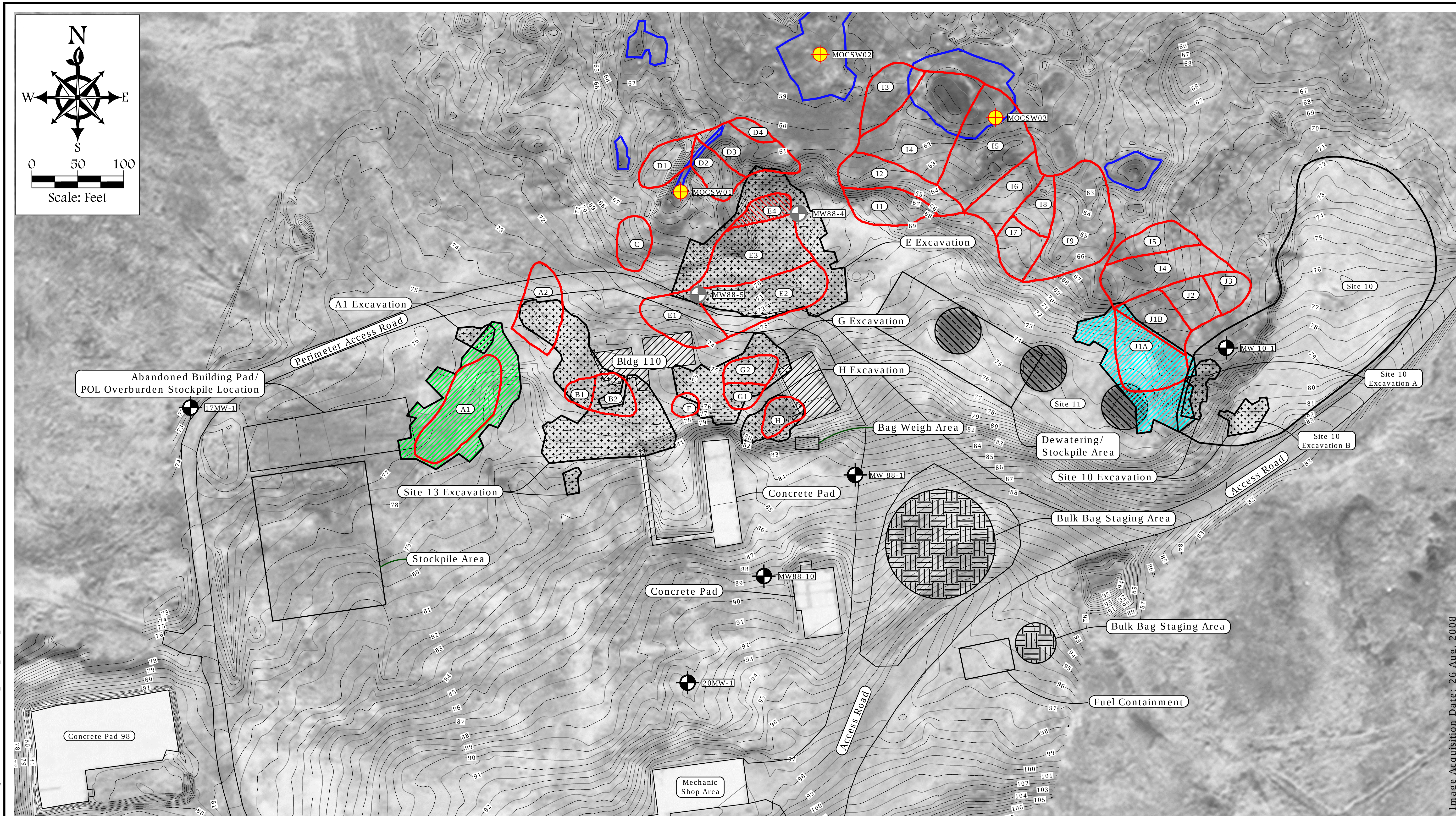
HTRW	Hazardous, Toxic, and Radioactive Waste
MI	*MULTI INCREMENT®*
MOC	Main Operations Complex

FIGURE 10
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
SITE 28 MI SAMPLING AREAS

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34120057

DATE	12/19/12
DWN.	NAP
SCALE	1"=100'
APPRVD.	GJ



Legend

- Surface Water Sample
- Monitoring Well Location
- Monitoring Well Location Abandoned in 2012
- Surface Water
- Concrete Pad (Removed 2011)
- A1 Excavation Area (2011)
- UVOST® Delineated Plume (2010)
- Former AST Location
- J1A Excavation Area (2011)
- 2012 Excavation
- A1 Plume Identification
- Secondary Topographic Contours
- 73 Primary Topographic Contours and Ground Elevation

Notes:

AST	Aboveground Storage Tank
HTRW	Hazardous, Toxic, and Radioactive Waste
POL	Petroleum, Oil, and Lubricants
UVOST®	Ultraviolet Optical Screening Tool

-Topo units are in feet, elevations are based on the North American Vertical Datum of 1988

FIGURE 11
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
MOC OVERVIEW MAP

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM:	NAD 83
PROJECTION:	STATE PLANE AK 9
Project No.	34120057
DATE	12/20/12
DWN.	NAP
SCALE	1" = 100'
APPRVD.	GJ

Drawing: O:\JOBS\34120057 2012 NE CAPE\ACAD-ENVIRO FIGURES-NECAPE-NOV2012\FIGURE-11.DWG - Layout: FIGURE-11
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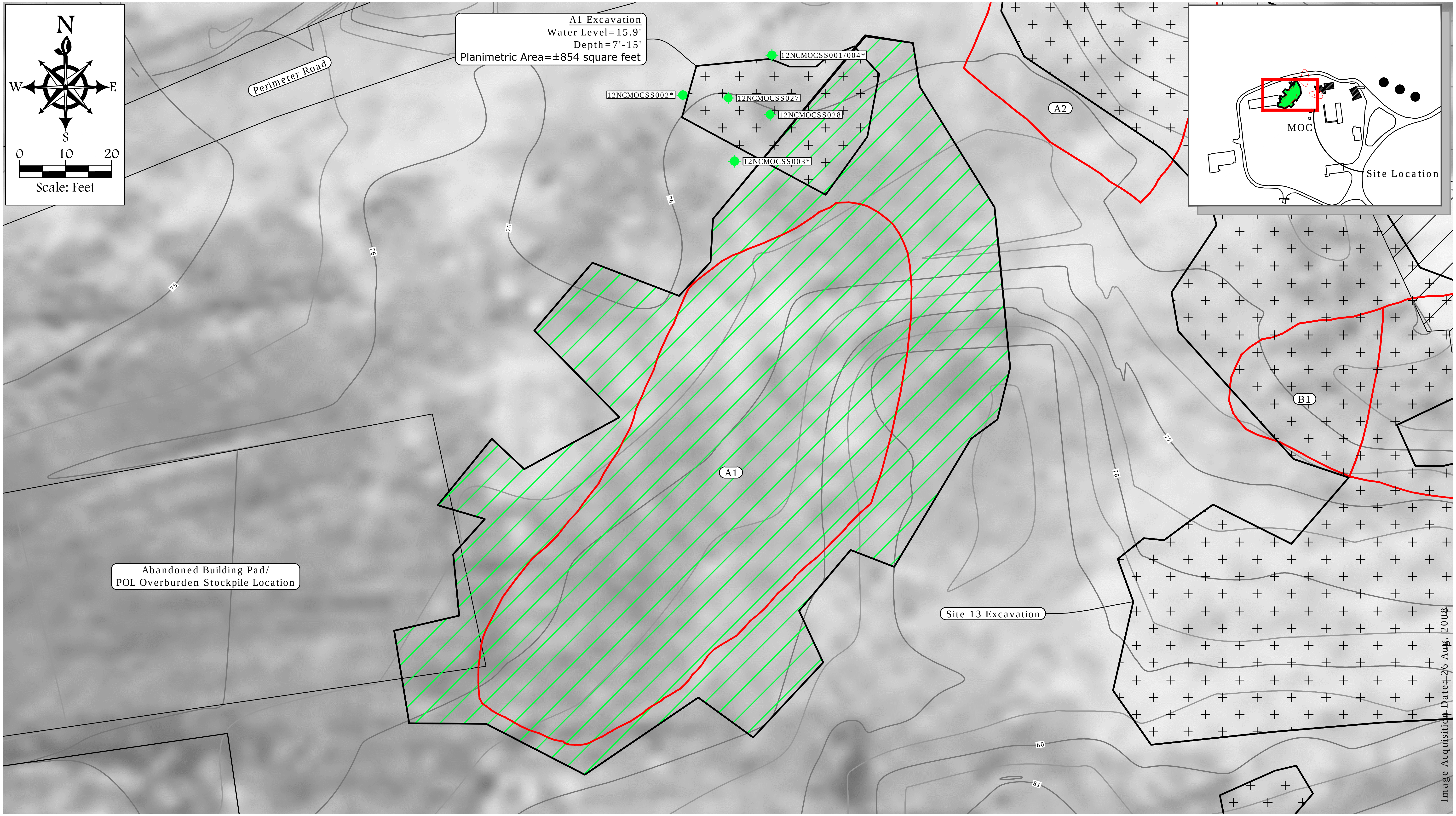


Legend

- A1 Excavation Area (2011)
- UVOST® Delineated Plume (2010)
- 2012 Excavation
- 2012 Soil Sample Location Contaminant Concentrations did not Exceed Cleanup Levels
- H — Plume Identification
- Secondary Topographic Contours
- 73 — Primary Topographic Contours and Ground Elevation

Notes:

*	Sidewall Sample
mg/kg	Milligrams per Kilogram
HTRW	Hazardous, Toxic, and Radioactive Waste
MOC	Main Operations Complex
POL	Petroleum, Oil, and Lubricants
UVOST®	Ultraviolet Optical Screening Tool

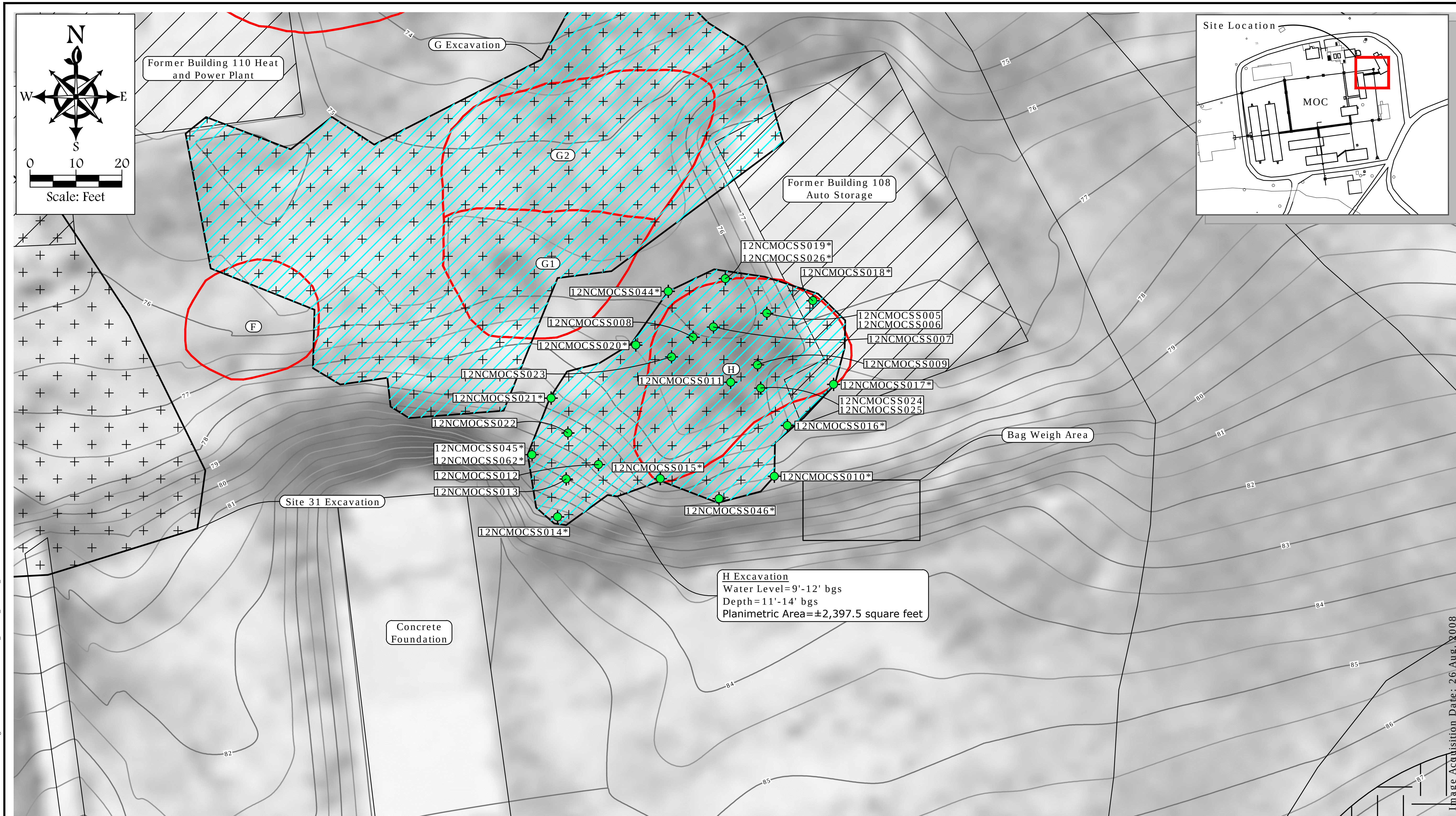
-Topo units are in feet, elevations are based on the North American Vertical Datum of 1988
-Confirmation soil samples collected for dieses range organics did not exceed the site-specific cleanup levels of 9,200 mg/kg.

FIGURE 12
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
A1 EXCAVATION EXTENTS AND SAMPLE LOCATIONS

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83		DATE	11/19/12
PROJECTION: STATE PLANE AK 9		DWN.	NAP
PROJECT NO. 34120057		SCALE	1" = 20'
		APPRVD.	GJ

Drawing: O:\JOBS\34120057 2012 NE CAPE\ACAD-ENVIRO\FIGURES-NECAPE-NOV2012\FIGURE-12.DWG - Layout: 34120057-FIG12-NOV12
User: MGARCIA May 14, 2013 - 1:29pm Xrefs: XREF-FIGURE-8.DWG TOPO-XREF.DWG - Images: EASTCAPE-STLAWRENCE_ORTHO_MOSAIC_AK83-9F.TIF



Legend

- 2012 Confirmation Soil Sample Location
- Concrete Pad (Removed 2011)
- 2012 Excavation
- UVOST Delineated Plume (2010)
- Water in Excavation
- H — Plume Identification
- Secondary Topographic Contours
- 73 — Primary Topographic Contours and Fround Elevation

Notes:

*	Sidewall Sample
mg/kg	Milligrams per Kilogram
bgs	Below Ground Surface
HTRW	Hazardous, Toxic, and Radioactive Waste
POL	Petroleum, Oil, and Lubricants
UVOST	Ultraviolet Optical Screening Tool

-Topo units are in feet, elevations are based on the North American Vertical Datum of 1988
-Confirmation soil sample collected for diesel range organics and residual range organics did not exceed the site-specific cleanup levels of 9,200 mg/kg.

FIGURE 13
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
H EXCAVATION EXTENTS AND SAMPLE LOCATIONS

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34120057

DATE 12/21/12
DWN. NAP
SCALE 1" = 20'
APPRVD. GJ

Drawing: O:\JOBS\34120057 2012 NE CAPE\ACAD-ENVIRO\FIGURES-NECAPE-NOV2012\FIGURE-13.DWG - Layout: FIGURE-13
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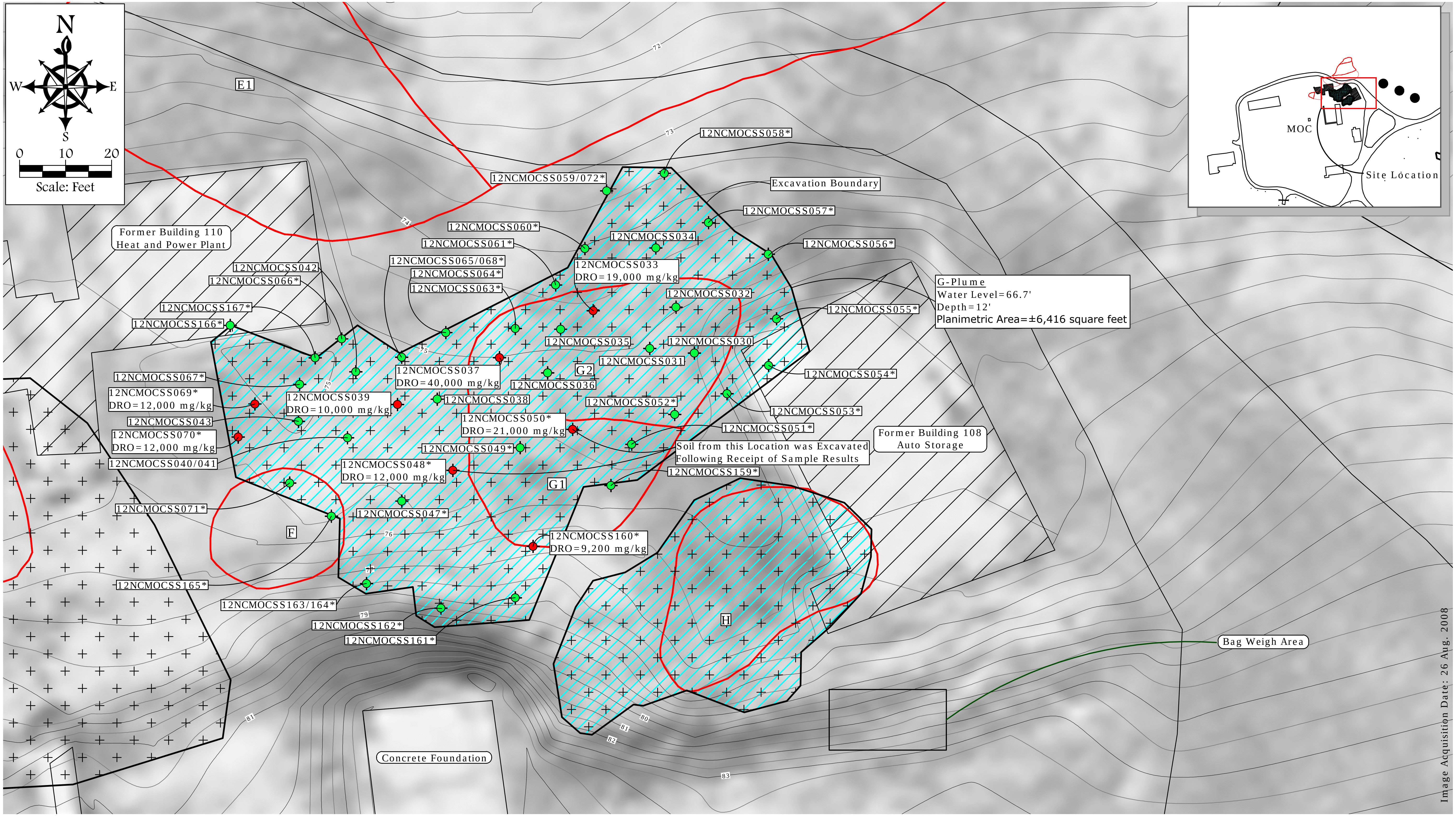


Legend

- Location Where DRO Concentration Exceeded Site-Specific Cleanup Level of 9,200 mg/kg
- 2012 Soil Sample Location Where DRO Concentration did not Exceed Site-Specific Cleanup Level of 9,200 mg/kg
- Surface Water
- Concrete Pad (Removed 2011)
- Water in Excvation
- UVOST® Delineated Plume (2010)
- H Plume Identification
- Secondary Topographic Contours
- 73 Primary Topographic Contours and Ground Elevation

Notes:

*	Sidewall Sample
mg/kg	Milligrams per Kilogram
AST	Aboveground Storage Tank
DRO	Diesel Range Organics
HTRW	Hazardous, Toxic, and Radioactive Waste
POL	Petroleum, Oil, and Lubricants
UVOST®	Ultraviolet Optical Screening Tool

-Topo units are in feet, elevations are based on the North American Vertical Datum of 1988
-Sample ID's are preceded by 12NCMOCSS

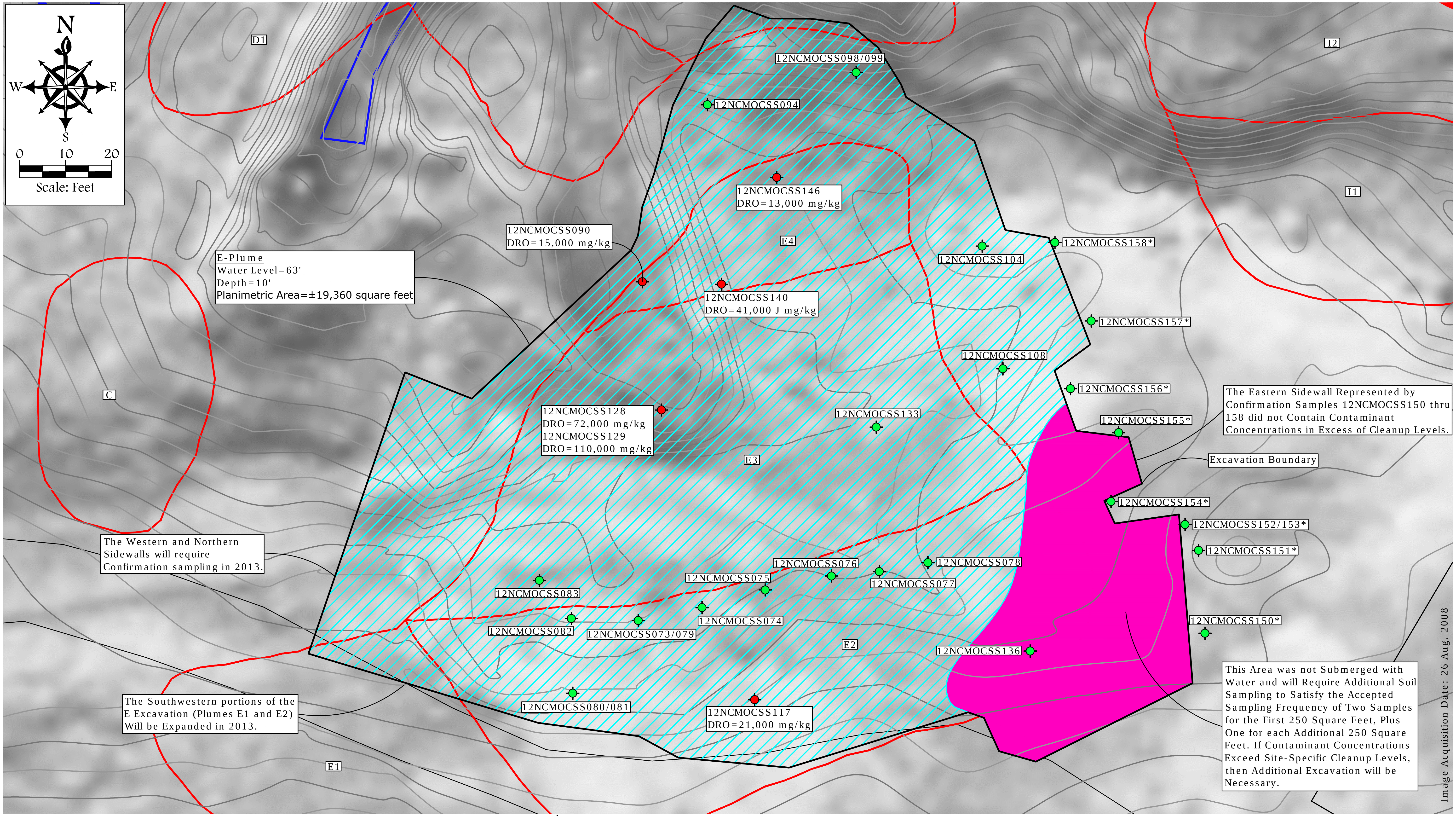
FIGURE 14
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
G EXCAVATION EXTENTS AND SAMPLE LOCATIONS

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34120057

DATE 12/26/12
DWN. NAP
SCALE 1" = 20'
APPRVD. GJ

Drawing: O:\JOBS\34120057 2012 NE CAPE\ACAD-ENVIRO FIGURES-NECAPE-NOV2012\FIGURE-14.DWG - Layout: FIGURE-14
User: MGARCIA May 20, 2013 - 2:21pm Xrefs: - Images: EASTCAPE-STLAWRENCE_ORTHO_MOSAIC_AK83-9F.TIF



Legend

- Surface Water
- Proposed Excavation Area (2012)
- Areas requiring additional sampling (2013)
- Excavation Extents (2012)
- Water in Excavation
- 2012 Confirmation Sample Location where DRO Concentration did not Exceed Site-Specific Cleanup Level of 9,200 mg/kg
- Location where DRO Concentrations Exceeding Site-Specific Cleanup Level of 9,200 mg/kg
- H Plume Identification
- Secondary Topographic Contours
- 73 Primary Topographic Contours and Ground Elevation

Notes:

*	Sidewall Sample
mg/kg	Milligrams Per Kilogram
DRO	Diesel Range Organics
HTRW	Hazardous, Toxic, and Radioactive Waste
J	Result is an Estimate
POL	Petroleum, Oil, and Lubricants
UVOST	Ultraviolet Optical Screening Tool

Topo units are in feet, elevations are based on the North American Vertical Datum of 1988

FIGURE 15
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
E EXCAVATION EXTENTS AND SAMPLE LOCATIONS

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34120057

DATE 12/26/12
DWN. MTG
SCALE 1" = 20'
APPRVD. GJ

Drawing: O:\JOBS\34120057 2012 NE CAPE\ACAD-ENVIRO\FIGURES-NECAPE-NOV2012\FIGURE-15.DWG - Layout: FIGURE-15
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Drawing: O:\JOBS\34120057 2012 NE CAPE\ACAD-ENVIRO\FIGURES-NECAPE-NOV2012\FIGURE-16.DWG - Layout: FIG16-REV1
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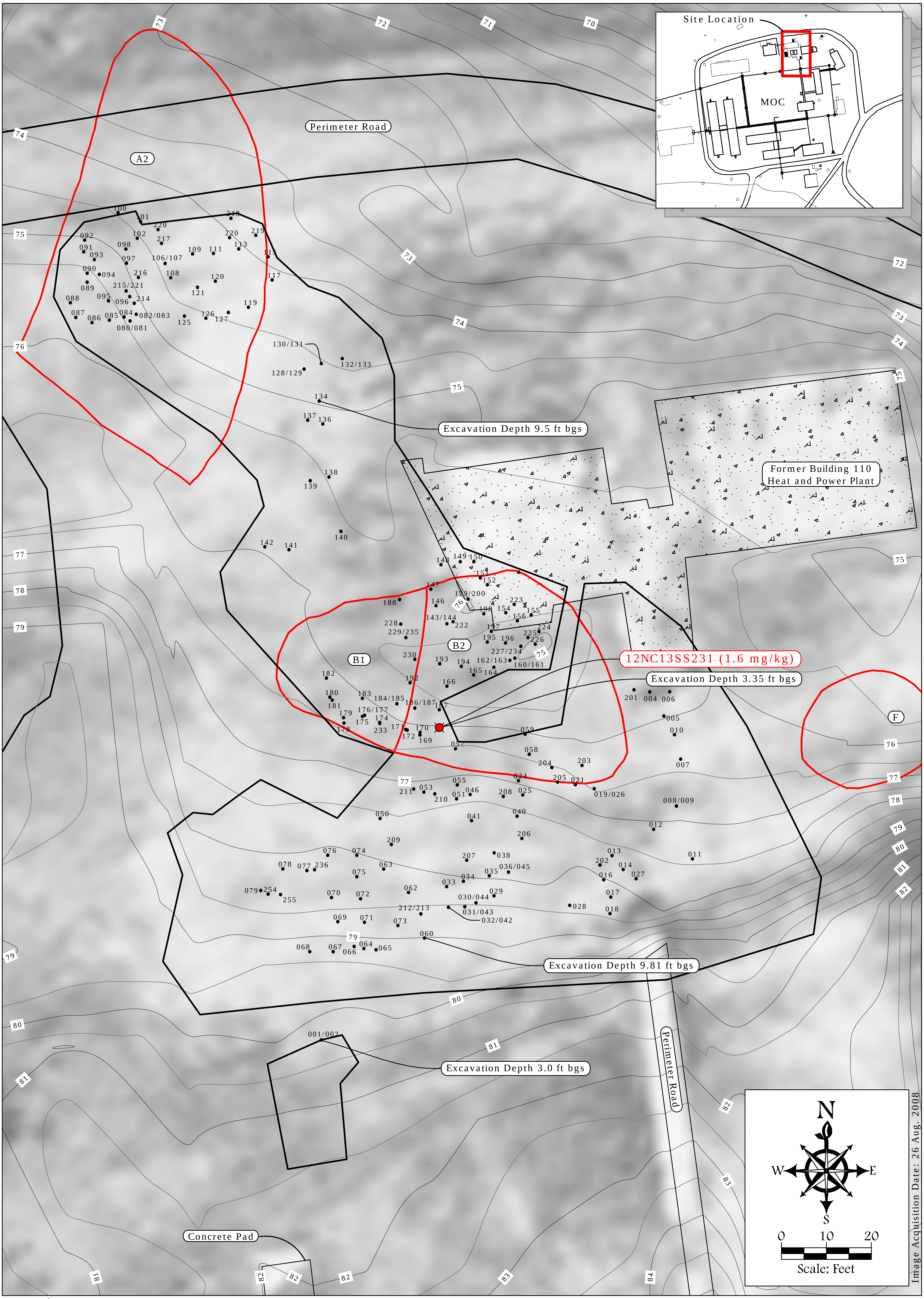

Legend
- 2012 Soil Sample Location below Cleanup Level
- 2012 Soil Sample PCB Concentrations Exceed 1 mg/kg
- UVOST Delineated POL Plume
- Excavation Area (2012)
- Concrete Pad (Removed 2011)
- Secondary Topographic Contours
- 73 Primary Topographic Contours and Ground Elevation
- B1 Plume Identification

Notes:

mg/kg	milligrams per kilogram
bgs	below ground surface
ft	ft
HTRW	hazardous, toxic, and radioactive waste
ID	identification
MOC	hazardous, toxic, and radioactive waste
PCB	polychorinated biphenyls
POL	petroleum, oil, and lubricants
UVOST	ultraviolet optical screening tool

-Soil sample IDs are preceded by 12NC13SS.
-Topo units are in feet, elevations are based on the North American Vertical Datum of 1988.
-PCB confirmation soil samples are depicted on the figure.

FIGURE 16
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
SITE 13 EXCAVATION EXTENTS AND PCB CONFIRMATION SOIL SAMPLE LOCATIONS

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
Project No. 34120057

DATE 12/21/12
DWN. NAP
SCALE SHOWN
APPRVD. GJ

Legend

- ● 2012 Soil Sample Location below Cleanup Level
- ● 2012 Soil Sample PCB Concentrations Exceed 1 mg/kg
- 170 Soil Sample Location

Notes:

mg/kg	Milligrams per Kilogram
bgs	Below Ground Surface
ft	Feet
HTRW	Hazardous, Toxic, and Radioactive Waste
ID	Identification
MOC	Main Operations Complex
PCB	Polychlorinated Biphenyls

Soil sample IDs are preceded by 12NC31SS.

FIGURE 17
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
SITE 31 EXCAVATION EXTENTS AND SAMPLE LOCATIONS

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34120057

DATE 03/15/12
DWN. NAP
SCALE 1" = 20'
APPRVD. MW

Drawing: O:\JOBS\34120057 2012 NE CAPE\ACAD-ENVIRO\FIGURES-NECAPE-NOV2012\FIGURE-17.DWG - Layout: FIGURE-17
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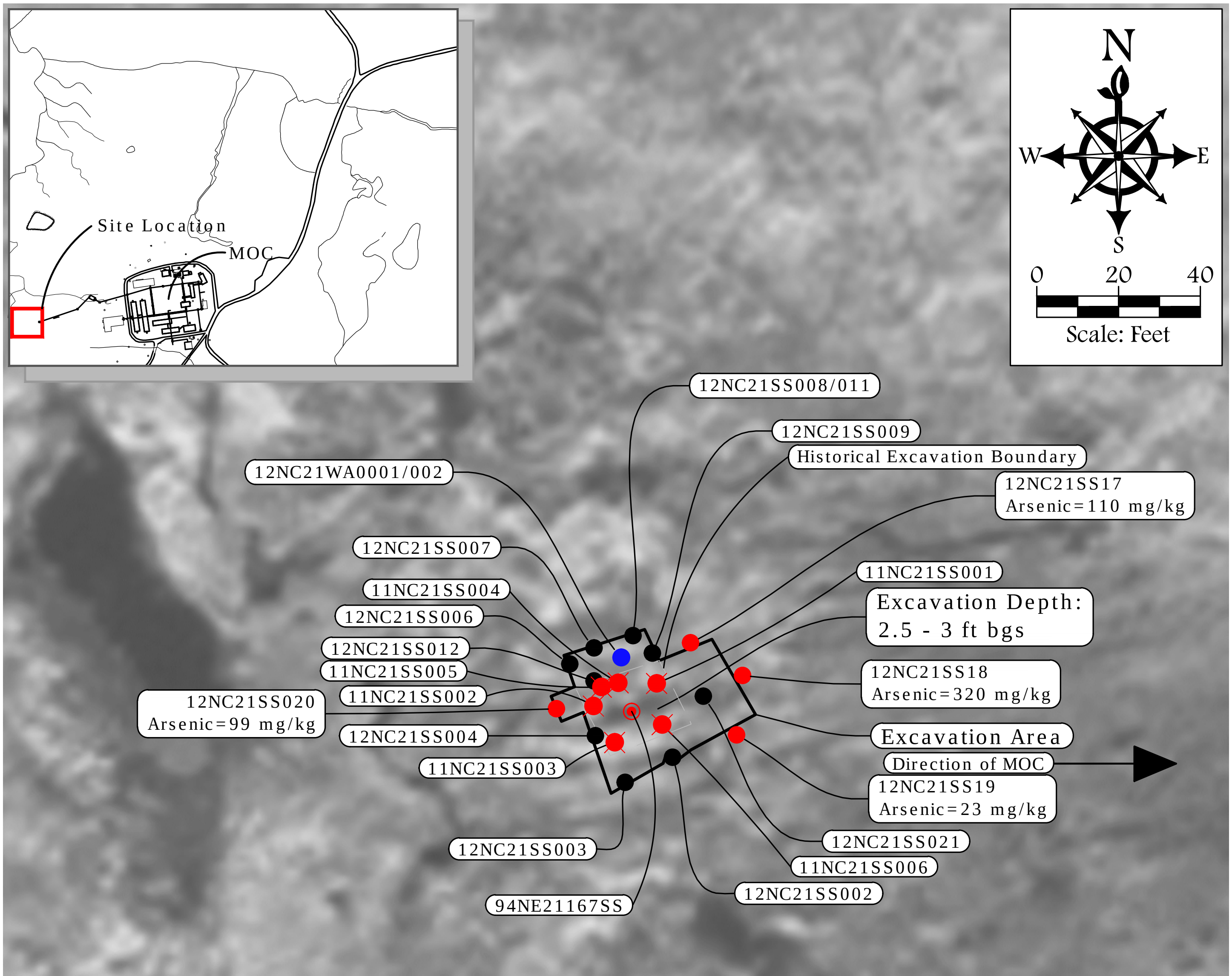


Legend

- Confirmation Soil Sample Location Where Arsenic Concentrations did not Exceed Site-Specific Cleanup Level
- Confirmation Soil Sample Location Where Arsenic Concentrations Exceed Site-Specific Cleanup Level
- 2012 Surface Water Sample Location
- 2011 Confirmation Soil Sample Location where Arsenic Concentrations Exceeded Site-Specific Cleanup Level
- Historical Soil Sample Location
- Excavation Boundary (2012)

Sample ID	Lab ID	Loc ID	Date Collected	Result (mg/kg)
11NC21SS001	580-28199-5	21-001	8/21/2011	56 D
11NC21SS002	580-28199-6	21-002	8/21/2011	32 D
11NC21SS003	580-28199-7	21-003	8/21/2011	22 D
11NC21SS004	580-28199-8	21-004	8/21/2011	100 D
11NC21SS005	580-28199-9	21-005	8/21/2011	180 D
11NC21SS006	580-28199-10	21-006	8/21/2011	74 D
11NC21SS007	580-28199-11	21-005	8/21/2011	140 D
11NC21SS008	580-28199-12	21-008 BW	8/21/2011	80 D

Notes:

mg/kg Milligrams per Kilogram
bgs Below Ground Surface
ft Feet
ID Identification
HTRW Hazardous, Toxic, and Radioactive Waste
MOC Main Operations Complex
-Sample IDs are preceded by 12NC21SS
-Excavation depth 2' below water
-Arsenic cleanup level is 11 mg/kg.

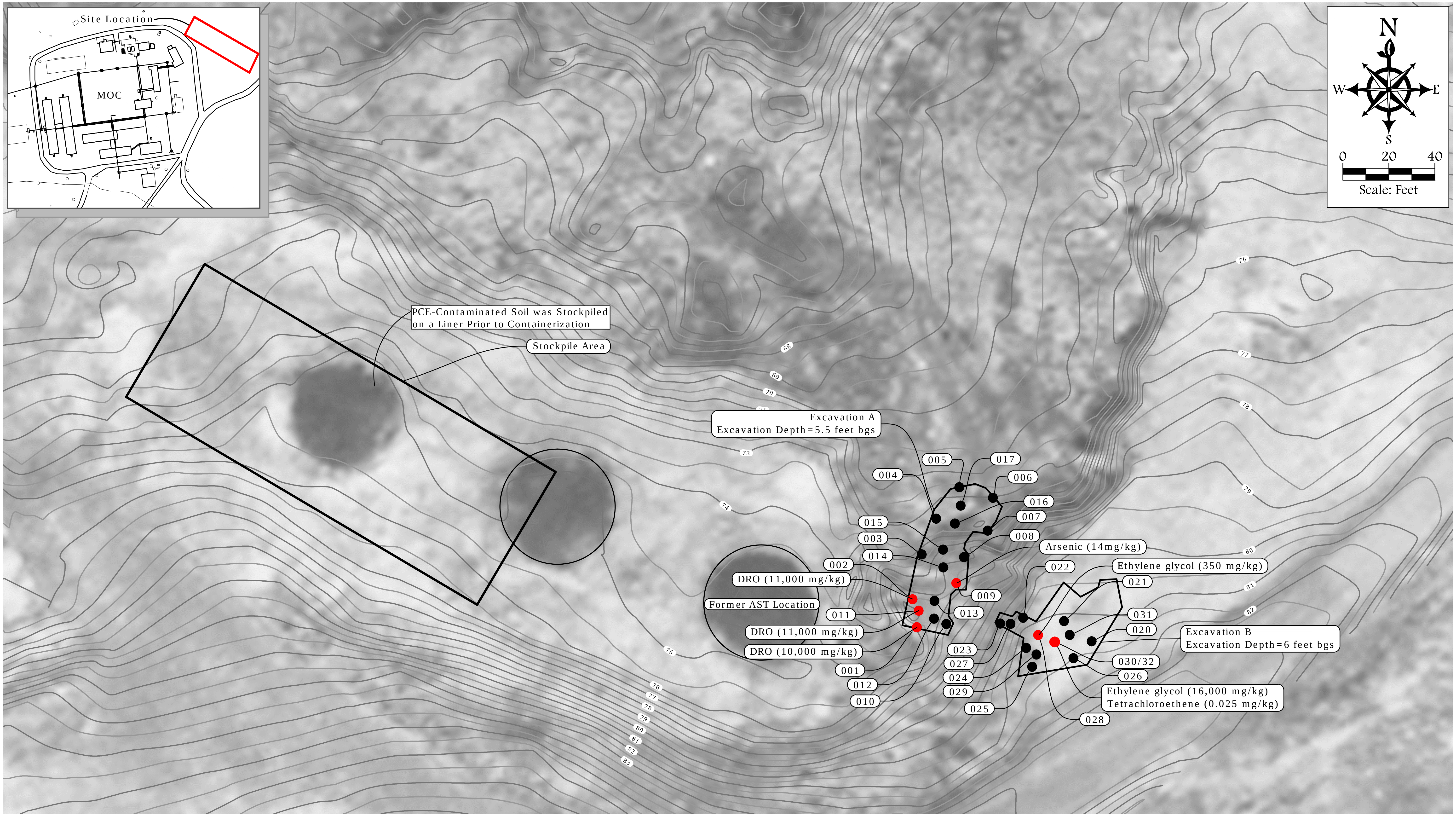
Drawing: O:\JOBS\34120057 2012 NE CAPE\ACAD-ENVIRO\FIGURES-NECAPE-NOV2012\FIGURE-18.DWG - Layout: FIGURE-18
User: MGARCIA May 22, 2013 - 2:25pm Xrefs: - Images: EASTCAPE-STLAWRENCE_ORTHO_MOSAIC_AK83-9F.TIF

FIGURE 18
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
SITE 21 EXCAVATION AREA AND SAMPLE LOCATIONS

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34120057

DATE 04/29/13
DWN. NAP
SCALE 1"= 40'
APPRVD. MW



Legend

- Confirmation Soil Sample Locations where Contaminant Concentrations Do Not Exceed Cleanup Levels
- Soil Sample Location where Contaminant Concentrations Exceeded Cleanup Levels

Notes:

mg/kg	Milligrams Per Kilogram
AST	Aboveground Storage Tank
bgs	Below Ground Surface
DRO	Diesel Range Organics
ID	Identification
MOC	Main Operations Complex
PCE	Tetrachloroethene

Sample ID's are preceded by 12NC10SS

FIGURE 19
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
SITE 10 DRUM REMOVAL AREA AND SAMPLE LOCATIONS

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM:
NAD 83
PROJECTION:
STATE PLANE AK 9
Project No.
34110008

DATE	12/20/12
DWN.	NAP
SCALE	1:240
APPRVD.	GJ

Drawing: O:\JOBS\34120057 2012 NE CAPE\ACAD-ENVIRO FIGURES-NECAPE-NOV2012\FIGURE-19.DWG - Layout: FIGURE-19
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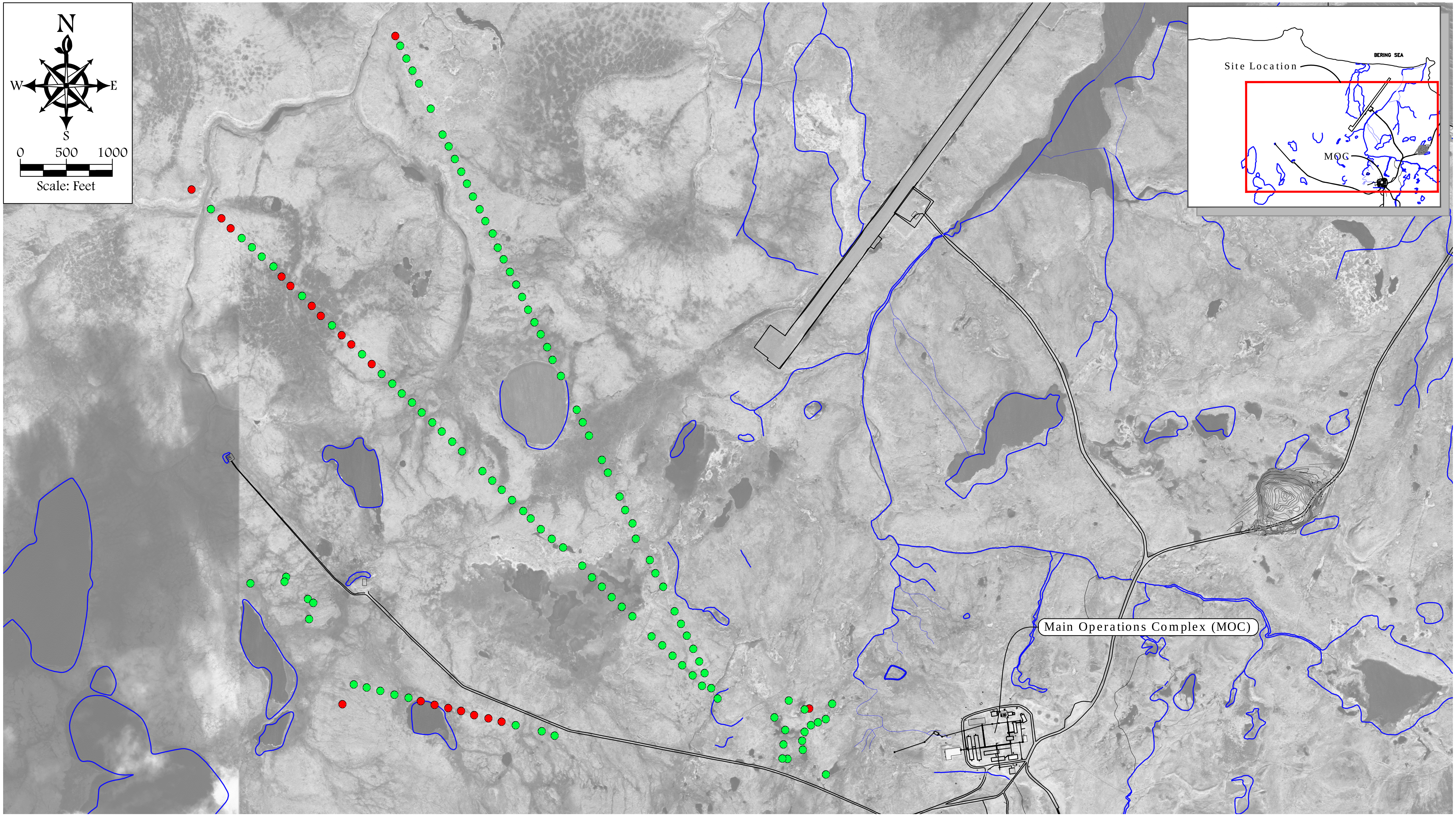

Legend

- Power Pole Remaining on Site
- Removed Power Pole
- Surface Water

Note:

Remaining power poles will be removed in 2013.

FIGURE 20
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
POLE REMOVAL LOCATION MAP

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM:	NAD 83
PROJECTION:	STATE PLANE AK 9
PROJECT NO.	34120057
DATE	12/21/12
DWN.	NAP
SCALE	SHOWN
APPRVD.	GJ

Drawing: O:\JOBS\34120057 2012 NE CAPE\ACAD-ENVIRO\FIGURES-NECAPE-NOV2012\FIGURE-20.DWG - Layout: FIGURE-20
User: MGARCIA May 17, 2013 - 9:22am Xrefs: XREF-FIGURE-8.DWG - Images: EASTCAPE-STLAWRENCE_ORTHO_MOSAIC_AK83-9F.TIF

Drawing: O:\JOBS\34120057 2012 NE CAPE\ACAD-ENVIRO\FIGURES-NECAPE-NOV2012\FIGURE-21.DWG - Layout: FIGURE-21
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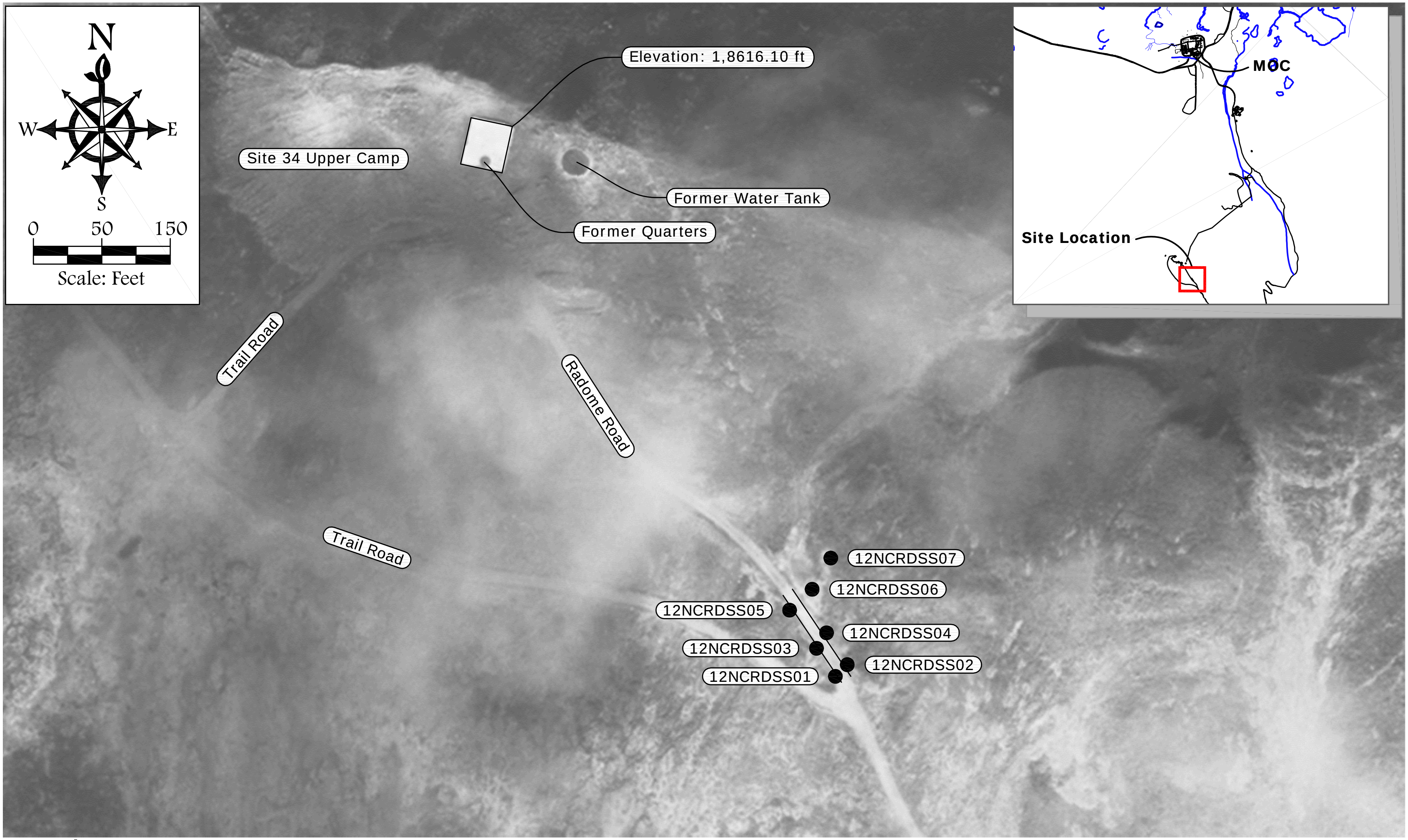


Legend

● Confirmation Soil Sample Location where Contaminant Concentrations Do Not Exceed Cleanup Levels

Notes:

ft feet

MOC main operations complex

-None of the confirmation soil sample results contained concentrations of contaminants which exceeded cleanup levels.

-Confirmation samples were analyzed for gasoline range organics, benzene, toluene, ethylbenzene, total xylenes, diesel range organics, residual range organics, petroleum aromatic hydrocarbons, polychlorinated biphenyls and Resource Conservation and Recovery Act (RCRA) 8 metals plus nickel, vanadium and zinc.

FIGURE 21
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
RADOME ROAD SAMPLE LOCATIONS

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM: NAD 83
PROJECTION: STATE PLANE AK 9
PROJECT NO. 34120057

DATE 12/26/12
DWN. NAP
SCALE 1"=150'
APPRVD. GJ

Legend

Monitoring Well Location Abandoned in 2012

FIGURE 22
Northeast Cape, St. Lawrence Island, Alaska
Northeast Cape HTRW Remedial Actions
ABANDONED MONITORING WELLS LOCATION MAP

Bristol
ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907) 563-0013 Fax (907) 563-6713

DATUM:	NAD 83
PROJECTION:	STATE PLANE AK 9
PROJECT NO.	34120057
DATE	12/21/12
DWN.	NAP
SCALE	1" = 150'
APPRVD.	GJ

Drawing: O:\JOBS\34120057 2012 NE CAPE\ACAD-ENVIRO\FIGURES-NECAPE-NOV2012\FIGURE-22.DWG - Layout: FIGURE-22
User: MGARCIA May 17, 2013 - 10:21am Xrefs: TOPO-XREF.DWG - Images: EASTCAPE-STLAWRENCE_ORTHO_MOSAIC_AK83-9F.TIF

APPENDIX A

Permits

Bristol

ENVIRONMENTAL
REMEDIATION SERVICES, LLC

111 W. 16th Avenue, Third Floor
Anchorage, AK 99501
phone (907) 563-0013
fax (907) 563-6713
www.bristol-companies.com

FAX TRANSMITTAL

Total number of sheets (including cover): 8

Date: 21 June 2012

Time: 3:45 pm

To: Morris Toolie Jr

From: Molly Welker

Fax No.: 907-984-6185

Regarding: NE Cape Quarry Agreement

Phone No.: 907–984-6414

Project No. 34120057

Project Name: 2012 NE Cape HTRW Project

MATERIAL SUPPLY AND
QUARRY OPERATING AGREEMENT

Kukulget Inc., whose address is P.O. Box 160 Savoonga, Alaska 99769, and Sivuqaq Inc., whose address is P.O. Box 101 Gambell, Alaska 99742, Alaska Native Corporations created pursuant to the Alaska Native Claims Settlement Act, herein referred to as "Owners," and Bristol Environmental Remediation Services LLC, whose address is 111 W. 16th Avenue, Third Floor, Anchorage, Alaska 99501, herein referred to as "Contractor" agree to the extraction of material and the operation of the quarry and such other rights as are designated in this contract, subject to the following provisions:

1. DESCRIPTION - LOCATION, MATERIAL, AND PRICE:

1.1. Quarry Description. The material source area covered by this agreement is the borrow site south of the Main Operations Complex at Northeast Cape, St. Lawrence Island, Alaska shown on the attached figure.

1.2. Royalty. The royalty price for all types of material removed from the Quarry during the Term of this Agreement is:

Material Type	Unit Price
All Material	$10.00 (per cubic yard)

Quantities to be determined by truck count.

2. EXCLUSIVE RIGHTS AND DUTIES:

Owner hereby grants to Contractor and Contractor accepts from Owner, the exclusive right to manage and operate the Quarry for the Term of this Agreement (defined in ¶3). Management and operation of the Quarry shall include, without limitation, the following:

A. The exclusive right to manage the extraction and removal of Materials from the Quarry;

B. The exclusive right, to secure access to the Quarry to avoid an attractive nuisance and deter unauthorized extraction of Materials therefrom, up to and including, fencing the perimeter and/or access to the Quarry;

C. The duty to perform all reclamation identified in the Letter of Intent (section 5).

3. TERM:

The term of this Agreement ("term") shall commence on June 15, 2012 and expire on December 31, 2012.

4. PAYMENTS AND DEPOSITS:

Within 30 days after the cessation of work for winter, or completion or termination, Contractor in any year in which the Contractor extracts or transports material from the Quarry, Contractor shall pay payments as described in Paragraph 1.2.

5. LETTER OF INTENT/ANNUAL RECLAMATION STATEMENT:

By June 15, 2012 and prior to commencing any operations in any Quarry subject to this Agreement, the Contractor shall file a "Letter of Intent" (Letter) with the State of Alaska Department of Natural Resources, Division of Land (Division of Land) as required by State law. The contractor shall also file an "Annual Reclamation Statement" (Statement) with the Division of Land as required by State law. The Statement shall be filed before December 31 of any calendar year during which Quarry operations were carried out under this Agreement. The Contractor shall provide copies of the Letter and the Statement(s) to the Owners.

6. RECLAMATION PLAN:

Contractor shall comply with the requirements of the Letter (section 5) regarding reclamation. The Contractor shall document reclamation activities per the Statement (section 5).

7. CONFLICT WITH CONTRACT.

In the event that any provision of this Material Supply Contract and Quarry Operating Agreement shall conflict with Contractor's Contract W911KB-12-C-0003 with the Corp of Engineers for the Northeast Cape HTRW Remedial Actions, St. Lawrence Island, Alaska, contract W911KB-12-C-0003 shall control and this Agreement shall be considered amended to bring it into conformity with W911KB-12-C-0003.

8. INSPECTION OF QUARRY:

Prior to commencing any operations at the Quarry, authorized representatives of Contractor and Owners may inspect the Quarry to determine whether and to what extent prior mining operations have resulted in visual environmental contamination that requires remediation. Contractor shall have no obligation to perform remediation of contamination discovered at this inspection; provided, however, that from the date of such inspection Contractor shall be liable for all hazardous materials deposited at the Quarry as a result of Contractor's operations during the term hereof, or any extension . Failure by the parties to do so shall not affect the enforceability of this Agreement, provided Contractor prepares and transmits its environmental findings to Owners, at its address set forth in ¶17, below in writing, before beginning Operations.

9. BOOKS AND RECORDS OF ACCOUNT:

Contractor shall maintain accurate and complete records, log books and books of account documenting: (a) the volume of gravel extracted from the Quarry seasonally and submitted to Owners; (b) the amounts due and payable by Contractor and; the amounts actually paid by Contractor to Owners pursuant to this Agreement.

Materials from the Quarry shall be measured by truckloads. Each truck load will contain between 18.75 and 25 cubic yards depending on the truck type (e.g., 30 or 40 ton rock truck). Truck count and truck type shall be performed and recorded by the operator loading haul units at the quarry site. The operator will provide the truck count to the Contractor's Site Superintendent or his designee on a daily basis. The Site Superintendent will provide a summary of the truck count to Owner within five business days of receiving a request from the Owner.

10. OPERATING REQUIREMENTS:

10.1. Standards of Operations. Contractor shall excavate and remove Material from the Quarry in compliance with all laws, regulations, ordinances, orders and its contract with the Corps W911KB-06-D-0007. Contractor shall conduct and maintain its Operations in a commercially reasonable, workman like and clean manner, and shall take all necessary precautions to prevent or suppress fires and to prevent erosion, contamination or destruction of the land and adjacent wetlands and waters. The Contractor agrees to carry out its quarry operations only in areas previously disturbed by others at the Quarry site.

10.2. Supervision. Contractor shall maintain adequate supervision at all times when Operations are in progress to ensure compliance with the provisions of this contract and all applicable federal, state, and local laws and regulations.

10.3. Agents. The provisions of this Contract apply with equal force upon any agent, employee, or contractor designated by Contractor to perform any of the Operations under this contract. Contractor is liable for the noncompliance caused by any such agent, employee, or contractor.

10.4. Grave Sites or Archaeological Sites. No grave or archaeological site shall be in any way disturbed, removed, or damaged. Upon encountering any grave or archaeological site, Contractor shall immediately cease work in the area of the site and shall immediately notify Owners.

11. COMPLIANCE WITH APPLICABLE LAWS:

Contractor shall comply with all local, State and federal laws, statutes, ordinances, rules, regulations, decrees, injunctions, orders and codes applicable to the operation or management of the Quarry, including without limitation, mining reclamation, mining safety and health (i.e., "MSHA") and occupational safety and health (i.e., "OSHA"). These laws and regulations are, by this reference, made a part of this Contract.

12. REQUIRED PERMITS:

Contractor shall obtain and maintain, at its expense and throughout the Term, all licenses, permits, approvals, consents and certificates from local, state and federal authorities which may be necessary or appropriate for its management and operation of the Quarry.

13. ASSIGNMENT:

This contract may be assigned or transferred pursuant to 30 days advance notice to Owners.

14. PERMITS:

Any permits necessary for Operations under this Contract must be obtained by Contractor before commencing those Operations.

15. WARRANTIES:

This sale is made without any warranties, express or implied, as to quantity, quality, merchantability, profitability, or fitness for a particular use of the Material to be extracted from the Quarry under contract. Contractor specifically waives any claims that may arise resulting from the use of the Material.

16. NOTICES:

All notices and other documents required or authorized under this Contract must be in writing and are deemed delivered upon receipt provided that the same are sent certified mail, postage paid, to the party to which the same is mailed the following address or such other address as such party may by written notice provide:

To the Owner: Kukulget Inc.
P. O. Box 160
Savoonga, AK 99769

Sivuqaq Inc.
P.O. Box 101
Gambell, AK 99742

with a copy to Jerald Reichlin, Attorney at Law.

To the Contractor:
Bristol Environmental Remediation Services, LLC
Attn: Molly Welker
111 W. 16th. Avenue, Third Floor
Anchorage, Alaska 99501

17. INTEGRATION AND MODIFICATION:

This Contract, including all laws and documents that by reference are incorporated in it or made a part of it, contains the entire agreement between the parties. This Contract may not be modified or amended except by a document signed by both parties to this contract. Any amendment or modification which is not in writing, signed by both parties, is null and void and of no legal effect.

18. SEVERABILITY OF CLAUSES OF CONTRACT:

If any provision of this Contract is adjudged to be invalid, that judgment does not affect the validity of any other provision of this Contract, nor does it constitute any cause or action in favor of either party as against the other.

19. CONSTRUCTION:

Words in the singular number include the plural, and words in the plural number include the singular.

20. HEADINGS:

The headings of the numbered paragraphs in this Contract shall not be considered in construing any provisions of this Contract.

21. "EXTRACTED," "EXTRACTION":

In this Contract, use of the terms "Extracted" and "Extraction" encompasses the severance or removal, as well as extraction, by Contractor of any Material covered by this Contract.

22. WAIVERS:

No agent, representative, or employee of Owners has authority to waive any provision of this Contract unless expressly authorized to do so in writing by the Presidents of Kukulget Inc. and Sivuqaq Inc.

23. GOVERNING LAW:

This Contract shall be governed by and construed in accordance with Alaska law. Venue and jurisdiction shall lie exclusively in the Superior Court for the State of Alaska, Third Judicial District, at Anchorage, Alaska.

24. EFFECTIVE DATE:

This Contract shall be effective the 15th day of June 2012.

25. BY SIGNING THIS CONTRACT, Owner, and Contractor, agrees to be bound by its provisions as set out above.

CONTRACTOR:

By: ______________________

Its: Project Manager

OWNER:

Kukulget Inc.

By: ______________________

Its: ______________________

Sivuqaq Inc.

By: ______________________

Its: President.

REORDER FORM NO. 128 LBB

Remittance Advice

Check: 404843 Paid by: Bristol Envt'l Remediation Svc
Date: 04/27/12 Paid to: Alaska Dept of Natural Resourc
Amount: 350.00

Our Account #:
Vendor Code: 1102

Inv. Date	Invoice No.	Job Number	Inv. Amount	Discount	Amount Paid	Retention	Remarks
04/20/12	CR042012SL	34120057	350.00	0.00	350.00	0.00	water permitting fee
	Check Totals		350.00	0.00	350.00	0.00	

COPY

COPY

COPY

THIS MULTI-TONE AREA OF THE DOCUMENT CHANGES COLOR GRADUALLY AND EVENLY FROM DARK TO LIGHT WITH THE DARKER AREAS AT THE TOP AND BOTTOM.

Bristol Envt'l Remediation Svc
111 W. 16th Ave
Third Floor
Anchorage, AK 99501

Wells Fargo Bank
PO Box 63020

11-24
1210

Date	Check No.
04/27/12	404843

PAY **THREE HUNDRED FIFTY AND XX / 100

$ ** 350.00

Two Signatures Required if over $10,000

TO THE ORDER OF
Alaska Dept of Natural Resourc
550 W 7th Ave
Ste 2010
Anchorage, AK 99501

⑈404843⑈ ⑆121000248⑆4121420236⑈

DIVISION OF MINING, LAND AND WATER

WATER RESOURCES SECTION

www.dnr.state.ak.us/mlw/water/index.htm

Alaska Department of NATURAL RESOURCES

Anchorage Office 550 West 7th Avenue, Suite 1020 Anchorage, AK 99501-3562 (907) 269-8600 Fax: (907) 269-8947	Juneau Office PO Box 111020 400 Willoughby Avenue Juneau, AK 99811-1020 (907) 465-3400 Fax: (907) 586-2954	Fairbanks Office 3700 Airport Way Fairbanks, AK 99709-4699 (907) 451-2790 Fax: (907) 451-2703	***For ADNR Use Only*** ***Date/Time Stamp***
For ADNR Use Only ***TWUP #***	***For ADNR Use Only*** ***CID #***	***For ADNR Use Only*** ***Receipt Type WR***	

APPLICATION FOR TEMPORARY USE OF WATER

INSTRUCTIONS

1. Complete one application for each project including up to five water sources (incomplete applications will not be accepted).
2. Attach legible map that includes meridian, township, range, and section lines such as a USGS topographical quadrangle or subdivision plat. Indicate water withdrawal point(s), location(s) of water use, and point(s) of return flow or discharge (if applicable).
3. Attach sketch, photos, plans of water system, or project description (if applicable).
4. Attach driller's well log for drilled wells (if available).
5. Attach copy of ADNR fish habitat permit (if applicable).
6. Attach completed Coastal Project Questionnaire (if applicable - see page 4).
7. Submit non-refundable fee (see page 4).

APPLICANT INFORMATION

Project Name: NE Cape Landfill Site

Organization Name (if applicable): Bristol Environmental Remediation Services

Agent or Consultant Name (if applicable): Susan Luetters, Bristol Engineering Srvs. Corp.

Individual Name (if applicable): Molly Welker

Individual Co-applicant Name (if applicable):

Mailing Address: 111 West 16th Ave. Third Floor

City: Anchorage

State: AK

Zip Code: 99501

Daytime Phone Number: 907-563-0013

Alternate Phone Number (optional):

Fax Number (if available): 907-563-6713

E-Mail Address (optional): mwelker@bristol-companies.com

PROPERTY DESCRIPTIONS

Location of Water Use

Project Area (e.g. milepost range, place name, survey number)	Meridian	Township	Range	Section	Quarter Sections	
Northeast Cape, St. Lawrence Island	Kateel River	25S	54W		¼	¼
					¼	¼

Location of Water Source

Geographic Name of Water Body or Well Depth	Meridian	Township	Range	Section	Quarter Sections	
Suqitughneg River	Kateel River	25S	54W		¼	¼
					¼	¼
					¼	¼
					¼	¼
					¼	¼

Location of Water Return Flow or Discharge (if applicable)

Geographic Name of Water Body or Well Depth	Meridian	Township	Range	Section	Quarter Sections	
Not Applicable					¼	¼
					¼	¼

METHOD OF TAKING WATER

Pump Pump Intake 4 Inches Hours Working 1.5 Hours/Day
Pump Output 35 GPM Length of Pipe 20 Feet (from pump to point of use)

Gravity Pipe Diameter ______ Inches Length of Pipe ______ Feet (take point to point of use)
Head ______ Feet

Ditch L ______ H ______ W ______ Feet Diversion Rate ______ ☐ GPM or ☐ CFS

Reservoir L ______ H ______ W ______ Feet Water Storage ______ Acre-feet

Dam L ______ H ______ W ______ Feet Water Storage ______ Acre-feet

AMOUNT OF WATER

Purpose of Water Use	Quantity of Water			Season of Use	
	Maximum Withdrawal Rate	Total Daily Amount	Total Seasonal Amount	Date Work Will Start	Date Work Will be Completed
Dust suppression/Camp water use	3000 GPD	3000 GPD	180,000 gal	June 15, 2012	Sept. 15, 2015
	Project Totals	3000 GPD	180,000 gal	Total years needed:	1/6 (3 mo. over 4 yrs)

PROJECT DESCRIPTION

What alternative water sources are available to your project should a portion of your requested diversion be excluded because of water shortage or public interest concerns?

There is no other viable alternative.

Are there any surface water bodies or water wells at or near your site(s) that could be affected by the proposed activity? If yes, list any ground water monitoring programs going on at or near the sites, any water shortages or water quality problems in the area, and any information about the water table, if known.

No water wells or surface water bodies are anticipated to be impacted by the proposed activity.

Briefly describe the type and size of equipment used to withdraw and transport water, including the amount of water the equipment uses or holds.

A 2000 gallon tank has been placed into the bed if an old dump truck which will serve as the tanker truck. There is a 4-inch pump associated with this that will be used to pump water into and out of the tank. Water from the tanker truck will be used for dust suppression and camp water use.

Briefly describe what changes at the project site and surrounding area will occur or are likely to occur because of construction or operation of your project (e.g. public access, streambed alteration, trenching, grading, excavation).

None are anticipated or expected.

Briefly describe land use around the water take, use, and return flow points (e.g. national park, recreational site, residential).

undeveloped

Will project be worked in phases? State reason for completion date.

No, all work started will be completed this season.

Briefly describe your entire project:

See attached project description.

(Attach extra page if needed.)

11 AAC 93.220 sets out the required information on the application and authorizes the department to consider any other information needed to process an application for a temporary use of water. This information is made a part of the state public water records and becomes public information under AS 40.25.110 and 40.25.120. Public information is open to inspection by you or any member of the public. A person who is the subject of the information may challenge its accuracy or completeness under AS 44.99.310, by giving a written description of the challenged information, the changes needed to correct it, and a name and address where the person can be reached. False statements made in an application for a benefit are punishable under AS 11.56.210.

SIGNATURE

The information presented in this application is true and correct to the best of my knowledge. I understand that no water right or priority is established per 11 AAC 93.210-220, that the water used remains subject to appropriation by others, and that a temporary water use authorization may be revoked if necessary to protect the water rights of other persons or the public interest.

Susan T Luetters
Signature

4/27/2012
Date

Susan T. Luetters
Name (please print)

Sr. Environmental Scientist
Title (if applicable)

REFERENCES

Measurement Units

GPD = gallons per day
CFS = cubic feet per second
GPM = gallons per minute
AF = acre-feet
AFY = acre-feet per year (325,851 gallons/year)
AFD = acre-feet per day (325,851 gallons/day)
MGD = million gallons per day

Conversion Table

5,000 GPD=	30,000 GPD=	100,000 GPD=	500,000 GPD=	1,000,000 GPD=
0.01 CFS	0.05 CFS	0.2 CFS	0.8 CFS	1.5 CFS
3.47 GPM	20.83 GPM	69.4 GPM	347. 2 GPM	694.4 GPM
5.60 AFY	33.60 AFY	112.0 AFY	560.1 AFY	1120.1 AFY
0.2 AFD	0.09 AFD	0.3 AFD	1.5 AFD	3.1 AFD
0.01 MGD	0.03 MGD	0.1 MGD	0.5 MGD	1.0 MGD

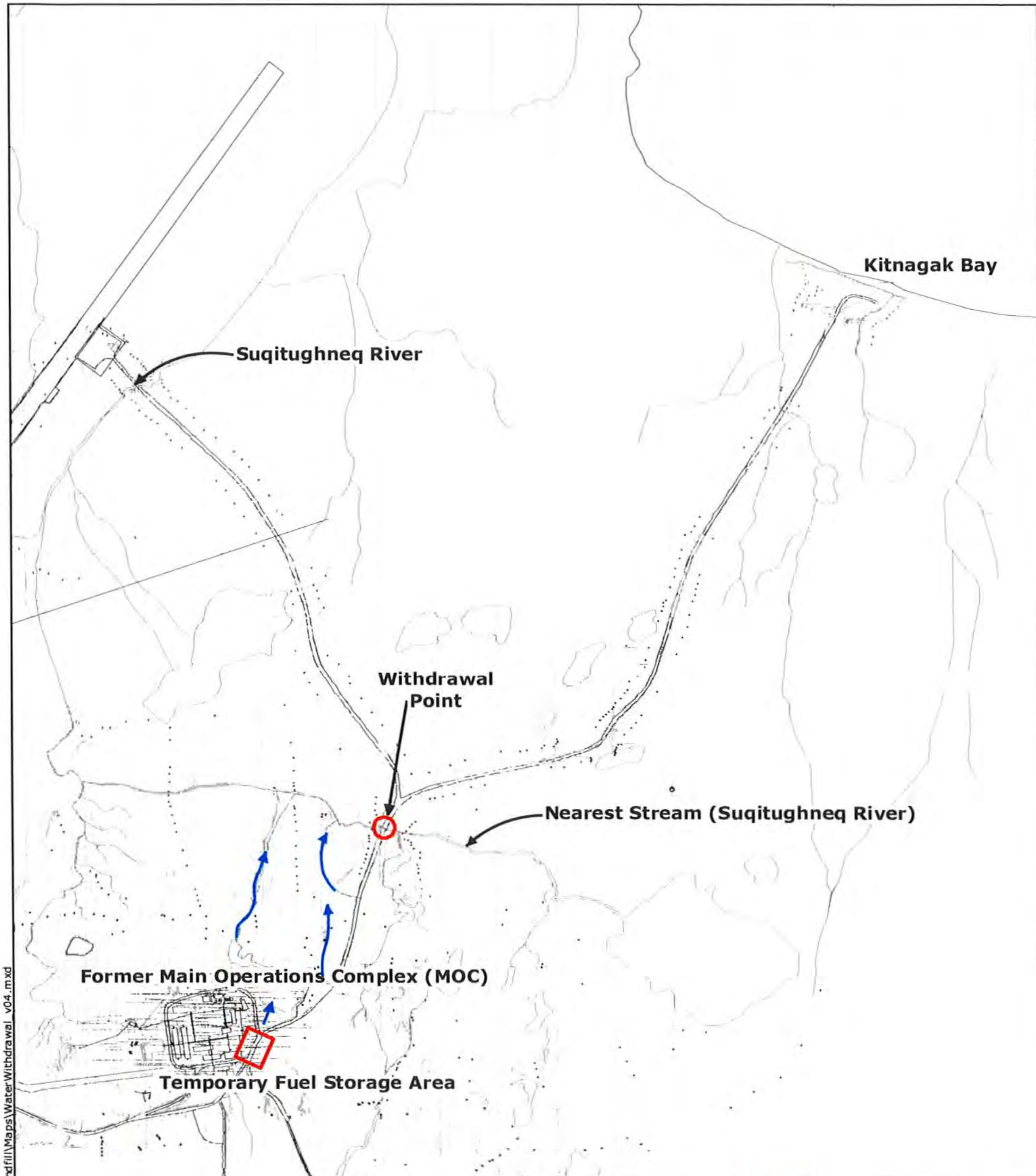
Fee required by regulation 11 AAC 05.010(a)(8)

- **$350** for all uses of water from up to five water sources

Make checks payable to "Department of Natural Resources".

Coastal Zone

If this appropriation is within the Coastal Zone, and you are planning to use more than 1,000 GPD from a surface water source or 5,000 GPD from a subsurface water source, you need to submit a completed Coastal Project Questionnaire with this application. For more information on the Coastal Zone, contact the Office of Project Management and Permitting; Anchorage 269-7470, Juneau 465-3562, www.dnr.state.ak.us/acmp/.



File: G:\Jobs\49028_NE_Cape_Landfill\Maps\WaterWithdrawal_v04.mxd

Note: Not to Scale. Blue lines indicate surface water flow.

Figure 6

Northeast Cape, St. Lawrence Island, Alaska

Withdrawal Point on the Suqitughneq River

Bristol ENVIRONMENTAL REMEDIATION SERVICES, LLC
Phone (907)563-0013 Fax (907)563-6713
Project No. 49028

DATUM: N/A	DATE	06-04-09	SHEET	
PROJECTION: N/A	DWN.	BI-ME	1	
	SCALE	NTS	of	
	APPR.	BEESC-SL	1	

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

111 W. 16th Avenue, Third Floor
Anchorage, Alaska 99501-5109
907-563-0013 Phone
907-563-6713 Fax

Proposed Plan for 2012 HTRW Remedial Actions
Northeast Cape, St. Lawrence Island, Alaska

INTRODUCTION

The Northeast Cape (NE Cape) site is located on St. Lawrence Island, in the Bering Sea, near the territorial waters of Russia, approximately 135 air-miles southwest of Nome. The Village of Savoonga is the closest community; located 60 miles northwest of the site. The NE Cape site, at 63°19' North, 168°58' West, is 9 miles west of the northeastern cape of St. Lawrence Island. The NE Cape site originally encompassed 4,800 acres (7.5 square miles). The site is bounded by Kitnagak Bay to the northeast, Kangighsak Point to the northwest, and the Kinipaghulghat Mountains to the south (Figure 1). The site has been subject to previous phased remedial investigations and several removal actions; all of the former buildings and structures have been removed and most of the debris has been addressed. Due to the remoteness, sea ice conditions, and fall storms in the Bering Sea near the site on St. Lawrence Island, the field season is generally limited to less than 90 days.

Environmental investigations and cleanup activities at NE Cape began in the mid 1980s. Multiple remedial investigations and removal actions occurred from 1994 to 2011 and resulted in the identification of 34 separate sites of concern within the larger NE Cape complex.

This proposed plan pertains to removal of petroleum (POL) - contaminated soil at the Main Operations Complex, polychlorinated biphenyls (PCBs) - contaminated soil at Sites 13 and 31, and arsenic-contaminated soil from Site 21. The objectives of this 2012 project are to implement selected remedies for the NE Cape sites, as detailed in the Final 2009 Decision Document for the NE Cape HTRW Project.

Main Operations Complex (MOC)

The MOC at the NE Cape installation included the majority of the site infrastructure including buildings, heat and power supply, fuel storage tanks, maintenance, and housing quarters. Individual sites were grouped together to evaluate an overall response action for the known contamination. These sites are located on the northeast portion of the main complex gravel pad and include Sites 10, 11, 13, 15, 19, and 27. See Figure 2 for site locations.

All of the MOC structures have been demolished including backfill of utilidors. Tanks and piping have been removed. Contaminated concrete, PCB-contaminated soils, and fuel stained soils were also excavated and transported off-site during removal actions from 2000 to 2011. Inert concrete foundations and pads remain at the MOC.

The primary contaminant of concern in soil at the MOC is DRO. Surface and subsurface soils are contaminated with petroleum to depths exceeding 15 feet below ground surface. The fuel contamination is most heavily concentrated within a layer of peat and silt, and may have created a smear zone along the shallow groundwater interface.

Shallow groundwater is also contaminated throughout the northeast portion of the MOC, over an area of approximately 175,000 square feet. The primary contaminants of concern in groundwater are DRO, GRO, RRO, benzene, and naphthalene. The depth to groundwater across the northeast portion of the MOC varies significantly. In some areas, a perched aquifer is present, with shallow groundwater encountered between 4 and 7 feet below ground surface. A potentially confined aquifer is also present, with water encountered from 10 to 25 feet below ground surface.

Numerous remedial investigations have been conducted since 1994. The sampling results indicate soils and groundwater contain petroleum compounds at elevated levels. An in-situ chemical oxidation (ISCO) pilot test was completed at the MOC in 2009. Results indicated ISCO was not an effective means of remediating the POL-contaminated, peat rich soil present at the MOC. As a result, excavation and removal is the preferred alternative. Additional data were collected at the MOC during the 2010 field season. Specifically, ultra-violet optical screening tool (UVOST) technology was used to evaluate the extent and magnitude of petroleum-contaminated soil. In 2011 Bristol excavated over 8,000 tons of POL-contaminated soil from the MOC. In 2012 Bristol will continue to target excavating the contaminated soil located on the former building pad area and not in wetlands. Bristol estimates that over 6,500 tons of POL-contaminated soil will be excavated from the MOC in 2012.

<u>Site 13 – Power and Heat Building</u>

Site 13 consisted of the Heat and Electrical Power Building (Building 110). Several aboveground storage tanks (ASTs), underground storage tanks (USTs), diesel generators, and power transformers were formerly located at this site.

Soil samples collected during the 2003 demolition of the wooden utilidor corridor south of Building 110 also indicated two discrete hits of PCBs ranging from 2.4 to 16.9 mg/Kg, at depths of 4 to 5 feet below ground surface. The utilidor trenches were backfilled with clean fill.

Surface and subsurface soil samples were collected over several years to evaluate the extent of PCB contamination surrounding Building 110 and the transformer pads. During 2005, 141 tons of PCB-contaminated soils were excavated and removed from Site 13. Soil screening and laboratory confirmation samples following the 2005 removal action indicated residual PCB concentrations up to 37.1 mg/Kg at one location (excavation 13B-2). Three excavations (13C, 13D, and 13E) conducted north of Building 110 during the 2005 field season successfully removed PCB contamination to below 1 mg/Kg at these locations.

Approximately 2,420 tons of additional PCB-contaminated soil was removed from Site 13 during 2011 for a total volume removed since 2005 of 3,151 tons. Soil screening sample results indicate residual PCB-contaminated soil remains approximately 4 feet below the ground surface. A plastic liner was used to demarcate the boundary between clean backfill and potentially contaminated residual soil. Bristol is scoped to remove 2,600 tons of PCB soil from Sites 13 and 31 in 2012.

Site 21 – Wastewater Treatment Tank

Site 21 included the wastewater treatment system for the MOC. The facility was located west of the perimeter road and consisted of a concrete septic settling tank which discharged via an 8" insulated cast iron pipe to the wetland area approximately 450 feet to the west.

The septic tank compartments were cleaned and decommissioned during the 2003 removal action. The utilidor corridor from the main complex to the septic tank and the wooden utilidor outfall line were also removed in 2003. Confirmation soil samples were collected from underneath the inlet and outfall lines, adjacent to and below the lowest level of the septic tank, and from beneath the wooden utilidor corridor. The concrete sidewalls and floor of the tank were also sampled prior to demolition. All PCB sampling results from the concrete were equal to or less than 1 mg/Kg. The concrete tank was broken up and buried in place.

Soil, sediment, surface water, and shallow groundwater samples were collected at Site 21 throughout the various phases of remedial investigation. Arsenic and PCBs were identified as primary contaminants of concern during the investigations. The PCB-contaminated soil was removed at Site 21 in 2010.

Arsenic was detected at a single location (SS170) at an anomalous concentration of 170 mg/Kg in surface soil down-gradient of the septic tank outfall during the 1994 investigation. Other surface soil and subsurface soil samples collected in 1994 at Site 21 contained arsenic at levels ranging from 2.8 to 39 mg/Kg. Additional surface soil and sediment samples were collected from the surrounding tundra near the septic tank outfall in 2001 and arsenic concentrations ranged from 4.5 to 14.7 mg/Kg and were within the range of ambient levels for the NEC site. During the 2003 removal action, arsenic was detected in tundra soil samples collected from immediately beneath the demolished utilidor corridor at concentrations ranging from 11.4 to 35.2 mg/Kg. The arsenic detections are likely attributable to naturally occurring minerals in the tundra soils. There is no other known source for the detected arsenic.

Approximately 32 tons of arsenic-contaminated soil was removed from Site 21 during 2010-2011. Residual arsenic-contaminated soil (17 mg/Kg arsenic) remains above the site specific cleanup level of 11 mg/Kg. In 2012 Bristol is scoped to remove 100 tons of arsenic contaminated soil.

Site 31 – White Alice Communications Station

The White Alice Complex is located southeast and uphill from the main operations complex in a glacial valley at the base of Mt. Kangukhsam. The site included four large billboard antennas, a central main electronics building, other supporting structures, and seven ASTs.

Surface water samples were collected in 2001 and no contaminants of concern were identified.

Surface and subsurface soil samples were collected in 2001, 2003, and 2004 to evaluate the extent of petroleum hydrocarbon contamination associated with former fuel tanks and piping. Specifically, soil samples were collected from beneath fuel pipelines, fuel tanks, and tank impoundments. Samples were also collected to evaluate the extent of PCB contamination near transformer pads and a septic outfall.

The antennas, buildings, and ASTs were demolished and removed during the 2003 field season. A total of 118 tons of PCB-contaminated soil was excavated from three locations: 1) south and west of the former Main Electronics Building (Bldg 1001); 2) adjacent to a former transformer pad; and 3) at the septic tank outfall during the 2005 field season. PCB-contaminated concrete (79 tons) was removed from portions of the Building 1001 foundation. Confirmation soil samples were collected in 2005 after the removal of PCB-contaminated soil and concrete.

Confirmation soil sample results indicated PCBs remained in subsurface soil at concentrations above 1 mg/Kg (ranging from 1.53 to 7.09 mg/Kg) only adjacent to the former transformer pad. The excavations west of the former Main Electronics Building and at the septic tank outfall successfully removed all PCB contaminated soil to below 1 mg/Kg.

As a result of residual contamination present adjacent to the former transformer pad, approximately 2,058 tons of additional PCB-contaminated soil was removed from Site 31 during 2010-2011 for a total volume removed since 2005 of 2,176 tons. Residual PCB-contaminated soil remains in the subsurface. A plastic liner was used to demarcate the boundary between clean backfill soil and potentially contaminated residual soil. In 2012 Bristol is scoped to remove 2,600 tons of PCB-contaminated soil from Sites 13 and 31.

PROPOSED PLAN

Bristol plans to excavate, process, handle, and dispose off site the POL-contaminated soil to a depth of 15 feet, or 2-feet below groundwater, whichever occurs first, at the MOC. Approximately 6,700 tons of POL-contaminated soil above the site specific cleanup goal of 9,200 mg/kg DRO will be removed on the building pad (Photograph 1). During excavation, special attention will be given to separation of clean overburden. Clean overburden will be separately stockpiled from contaminated soil. Upon completion of excavation, stockpiled overburden will be used as backfill. Following backfill with stockpiled overburden, clean backfill from the local borrow source will be used (Photograph 2). Backfill will be placed to an elevation that ensures positive drainage without ponding of water and will not promote erosion.

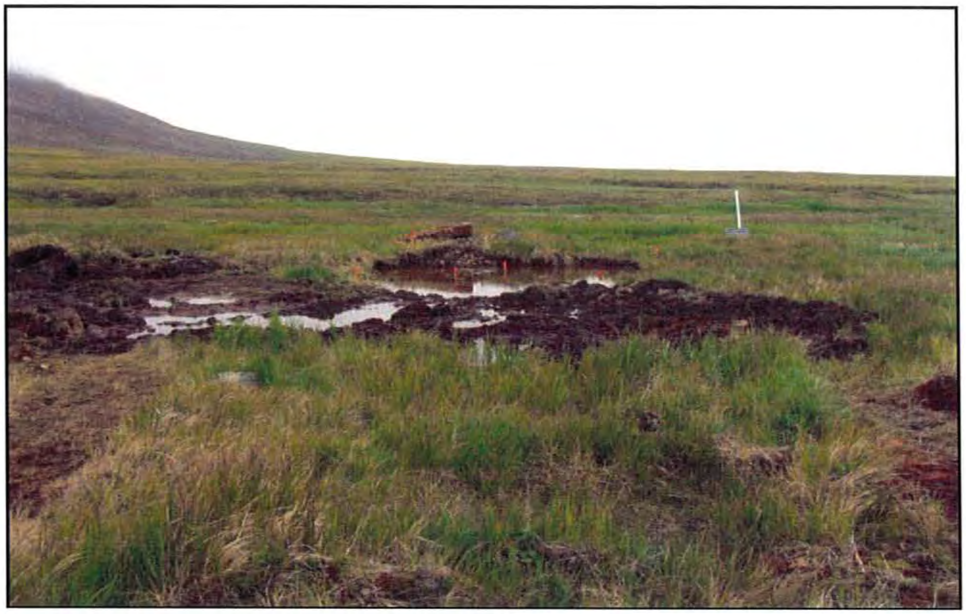
An estimated 2,600 tons of PCB-contaminated soil from Sites 13 and 31 will be excavated, handled, and disposed off site (Photographs 3 and 4). Both of these sites are in gravel pad or very coarse grain to cobbly soils. From Site 21 an estimated 100 tons of arsenic-contaminated soil will be excavated, handled, and disposed off site (Photograph 5).

Photograph 1 – Main Operations Complex building pad area.

Photograph 2 – Working borrow area.

Photograph 3 - Site 13 area excavated in 2011.

Photograph 4 – Site 31 POL-contaminated soil excavation area.



Photograph 5 – Site 21 arsenic-contaminated soil excavation area.

Alaska Department of Environmental Conservation
Wastewater Discharge Authorization Programs

STATE OF ALASKA WASTEWATER GENERAL PERMIT

2009DB0004

Contained Water GP

This permit is issued under provisions of Alaska Statutes 46.03, the Alaska Administrative Code as amended, and other applicable State laws and regulations. This permit may be terminated, modified, or renewed under provisions of Alaska Statute and the Alaska Administrative Code. This permit supersedes State wastewater general permit 2003DB0089.

This wastewater discharge general permit is available for use by persons responsible for the discharge of contained water that meets the eligibility criteria in this permit. Contained water means water isolated from the environment in a manmade container or a lined impoundment structure.

The owners and operators of facilities covered under this general permit are authorized to discharge to the lands and waters of the State of Alaska in accordance with discharge point(s) effluent limitations, monitoring requirements, and other conditions set forth herein.

This general permit shall become effective **March 19, 2009**

This general permit and the authorization to discharge shall expire at midnight, **March 18, 2014**.

SIGNATURE ON FILE	3/19/2009
Signature	Date
Sharmon M Stambaugh	Wastewater Discharge Program Manager
Printed Name	Title

Wastewater Discharges Eligible For Coverage Under this Permit. This general permit applies to:

- contained water including, but not limited to: hydrostatic test water or chlorinated water from tanks, pipelines, swimming pools, and other containers that hold wastewater that meets state water quality standards in 18 AAC 70 and the effluent limitations in Section 1.2.2 of this permit;

Wastewater Discharges Not Covered by this Permit. This general permit does not apply to:

- Contaminated groundwater where halogenated hydrocarbons are the primary contaminant of concern;
- A discharge to waters listed by the state as impaired, where the impairment is wholly or partially caused by a pollutant contained within the proposed discharge;
- A discharge from a sewage lagoon or other treatment works subject to a different State wastewater discharge permit;
- A discharge permitted under storm water general permits;
- A discharge to groundwater under a response action, a cleanup, or a corrective action approved under 18 AAC 70.005; or
- A wastewater discharge originating from water accumulations within secondary containment areas as regulated under 18 AAC 75.075 (d), AND is intended to be discharged to a surface water.

Notice of Intent (NOI) Requirements

- An NOI under Section 1.1.1 and prior written authorization from the Department are required for one-time discharge (i.e., no more than one discharge per year) of a volume of water greater than or equal to 10,000 gallons through discharge to the land surface or to a surface water body; or
- An NOI is not required for a one-time discharge of a volume of water less than 10,000 gallons, however, all terms and conditions of this permit, including the effluent limitations in Section1.2.2, still apply.

General Provisions

A wastewater discharge authorized under this general permit is subject to the terms and conditions specified in Sections 1 and 2 of this permit. All discharges made under the authority of this permit, regardless of size, are subject to the terms and conditions contained herein. Approval to operate under this permit shall be valid for not longer than 12 months. This permit does not relieve the permittee of the responsibility of obtaining other required permits if any.

The Department will require a person to obtain an individual permit when the wastewater discharge does not meet the eligibility criteria of this general permit, contributes to pollution, has the potential to cause or causes an adverse impact on public health or water quality, or a change occurs in the availability of technology or practices for the control or abatement of pollutants contained in the discharge.

TABLE OF CONTENTS

1 OPERATIONAL REQUIREMENTS

1.1 NOTICE OF INTENT

1.1.1 An applicant wishing to conduct a discharge activity under this permit and whose total discharge volume is equal to or greater than 10,000 gallons, must submit a Notice of Intent to the Alaska Department of Environmental Conservation. The Notice of Intent form can be found at http://www.dec.state.ak.us/water/wwdp/index.htm or by sending a request to DEC.Water.WQPermit@alaska.gov. The Notice of Intent must be submitted to ADEC at least thirty (30) days prior to the start of the discharge activity at:

Alaska Department of Environmental Conservation
Division of Water
Wastewater Discharge Authorization Programs
555 Cordova Street
Anchorage, Alaska 99501
Phone (907)-269-6285
Fax (907)-269-3487
Email DEC.Water.WQPermit@alaska.gov
http://www.dec.state.ak.us/water/wwdp/index.htm

1.1.2 A Notice of Intent is **not** required for discharges of less than a total of 10,000 gallons. However the water quality standards in 18 AAC 70 and the terms and conditions in this permit still apply to all activities conducted under this permit even if submittal of a Notice of Intent is not required.

1.1.3 The Notice of Intent must be accompanied by the appropriate fee as found in 18 AAC 72.956 or any such regulations as amended. The permit fees can be found the Department's website at: www.state.ak.us\dec\water\wwdp\online permitting\fees.htm

1.1.4 An applicant must have written authorization from the Department before conducting a discharge activity under this permit which results in a total discharge of 10,000 gallons or more of contained water. The Department will, in its discretion, deny use of this permit, or attach or waive conditions appropriate for a specific discharge activity in the authorization.

1.1.5 The written authorization is effective for the period beginning on the effective date of the authorization and lasting through its expiration date. If this permit is modified or renewed during the term of the authorization, the new permit requirements apply.

1.2 TERMS AND CONDITIONS

1.2.1 The permittee is authorized to discharge wastewater as specified in this subsection.

1.2.2 Wastewater discharged shall not exceed the following limitations:

Effluent Characteristic	**Maximum Value**
Turbidity	5 NTU above background[1]
Settleable Solids	0.2 mL/L (milliliters per liter)
Total Chlorine	11 µg/L fresh water or 7.5 µg/L saltwater (micrograms per liter)
pH	Between 6.5 and 8.5 pH units or within 0.2 units (marine water), or 0.5 units (fresh water) of the receiving water pH at all times.
Total Aqueous Hydrocarbons (TAqH)	15 µg/L (micrograms per liter)
Total Aromatic Hydrocarbons (TAH)	10 µg/L (micrograms per liter)

1.2.3 The discharge shall not cause thermal or physical erosion.

1.2.4 The discharge shall not cause re-suspension of sediments upon discharge to receiving waters.

1.2.5 The discharge shall be free of (a) any additives such as antifreeze solutions, methanol, solvents, and corrosion inhibitors; (b) solid wastes and garbage; (c) toxic substances; (d) grease or oils which exceed the effluent limitations in Section 1.2.2 or produce sheen; (e) foam in other than trace amounts; or (f) other contaminants.

1.2.6 The discharge shall not cause a violation of the Alaska Water Quality Standards (18 AAC 70).

1.2.7 The discharge shall not cause adverse effects to aquatic or plant life, their reproduction or habitats.

1.2.8 The Department will, in its discretion, attach terms and conditions to the written authorization required by Section1.1.4, as appropriate.

1 Applies to discharges to the waters of the state only. Not in effect for disposals which freeze upon discharge. Shall not have more than 10% increase in turbidity when the natural condition is more than 50 NTU, not to exceed a maximum increase of 15 NTU. Shall not exceed 5 NTU over natural conditions for all lake waters.

1.2.9 This permit does not constitute a grant of water rights.

1.2.10 An applicant must contact the Department of Fish & Game, Office of Habitat Management and Permitting, http://www.habitat.adfg.alaska.gov/ , two weeks prior to any discharge, if the discharged water will enter fish-bearing waters.

1.2.11 If a toxic pollutant (including oil, grease, or solvents) concentration standard is established in accordance with 18 AAC 70 for a pollutant present in this discharge, and such standard is more stringent than the limitation in this permit, this permit is considered to be modified in accordance with the toxic pollutant concentration standard.

1.3 MONITORING

1.3.1 Test procedures used for sample analysis shall conform to methods cited in 18 AAC 70.020(c), or as such regulations may be amended. The permittee may substitute alternative methods of monitoring or analysis upon receipt of prior written approval from the Department.

1.3.2 The permittee shall use current calibrated equipment when taking field measurements, and shall use bottles and sampling procedures provided by the laboratory when taking samples for laboratory analysis.

1.3.3 Samples and measurements taken shall be representative of the volume and nature of the monitored activity.

1.3.4 For discharges equal to or greater than 10,000 gallons, the permittee shall monitor the contained water, background natural condition, or the wastewater stream of the discharge in the following manner and frequency. Monitoring results from all before discharge samples must be received and reviewed by the permittee before discharging in order to insure compliance with the conditions in Section 1.2.2.

For discharges less than 10,000 gallons, the permittee is required to conduct the Field monitoring to insure compliance with the conditions in Section 1.2.2, but is not required to conduct the TAqH or TAH Lab monitoring unless there is sheen.
In accordance with this section, the following requirements apply:

Effluent Characteristic	Sample Location	Minimum Frequency	Sample Type	Sample method
Total Flow	Effluent	Daily	Estimate or Measured	Field
Turbidity (NTU)	Effluent & Background	Before discharge and 1 per week	Grab	Field
Settleable Solids	Effluent	Before discharge and 1 per week	Grab	Field (see note 11 to 18 AAC 70.020(b))
Total Chlorine	Containment	Before discharge	Grab	Field
pH	Containment	Before discharge	Grab	Field
Total Aqueous Hydrocarbons (TAqH)	Containment	Before discharge	Grab	Lab method 602 or 624 (see note 7 to 18 AAC 70.020(b))
Total Aromatic Hydrocarbons (TAH)	Containment	Before discharge	Grab	Lab method 610 or 625 (see note 7 to 18 AAC 70.020(b))

1.3.5 If the permittee monitors any contained water, discharge, or surface water characteristic identified in this permit more frequently than required, the results of such monitoring shall be reported to the Department in the monitoring report required under Section 1.4 of this permit.

1.3.6 Additional monitoring parameters and increased monitoring frequency may be required on a case-by-case basis.

1.3.6 Specific requirements for monitoring may be waived by the Department in the authorization to discharge under this permit if the information submitted in the Notice of Intent demonstrates no reasonable potential to exceed the effluent limitations in Section 1.2.2 of this permit.

1.4 REPORTING

For a discharge equal to or greater than 10,000 gallons, monitoring results shall be recorded on a Discharge Monitoring Report (DMR) and submitted no later than the 14th day of the month following the month that each sampling occurs. Reporting shall begin when the discharge starts. Reporting shall be done on the electronic form included with the written authorization or on the form located at the website address provided below. The reports shall be emailed AND signed copies of the monitoring results and all other reports required herein shall be submitted to the Department office at the following address:

Alaska Department of Environmental Conservation
Division of Water
Compliance Section
555 Cordova Street
Anchorage, Alaska 99501
Toll free 1-877-569-4114 (outside Anchorage service area)
In Anchorage service area 907-269-4114
Fax (907) 269-4604
Email: dec-wqreporting@alaska.gov
http://www.dec.state.ak.us/water/Compliance/index.htm

A false statement knowingly made by the permittee, the operator, or other employee, including a contractor, on any such report may result in the imposition of criminal penalties as provided for under AS 46.03.790.

1.5 RECORDS RETENTION

All records and information resulting from the monitoring activities required by this permit, including all records of analyses performed, calibration and maintenance of instrumentation, and recordings from continuous monitoring instrumentation shall be retained in Alaska for three years for observation by the Department. Upon request from the Department, the permittee shall submit certified copies of such records.

1.6 CHANGE IN DISCHARGE

A discharge authorized herein shall comply with the terms and conditions of this permit. The discharge of any pollutant or toxic material more frequently than specified, or at a concentration or limit not authorized, shall constitute noncompliance with the permit. Any anticipated construction changes, flow increases, or process modifications which will result in new, different, or increased discharge of pollutants and will cause a violation of this permit's limitations are not allowed under this permit and must be reported by submission of an individual waste discharge permit application or a revision of the Notice of Intent. Physical changes to the treatment process may be subject to plan review.

1.7 ACCIDENTAL DISCHARGES

The permittee shall provide protection from accidental discharges not in compliance with the terms and conditions of this permit. Facilities to prevent such discharges shall be maintained in good working condition at all times.

1.8 NONCOMPLIANCE NOTIFICATION

1.8.1 If, for any reason, the permittee does not comply with or will be unable to comply with any term or condition specified in this permit, the permittee shall report the noncompliance to the Department within 72 hours of becoming aware of such noncompliance. This report shall be by telephone, fax, email, or in the absence of these avenues, by mail to the address information provided in Section 1.4.

1.8.2 A written follow-up report shall be sent to the Department within seven (7) days of the noncompliance event. The written report shall contain, but is not limited to:

1.8.2.1 Times and dates on which the event occurred, and if not corrected, the anticipated time the noncompliance is expected to continue;

1.8.2.2 A detailed description of the event, including quantity and type of materials causing the noncompliance;

1.8.2.3 Details of any actual or potential impact on the receiving environment or public health;

1.8.2.4 Details of actions taken or to be taken to correct the cause(s) of the event and to remedy any damage that result from the event.

1.8.2.5 A permittee may use the ADEC non-compliance notification form to provide the required information of this section. Go to the website address provided in Section 1.4 or send a request to the email address provided in Section 1.4.

1.9 RESTRICTION OF PERMIT USE

The department will require a person with a general permit authorization to obtain an individual permit if the department determines that the discharge does not meet the requirements of this permit, the discharge contributes to pollution, there is a change in technology, or the environment or public health are not protected.

1.10 TRANSFER OF OWNERSHIP

In the event of any change in control or ownership of the permitted facility, the permittee shall notify the succeeding owner or controller of the existence of this permit and the authorization by letter or by using the Change in Ownership Form. A copy of the letter or form shall be forwarded to the Department at the address listed in Section1.1. The original permittee remains responsible for permit compliance unless and until the succeeding owner or controller agrees in writing to assume such responsibility and the Department approves assignment of the permit. The Department will not unreasonably withhold such approval.

2 GENERAL REQUIREMENTS

2.1 ACCESS AND INSPECTION

The permittee shall allow the department access to the permitted facilities at reasonable times to conduct scheduled or unscheduled inspections or tests to determine compliance with this permit, the terms of the authorization to operate under this permit, State laws, and regulations.

2.2 INFORMATION ACCESS

Except where protected from disclosure by applicable state or federal law, all records and reports submitted in accordance with the terms and conditions of this permit shall be available for public inspection at the appropriate State of Alaska Department of Environmental Conservation office.

2.3 CIVIL AND CRIMINAL LIABILITY

Nothing in this permit shall relieve the permittee from any potential civil or criminal liability for noncompliance with this permit, their authorization to operate, or applicable laws and regulations.

2.4 AVAILABILITY

The permittee shall post or maintain a copy of this permit and their authorization available to the public at the discharge facility.

2.5 ADVERSE IMPACT

The permittee shall take all necessary means to minimize any adverse impacts to the receiving waters or lands resulting from noncompliance with any limitation or condition specified in this permit, including additional monitoring needed to determine the nature and impact of the non-complying activity. The permittee shall clean up and restore all areas adversely impacted by the non-complying activity.

2.6 CULTURAL OR PALEONTOLOGICAL RESOURCES

If cultural or paleontological resources are discovered as a result of this discharge activity, work which would disturb such resources is to be stopped, and the State Historic Preservation Office, Division of Parks and Outdoor Recreation, Department of Natural Resources (907) 762-2622, is to be notified immediately.

2.7 OTHER LEGAL OBLIGATIONS

This permit does not relieve the permittee from the duty to obtain any other necessary permits or approvals from the Department or other local, state, or federal agencies, and to comply with the requirements contained in any such permits. All activity conducted and all plan approvals implemented by the permittee pursuant to the terms of this permit shall comply with all applicable local, state, and federal laws and regulations.

2.8 POLLUTION PREVENTION

In order to prevent and minimize present and future pollution, when making management decisions that affect waste generation, the permittee shall consider the following order of priority options as outlined in AS 46.06.021:

- Wastewater source reduction;
- Wastewater recycling;
- Wastewater treatment; and
- Wastewater discharge to the environment.

STATE OF ALASKA

SARAH PALIN, GOVERNOR

1300 COLLEGE RD.
FAIRBANKS, AK 99701
PHONE: (907) 459-7289
FAX: (907) 459-7303

DEPARTMENT OF FISH AND GAME

DIVISION OF HABITAT

FISH HABITAT PERMIT
FH09-III-0103
Amendment #1

ISSUED: April 22, 2009
AMENDMENT #1 ISSUED: June 5, 2009
EXPIRES: December 31, 2014

Ms. Molly Welker
Bristol Environmental and Engineering Services Corporation
111 W. 16th Ave., Third Floor
Anchorage, AK 99501-5109

Dear Ms. Welker:

RE: Bridge Repair, Northeast Cape White Alice Site Removal Action (St. Lawrence Island); T25S, R54W, Suqitughneq River; SID AK0203-17AA

Pursuant to AS 16.05.841, the Alaska Department of Fish and Game (ADF&G), Division of Habitat, has reviewed Ms. Susan Luetters' email request, dated June 4, 2009, to amend Fish Habitat Permit FH09-III-0103 to authorize withdrawal of up to 3,000 gallons per day of water from the Suqitughneg River (180,000 gallons per season). Water will be withdrawn with a 4-inch diameter pump at a rate of 35 gpm. Proposed season of use is July 15, 2009 to September 15, 2009.

In accordance with AS 16.05.841, Fish Habitat Permit FH09-III-0103 is hereby amended subject to the following stipulation:

(1) In fish bearing waters, pump intakes or stream diversions shall be designed to prevent intake, impingement, or entrapment of fish. Each water intake structure shall be centered in a screened enclosure. The effective screen opening may not exceed ¼ inch. To reduce fish impingement on the screened surfaces, water velocity at the screen/water interface may not exceed 0.5 feet per second when the pump is operating.

NOTE: Due the small water withdrawal rate, the simplest manner to achieve compliance with this stipulation is to perforate the lower third of a 5-gallon plastic bucket with a large number of ¼-inch holes, place some large rock in the bucket to keep it submerged, and then place the intake hose (presumably with a small rock chuck) in the bucket.

All other terms and conditions of FH09-III-0103 remain in effect.

Sincerely,

Denby S. Lloyd, Commissioner

BY: Robert F. "Mac" McLean, Regional Supervisor
Habitat Division
Alaska Department of Fish and Game

cc: Chris Milles, ADNR, Fairbanks
Ann Rappoport, USFWS, Anchorage
Jeanne Hanson, NMFS, Anchorage

RFM:mac

STATE OF ALASKA

SARAH PALIN, GOVERNOR

1300 COLLEGE RD.
FAIRBANKS, AK 99701
PHONE: (907) 459-7289
FAX: (907) 459-7303

DEPARTMENT OF FISH AND GAME

DIVISION OF HABITAT

FISH HABITAT PERMIT
FH09-III-0102

ISSUED: April 22, 2009
EXPIRES: December 31, 2014

Ms. Molly Welker
Bristol Environmental and Engineering Services Corporation
111 W. 16th Ave., Third Floor
Anchorage, AK 99501-5109

Dear Ms. Welker:

RE: Equipment Stream Crossing, Northeast Cape White Alice Site Removal Action (St. Lawrence Island), T25S, R54W, Quangeghsaq River; SID AK 0203-17AA

Pursuant to AS 16.05.841, the Alaska Department of Fish and Game (ADF&G), Division of Habitat, has reviewed your proposal to make multiple crossings at multiple sites (four) across the Quangeghsaq River with amphibious all-terrain vehicles. Timbers or poles may need to be placed in and adjacent to the stream to create better crossing sites that prevent ATVs from getting stuck and reduce damage to vegetation. Access is needed to cut down and remove hundreds of poles from abandoned utility lines. ADF&G originally received a description of the proposed project on March 19, 2002 and a more detailed description via email on April 3, 2002. That activity was permitted under Fish Habitat Permit FG02-III-0073 which expired December 31, 2005. Additional access may be needed to conduct maintenance activities.

The Quangeghsaq River supports anadromous Dolly Varden (and possibly whitefish) and resident fish (e.g., Alaska blackfish) in the area of your proposed activity. Based upon our review of your plans, your proposed project may obstruct the efficient passage and movement of fish.

In accordance with AS 16.05.841, project approval is hereby given subject to the following stipulations:

(1) Equipment crossings shall be made from bank to bank in a direction substantially perpendicular to the direction of stream flow.

Equipment crossings shall be made only at locations with gradually sloping banks. There shall be no crossings at locations with sheer or cut banks.

Banks shall not be altered or disturbed in any way to facilitate crossings. If stream banks are inadvertently disturbed, they shall be immediately stabilized to prevent erosion.

(2) If timber/poles are placed in and adjacent to the stream to create a crossing site, they must be placed in such a way that free passage of fish is assured. In addition, all material shall be completely removed from the streambed and banks at the end of each work season. If needed, the streambed shall be recontoured to assure that "trenches" are not left that will trap fish at low-water levels.

(3) Vehicle crossings shall be limited to only what is necessary to accomplish work.

(4) No damming or diversions are permitted.

The permittee is responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved plan. For any activity that significantly deviates from the approved plan, the permittee shall notify the ADF&G and obtain written approval in the form of a permit amendment before beginning the activity. Any action taken by the permittee, or an agent of the permittee, that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any stipulation contained in this permit will be deemed a significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is the responsibility of the ADF&G. Therefore, it is recommended that the ADF&G be consulted immediately when a deviation from the approved plan is being considered.

This letter constitutes a permit issued under the authority of AS 16.05.841. This permit must be retained on site during construction. Please be advised that this approval does not relieve you of the responsibility of securing other permits, state, federal or local.

This permit provides reasonable notice from the commissioner that failure to meet its terms and conditions constitutes violation of AS 16.05.861; no separate notice under AS 16.05.861 is required before citation for violation of AS 16.05.841 can occur.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. The department reserves the right to require mitigation measures to correct disruption to fish and game created by the project and which were a direct result of the failure to comply with this permit or any applicable law.

The recipient of this permit (permittee) shall indemnify, save harmless, and defend the department, its agents and its employees from any and all claims, actions or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or the permittee's performance under this permit. However, this provision has no effect, if, and only if, the sole proximate cause of the injury is the department's negligence.

Sincerely,

Denby S. Lloyd, Commissioner

Robt F McLean

BY: Robert F. "Mac" McLean, Regional Supervisor
Habitat Division

cc: Chris Milles, ADNR, Fairbanks
Ann Rappoport, USFWS, Anchorage
Jeanne Hanson, NMFS, Anchorage

RFM:mac

STATE OF ALASKA

SARAH PALIN, GOVERNOR

DEPARTMENT OF FISH AND GAME

1300 COLLEGE RD.
FAIRBANKS, AK 99701
PHONE: (907) 459-7289
FAX: (907) 459-7303

DIVISION OF HABITAT

FISH HABITAT PERMIT
FH09-III-0103

ISSUED: April 22, 2009
EXPIRES: December 31, 2014

Ms. Molly Welker
Bristol Environmental and Engineering Services Corporation
111 W. 16th Ave., Third Floor
Anchorage, AK 99501-5109

Dear Ms. Welker:

RE: Bridge Repair, Northeast Cape White Alice Site Removal Action (St. Lawrence Island); T25S, R54W, Suqitughneq River; SID AK0203-17AA

Pursuant to AS 16.05.841, the Alaska Department of Fish and Game (ADF&G), Division of Habitat, has reviewed your proposal to place riprap or conduct maintenance activities in the Suqitughneq River (on St. Lawrence Island) to protect the bridge abutments. ADF&G received your request via email on April 17, 2009. Your original request was received on March 19, 2002 with a more detailed description received via email on April 3, 2002. The original activity was permitted under Fish Habitat Permit FG02-III-0072 which expired December 31, 2005.

Your original proposed project entailed placing approximately 15 cubic yards of riprap at the base of the abutments of the bridge crossing the Suqitughneq River each work season (two work seasons are anticipated). An excavator, operating from the deck of the bridge, will place the riprap. The current proposed work will included any necessary repairs but will not exceed the original footprint and scope of work.

The Suqitughneq River supports anadromous Dolly Varden (and possibly whitefish) and resident fish (e.g., Alaska blackfish) in the area of your proposed activity. Based upon our review of your plans, your proposed project should not obstruct the efficient passage and movement of fish.

In accordance with AS 16.05.841, project approval is hereby given subject to the following stipulations:

(1) Banks shall not be altered or disturbed in any way. If stream banks are inadvertently disturbed, they shall be immediately stabilized to prevent erosion.

(2) "End-dumping" riprap is prohibited. Riprap shall be strategically placed to prevent excess rock in the streambed.

The permittee is responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved plan. For any activity that significantly deviates from the approved plan, the permittee shall notify the ADF&G and obtain written approval in the form of a permit amendment before beginning the activity. Any action taken by the permittee, or an agent of the permittee, that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any stipulation contained in this permit will be deemed a significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is the responsibility of the ADF&G. Therefore, it is recommended that the ADF&G be consulted immediately when a deviation from the approved plan is being considered.

This letter constitutes a permit issued under the authority of AS 16.05.841. This permit must be retained on site during construction. Please be advised that this approval does not relieve you of the responsibility of securing other permits, state, federal or local.

This permit provides reasonable notice from the commissioner that failure to meet its terms and conditions constitutes violation of AS 16.05.861; no separate notice under AS 16.05.861 is required before citation for violation of AS 16.05.841 can occur.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. The department reserves the right to require mitigation measures to correct disruption to fish and game created by the project and which were a direct result of the failure to comply with this permit or any applicable law.

The recipient of this permit (permittee) shall indemnify, save harmless, and defend the department, its agents and its employees from any and all claims, actions or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or the permittee's performance under this permit. However, this provision has no effect, if, and only if, the sole proximate cause of the injury is the department's negligence.

Sincerely,

Denby S. Lloyd, Commissioner

BY: Robert F. "Mac" McLean, Regional Supervisor
Habitat Division
Alaska Department of Fish and Game

cc: Chris Milles, ADNR, Fairbanks
Ann Rappoport, USFWS, Anchorage
Jeanne Hanson, NMFS, Anchorage

RFM:mac

Luetters, Susan

From: Sackinger, Robert B (DNR) <robert.sackinger@alaska.gov>
Sent: Wednesday, April 11, 2012 3:51 PM
To: Luetters, Susan
Cc: Floyd, Christopher B POA; Welker, Molly
Subject: RE: NE Cape 2012

Susan,

Dianna is now working for BLM. I have assumed her previous duties.
The letter is still valid. I will note (again) that clean up is still ongoing. You are "good to go."

Thanks,

R. Bruce Sackinger
Natural Resource Specialist III
State of Alaska, Department of Natural Resources
Division of Mining, Land & Water, Northern Regional Office
(907) 451-2720
bruce.sackinger@alaska.gov

From: Luetters, Susan [mailto:sluetters@bristol-companies.com]
Sent: Wednesday, April 11, 2012 3:29 PM
To: Sackinger, Robert B (DNR)
Cc: Floyd, Christopher B POA; Welker, Molly
Subject: FW: NE Cape 2012

Please disregard the previous email as one of the attachments was incomplete.

Susan Luetters
Senior Environmental Scientist
Bristol Engineering Services Corporation
Phone : (907) 563-0013

From: Luetters, Susan
Sent: Wednesday, April 11, 2012 3:20 PM
To: 'Leinberger, Dianna L (DNR)'
Cc: Welker, Molly; Floyd, Christopher B POA
Subject: RE: NE Cape 2012

Hi Dianna,

It is that time of year again. Bristol Environmental Remediation Services (BERS) will be heading out to North East Cape again. I have included the email string from the past couple of years, and as attachments the original Permit letter and the current year's project description. Conditions surrounding the request remain unchanged from the past three years. Are we still good to go?

f you require any additional information please call/email me.

From:	Kimberly Klein@fws.gov
To:	Luetters, Susan
Cc:	Floyd, Christopher B POA; Welker, Molly
Subject:	RE: 2010 and 2011 Project Information - NE Cape, St. Lawrence Island
Date:	Monday, April 23, 2012 5:01:03 PM

Susan, Christopher, and Molly,

Thank you for sending the project description and figures for the proposed 2012 cleanup activities at the St. Lawrence Island Northeast Cape Site for potential impacts to threatened and endangered species. We reviewed and evaluated the project for new information following the activities of 2010. Based on this information, we have determined that the project has not substantially changed from that evaluated in 2009-2011, and as such, it will not be necessary to reinitiate consultation with the US Fish and Wildlife Service pursuant to Section 7 of the Endangered Species Act for this year's (2012) activities. The determination and concurrence statement issued May 13, 2009 will remain in effect and applicable to the cleanup activities of 2012.

This letter relates only to federally listed or proposed species, and/or designated or proposed critical habitat, under our jurisdiction. This letter does not address species under the jurisdiction of the National Marine Fisheries Service, or other legislation or responsibilities under the Fish and Wildlife Coordination Act, Clean Water Act, National Environmental Policy Act, Marine Mammal Protection Act, Migratory Bird Treaty Act, or Bald and Golden Eagle Protection Act. Please send us and available monitoring and reporting documents or updated permits when these are available, and let us know if you have any questions or concerns. Thank you.

Kimberly Klein
Endangered Species Biologist
USFWS/AFWFO
605 W. 4th Ave. Room G-61
Anchorage, AK 99501
(907) 271-2066

"Luetters, Susan" <sluetters@bristol-companies.com>

"Luetters, Susan" <sluetters@bristol-companies.com>

04/13/2012 05:17 PM

To <Kimberly_Klein@fws.gov>
cc "Welker, Molly" <mwelker@bristol-companies.com>, "Floyd, Christopher B POA" <Christopher.B.Floyd@usace.army.mil>
Subject RE: 2010 and 2011 Project Information - NE Cape, St. Lawrence Island

Luetters, Susan

From:	Dana Seagars <dana.seagars@noaa.gov>
Sent:	Wednesday, April 11, 2012 4:34 PM
To:	Luetters, Susan
Cc:	Welker, Molly; Jon Kurland
Subject:	Re: St. Lawrence Island: NE Cape Cleanup 2012

Hi Susan:
There have been no changes on the Steller sea lion front since last year, so yes, the letter is still valid.
Please adjust your contact for Assistant Administrator of Protected Resources from Kaja Brix to Jon Kurland effective immediately. Jon's email is Jon.Kurland@noaa.gov and his phone number in Juneau is 907-586-7638.
Thank you, Dana Seagars

On Wed, Apr 11, 2012 at 3:10 PM, Luetters, Susan <sluetters@bristol-companies.com> wrote:

Hi Dana,

Bristol Environmental Remediation Services (BERS) will be heading out to North East Cape again this year in June, and we are checking in with NOAA-NMFS to reaffirm our compliance with existing reg.'s as it pertains to our work getting to, and while on, the island.

The email string associated with this transmission is the correspondence between your office and ours beginning in 2010.

We would appreciate it if you would please verify that the original letter, as it stands, is still valid. For your information I have attached the current Project Description and the original 2009 correspondence between our office and yours regarding marine species of concern to NOAA-NMFS.

Thank you for your time and attention to this matter, and if you have any questions please call or email me.

Susan Luetters
Senior Environmental Scientist
Bristol Environmental Remediation Services, LLC
111 W. 16th Avenue, Third Floor
Anchorage, AK 99501-5109
Phone : (907) 563-0013
Direct : (907) 743-9316
FAX : (907) 563-6713
sluetters@bristol-companies.com
http://www.bristol-companies.com/

STATE OF ALASKA

SARAH PALIN, GOVERNOR

1300 COLLEGE RD.
FAIRBANKS, AK 99701
PHONE: (907) 459-7289
FAX: (907) 459-7303

DEPARTMENT OF FISH AND GAME

DIVISION OF HABITAT

FISH HABITAT PERMIT
FH09-III-0103

ISSUED: April 22, 2009
EXPIRES: December 31, 2014

Ms. Molly Welker
Bristol Environmental and Engineering Services Corporation
111 W. 16th Ave., Third Floor
Anchorage, AK 99501-5109

Dear Ms. Welker:

RE: Bridge Repair, Northeast Cape White Alice Site Removal Action (St. Lawrence Island); T25S, R54W, Suqitughneq River; SID AK0203-17AA

Pursuant to AS 16.05.841, the Alaska Department of Fish and Game (ADF&G), Division of Habitat, has reviewed your proposal to place riprap or conduct maintenance activities in the Suqitughneq River (on St. Lawrence Island) to protect the bridge abutments. ADF&G received your request via email on April 17, 2009. Your original request was received on March 19, 2002 with a more detailed description received via email on April 3, 2002. The original activity was permitted under Fish Habitat Permit FG02-III-0072 which expired December 31, 2005.

Your original proposed project entailed placing approximately 15 cubic yards of riprap at the base of the abutments of the bridge crossing the Suqitughneq River each work season (two work seasons are anticipated). An excavator, operating from the deck of the bridge, will place the riprap. The current proposed work will included any necessary repairs but will not exceed the original footprint and scope of work.

The Suqitughneq River supports anadromous Dolly Varden (and possibly whitefish) and resident fish (e.g., Alaska blackfish) in the area of your proposed activity. Based upon our review of your plans, your proposed project should not obstruct the efficient passage and movement of fish.

In accordance with AS 16.05.841, project approval is hereby given subject to the following stipulations:

(1) Banks shall not be altered or disturbed in any way. If stream banks are inadvertently disturbed, they shall be immediately stabilized to prevent erosion.

(2) "End-dumping" riprap is prohibited. Riprap shall be strategically placed to prevent excess rock in the streambed.

The permittee is responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved plan. For any activity that significantly deviates from the approved plan, the permittee shall notify the ADF&G and obtain written approval in the form of a permit amendment before beginning the activity. Any action taken by the permittee, or an agent of the permittee, that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any stipulation contained in this permit will be deemed a significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is the responsibility of the ADF&G. Therefore, it is recommended that the ADF&G be consulted immediately when a deviation from the approved plan is being considered.

This letter constitutes a permit issued under the authority of AS 16.05.841. This permit must be retained on site during construction. Please be advised that this approval does not relieve you of the responsibility of securing other permits, state, federal or local.

This permit provides reasonable notice from the commissioner that failure to meet its terms and conditions constitutes violation of AS 16.05.861; no separate notice under AS 16.05.861 is required before citation for violation of AS 16.05.841 can occur.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. The department reserves the right to require mitigation measures to correct disruption to fish and game created by the project and which were a direct result of the failure to comply with this permit or any applicable law.

The recipient of this permit (permittee) shall indemnify, save harmless, and defend the department, its agents and its employees from any and all claims, actions or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or the permittee's performance under this permit. However, this provision has no effect, if, and only if, the sole proximate cause of the injury is the department's negligence.

Sincerely,

Denby S. Lloyd, Commissioner

BY: Robert F. "Mac" McLean, Regional Supervisor
Habitat Division
Alaska Department of Fish and Game

cc: Chris Milles, ADNR, Fairbanks
Ann Rappoport, USFWS, Anchorage
Jeanne Hanson, NMFS, Anchorage

RFM:mac

STATE OF ALASKA

SARAH PALIN, GOVERNOR

1300 COLLEGE RD.
FAIRBANKS, AK 99701
PHONE: (907) 459-7289
FAX: (907) 459-7303

DEPARTMENT OF FISH AND GAME

DIVISION OF HABITAT

FISH HABITAT PERMIT
FH09-III-0102

ISSUED: April 22, 2009
EXPIRES: December 31, 2014

Ms. Molly Welker
Bristol Environmental and Engineering Services Corporation
111 W. 16th Ave., Third Floor
Anchorage, AK 99501-5109

Dear Ms. Welker:

RE: Equipment Stream Crossing, Northeast Cape White Alice Site Removal Action (St. Lawrence Island), T25S, R54W, Quangeghsaq River; SID AK 0203-17AA

Pursuant to AS 16.05.841, the Alaska Department of Fish and Game (ADF&G), Division of Habitat, has reviewed your proposal to make multiple crossings at multiple sites (four) across the Quangeghsaq River with amphibious all-terrain vehicles. Timbers or poles may need to be placed in and adjacent to the stream to create better crossing sites that prevent ATVs from getting stuck and reduce damage to vegetation. Access is needed to cut down and remove hundreds of poles from abandoned utility lines. ADF&G originally received a description of the proposed project on March 19, 2002 and a more detailed description via email on April 3, 2002. That activity was permitted under Fish Habitat Permit FG02-III-0073 which expired December 31, 2005. Additional access may be needed to conduct maintenance activities.

The Quangeghsaq River supports anadromous Dolly Varden (and possibly whitefish) and resident fish (e.g., Alaska blackfish) in the area of your proposed activity. Based upon our review of your plans, your proposed project may obstruct the efficient passage and movement of fish.

In accordance with AS 16.05.841, project approval is hereby given subject to the following stipulations:

(1) Equipment crossings shall be made from bank to bank in a direction substantially perpendicular to the direction of stream flow.

Equipment crossings shall be made only at locations with gradually sloping banks. There shall be no crossings at locations with sheer or cut banks.

Banks shall not be altered or disturbed in any way to facilitate crossings. If stream banks are inadvertently disturbed, they shall be immediately stabilized to prevent erosion.

(2) If timber/poles are placed in and adjacent to the stream to create a crossing site, they must be placed in such a way that free passage of fish is assured. In addition, all material shall be completely removed from the streambed and banks at the end of each work season. If needed, the streambed shall be recontoured to assure that "trenches" are not left that will trap fish at low-water levels.

(3) Vehicle crossings shall be limited to only what is necessary to accomplish work.

(4) No damming or diversions are permitted.

The permittee is responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved plan. For any activity that significantly deviates from the approved plan, the permittee shall notify the ADF&G and obtain written approval in the form of a permit amendment before beginning the activity. Any action taken by the permittee, or an agent of the permittee, that increases the project's overall scope or that negates, alters, or minimizes the intent or effectiveness of any stipulation contained in this permit will be deemed a significant deviation from the approved plan. The final determination as to the significance of any deviation and the need for a permit amendment is the responsibility of the ADF&G. Therefore, it is recommended that the ADF&G be consulted immediately when a deviation from the approved plan is being considered.

This letter constitutes a permit issued under the authority of AS 16.05.841. This permit must be retained on site during construction. Please be advised that this approval does not relieve you of the responsibility of securing other permits, state, federal or local.

This permit provides reasonable notice from the commissioner that failure to meet its terms and conditions constitutes violation of AS 16.05.861; no separate notice under AS 16.05.861 is required before citation for violation of AS 16.05.841 can occur.

In addition to the penalties provided by law, this permit may be terminated or revoked for failure to comply with its provisions or failure to comply with applicable statutes and regulations. The department reserves the right to require mitigation measures to correct disruption to fish and game created by the project and which were a direct result of the failure to comply with this permit or any applicable law.

The recipient of this permit (permittee) shall indemnify, save harmless, and defend the department, its agents and its employees from any and all claims, actions or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from permitted activities or the permittee's performance under this permit. However, this provision has no effect, if, and only if, the sole proximate cause of the injury is the department's negligence.

Sincerely,

Denby S. Lloyd, Commissioner

BY: Robert F. "Mac" McLean, Regional Supervisor
Habitat Division

cc: Chris Milles, ADNR, Fairbanks
Ann Rappoport, USFWS, Anchorage
Jeanne Hanson, NMFS, Anchorage

RFM:mac

STATE OF ALASKA

SEAN PARNELL, GOVERNOR

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF MINING, LAND & WATER
Water Resources Section

550 WEST 7TH AVENUE, SUITE 1020
ANCHORAGE, ALASKA 99501-3562
PHONE: (907) 269-8600
FAX: (907) 269-8904

June 12, 2012

Bristol Environmental Remediation Services
Attn: Molly Welker
111 W. 16th Avenue, Third Floor
Anchorage, AK 99501

Subject: Temporary Water Use Authorization, TWUP A2012-63

Dear Ms. Welker:

The Water Resources Section completed the review of the Application for Temporary Use of Water from Bristol Environmental Remediation Services. Enclosed is the Temporary Water Use Authorization TWUP A2012-63, **with an expiration date of September 15, 2016,** for uses associated with the ongoing environmental remedial cleanup activities at the former Northeast Cape site on St. Lawrence Island.

Please note all of the conditions on the permit, especially conditions one (1), five (5) and thirteen (13) through twenty-four (24).

If changes to this project are proposed during its operation, please contact this office immediately to determine if further review is necessary. If you have any questions or concerns, I may be contacted at (907) 269-8588. Thank you for your cooperation with the Water Resources Section.

Sincerely,

Merry Johnson

Merry Johnson
Natural Resource Specialist III

Enclosures: Temporary Water Use Authorization – TWUP A2012-63
Administrative Service Fee Fact Sheet

Cc. Susan Luetters, Bristol Environmental & Engineering Services Corporation
(Via email: sluetters@bristol-companies.com)

"To responsibly develop Alaska's resources by making them available for maximum use and benefit consistent with the public interest."

ALASKA DEPARTMENT OF NATURAL RESOURCES

Division of Mining, Land, and Water

Water Resources Section

550 West 7th Avenue, Suite 1020, Anchorage, AK 99501-3562

TEMPORARY WATER USE AUTHORIZATION
TWUP A2012-63

Pursuant to AS 46.15, as amended and the rules and regulations promulgated thereunder, permission is hereby granted to Bristol Environmental Remediation Services, 111 W. 16th Avenue, Third Floor, Anchorage, Alaska 99501, and its contractors, **to withdraw up to 3,000 gallons of** water per day **(subject to a maximum of 180,000 gallons of water)** from June 15 through September 15 of each authorized year from the below-described source of water. The water will be used for camp water supply and dust suppression associated with the ongoing environmental remedial cleanup activities at the former Northeast Cape site, on Saint Lawrence Island, Alaska.

SOURCE OF WATER:

Suqitughneg River within NW¼ Section 15, Township 25 South, Range 54 West, Kateel River Meridian.

STRUCTURES TO BE CONSTRUCTED AND USED:

Screened water intake structure, four-inch pump with 35-gpm output, hose and/or pipe and other water removal and distribution equipment.

Changes in the natural state of water are to be made as stated herein and for the purposes indicated.

During the effective period of this authorization, the permittee shall comply with the following conditions:

CONDITIONS:

1. This authorization does not authorize the permittee to enter upon any lands until proper rights-of-way, easements, or permission documents from the appropriate landowner have been obtained.
2. Follow acceptable engineering standards in exercising the privilege granted herein.
3. Comply with all applicable laws, and any rules and/or regulations issued thereunder.
4. Except for claims or losses arising from negligence of the State, defend and indemnify the State against and hold it harmless from any and all claims, demands, suits, loss, liability and expense for injury to or death of persons and damages to or loss of property arising out of or connected with the exercise of the privileges covered by this authorization.
5. Notify the Water Resources Section upon change of address.

6. The permittee shall obtain and comply with other permits/approvals (state, federal, or local) that may be required prior to beginning water withdrawal pursuant to this authorization.

7. The permittee shall allow an authorized representative of the Water Resources Section to inspect, at reasonable times, any facilities, equipment, practices, or operators regulated or required under this authorization.

8. Failure to respond to a request for additional information during the term of the authorization may result in the termination of this authorization.

9. The permittee is responsible for the actions of contractors, agents, or other persons who perform work to accomplish the approved project, and shall ensure that workers are familiar with the requirements of this authorization. For any activity that significantly deviates from the approved project during its siting, construction, or operation, the permittee is required to contact the Water Resources Section and obtain approval before beginning the activity.

10. The Water Resources Section may modify this authorization to include different limitations, expand monitoring requirements, evaluate impacts, or require restoration at the site.

11. Any false statements or representations, in any application, record, report, plan, or other document filed or required to be maintained under this authorization, may result in the termination of this authorization.

12. Pursuant to 11 AAC 93.220 (f), this authorization may be suspended by the Department of Natural Resources to protect the water rights of other persons or the public interest.

13. Any water intake structure in fish bearing waters, including a screened enclosure, well-point, sump, or infiltration gallery, must be designed, operated, and maintained to prevent fish entrapment, entrainment, or injury, unless specifically exempted by the Alaska Department of Fish and Game, Habitat Division.

14. **Water intake structure must be enclosed and centered within a screened box or cylinder with a maximum screen-mesh size of 1/4 inches. To reduce fish impingement at the screen/water interface, water velocity may not exceed 0.5 feet per second when the pump is operating.**

15. **Adequate flow and water levels must remain to support indigenous aquatic life and provide for the efficient passage and movement of fish. Issuance of this authorization does not give the permittee the right to block or dam a water course.**

16. Permittee shall inspect the intake screen for damage (torn screen, crushed screen, screen separated from intake ends, etc.) after each use and prior to each deployment. Any damage observed must be repaired prior to use of the structure. The structure must always conform to the original design specifications while in use.

17. Water discharge (including runoff) shall not be discharged at a rate or location resulting in sedimentation, erosion, or other disruptions to the bed or banks of water bodies, causing water quality degradation.

18. The suction hose at the water extraction site must be clean and free from contamination at all times to prevent introduction of contamination to the water body, and should be in water of sufficient depth so that sediments are not disturbed during the water extraction process.

19. Water bodies shall not be altered to facilitate water withdrawal or disturbed in any way. If banks, shores, or beds are inadvertently disturbed, excavated, compacted, or filled by activities attributable to this project, they shall be immediately stabilized to prevent erosion and resultant sedimentation of water body which could occur both during and after operations. Any disturbed areas shall be recontoured and revegetated.

20. Pumping operations shall be conducted in such a way as to prevent any petroleum products or other hazardous substances from contaminating surface or ground water. Pumps will not be fueled or serviced within 100 feet of a pond, lake, stream, or river unless the pumps are situated within a catch basin designed to contain any spills. Vehicles will not be fueled or serviced within 100 feet of a pond, lake, stream or river. Equipment shall not be stored or serviced within 100 feet of any of the subject water bodies. In case of accidental spills, absorbent pads shall be readily available at the water collection point. All spills must be reported to the Alaska Department of Environmental Conservation and the Alaska Department of Natural Resources.

21. In-water activity will be limited to placement and removal of the intake structure only. No other in-water activities will occur.

22. There shall be no wheeled, tracked, excavating, or other machinery or equipment (with the exception of the non-motorized screened intake box) operated below the ordinary high water line.

23. The placement of water trucks and/or pumping equipment shall not unnecessarily hinder public access.

24. Per 11 AAC 05.010. (a)(8)(M), an annual administrative service fee shall be assessed on this appropriation of water.

This Temporary Water Use Authorization is issued pursuant to 11 AAC 93.220. No water right or priority is established by a temporary water use authorization issued pursuant to 11 AAC 93.220. Water so used is subject to appropriation by others (11 AAC 93.210(b)).

Pursuant to 11 AAC 93.210 (b), authorized temporary water use is subject to amendment, modification, or revocation by the Department of Natural Resources if the Department of Natural Resources determines that amendment, modification, or revocation is necessary to supply water to lawful appropriators of record or to protect the public interest.

This authorization shall expire on September 15, 2016.

Date issued: June 12, 2012

Approved: K. Plett

Title: Natural Resource Manager

From:	Kimberly_Klein@fws.gov
To:	Luetters, Susan
Cc:	Floyd, Christopher B POA; Welker, Molly
Subject:	RE: 2010 and 2011 Project Information - NE Cape, St. Lawrence Island
Date:	Monday, April 23, 2012 5:01:03 PM

Susan, Christopher, and Molly,
Thank you for sending the project description and figures for the proposed 2012 cleanup
activities at the St. Lawrence Island Northeast Cape Site for potential impacts to threatened and endangered species. We reviewed and evaluated the project for new information
following the activities of 2010. Based on this information, we have determined that the project has not substantially changed from that evaluated in 2009-2011, and as such, it will not be
necessary to reinitiate consultation with the US Fish and Wildlife Service pursuant to Section 7 of the Endangered Species Act for this year's (2012) activities. The determination and concurrence statement issued May 13, 2009 will remain in effect and applicable to the cleanup activities of 2012.

This letter relates only to federally listed or proposed species, and/or designated or proposed critical habitat, under our jurisdiction. This letter does not address species under the jurisdiction of the National Marine
Fisheries Service, or other legislation or responsibilities under the Fish and Wildlife Coordination Act, Clean Water Act, National Environmental Policy Act, Marine Mammal Protection Act, Migratory Bird Treaty Act, or Bald and Golden Eagle Protection Act. Please send us and available monitoring and reporting documents or updated permits when these are available, and let us know if you have any questions or
concerns. Thank you.

Kimberly Klein
Endangered Species Biologist
USFWS/AFWFO
605 W. 4th Ave. Room G-61
Anchorage, AK 99501
(907) 271-2066

"Luetters, Susan" <sluetters@bristol-companies.com>

"Luetters, Susan" <sluetters@bristol-companies.com>

04/13/2012 05:17 PM

To <Kimberly_Klein@fws.gov>
cc "Welker, Molly" <mwelker@bristol-companies.com>, "Floyd, Christopher B POA" <Christopher.B.Floyd@usace.army.mil>
Subject RE: 2010 and 2011 Project Information - NE Cape, St. Lawrence Island

Hi Kim,

Bristol Environmental Remediation Services (BERS) will be heading out to North East Cape again this year. We are anticipating arrival on Island in June. We just wanted to touch base with USFWS to make sure that we were all still good with USFWS. Included as attachments is the 2012 project description and the 2012 version of the questions that we have been answering for the last couple of years.

Please let me know if you require any additional information.

Susan Luetters
Senior Environmental Scientist
Bristol Environmental Remediation Services, LLC
111 W. 16th Avenue, Third Floor
Anchorage, AK 99501-5109
Phone : (907) 563-0013
Direct : (907) 743-9316
FAX : (907) 563-6713
sluetters@bristol-companies.com
http://www.bristol-companies.com/
From: Kimberly_Klein@fws.gov [mailto:Kimberly_Klein@fws.gov]
Sent: Wednesday, June 01, 2011 10:10 PM
To: Welker, Molly
Cc: Luetters, Susan
Subject: Re: 2010 and 2011 Project Information - NE Cape, St. Lawrence Island

S

	Alaska Department of Environmental Conservation **Wastewater Discharge Authorization Programs**
	STATE OF ALASKA WASTEWATER GENERAL PERMIT **2009DB0004**

Contained Water GP

This permit is issued under provisions of Alaska Statutes 46.03, the Alaska Administrative Code as amended, and other applicable State laws and regulations. This permit may be terminated, modified, or renewed under provisions of Alaska Statute and the Alaska Administrative Code. This permit supersedes State wastewater general permit 2003DB0089.

This wastewater discharge general permit is available for use by persons responsible for the discharge of contained water that meets the eligibility criteria in this permit. Contained water means water isolated from the environment in a manmade container or a lined impoundment structure.

The owners and operators of facilities covered under this general permit are authorized to discharge to the lands and waters of the State of Alaska in accordance with discharge point(s) effluent limitations, monitoring requirements, and other conditions set forth herein.

This general permit shall become effective **March 19, 2009**

This general permit and the authorization to discharge shall expire at midnight, **March 18, 2014**.

SIGNATURE ON FILE	3/19/2009
Signature	Date
Sharmon M Stambaugh	Wastewater Discharge Program Manager
Printed Name	Title

Wastewater Discharges Eligible For Coverage Under this Permit. This general permit applies to:

- contained water including, but not limited to: hydrostatic test water or chlorinated water from tanks, pipelines, swimming pools, and other containers that hold wastewater that meets state water quality standards in 18 AAC 70 and the effluent limitations in Section 1.2.2 of this permit;

Wastewater Discharges Not Covered by this Permit. This general permit does not apply to:

- Contaminated groundwater where halogenated hydrocarbons are the primary contaminant of concern;
- A discharge to waters listed by the state as impaired, where the impairment is wholly or partially caused by a pollutant contained within the proposed discharge;
- A discharge from a sewage lagoon or other treatment works subject to a different State wastewater discharge permit;
- A discharge permitted under storm water general permits;
- A discharge to groundwater under a response action, a cleanup, or a corrective action approved under 18 AAC 70.005; or
- A wastewater discharge originating from water accumulations within secondary containment areas as regulated under 18 AAC 75.075 (d), AND is intended to be discharged to a surface water.

Notice of Intent (NOI) Requirements

- An NOI under Section 1.1.1 and prior written authorization from the Department are required for one-time discharge (i.e., no more than one discharge per year) of a volume of water greater than or equal to 10,000 gallons through discharge to the land surface or to a surface water body; or
- An NOI is not required for a one-time discharge of a volume of water less than 10,000 gallons, however, all terms and conditions of this permit, including the effluent limitations in Section1.2.2, still apply.

General Provisions

A wastewater discharge authorized under this general permit is subject to the terms and conditions specified in Sections 1 and 2 of this permit. All discharges made under the authority of this permit, regardless of size, are subject to the terms and conditions contained herein. Approval to operate under this permit shall be valid for not longer than 12 months. This permit does not relieve the permittee of the responsibility of obtaining other required permits if any.

The Department will require a person to obtain an individual permit when the wastewater discharge does not meet the eligibility criteria of this general permit, contributes to pollution, has the potential to cause or causes an adverse impact on public health or water quality, or a change occurs in the availability of technology or practices for the control or abatement of pollutants contained in the discharge.

TABLE OF CONTENTS

1 OPERATIONAL REQUIREMENTS

1.1 NOTICE OF INTENT

1.1.1 An applicant wishing to conduct a discharge activity under this permit and whose total discharge volume is equal to or greater than 10,000 gallons, must submit a Notice of Intent to the Alaska Department of Environmental Conservation. The Notice of Intent form can be found at http://www.dec.state.ak.us/water/wwdp/index.htm or by sending a request to DEC.Water.WQPermit@alaska.gov. The Notice of Intent must be submitted to ADEC at least thirty (30) days prior to the start of the discharge activity at:

Alaska Department of Environmental Conservation
Division of Water
Wastewater Discharge Authorization Programs
555 Cordova Street
Anchorage, Alaska 99501
Phone (907)-269-6285
Fax (907)-269-3487
Email DEC.Water.WQPermit@alaska.gov
http://www.dec.state.ak.us/water/wwdp/index.htm

1.1.2 A Notice of Intent is **not** required for discharges of less than a total of 10,000 gallons. However the water quality standards in 18 AAC 70 and the terms and conditions in this permit still apply to all activities conducted under this permit even if submittal of a Notice of Intent is not required.

1.1.3 The Notice of Intent must be accompanied by the appropriate fee as found in 18 AAC 72.956 or any such regulations as amended. The permit fees can be found the Department's website at: www.state.ak.us\dec\water\wwdp\online permitting\fees.htm

1.1.4 An applicant must have written authorization from the Department before conducting a discharge activity under this permit which results in a total discharge of 10,000 gallons or more of contained water. The Department will, in its discretion, deny use of this permit, or attach or waive conditions appropriate for a specific discharge activity in the authorization.

1.1.5 The written authorization is effective for the period beginning on the effective date of the authorization and lasting through its expiration date. If this permit is modified or renewed during the term of the authorization, the new permit requirements apply.

1.2 TERMS AND CONDITIONS

1.2.1 The permittee is authorized to discharge wastewater as specified in this subsection.

1.2.2 Wastewater discharged shall not exceed the following limitations:

Effluent Characteristic	**Maximum Value**
Turbidity	5 NTU above background[1]
Settleable Solids	0.2 mL/L (milliliters per liter)
Total Chlorine	11 µg/L fresh water or 7.5 µg/L saltwater (micrograms per liter)
pH	Between 6.5 and 8.5 pH units or within 0.2 units (marine water), or 0.5 units (fresh water) of the receiving water pH at all times.
Total Aqueous Hydrocarbons (TAqH)	15 µg/L (micrograms per liter)
Total Aromatic Hydrocarbons (TAH)	10 µg/L (micrograms per liter)

1.2.3 The discharge shall not cause thermal or physical erosion.

1.2.4 The discharge shall not cause re-suspension of sediments upon discharge to receiving waters.

1.2.5 The discharge shall be free of (a) any additives such as antifreeze solutions, methanol, solvents, and corrosion inhibitors; (b) solid wastes and garbage; (c) toxic substances; (d) grease or oils which exceed the effluent limitations in Section 1.2.2 or produce sheen; (e) foam in other than trace amounts; or (f) other contaminants.

1.2.6 The discharge shall not cause a violation of the Alaska Water Quality Standards (18 AAC 70).

1.2.7 The discharge shall not cause adverse effects to aquatic or plant life, their reproduction or habitats.

1.2.8 The Department will, in its discretion, attach terms and conditions to the written authorization required by Section1.1.4, as appropriate.

1 Applies to discharges to the waters of the state only. Not in effect for disposals which freeze upon discharge. Shall not have more than 10% increase in turbidity when the natural condition is more than 50 NTU, not to exceed a maximum increase of 15 NTU. Shall not exceed 5 NTU over natural conditions for all lake waters.

1.2.9 This permit does not constitute a grant of water rights.

1.2.10 An applicant must contact the Department of Fish & Game, Office of Habitat Management and Permitting, http://www.habitat.adfg.alaska.gov/ , two weeks prior to any discharge, if the discharged water will enter fish-bearing waters.

1.2.11 If a toxic pollutant (including oil, grease, or solvents) concentration standard is established in accordance with 18 AAC 70 for a pollutant present in this discharge, and such standard is more stringent than the limitation in this permit, this permit is considered to be modified in accordance with the toxic pollutant concentration standard.

1.3 MONITORING

1.3.1 Test procedures used for sample analysis shall conform to methods cited in 18 AAC 70.020(c), or as such regulations may be amended. The permittee may substitute alternative methods of monitoring or analysis upon receipt of prior written approval from the Department.

1.3.2 The permittee shall use current calibrated equipment when taking field measurements, and shall use bottles and sampling procedures provided by the laboratory when taking samples for laboratory analysis.

1.3.3 Samples and measurements taken shall be representative of the volume and nature of the monitored activity.

1.3.4 For discharges equal to or greater than 10,000 gallons, the permittee shall monitor the contained water, background natural condition, or the wastewater stream of the discharge in the following manner and frequency. Monitoring results from all before discharge samples must be received and reviewed by the permittee before discharging in order to insure compliance with the conditions in Section 1.2.2.

For discharges less than 10,000 gallons, the permittee is required to conduct the Field monitoring to insure compliance with the conditions in Section 1.2.2, but is not required to conduct the TAqH or TAH Lab monitoring unless there is sheen.
In accordance with this section, the following requirements apply:

Effluent Characteristic	**Sample Location**	**Minimum Frequency**	**Sample Type**	**Sample method**
Total Flow	Effluent	Daily	Estimate or Measured	Field
Turbidity (NTU)	Effluent & Background	Before discharge and 1 per week	Grab	Field
Settleable Solids	Effluent	Before discharge and 1 per week	Grab	Field (see note 11 to 18 AAC 70.020(b))
Total Chlorine	Containment	Before discharge	Grab	Field
pH	Containment	Before discharge	Grab	Field
Total Aqueous Hydrocarbons (TAqH)	Containment	Before discharge	Grab	Lab method 602 or 624 (see note 7 to 18 AAC 70.020(b))
Total Aromatic Hydrocarbons (TAH)	Containment	Before discharge	Grab	Lab method 610 or 625 (see note 7 to 18 AAC 70.020(b))

1.3.5 If the permittee monitors any contained water, discharge, or surface water characteristic identified in this permit more frequently than required, the results of such monitoring shall be reported to the Department in the monitoring report required under Section 1.4 of this permit.

1.3.6 Additional monitoring parameters and increased monitoring frequency may be required on a case-by-case basis.

1.3.6 Specific requirements for monitoring may be waived by the Department in the authorization to discharge under this permit if the information submitted in the Notice of Intent demonstrates no reasonable potential to exceed the effluent limitations in Section 1.2.2 of this permit.

1.4 REPORTING

For a discharge equal to or greater than 10,000 gallons, monitoring results shall be recorded on a Discharge Monitoring Report (DMR) and submitted no later than the 14th day of the month following the month that each sampling occurs. Reporting shall begin when the discharge starts. Reporting shall be done on the electronic form included with the written authorization or on the form located at the website address provided below. The reports shall be emailed AND signed copies of the monitoring results and all other reports required herein shall be submitted to the Department office at the following address:

Alaska Department of Environmental Conservation
Division of Water
Compliance Section
555 Cordova Street
Anchorage, Alaska 99501
Toll free 1-877-569-4114 (outside Anchorage service area)
In Anchorage service area 907-269-4114
Fax (907) 269-4604
Email: dec-wqreporting@alaska.gov
http://www.dec.state.ak.us/water/Compliance/index.htm

A false statement knowingly made by the permittee, the operator, or other employee, including a contractor, on any such report may result in the imposition of criminal penalties as provided for under AS 46.03.790.

1.5 RECORDS RETENTION

All records and information resulting from the monitoring activities required by this permit, including all records of analyses performed, calibration and maintenance of instrumentation, and recordings from continuous monitoring instrumentation shall be retained in Alaska for three years for observation by the Department. Upon request from the Department, the permittee shall submit certified copies of such records.

1.6 CHANGE IN DISCHARGE

A discharge authorized herein shall comply with the terms and conditions of this permit. The discharge of any pollutant or toxic material more frequently than specified, or at a concentration or limit not authorized, shall constitute noncompliance with the permit. Any anticipated construction changes, flow increases, or process modifications which will result in new, different, or increased discharge of pollutants and will cause a violation of this permit's limitations are not allowed under this permit and must be reported by submission of an individual waste discharge permit application or a revision of the Notice of Intent. Physical changes to the treatment process may be subject to plan review.

1.7 ACCIDENTAL DISCHARGES

The permittee shall provide protection from accidental discharges not in compliance with the terms and conditions of this permit. Facilities to prevent such discharges shall be maintained in good working condition at all times.

1.8 NONCOMPLIANCE NOTIFICATION

1.8.1 If, for any reason, the permittee does not comply with or will be unable to comply with any term or condition specified in this permit, the permittee shall report the noncompliance to the Department within 72 hours of becoming aware of such noncompliance. This report shall be by telephone, fax, email, or in the absence of these avenues, by mail to the address information provided in Section 1.4.

1.8.2 A written follow-up report shall be sent to the Department within seven (7) days of the noncompliance event. The written report shall contain, but is not limited to:

1.8.2.1 Times and dates on which the event occurred, and if not corrected, the anticipated time the noncompliance is expected to continue;

1.8.2.2 A detailed description of the event, including quantity and type of materials causing the noncompliance;

1.8.2.3 Details of any actual or potential impact on the receiving environment or public health;

1.8.2.4 Details of actions taken or to be taken to correct the cause(s) of the event and to remedy any damage that result from the event.

1.8.2.5 A permittee may use the ADEC non-compliance notification form to provide the required information of this section. Go to the website address provided in Section 1.4 or send a request to the email address provided in Section 1.4.

1.9 RESTRICTION OF PERMIT USE

The department will require a person with a general permit authorization to obtain an individual permit if the department determines that the discharge does not meet the requirements of this permit, the discharge contributes to pollution, there is a change in technology, or the environment or public health are not protected.

1.10 TRANSFER OF OWNERSHIP

In the event of any change in control or ownership of the permitted facility, the permittee shall notify the succeeding owner or controller of the existence of this permit and the authorization by letter or by using the Change in Ownership Form. A copy of the letter or form shall be forwarded to the Department at the address listed in Section1.1. The original permittee remains responsible for permit compliance unless and until the succeeding owner or controller agrees in writing to assume such responsibility and the Department approves assignment of the permit. The Department will not unreasonably withhold such approval.

2 GENERAL REQUIREMENTS

2.1 ACCESS AND INSPECTION

The permittee shall allow the department access to the permitted facilities at reasonable times to conduct scheduled or unscheduled inspections or tests to determine compliance with this permit, the terms of the authorization to operate under this permit, State laws, and regulations.

2.2 INFORMATION ACCESS

Except where protected from disclosure by applicable state or federal law, all records and reports submitted in accordance with the terms and conditions of this permit shall be available for public inspection at the appropriate State of Alaska Department of Environmental Conservation office.

2.3 CIVIL AND CRIMINAL LIABILITY

Nothing in this permit shall relieve the permittee from any potential civil or criminal liability for noncompliance with this permit, their authorization to operate, or applicable laws and regulations.

2.4 AVAILABILITY

The permittee shall post or maintain a copy of this permit and their authorization available to the public at the discharge facility.

2.5 ADVERSE IMPACT

The permittee shall take all necessary means to minimize any adverse impacts to the receiving waters or lands resulting from noncompliance with any limitation or condition specified in this permit, including additional monitoring needed to determine the nature and impact of the non-complying activity. The permittee shall clean up and restore all areas adversely impacted by the non-complying activity.

2.6 CULTURAL OR PALEONTOLOGICAL RESOURCES

If cultural or paleontological resources are discovered as a result of this discharge activity, work which would disturb such resources is to be stopped, and the State Historic Preservation Office, Division of Parks and Outdoor Recreation, Department of Natural Resources (907) 762-2622, is to be notified immediately.

2.7 OTHER LEGAL OBLIGATIONS

This permit does not relieve the permittee from the duty to obtain any other necessary permits or approvals from the Department or other local, state, or federal agencies, and to comply with the requirements contained in any such permits. All activity conducted and all plan approvals implemented by the permittee pursuant to the terms of this permit shall comply with all applicable local, state, and federal laws and regulations.

2.8 POLLUTION PREVENTION

In order to prevent and minimize present and future pollution, when making management decisions that affect waste generation, the permittee shall consider the following order of priority options as outlined in AS 46.06.021:

- Wastewater source reduction;
- Wastewater recycling;
- Wastewater treatment; and
- Wastewater discharge to the environment.

THE STATE of ALASKA
GOVERNOR SEAN PARNELL

Department of Environmental Conservation
DIVISION OF WATER
Wastewater Discharge Authorization Program

555 Cordova Street
Anchorage, Alaska 99501-2617
Main: 907.269.6285
fax: 907.334.2415
www.dec.alaska.gov/water/wwdp

August 31, 2012

DEC File No.: 475.48.001

Greg Jarrell
Bristol Environmental Remediation Services, LLC
111 W. 16th Avenue, Third Floor
Anchorage, AK 99501

Re: **Authorization 2009DB0004-0216: Bristol Environmental Remediation Services, LLC-Northeast Cape HTRW Remedial Actions**

Dear Permittee:

The Alaska Department of Environmental Conservation (DEC) has completed its review of your 2009DB0004 Contained Water Notice of Intent (NOI) for the Northeast Cape HTRW Remedial Actions and is issuing authorization number 2009DB0004-0216 for this project. The discharge from this project is authorized in accordance with the terms of the general permit and any site specific requirements in this authorization. An electronic copy of the Contained Water general permit will be attached to the PDF portfolio which includes this authorization letter which is posted to the DEC water permit search.

The authorization effective date is August 31, 2012.

The authorization to discharge expires at midnight on August 30, 2013.

The authorized discharge location is to a gravel pad upland of a vegetated area as described in the NOI.

The following site specific conditions apply:

1) Before water discharge, the permittee must collect contained water samples for TAH and TAqH. If the analytical results exceed the effluent limits established by the permit, the water must be treated to meet the requirements of the permit and retested prior to discharge.

2) At startup, a visual check for petroleum sheen is required. If an oil sheen is observed corrective action must be taken to remove the hydrocarbon contamination prior to discharge.

3) Visual checks for sheen in the effluent must be recorded daily, and daily estimates of flow must be taken to accurately estimate the total wastewater discharged monthly and for the total project.

4) Monitoring for the following parameters are waived by this authorization: pH, turbidity, settleable solids, and total chlorine.

A copy of the General Permit 2009DB0004 and this authorization must be kept at the project site. This authorization does not relieve the permittee from other local, state, or federal government permitting requirements.

The Discharge Monitoring Report can be found and completed on the following website, http://www.dec.alaska.gov/water/Compliance/permittee.html. Once the DMR is completed it shall be submitted to the following address:

Department of Environmental Conservation
Division of Water
Compliance and Enforcement Program
555 Cordova Street
Anchorage, Alaska 99501
Telephone Nationwide (877) 569-4114
In Anchorage Area/International (907) 269-4114
Fax (907) 269-4114
Email: dec-wqreporting@alaska.gov

If you have any questions concerning this authorization, please contact Jake Greuey at (907) 269-8117 or Jake.Greuey@alaska.gov.

Sincerely,

James Rypkema

James Rypkema
Section Manager, Storm Water and Wetlands

Department of Environmental Conservation

Water Online Application System

Admin Pages:
Home
Activate / Deactivate Permits
O2D Administrator

This page shows the current status of the permit you selected to view. On this page you can view and update or change the status. To change the status, just select another option from the dropdown list, and click the 'Set ... Status' button next to the list. This will update the permit to the state you have selected in that dropdown list.

Created By:	DEREK TANNAHILL on 8/28/2012 2:12:35 PM	**Last Modified:**	8/29/2012 10:20:29 AM

Status	Details	Options	Change Status
Signed	Administratively signed on 8/29/2012 10:20:29 AM	Signed	Set Signed Status
Paid	Paid on 8/28/2012 2:35:43 PM	Paid	Set Payment Status
Fee Amount	$350.00		Void

Application Data (Completed)

Tracking #:	2009DB0004-0216	**Facility:**	Northeast Cape HTRW Remedial Actions	**Permit Type:**	Contained Water Permit

Project Information	***Details***
Project Name	Northeast Cape HTRW Remedial Actions
On-site Address Line 1	Main Operations Complex, Site 28
On-site Address Line 2	
Nearest City	Savoonga
State	AK
Nearest Zip Code	99769
Country	USA
On-site Phone	8773700628
On-site Fax	
On-site Email	
Description of project	
NAICS Code	I do not know

Contacts	***Details***	
On-Site Contact	Name:	Chuck Croley
	Title	Site Superintendent
	Organization:	Bristol Environmental Remediation Services, LLC
	Address:	111 W. 16th Avenue, Third Floor
	City:	Anchorage
	State:	AK
	Zip:	99501
	Country:	USA
	Phone:	9075630013
	Cell:	
	Fax:	
	Email:	

	Website:	
Applicant, Billing Contact	Name: Title Organization: Address: City: State: Zip: Country: Phone: Cell: Fax: Email: Website:	Greg Jarrell Project Manager Bristol Environmental Remediation Services, LLC 111 W. 16th Avenue, Third Floor Anchorage AK 99501 USA 9075630013
Responsible Party	Name: Title Organization: Address: City: State: Zip: Country: Phone: Cell: Fax: Email: Website:	Carey Cossaboom Project Manager US Army Engineer District, Alaska P.O. Box 6898 JBER AK 99506 USA 9077538689

Discharge Information	***Details***
Is this a discharge of hydrostatic test water?	No
Does the water contain chlorine or other toxic substances?	No
End of pipe latitude (1) Converter	
End of pipe longitude (1)	
Additional end of pipe latitudes and longitudes	
Mapping Technique	GPS Unit
Description of Wastewater Treatment Plan	
The water processing site will consist of a Geotube placed atop an impermeable liner. The Geotube will contain the sediment while allowing water to pass through the pore spaces. The wastewater will be captured by the liner and directed toward a primary water impoundment. Water samples will be collected from the primary water impoundment and analyzed at a laboratory for all COCs. Water from the primary impoundment will be treated through a granular activated carbon filtering system and discharged into a secondary impoundment. Wastewater samples will be collected from the secondary impoundment and analyzed at a laboratory for all COCs. Water will remain in the secondary impoundment until sample results confirm that all contaminant concentrations are below discharge criteria presented in the State of Alaska Wastewater General Permit 2009DB0004. If results indicate concentrations below discharge criteria, then the treated water will be discharged to the ground.	
Maximum anticipated discharge flow rate (gallons per day - GPD)	
Average anticipated discharge flow rate (gallons per day - GPD)	
Total anticipated discharge (gallons)	
Discharge velocity at end of pipe (feet per second - FPS)	
Anticipated start date	09/03/2012
Anticipated completion date	10/05/2012

Receiving Area Information	***Details***
Receiving Area Name	Water Processing Area
Receiving Area Type	Unvegetated Area

Description of receiving area Gravel pad upland of drainage area.	
Supply for aquaculture	No
Supply for industrial use	No
Primary contact recreation	I do not know
Secondary contact recreation	I do not know
Catalogued anadromous spawning area	I do not know
Harvesting for consumption of raw mollusks or other raw aquatic life	No

Attachments	***Title (Type), Description***
FIG10-SITE28-JULY12.pdf	**PROPOSED PHASE 1 SEDIMENT REMOVAL AREAS (Project Description Material)**

Creator	Date	Comment		
jjgreuey	08/29/2012 10:19	Received e-mailed signature page on 8/28/12 from Greg Jarrell. Admin signed	Edit	Delete

Add Comment

Home

THE STATE of ALASKA
GOVERNOR SEAN PARNELL

Department of Environmental Conservation

DIVISION OF SPILL PREVENTION & RESPONSE
Contaminated Sites Program

555 Cordova Street
Anchorage, Alaska 99501
Phone: 907.269.7503
Fax: 907.269.7649
dec.alaska.gov

File No: 475.38.013

November 14, 2012

US Army Corps of Engineers USACE, AK District
Attn: Mr. Carey Cossaboom
CEPOA-PM-ESP
P.O. Box 6898
JBER, AK 99506-0898

Re: ADEC Approval of the Responses to Comments (RTC) on the Draft 2012 Northeast Cape Removal Action (RA) Work Plan

Dear Mr. Cossaboom;

Thank you for providing the Alaska Department of Environmental Conservation's Contaminated Sites Program (ADEC) with a copy of the Draft Northeast Cape RA Work Plan which is dated May 2012 and was received by ADEC on June 01, 2012.

ADEC previously completed its review of the draft work plan and electronically submitted three batches of comments via email to the project delivery team for review. The batch names/submission dates included the following:
1) 475.38.013 draft May12 NEC RA Work Plan adec comments 6-26-2012/July 02, 2012
2) 475.38.013 draft May12 NEC RA Work Plan figures 1-12 adec comments 7-3-2012/July 3, 2012
3) 475.38.013 draft May12 NEC RA work plan UFP-QAPP+appendices adec comments 7-10-2012/July 10, 2012.

ADEC tentatively approved portions of the draft work plan via a July12, 2012 email which was attached to ADEC's July 23, 2012 letter to the Army Corps of Engineers (Corps) (which included copies of ADEC's original formal comments for the Corps' records). This letter serves as ADEC's comprehensive approval of all RTCs to the three batches of comments listed above, including responses to additional ADEC comments prior to ADEC tentatively approving the work plan to be implemented in the field via its July 13, 2012 email to the project team; a copy of which is attached to this letter for reference. Copies of ADEC's comment templates which include dated notations of

ADEC's approval of the RTCs are attached to this letter for your records. Also attached to this letter is a copy of ADEC's July 20, 2012 email to the project team, with which ADEC approved the RTCs on the figures associated with the draft 2012 RA work plan.

Thank you also for providing ADEC with a copy of the final 2012 Northeast Cape RA Work Plan which is dated July 2012 and was received by ADEC on September 13, 2012. ADEC is completing its review of the final document and will send a separate letter pending approval.

Please contact me at curtis.dunkin@alaska.gov or at (907)269-3053 if you have any questions regarding this letter.

Sincerely,

Curtis Dunkin
Environmental Program Specialist

cc: Greg Jarrell and Julie Clark – BERS (via email)

Alaska Department of Environmental Conservation (ADEC)
Contaminated Sites Program
Document Reviewed: Draft May 2012 Northeast Cape Removal Action Work Plan
Commenter: Curtis Dunkin-ADEC Date Submitted: July 2, 2012 ADEC responses to RTCs noted in red; resubmitted on July 6, 2012 after a comment resolution telephone discussion w/ USACE project manager C. Cossaboom; ADEC responses to additional RTCs on July 11, 2012
Additional ADEC responses to RTCs on July 13, 2012

Comment #	Page #	Section	ADEC Comment	Response
1.			**Comments on draft 2012 NEC Work Plan Narrative**	
2.	1	Introduction	**Bullets outlining the scope of work in this and other sections need to include site 28 sediment sampling and characterization, site 21 surface water sampling, backfilling of excavations where contaminant concentrations remain above ADEC cleanup level(s), off site removal of overwintered sacks containing contaminated soil, miscellaneous correlation sampling, and all other major activities planned for the 2012 RA.** RTC in the right column is ADEC-Accepted; however, the tasks which are not scoped for 2012 still require ADEC review and approval prior to implementing therefore the work plan should state addendums to the work plan will be submitted at a later date.	**Additional Scope of Work bullet points have been added (e.g., Site 28 & 21). Items not currently part of Scope of Work that will be completed in 2012 will be noted in the final report (e.g., correlation sampling; overwintering of bulk bags). Bristol will plan to make addendums to the Work Plan when additional options and tasks are funded by the USACE. The addendums will be submitted to the ADEC for approval (7/10/12)ADEC-Accepted (7-11-12)**
3.	8	2.5	**Last paragraph of this section, replace the uses of 'this stream' with 'the Suqitughneq River' or 'the Suqi' or 'this river' for clarity – or are the references to another stream(s) other than the Suqi River?**	**The text has been changed to "Suqitughneq River".** ADEC-Accepted
4.	9	2.8	**Rephrase the sentence 'More than 1,000 reindeer…' to state 'A population of approximately 1000 reindeer inhabit the island.'**	**The text has been changed in accordance with the comment** ADEC-Accepted

5.	10	2.8	Add the sand hill crane to avian species known to inhabit the island.	Sandhill Crane was added to avian species ADEC-Accepted
6.	10	2.9	Responses to previous ADEC inquiries re: whether or not Gambell residents inhabit NEC have been that only Savoonga residents are known to visit and temporarily inhabit the NEC area.	There are fewer residents of Gambell coming by NE Cape in the summer, but with snow machines, they all travel far in the winter. They also tend to gather at their own hunting camps. The fish camp at NE Cape is a rest stop. ADEC-Accepted, state this in the narrative
7.	11	2.11	Is Sivuqaq, Inc. associated specifically with Gambell, and are they Gambell Native and Savoonga Corporations or the Native Village of Gambell and NVS?	Sivuqaq, Inc. is the village corporation associated with Gambell. Kukulget, Inc. is the village corporation associated with Savoonga. ADEC-Accepted; state this in the narrative
8.	13	3.0	States that 2,600 tons are scoped for PCB-contaminated soil removal, but later references in the work plan state otherwise (Tables 4-3 and 4-4 page 61). Same comment re: conflicting references to the scoped PCS volumes to be removed throughout the document. See comment #1 above re: other planned 2012 activities.	Text and tables have been corrected and updated through Modification P00001 (27-June-2012) ADEC-Accepted
9.	16	Table 3-1	Insert a footnote for the reference to 'cleanup level' that states 'ADEC Table C Groundwater Cleanup Level'.	Row heading in Table 3-1 has been changed to "ADEC Table C….." ADEC-Accepted

10.	20	3.2.5	References to 'Kg', K should be capitalized (also elsewhere in document). Last sentence of this section needs to better define the conditions under which 'no petrogenic sheen was observed'. Was any sheen and/or odors (biogenic or petrogenic) observed at this site? Have either sheen(s) or odor(s) been previously observed at this site; whether sediments and/or water were or were not disturbed? ADEC-Accepted RTC in right column re: addition to the text; however the current work plan and future documents should also include an explanation in the narrative re: the fuel odor that continues to be '…evident when a person walks across the vegetative mat…' as stated on page 59 of the QAPP	Bristol uses the proper scientific abbreviation for Kilogram, which is kg. ADEC-Accepted The following text has been added: "There is no record of any biogenic or petrogenic sheen at this location and none were observed during the sample collection. Sediments were not disturbed during the collection of surface water samples." The statement will be added….This vegetation does not appear stressed, though petroleum odor is evident when a person walks across the vegetative mat (7/10/12) ADEC-Accepted (7-11-12)
11.	21	3.2.6	Last paragraph on this page, insert '…of 1.5 mg/L.' at the end of the sentence starting w/ 'DRO was detected at…'.	Text has been changed accordingly ADEC-Accepted
12.	22	3.2.6	Include soil samples in the first sentence on this page (soil and sediment samples were collected in 2011). State that contaminant exceedances were observed in sediment and soil samples.	Text has been adjusted accordingly ADEC-Accepted
13.	23	4.0	See comment #1 above.	See response #1 ADEC-Accepted
14.	36	4.2	Clarify why there are two task orders for POL-contaminated soil. See comment #13 above re: conflicting references re: scoped volumes and weights.	Volumes of soil have been updated ADEC-Accepted

15.	37	4.2/Figure 4	Do the polygons for the site 13 excavation as depicted in Figure 4 represent the excavation footprint to date (post 2011 removal activities) or do they represent what is planned/anticipated for 2012? Per the 2011 report and recent discussion at the May 16, 2012 technical planning meeting, ADEC's understanding is that the site 13 excavation has not yet entered any POL plumes; only that the NW corner was approaching plume A2. Figure 4 also depicts the site 13 excavation with encroachments on the B1 and B2 plumes. The 'proposed excavation area' depiction in Figure 4 should be clarified in the legend whether this represents the original estimated boundary of the plume or the proposed area of work for 2012. These issues need to be clarified in all associated figures and narrative sections where applicable. Last sentence of third paragraph on this page needs to be rephrased; PCBs are the driving contaminant of concern in regards to waste disposal requirements therefore soils contaminated with both POL and PCBs above cleanup levels must be screened, removed, and disposed of based on PCB concentrations. Also state for clarification that once confirmation samples indicate that PCB concentrations in remaining soils are below the cleanup level, that remaining POL-contaminated soils adjacent to the PCB site will be screened, removed, and disposed of based on POL criteria only. Last paragraph of page 37, more discussion is required re: the status of and any planned 2012 work associated w/ plume J1A. RTC in the right column re: figure revisions is ADEC-Accepted; please provide ADEC with copies of the revised figures for review and approval prior to submitting a revised copy of the work plan. Note: ADEC also submitted separate comments on just the work plan figures which should also be addressed and submitted to ADEC for review and approval prior to submitting a revised copy of the work plan.	All figures have been updated to better indicate existing vs. proposed excavation areas. Text has been added detailing the nature of PCBs vs. POL soils at Site 13 ADEC-Accepted As discussed during the NE Cape UFP-QAPP meeting, there are no plans to reopen the excavation at J1A. The remaining contamination is in wetland/tundra areas off of the pad. ADEC-Accepted; state this in the work plan for clarity; the only reference to J1A in the narrative is 'excavation was initiated in 2011'. Text will be clarified to state that at this time there are no plans to reopen and excavate more soil at J1A. ADEC-Accepted (7-11-12) Revised figures sent to ADEC on 7/9/12 and revisions to figures suggested by ADEC will be incorporated into the next revision of the figures (7/10/12). ADEC-Accepted (7-11-12)

16.	38	4.2	Second to last paragraph on this page, state the purpose of surface water sampling. More detailed information should be stated re: how long before, when during, and how long after excavation activities occur/have occurred. Re: clarification questions in comment #15 above related to depictions of excavation footprints and proposed excavation areas in Figure 4 (and other Figures) are the I plumes proposed to be excavated in 2012? If so, then more sampling locations need to be proposed that are further down gradient of the currently depicted locations prior to and in situ of the excavation reaching the depicted 'ponding' area(s). More frequent monitoring and sampling of the down gradient surface waters is necessary during excavation activities associated with the MOC plumes. Narrative needs to include more discussion re: the response plan in the event contaminant migration is observed. Re: the discussion of time constraints and end of field season, more discussion is necessary re: the potential risks (contaminant migration, erosion, etc.) associated with over wintering an open excavation near areas with shallow groundwater and/or surface waters (specifically the site 28 drainage) and how those risks will be mitigated. RTC in the right column does not adequately address ADEC's comments. Note: after a comment resolution telephone discussion w/ the Corps project manager C. Cossaboom on July 6, 2012, ADEC's concerns were in large part addressed by clarifying that no excavation activities would occur in the I plume in 2012. However, more frequent sampling of the surface waters down gradient of the MOC should be implemented and the work plan should state mitigation procedures in the event contaminant migration is observed. C. Cossaboom (7/6/12) note: Some excavation may occur on the I Plume as indicated in the Bristol RTC. The majority of the I Plume is in wetland area that is not currently slated for excavation.	Text has been added ADEC-Accepted Additional text has been added to further clarify approximate timing. ADEC-Accepted Please see response to #15, additionally, no further excavation of I plume is anticipated with the exception of the small portion remaining on the pad (I1 area) that will not affect the locations of water sample collection points. (no change in text) ADEC-Accepted; clarify in the narrative that the majority of the 'I' plume is in the wetland drainage and is proposed to not be excavated to avoid adverse impacts. This will be clarified in the Work Plan ADEC-Accepted (7-11-12) Mitigation procedures will be expanded in the Work Plan to include visual monitoring of increased turbidity and/or effluent that shows up downgradient at the time of the MOC excavation The USACE has agreed to collect additional samples to determine the impact of the effluent to the wetlands (7/10/12). ADEC-Accepted (7-11-12)
17.		4.2	This section needs to discuss how G and H plumes will be further investigated to determine whether or not the suspected perched water table, as observed in 2011, is seasonal or year-round	The following information will be added to the Work Plan: In 2011 when excavation began

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			and how contamination associated with these plumes will be addressed (either removal and/or further characterization and monitoring). RTC in the right column does not adequately address ADEC's comments. Note: after a comment resolution telephone discussion w/ the Corps project manager C. Cossaboom on July 6, 2012, ADEC and the Corps concurred that further investigation of suspected perched water tables will be necessary. The current work plan section 4.2 nor the QAPP discuss how this issue will be addressed, and instead insinuate that the G&H plumes will be readdressed the same way they were in 2011, except in 2012 to 2ft below the water table. C. Cossaboom (7/6/12) note: May need clarification yet: Work Plans need to state how sampling will proceed where water table prevents further excavation. **ADEC appreciates the 7-10-12 RTC in the right column being added to the narrative and QAPP of the draft work plan; however, the RTC does not address the further investigation requested by ADEC as well as the 7-6-12 request by the USACE above (determine extent and status of suspected perched groundwater, a sampling plan in the event water table is encountered prior to contamination which includes sampling the groundwater and soil above the contaminated horizon(s) as well as digging to the depth of contamination to collect characterization samples, etc.). (7-11-12)**	**on the G and H plumes, relatively shallow groundwater infiltrated the excavations. The excavation at the H plume showed groundwater at approximately 5.2 feet bgs. Two UVOST points were installed within the H plume area in 2010, 10NC27 UV-110 and 10NC27 UV-111. UV-110 indicated that DRO contamination exceeding cleanup levels begins at 7.5 feet bgs (based on a 9.2 percent Laser-Induced Fluorescence [LIF] response), and UV-111 did not show indications of contaminants that exceeded cleanup levels until a depth of approximately 10.5 feet was reached. Groundwater infiltrated the excavation at approximately 5 feet bgs in the H plume near UVOST location 10NC27 UV-110. Since the top of the contaminated zone of soil is located approximately 2.5 feet below groundwater in this area, no soil was removed. Likewise at 10NC27 UV-111 (also located within the H plume), the contaminated zone of soil was in excess of 2 feet below groundwater. One**

				UVOST point was installed within the G1 plume (10NC27 UV-108) and indicated a contaminated zone located approximately 11 feet bgs. Excavations in and near plume G1 were infiltrated with groundwater at approximately 7 feet bgs. Since the contaminated zone of soil is in excess of 2 feet below groundwater in plume G1, no soil was removed from this location. The depth to contamination in the G2 plume is 8 feet bgs, and excavations encountered groundwater at approximately 7 feet bgs. UVOST locations 10NC27 UV-93 and UV-94 are located within the G2 plume and show a depth to contamination of 8 feet and 9 feet bgs, respectively. No soil was excavated from this area in 2011, but excavation may be possible in 2012 if groundwater conditions are similar or if the groundwater table is lower. (7/10/12). See Left Column Previous Page (7-11-12) **Based on the Comment Resolution Teleconference Meeting with ADEC and USACE (7/13/12)**

				Bristol will collect a sidewall sample above the groundwater and floor samples 2' below the water table if we encounter groundwater in the G&H plumes. These confirmation samples will be collected if groundwater is encountered during the excavation and it is at a level above the targeted contamination layers shown by the UVOST logs in these plumes. These confirmation samples will also be collected if Bristol is able to excavate the contaminated layers in these plumes. No groundwater samples will be collected. A groundwater monitoring network will be installed at the MOC when the soil removal tasks are completed. Bristol will also provide more information on the 12' deep test pit that was dug to determine if we will encounter shallow groundwater again in this area in 2012. A GPS location will be provided and Bristol will document if groundwater fills this test pit, if sheen is observed, and if any odor is detected. ADEC-Accepted (7-13-12)

18.	46	4.4	The excavation area of site 21 where contamination exceeding cleanup levels remains at 2 feet below the water table will need to be backfilled with clean material to achieve protectiveness. Confirmation soil samples need to be collected to determine what residual contamination is left in place below 2 feet of the water table. ADEC also requests further investigation of this site (in addition to the ADEC-requested 2012 surface water and confirmation sampling of the contaminated soil/sediment which is left in place 2 feet below the water table) in order to determine whether or not down gradient migration of As is occurring. Future monitoring and/or institutional controls for this site may be necessary. RTC in the right column does not adequately address ADEC's comments. Note: after a comment resolution telephone discussion w/ the Corps project manager C. Cossaboom on July 6, 2012, ADEC and the Corps concur that residual contamination left in place two ft. below the water table needs to be sampled and characterized in order to determine further action required to achieve protectiveness at this site. Backfilling should occur after it is confirmed that all contamination down to two feet below the water table has been removed to contaminant concentrations below cleanup level. **ADEC-Accepted (7-11-12); Confirmation samples should be collected as requested in 2012 in the same manner they were collected in 2011 (and this should be detailed in associated sections of the narrative and QAPP of the work plan. ADEC acknowledges the challenges that may be associated with backfilling this site and will discuss further w/ the Corps after review of the 2012 RA report.**	According to the USACE backfilling of Site 21 may occur in the future after the sampling results are evaluated from the confirmation samples collected in 2012. Backfilling Site 21 will require a road/pad be constructed out to the site to allow for a heavy rock truck to reach the site with the clean borrow pit material. In 2011 at Site 21, the confirmation samples were taken from beneath the water table and were collected from the excavator bucket. The excavator pulled up soil from beneath the water, drained the water from the bucket, moved the bucket near the sampler and the sampler took the sample from the bucket. In 2012 contaminated soil will be excavated up to 2 feet below groundwater in accordance with ADEC requirements (7/10/12) See left column (7-11-12) **Based on the Comment Resolution Meeting with ADEC and USACE on 7/13/12 Bristol will collect floor confirmation samples in the Site 21 excavation area. The backfilling of Site 21 will be delayed until the 2012 confirmation samples are summarized and evaluated.** **ADEC-Accepted (7-13-12)**

19.	47	4.5	**A sample should also be collected from a location where vegetation is vigorous and does not appear to be stressed.** What is meant by 'acknowledged?' RTC in the right column does not adequately address ADEC's comment. Note: after a comment resolution telephone discussion w/ the Corps project manager C. Cossaboom on July 6, 2012, ADEC and the Corps concur that two samples should be conducted in locations where vegetation appears to be vigorous and healthy. ADEC's rationale for this is in the event that contaminants are detected at low levels in 'stressed vegetation areas' but not exceeding cleanup levels, that any detections in soil sample results from 'non-stressed vegetation' locations could provide a correlation. ADEC understands that conditions might be such that the project team could observe no discernible differences in vegetative vigor associated with the site.	**Comment acknowledged.** **Bristol will modify the Work Plan to include the information in this comment related to collecting 2 samples where the vegetation is vigorous and does not appear stressed (7/10/12).** **ADEC-Accepted (7-11-12)**
20.	48	4.6	**The stated definition of sediment needs to be changed to '…naturally occurring mineral and organic material found at the base…'. Organic material needs to be defined as not including actively growing vegetation or the vegetative mat. State that the mineral material atop the vegetative mat will be considered soil (in addition to not being considered sediment).** Re: RTC in the right column - Note: after a comment resolution telephone discussion w/ the Corps project manager C. Cossaboom on July 6, 2012, ADEC and the Corps concur that ADEC's requested definition revision of sediment will be utilized. Sediment will be defined as: all loose mineral and organic material that is not actively growing vegetation or part of the vegetative mat. ADEC's rationale is that significant contaminant concentrations in loose organic sediment could be overlooked if only 'mineral' sediment is addressed for characterization and removal.	**The definition of sediment was specifically called out in Bristol's SOW from USACE; therefore the USACE will have to agree to this additional information for the definition of sediment,** **The Work Plan will be modified to include the definition of sediment as suggested in this comment (7/10/12)** **ADEC-Accepted (7-11-12)**

21.		4.6	State the number/ration of silica gel cleanup samples that are proposed. It should be discussed in the narrative that the referenced 'historically contaminated locations' were part of transect sample lines which were conducted to characterize sediment in general areas throughout the drainage, and not to thoroughly characterize all of the sediment within the drainage. It needs to also state that the proposed 54 sediment samples collected at the proposed sampling intervals (stream and pond) may not be sufficient to adequately characterize all the sediment throughout the drainage. Pond sample densities and locations should be based on two criteria: 1) the surface area of the pond and 2) the amount of sediment within the pond's surface area (as determined from the mapping results) – not just three samples per pond. RTCs in the right column pertaining to all of ADEC's comments in this section - Note: after a comment resolution telephone discussion w/ the Corps project manager C. Cossaboom on July 6, 2012, ADEC and the Corps concur that the Site 28 mapping, sampling, and removal action should be done in three separate stages in the 2012 season, which should build upon each other to approve the effectiveness of the remedial effort. ADEC tentatively approved the mapping effort for site 28 to be implemented by the field team on July 6, 2012 via email to the project team and that the mapping effort incorporate the agreed upon definition of sediment as discussed in comment #20 above. ADEC requests that addendums to the work plan be submitted to the project team for review and ADEC approval for the sediment sampling effort (after the results of the mapping effort are made available to the project team for review via a technical memorandum), and similarly an addendum to the work plan be submitted for the phase I sediment removal after the sediment sample results are made available to the project team for review via a technical memorandum. ADEC Accepted; however, ADEC requests that the mapping results be provided to the project team for review to allow for inputs to the decisions for determining the sediment sampling locations due to the many unknowns (i.e. concentrations of sediment and their locations, proximity of larger concentrations of sediment to areas known to be contaminated, etc.). (7-11-12)	Text has been changed to include frequency of silica gel cleanup samples ADEC-Accepted, state the frequency. Frequency will be stated (7/10/12). ADEC-Accepted (7-11-12) The following text has been added: "Transect lines were placed to include areas of historical contamination and were analyzed to gain a general understanding of the potential contaminants throughout the drainage and did not result in a full characterization of the drainage system." The number of samples and locations will be determined after the sediment mapping is completed. At least 54 samples will be collected. All mapping and sample results will be sent to ADEC for approval prior to the sediment removal task which will be described in an addendum to the Work Plan and in the addendum to the Site 28 Technical Memorandum. Please note that at this time the current SOW & Bristol's plan is to perform mapping and sediment sampling prior to production of the technical memorandum addendum. (7/10/12) See Left Column (7-11-12)

				Based on the Comment Resolution Meeting on 7/13/12 with USACE and ADEC Bristol has been approved to collect sediment samples to characterize the sediment that will allow Bristol to provide a map of the sediment areas and sample results to the ADEC and USACE prior to the Phase 1 Sediment Removal effort. ADEC-Accepted (7-13-12)
22.		4.7	ADEC will submit comments within the week of July 2, 2012 on section 4.7 and 4.7.1 and related activities. ADEC has numerous comments and questions on the activities and methods proposed in this work plan.	Acknowledged Please see RTC # 21 above re: Site 28 Drainage Remedial Actions ADEC-Accepted (7-11-12)
23.	54	4.8.1	The DUs should be sampled at 50 incremental units. The northern boundary of the Cargo Beach sampling effort should encompass the entire area that has been previously used as a staging/transport area. No sampling depth is stated. State the COC's based on historical activity at the site and the laboratory analysis analytes.	Text changed to read "approximately 50 incremental units…." As well as sample depth. Northern boundary definition encompasses the entire area that has been previously used as a staging/transport area ADEC-Accepted; state the sampling depth and COCs
24.	55	4.8.2	Same as comment # 54 re: No sampling depth, COCs, proposed sample analytes, etc.	See #23 response ADEC-Accepted; state the sampling depth and COCs
25.	56	4.8.3	Same as comments # 54 and 55 above.	See #23 response ADEC-Accepted; state the sampling depth and COCs

26.	56	4.9		**Has previous site characterization confirmed that POL contaminants are the only COC's? If so state and reference this. If not, other COCs should be screened and sampled for both characterization and confirmation. Is there a maximum volume of contaminated soil scoped for this site in 2012?** RTCs in the right column - Note: after a comment resolution telephone discussion w/ the Corps project manager C. Cossaboom on July 6, 2012, ADEC and the Corps concur that because of the unknowns, regardless of what drums and/or stained soil are/are not observed and/or removed from the site, because no previous investigation has occurred, the entirety of what is considered/agreed to be the footprint of site 10 requires soil characterization sampling for the full suite of contaminants. Further characterization and subsequent confirmation samples will be required if contamination is discovered and removal activities are required. Since ICs are not proposed for this site at this time, it is not acceptable to only sample any drum liquids for just POL and metals and to remove any stained soil; and for that to be the basis for determining future actions. C. Cossaboom (7/6/12) note: The drums found in 2011 were at the boundary of Sites 10 and 11. The Corps agrees that soil should be tested in this area where drums are discovered and excavated, for a full suite of potential contaminants. Site 10 has had previous investigation. There are no current plans to re-investigate the entirety of Site 10.	An area of surface soil contamination was documented in 1994 along the western edge of the gravel pad at the Site 10 Buried Drums site. The maximum concentration of DRO was 26,500 mg/kg. Additional surface soil samples were collected in 1996 and the maximum DRO was 17,000 mg/kg. Soil borings were completed in 2004 and demonstrated that subsurface soils are not significantly impacted; the maximum DRO result was 619 mg/kg. The extent of the buried drums, drum liquids, and associated contaminated soil at Site 10 is currently unknown. Data gathered during removal this construction season will be used to determine whether or not further removal is necessary in the future. The maximum volume of contaminated soil removal scoped for this site in 2012 is 50 tons. Soil confirmation samples will be collected and analyzed for a full suite of potential contaminants (GRO/BTEX; DRO/RRO; PAHS, PCBs, and metals) (7/10/12) **ADEC-Accepted; all of this info should be included in the narrative and QAPP of the work plan (7-11-12)**

27.	57-59	4.10	Surface water and soil samples should be collected in the order beginning with the most down gradient (LDU) in an upgradient direction towards the UDU.	Noted and text added ADEC-Accepted
28.	59	4.12	Narrative should state that ADEC has requested that any abandoned/demolished monitoring wells will be reinstalled as soon as site conditions allow.	USACE plans to install additional wells at the MOC following completion of soil removal ADEC-Accepted, state this in the narrative
29.	60	4.13	Corps of Engineers confirmed to ADEC that the holes remaining after stump removal are not backfilled with new material, rather the soil and material that comes out of the hole when removing the stump is put back in the hole. Narrative should briefly state this.	Text added accordingly ADEC-Accepted
30.	62	4.15	Include addendums and technical memorandums.	Addendums and memorandums are mentioned in the last paragraph of 4.15 ADEC-Accepted
31.	69	5.2.4	The names and qualifications of the two laboratory analysts for the field lab should be included.	Names and qualifications will be added ADEC-Accepted
32.	73	7.0	State the 2012 reporting deliverables and target dates.	Additional deliverable dates have been added. ADEC-Accepted
33.			**End of ADEC Comments on NEC Work Plan Narrative (except for sections 4.7 and 4.71 of the work plan narrative, which along with and ADEC comments on the work plan figures and UFP-QAPP will be submitted separately) within the week of July 2, 2012.** Note: many of ADEC's remaining comments which pertain to the QAPP portion of the work plan have been addressed as a result of the comment resolution telephone discussion w/ the Corps project manager C. Cossaboom on July 6, 2012. ADEC will submit any remaining comments that are not addressed via ongoing resolution of these and other comments and responses to RTCs already submitted if necessary prior to finalizing the work plan.	

Ariel, Callianne E (DEC)

From:	Dunkin, Curtis S (DEC)
Sent:	Friday, July 20, 2012 4:32 PM
To:	'Cossaboom, Carey C POA'; 'Shewman, Aaron F POA'; 'Craner, Jeremy POA'
Cc:	'Welker, Molly'; 'Jarrell, Greg'
Subject:	ADEC review and approval of responses to ADEC's comments on the draft 2012 NEC RA work plan figures
Attachments:	ADEC review of figures RTCs_NEC Work Plan_7-20-12.docx

Carey, thank you for providing the subject response to comments, for which I have completed review and determined them all to be adequate and acceptable; as notated in red font in the attached template. I will mail/email the project team a copy of this template w/ a cover letter on Monday for the Corps' records. Please contact me if you have any questions.
Thank you and regards

Curtis Dunkin
Environmental Program Specialist
ADEC Contaminated Sites Program
555 Cordova Street
Anchorage, AK 99501
Phone: 907-269-3053

Ariel, Callianne E (DEC)

From:	Dunkin, Curtis S (DEC)
Sent:	Friday, July 13, 2012 4:58 PM
To:	'Welker, Molly'; Cossaboom, Carey C POA; Shewman, Aaron F POA
Cc:	Jarrell, Greg
Subject:	RE: 2012 NE Cape Comment Resolution Meeting
Attachments:	ADEC review of addntl RTC_Comments_NEC Work_Plan_ 7-13-12.docx

Molly, thank you for providing the additional responses to the remaining additional ADEC comments on the draft 2012 NEC RA work plan, all of which I've determined adequately address ADEC's comments and revision requests. Pending that ADEC's remaining revision requests for the figures and UFP-QAPP associated with this work plan are incorporated into the revised work plan as agreed upon by the project delivery team during today's resolution meeting, ADEC tentatively approves the revised work plan to be implemented in the field. ADEC requests that the revised final work plan be completed and provided to project members as soon as possible, such that it is also available for reference in the field. I will send out a formal tentative approval letter to the project members on Monday. Please contact me if you have any questions.

Curtis Dunkin
Environmental Program Specialist
ADEC Contaminated Sites Program
555 Cordova Street
Anchorage, AK 99501
Phone: 907-269-3053

From: Welker, Molly [mailto:mwelker@bristol-companies.com]
Sent: Friday, July 13, 2012 4:43 PM
To: Cossaboom, Carey C POA; Dunkin, Curtis S (DEC); Shewman, Aaron F POA
Cc: Jarrell, Greg
Subject: 2012 NE Cape Comment Resolution Meeting

Please find attached the additional comments related to the Site 28, G & H Plumes at the MOC, and Site 21 that were discussed this morning during the Comment Resolution teleconference meeting.

Bristol appreciates the feedback and will move forward on the sediment sampling, making the revisions to the figures and work plan, and continuing to send the PDT information related to issues and results at NE Cape.

If you have any additional comments please contact me at 743-9341.

Thanks,

Molly

Molly Welker
Senior Project Manager
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Alaska Department of Environmental Conservation (ADEC)
Contaminated Sites Program
Document Reviewed: Draft May 2012 Northeast Cape Removal Action Work Plan Figures 1-12
Commenter: Curtis Dunkin-ADEC Date Submitted: July 3, 2012; ADEC reviewed RTCs on 7-20-12

Comment #	Page #	Section	ADEC Comment	Response
1.			**Comments on the Draft 2012 NEC RA Work Plan Figures 1-12**	
2.		Figures General	In the legends of all figures, state the year associated with all actions whether historical, future, proposed, etc. This should include all referenced samples, water in excavation (when observed), year an excavation boundary was proposed, year of the status of a depicted excavated footprint, etc.	Figures will be revised as suggested ADEC-Accepted (7-20-12)
3.		Figure 3	Include both references to the site number and name when calling out all sites (i.e. site 10 buried drums (only states site 10). Call out the roofing tar site which was discovered in 2010 and removed in 2011. The approximate Site 28 Drainage basin area should be outlined in red. The 'Barge Landing Area' as depicted should be included in the Cargo Beach MI sampling and discussed in the narrative. It would be helpful to have a new figure (similar to the format of figure 3) which expands the area of interest immediately surrounding and within the MOC that calls out all of the sites; include the POL soil dewatering impoundment sites in this figure. It would be helpful to better discern the water bodies, ponds, streams and rivers by making those associated lines and polygons blue.	Figure will be revised to include site name, roofing tar, outlining Site 28. ADEC-Accepted (7-20-12) Barge landing area will be included in the narrative on the MI sampling ADEC-Accepted (7-20-12) Water bodies will be denoted in blue ADEC-Accepted (7-20-12)
4.		Figure 4	Clarification is required re: the difference between the colored-hatched areas associated with (what the legend states to be) the area of any given excavation and the red lines which the legend states as 'proposed excavation area'. Perhaps there needs to be a different color of border added to the legend and the figure – one for proposed areas (currently the red border) which have not yet been excavated, and one for 'originally proposed' area, for areas where excavation activities have	Areas have been differentiated on the revised Figure 4 ADEC-Accepted (7-20-12)

			already occurred. Call out the name of the concrete pad in the center of the figure south of plume H. Call out the IDs of the monitoring wells. Call out lines should be a different color than black since they get lost within the topo lines.	Concrete Pad and MW will be called on figure Call out lines have been denoted in blue ADEC-Accepted (7-20-12)
5.		Figure 6	Overlay the originally proposed (postulated) plume boundary. The draft work plan narrative on page 37 should discuss more details of the information presented in Figure 6; for example 1) the fact that the excavation depths of most of the excavation footprint to date have gone to two feet below ground water; 2) that residual contamination remains both exceeding the alternative soil cleanup level and presumably Table C groundwater cleanup levels; 3) what is the basis for the 'proposed excavation area' – presumably the 2010 UVOST SI; 4) discuss the depicted sample location 11NCMOCSS068 (assuming sample was taken 2 ft below water table?); and 5) it is unclear what is meant by the legend reference to 'adjacent to' in regards to the curtain liners – are the curtain liners not 'overlying' those areas rather than being adjacent to? Brief discussion should be included in the narrative re: confirmation samples of the sidewalls of this excavation and the figure should depict any backfilling that has already occurred and when. This should be applied to other figures where backfilling has also occurred.	The original A1 plume delineated by the UVOST will be included in the figure. ADEC-Accepted (7-20-12) The text will be expanded as suggested. ADEC-Accepted (7-20-12) The proposed excavation area is based on sidewall Sample 11NCMOCSS068 being above the cleanup level. Liners were used to delineate the laterally extent of the excavation and were draped over the sidewalls (not the floor of the excavation since the floor was filled with water). The legend will be modified to clarify what is meant by 'adjacent' A note will be added to the figure that states this excavation was totally backfilled in 2011. As was J1A

				excavation at the MOC and this will be explained in the text. **ADEC-Accepted (7-20-12)**

6.		Figure 7	POL plumes and PCB excavation boundaries should be depicted with different colors rather than all black. All POL plume IDs should be called out in the figure. The PCB excavation footprint boundary should be depicted where confirmation samples have determined that soil contaminant concentrations are below ADEC cleanup level. Include a depiction in the legend for the numbers in the figure associated with the elevation contours. The narrative should clearly explain why a stockpile area is depicted over the same area where 2011 soil sample results were above the cleanup level. Should also clarify dates associated with the stockpile areas.	Revised figure shows the POL plumes in hatched red colors and IDs added. ADEC-Accepted (7-20-12) The intent of the PCB footprint boundaries, excavation locations, samples, etc. on Figure 7 is to provide enough surveyed reference point information for field operations related to the proposed excavation activities in 2012. ADEC-Accepted (7-20-12) The text will better explain that Fig 7 shows areas remaining above the cleanup level that will be targeted for removal in 2012, and more information to explain the stockpile results. ADEC-Accepted (7-20-12) A depiction in the legend for the numbers in the figure associated with the elevation contours has been added. ADEC-Accepted (7-20-12)

7.		Figure 8	Same comments and clarifications referenced in comment # 6 above for Figure 7. Any previously removed concrete should be depicted on the figure and in the legend. Also for both Figures 7 and 8, any previous PCB-wipe sample locations and the results (<1, >1, or >50 mg/Kg) should also be depicted.	No concrete was removed at Site 31. The concrete pad that was removed at Site 13 is shown in the legend of Fig 7. All of the concrete wipe-samples yielded results less than the cleanup level of 10 ug/100 square centimeters. Note: The PCB wipes are not recorded as mg/kg. Bristol will attempt to add PCB wipe locations to Figure 7 and 8 based on their locations documented in the field notes. Note: PCB wipe locations were not located with GPS as per the 2011 NE Cape Work Plan addendum. ADEC-Accepted (7-20-12)
8.		Figure 9	State in the figure and in the narrative of the work plan whether the 2011 samples as depicted were prior to or post excavation. Narrative should discuss briefly what information/data was used to determine that Arsenic contamination in soils exceeded cleanup levels which remained post 2011 removal.	Text added to figure legend "post excavation" ADEC-Accepted (7-20-12) The text will be clarified to state the following: "Following soil removal in 2011, discrete soil confirmation samples were collected from the

				excavation at the locations shown on Fig. 9. Confirmation samples were collected from the excavator bucket due to the excavation being inundated with water. " **ADEC-Accepted (7-20-12)**

9.		Figure 10	The figure does not adequately discern between what is considered to be the pond or stream features. Per the narrative of the work plan, ten ponds are proposed for sampling however, this figure depicts what appears to be more than 15 ponds. The figure and narrative should clarify whether 2011 delineated areas are considered to be a pond or a stream. A new figure for site 28 should be added which includes a specific ID for each pond feature and for what may be considered to be uniquely different reaches of the stream. Figures # 6 and 17 from the final February 2012 site 28 Technical Memorandum should be included in this work plan. Post mapping efforts, these figures should be updated with depictions of mapping results and the proposed 2012 sediment sampling locations and be submitted to ADEC for review and approval prior to collecting sediment samples. The same will be necessary to update these figures once 2012 sediment sample results are available to be included in the draft 2012 addendum; all of which the project team will utilize to determine the best path forward for removal actions; specifically Phase I. Has the depicted sediment trap been installed? If so state the date installed; if not rename proposed sediment trap. Call out the various concrete pad locations including the removed ones. What is the date of the aerial/ortho imagery? This should be stated in this and all other figures. Any significant changes to the drainage observed during the mapping effort (erosion, stream width and flow direction changes, etc. that have occurred since the ortho imagery was taken or since the 2011 delineation) should be depicted in the new figures.	This is a wetland area with dynamic fluctuations in water levels and features, and Bristol has delineated to the best of our ability in the work plan where the surface water bodies and ponding has occurred. Given the annual variability of the hydrology/surface runoff at NE Cape, specific hydrologic features related to the efforts/tasks at Site 28 will be better delineated after the 2012 mapping effort. And therefore Bristol disagrees with adding an additional figure until the 2012 mapping effort is completed. ADEC-Accepted (7-20-12) Figs 6 and 17 will be included in work plan and be revised after the sediment mapping is completed and sample results evaluated in 2012. All sample results and maps of the Site 28 that are generated in 2012 will be sent to ADEC for approval prior to the Phase 1 sediment removal. ADEC-Accepted (7-20-12) Sediment trap will be renamed to: Approximate location of proposed sediment trap. ADEC-Accepted (7-20-12) Concrete pads will be identified on the figure as well as the two pads that have been removed. Date of satellite image will be noted on all figures. All new survey data and ponding and stream data will be included in the amended Site 28 Tech Memo that will be sent to ADEC for approval ADEC-Accepted (7-20-12)

10.		Figure 11	All references in the legend samples collected need to state the matrix sampled. Call out what the arrow to the left of each decision unit represents. The down gradient direction in relationship to the both the decision units and the Suqi River need to be depicted. The location of the spring located near the Suqi River which has been previously samples should be depicted.	Revised figures will include soil and surface water sample matrix. ADEC-Accepted (7-20-12) The arrow on the left of each DU will be defined as the Grid Row Unit and down gradient direction will be shown on figure. ADEC-Accepted (7-20-12) The 2010 surface water sample (green dot) is shown on the figure ADEC-Accepted (7-20-12)
11.		Figure 12	Monitoring well locations should be depicted in color. Include the locations of the 2009 ISCO pilot study injection points in this figure and in future figures depicting the MOC monitoring well locations. Call out lines are very difficult to discern and should be changed to a color.	Figure will be revised as suggested ADEC-Accepted (7-20-12)
12.			**End of ADEC Comments on the Draft 2012 NEC RA Work Plan Figures 1-12**	

THE STATE of ALASKA

GOVERNOR SEAN PARNELL

Department of Environmental Conservation

DIVISION OF SPILL PREVENTION & RESPONSE
Contaminated Sites Program

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File No: 475.38.013

November 14, 2012

US Army Corps of Engineers USACE, AK District
Attn: Mr. Carey Cossaboom
CEPOA-PM-ESP
P.O. Box 6898
JBER, AK 99506-0898

Re: ADEC Approval of the Final 2012 Northeast Cape Removal Action (RA) Work Plan

Dear Mr. Cossaboom;

Thank you for providing the Alaska Department of Environmental Conservation's Contaminated Sites Program (ADEC) with a copy of the Final Northeast Cape RA Work Plan which is dated July 2012 and was received by ADEC on September 13, 2012.

ADEC has completed its review of the final work plan and determined that all of ADEC's comments and revision requests have been adequately addressed. ADEC provided the Army Corps of Engineers (Corps) with tentative approval to implement the work plan (via ADEC's July 13, 2012 email to the Corps) per final revisions to be made to the work plan as agreed upon by the project team after resolving numerous rounds of comments. This letter serves as ADEC's approval of the final work plan which ADEC has filed as the formal document on record.

Please contact me at curtis.dunkin@alaska.gov or at (907)269-3053 if you have any questions regarding this letter.

Sincerely,

Curtis Dunkin
Environmental Program Specialist

cc: Greg Jarrell and Julie Clark – BERS (via email)

STATE OF ALASKA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF PARKS AND OUTDOOR RECREATION
OFFICE OF HISTORY AND ARCHAEOLOGY

SARAH PALIN, GOVERNOR

550 W. 7TH AVENUE, SUITE 1310
ANCHORAGE, ALASKA 99501-3565
PHONE: (907) 269-8721
FAX: (907) 269-8908

July 2, 2009

File No.: 3130-1R COE/Environmental
3330-6N XSL-060

SUBJECT: Cleanup operations at Northeast Cape, Saint Lawrence Island
FUDS program

Guy R. McConnell
Chief, Environmental Resources Section
U. S. Army Corps of Engineers, Alaska District
P. O. Box 6898
Anchorage, AK 99506-0898

Dear Mr. McConnell:

The Alaska State Historic Preservation Office received your correspondence on May 29, 2009 and has reviewed your proposed cleanup operations under Section 106 of the National Historic Preservation Act. As mentioned in your letter, Alaska Heritage Resources Survey (AHRS) site, Northeast Cape AC & W and WACS (XSL-060) is within the area of potential effect. Demolition of XSL-060 has already been mitigated however, through implementation of a memorandum of agreement between the Corps and SHPO (signed in 1999). We concur with your finding therefore, that no historic properties will be adversely affected by this project.

Please contact Stefanie Ludwig at 269-8720 if you have any questions or if we can be of further assistance.

Sincerely,

Judith E. Bittner

Judith E. Bittner
State Historic Preservation Officer

JEB:sll

THE STATE
of ALASKA
GOVERNOR SEAN PARNELL

Department of Environmental Conservation

DIVISION OF WATER
Wastewater Discharge Authorization Program

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August 31, 2012

DEC File No.: 475.48.001

Greg Jarrell
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111 W. 16th Avenue, Third Floor
Anchorage, AK 99501

Re: **Authorization 2009DB0004-0216: Bristol Environmental Remediation Services, LLC-Northeast Cape HTRW Remedial Actions**

Dear Permittee:

The Alaska Department of Environmental Conservation (DEC) has completed its review of your 2009DB0004 Contained Water Notice of Intent (NOI) for the Northeast Cape HTRW Remedial Actions and is issuing authorization number 2009DB0004-0216 for this project. The discharge from this project is authorized in accordance with the terms of the general permit and any site specific requirements in this authorization. An electronic copy of the Contained Water general permit will be attached to the PDF portfolio which includes this authorization letter which is posted to the DEC water permit search.

The authorization effective date is August 31, 2012.

The authorization to discharge expires at midnight on August 30, 2013.

The authorized discharge location is to a gravel pad upland of a vegetated area as described in the NOI.

The following site specific conditions apply:

1) Before water discharge, the permittee must collect contained water samples for TAH and TAqH. If the analytical results exceed the effluent limits established by the permit, the water must be treated to meet the requirements of the permit and retested prior to discharge.

2) At startup, a visual check for petroleum sheen is required. If an oil sheen is observed corrective action must be taken to remove the hydrocarbon contamination prior to discharge.

3) Visual checks for sheen in the effluent must be recorded daily, and daily estimates of flow must be taken to accurately estimate the total wastewater discharged monthly and for the total project.

4) Monitoring for the following parameters are waived by this authorization: pH, turbidity, settleable solids, and total chlorine.

A copy of the General Permit 2009DB0004 and this authorization must be kept at the project site. This authorization does not relieve the permittee from other local, state, or federal government permitting requirements.

The Discharge Monitoring Report can be found and completed on the following website, http://www.dec.alaska.gov/water/Compliance/permittee.html. Once the DMR is completed it shall be submitted to the following address:

Department of Environmental Conservation Division of Water Compliance and Enforcement Program 555 Cordova Street Anchorage, Alaska 99501 Telephone Nationwide (877) 569-4114 In Anchorage Area/International (907) 269-4114 Fax (907) 269-4114 Email: dec-wqreporting@alaska.gov

If you have any questions concerning this authorization, please contact Jake Greuey at (907) 269-8117 or Jake.Greuey@alaska.gov.

Sincerely,

James Rypkema

James Rypkema
Section Manager, Storm Water and Wetlands

STATE OF ALASKA

DEPARTMENT OF NATURAL RESOURCES
Division of Mining, Land and Water

Northern Regional Land Section

SARAH PALIN, GOVERNOR

NORTHERN REGION
3700 AIRPORT WAY
FAIRBANKS, ALASKA 99709-4699
PHONE: (907) 451-3014
FAX: (907) 451-2751
dianna.leinberger@alaska.gov

May 18, 2009

Christopher Floyd
US Army Corps of Engineers, Alaska District
Environmental Resources Section
EN-CW-ER
PO BOX 6898
Elmendorf AFB, AK 99506-06898

RE: **Letter of Entry for state tidelands within Kitnagak Bay, Saint Lawrence Island**

For the purpose of accessing the Northeast Cape for a Formerly Used Defense Site Cleanup and a Native American Lands Environmental Mitigation Program Project

Dear Mr. Floyd,

The Department of Natural Resources, Division of Mining, Land and Water hereby grants the US Army Corps of Engineers (USACE) a "Letter of Entry" authorization to enter upon state tidelands for the express purpose of conducting barge landings for the continued assessment and cleanup of the Northeast Cape. The barge landings will occur at Kitnagak Bay located within Kateel River Meridian, Township 25 South, Range 54 West, sections 10, 11, 12, 14, 15.

The Northern Region Land Office is hereby providing this letter allowing for entry for the purpose of conducting the above described project. The Letter of Entry is subject to the following terms and conditions:

- The Letter of Entry does not convey any interest in state land and as such is revocable immediately, with or without cause. The USACE, its contractors and sub-contractors are authorized use of the barge landing within state tidelands, but are not authorized to preclude or restrict public access on and through the tideland area.

- All operations must be conducted in a manner that will assure minimum conflict with other users of the area. This Letter of Entry is subject to the principles of the public trust doctrine specifically the right of the public to use navigable waterways and the land beneath them for navigation, commerce, fishing, hunting, protection of areas for ecological study, and other purposes, must be protected.

- The Regional Manager or his designee reserves the right to grant other interests to the subject areas consistent with the public trust doctrine. The State of Alaska makes no representations or warranties whatsoever, either expressed or implied, as to the existence, number, or nature of such valid existing rights.

- All activities at the site shall be conducted in a manner that will minimize the disturbance to the natural character of the beach.

- All waste generated by the USACE, its contractors and sub-contractors under this Letter of Entry will be removed or otherwise disposed of as required by state and federal law.

- Abandonment of equipment is prohibited on state lands.

- Refueling of equipment and the storage of petroleum products on state owned tidelands is prohibited.

- The USACE, its contractors and sub-contractors shall immediately notify the Alaska Department of Environmental Conservation (ADEC) by telephone, and immediately afterwards send ADEC a written notice by facsimile, hand delivery, or first class mail, informing ADEC of any unauthorized discharges of oil to water, any discharge of hazardous substances other than oil and any discharge or cumulative discharge of oil greater than 55 gallons solely to land and outside an impermeable containment area. If a discharge, including a cumulative discharge, of oil is greater than 10 gallons but less than 55 gallons, or a discharge of oil greater than 55 gallons is made to an impermeable secondary containment area, the USACE, its contractors and sub-contractors shall report the discharge within 48 hours, and immediately afterwards send ADEC a written notice by facsimile, hand delivery, or first class mail. Any discharge of oil, including a cumulative discharge, solely to land greater than one gallon up to 10 gallons must be reported in writing on a monthly basis. The posting of information requirements of 18 AAC75.305 shall be met. Scope and Duration of Initial Response Actions (18 AAC 75.310) and reporting requirements of 18 AAC 75, Article 3 also apply.

  The USACE, its contractors and subcontractors shall supply ADEC with all follow-up incident reports. Notification of a discharge must be made to the nearest ADEC Area Response Team during working hours: Anchorage (907) 269-7500, fax (907) 269-7648; Fairbanks (907) 451-2121, fax (907) 451-2362; Juneau (907) 465-5340, fax (907) 465-2237. The ADEC oil spill report number outside normal business hours is (800) 478-9300.

- The USACE may not assign or transfer, in part or whole, the Letter of Entry to another party.

- The USACE must obtain written approval from the Regional Manager or his designee prior to making any changes or improvements to the project site or their operations as authorized by this Letter of Entry.

- This Letter of Entry does not relieve the USACE from securing other necessary state, federal and local permits. This Letter of Entry does not provide authorization for travel on private property.

- The USACE, its contractors and sub-contractors shall observe all federal, state and local laws and regulations applicable to the authorized areas, including regulations for the protection of fish and wildlife, and shall keep all premises in a neat, orderly, and sanitary condition.

- The Alaska Historic Preservation Act requires that if cultural or paleontological resources are discovered on state lands as a result of this activity, work that would disturb such resources must be stopped and the State Historic Preservation Office be contacted immediately at (907) 269-8720.

- This Letter of Entry is issued for a specific use. Use of the barge landing for purposes other than those specified constitutes a breach of this authorization and may result in revocation. This Letter of Entry is revocable with any applicable laws, statutes and regulations (state and federal).

Any questions regarding any aspect of this Letter of Entry shall be directed to Dianna Leinberger, Department of Natural Resources, Division of Mining, Land and Water, Northern Region Land Office, 3700 Airport Way, Fairbanks, Alaska 99709, (907) 451-3014, dianna.leinberger@alaska.gov.

Sincerely,

Dianna Leinberger

Dianna Leinberger
Natural Resource Specialist

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

June 29, 2009

Guy R. McConnell
Chief, Environmental Resources Section
U.S. Army Corps of Engineers, District Alaska
PO Box 6898
Elmendorf AFB, AK 99506-0898

Dear Mr. Connell:

I have reviewed your May 18, 2009 letter to Doug Mecum concerning an Army Corps of Engineers (ACOE) Formerly Used Defense Site (FUDS) project proposed at Northeast Cape on Saint Lawrence Island. The Steller sea lion (*Eumetopias jubatus*) is a species listed as "endangered" under the Endangered Species Act and may occur in the project vicinity. There is Steller sea lion designated critical habitat on haulout sites located on South Punuk Island at (64 04.0N, 168 51.0W) and at SW Cape (63 18.0N, 171 26.0W) on St. Lawrence Island. Other listed species you have identified as potentially present include: blue, fin, humpback, North Pacific right, and sperms whales.

According to your project description, contractors will access St. Lawrence Island by landing craft at Kitnagak Bay on the opposite site of the island and approximately 19 miles away from the nearest designated Steller sea lion critical habitat at South Punuk Island. As stated in your description: "There will be no reason for the landing craft to approach either of these two critical habitats." Any aircraft associated with the project will approach from the east and land at the Northeast Cape airstrip, and there will be no need to approach the Punuk Islands.

Based on the information in your letter and data available to us concerning critical habitat and the distribution of Steller sea lions and other species listed as "endangered" under NOAA Fisheries jurisdiction in the project area, we concur with your conclusion that the proposed activities will have no effect on the Federally listed species identified. However, our information concerning possible Steller sea lion use of St. Lawrence Island is scant and somewhat dated. Thus, if for any reason ACOE staff or contractors observe or encounter Steller sea lions within the project area, we request operations immediately cease and that ACOE staff contact our office to reinitiate consultation.

Please contact Mr. Dana J. Seagars (907-271-5005) or by e-mail (dana.seagars@noaa.gov) if you have any questions or require additional information.

Sincerely,

Bridget Mansfield for

Kaja Brix
ARA, Protected Resources Division

DEPARTMENT OF THE ARMY
RIGHT-OF-ENTRY FOR
ENVIRONMENTAL ASSESSMENT AND RESPONSE

<u>**SAINT LAWRENCE ISLAND, ALASKA**</u>	<u>**NO. DACA85-**</u> 8-08-0134
(Project, Installation or Activity)	(Property Identification Number)

The undersigned, hereinafter called the "**Owner**", in consideration of the mutual benefits of the work described below, hereby grants to the **UNITED STATES OF AMERICA**, hereinafter called the "Government", a right-of-entry upon the following terms and conditions:

1. The Owner hereby grants to the Government an irrevocable right to enter in, on, over and across the land described herein, for a period not to exceed five (5) years, <u>**beginning June 1, 2008**</u>, and terminating upon the earlier completion of remediation or the filling of a notice of termination in the local land records by the representative of the United States in charge of the Saint Lawrence Island remediation project, for use by the United States, its representatives, agents, contractors, and assigns, as a work area for environmental investigation and response; including the right to store, move, and remove equipment and supplies; erect and remove temporary structures on the land; investigate and collect samples; excavate and remove ordnance and explosive waste, pollutants, hazardous substances, contaminated soils, containerized waste, and replace with uncontaminated soil; excavate and remove all storage tanks (above, at and below ground level), contents and appurtenant piping; demolish and dispose of former military structures and debris; construct, operate, maintain, alter, repair and remove groundwater monitoring wells, groundwater purification and injection systems, appurtenances thereto and other devices for the monitoring and treatment of contamination in soil, air and water; and perform any other such work which may be necessary and incident to the Government's use for the environmental investigation and response on said lands; subject to existing easements for public roads and highways, public utilities, railroads and pipelines; reserving, however, to the landowner(s), their heirs, executors, administrators, successors and assigns, all such right, title, interest and privilege as may be used and enjoyed without interfering with or abridging the rights and right-of-entry hereby acquired.

2. The Owner also grants the right to enter and exit over and across any other lands of the Owner as necessary to use the described lands for the purposes listed above.

3. All tools, equipment, and other property taken upon or placed upon the land by the Government shall remain the property of the Government and may be removed by the Government at any time within a reasonable period after the expiration of this permit or right-of-entry.

4. Upon expiration or termination of this right-of-entry, the Government shall assure restoration of the ground contour and replace any pavement or other cover which was removed or damaged for this work, establish a groundcover of grass on areas not otherwise covered and reconnect any operating utility lines which were required to be disconnected or otherwise disrupted.

5. If any action of the Government's employees or agents in the exercise of this right-of-entry results in damage to the real property, the Government will, in its sole discretion, either repair such damage or make an appropriate settlement with the Owner. In no event shall such repair or settlement exceed the fair market value of the fee title to the real property at the time immediately preceding such damage. The Government's liability under this clause is subject to the availability of appropriations for such payment, and nothing contained in this agreement may be considered as implying that Congress will at a later date appropriate funds sufficient to meet any deficiencies. The provisions of this clause are without prejudice to any rights the Owner may have to make a claim under applicable laws for any damages other than those provided for herein.

6. The land affected by this right-of-entry is located in the State of Alaska, and is described as follows:

All surface and subsurface rights on Saint Lawrence Island, Alaska, within Township 20 South, Range 67 West, Kateel River Meridian and; Township 25 South, Range 54 West, Kateel River Meridian

WITNESS MY HAND AND SEAL this 17 day of June 2008.

Aaron Iworrigan

SAVOONGA AK 99769 JUN 17 2008 USPS

KUKULGET, INCORPORATED
Perry Pungowiyi, President

Perry Pungowiyi
Authorized Signature

P.O. Box 160
Address

(907) 984-6184
Telephone Number

UNITED STATES OF AMERICA

Veronica A. Hiriams
Veronica A. Hiriams
Chief, Real Estate Division
US Army Engineer District, AK
P.O. Box 898
Anchorage, Alaska 99506-0898

SAINT LAWRENCE ISLAND, ALASKA
(Project, Installation or Activity)

NO. DACA85- 8-08-0134
(Property Identification Number)

SIVUQAQ, INCORPORATED
~~Bruce Boolowon, President~~ Merle Apassingok, Acting Chairman

Authorized Signature

P.O. Box 101 Gambell, AK. 99742
Address

(907) 985-5826
Telephone Number

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Anchorage Fish and Wildlife Field Office
605 West 4th Avenue, Room G-61
Anchorage, Alaska 99501-2249

in reply refer to AFWFO

May 13, 2009

Susan Luetters
Bristol Environmental & Engineering Services Corporation
111 W 16th Ave., Third Floor
Anchorage, Alaska 99501

Re: St. Lawrence Island NE Cape Site USACE Dump Cleanup (*Consultation number 2009-0093*)

Dear Ms. Luetters,

On April 14, 2009, we received your email that Bristol Environmental & Engineering Services Corporation is working with the U.S. Army Corps of Engineers relative to a former military installation and White Alice Site that is in the process of being remediated towards closure. This site is located on the northeast corner of St. Lawrence Island. The Cargo Beach Road Landfill is an unpermitted landfill that was used as the installation's main solid waste disposal area from 1965 until closure in 1974. Bristol Environmental & Engineering Services Corporation is currently preparing the storm water pollution prevention plan relative to the removal of drums within an area that is the former dump site for the facility. Bristol Environmental & Engineering Services Corporation is scoped to remove 75 tons of contaminated soil with an option of another 150 tons of contaminated soil if needed. There will be no field screening or soil sampling and an in-situ chemical oxidation process will be used to remediate petroleum hydrocarbons in groundwater and soil at the former Main Operations Complex. Bristol Environmental & Engineering Services Corporation will remove drums filled with liquid up to 2500 gallons and the whole site will be capped with local material from a nearby and existing borrow area.

On May 11, 2009, I spoke with Chris Floyd from the Army Corps of Engineers. Apparently this former dump site was used to dispose of containers filled with various unknown liquids and when the military was done using the site, the dump site was simply covered with a large mound of dirt. Currently, contaminants, namely petroleum hydrocarbons, are leaking out of the sides of this mounded area and this project is to remedy that situation, remove drums, and re-cap the site more effectively.

As stated in the information you provided on April 14, 2009, drums containing liquids will be transported to a drum-processing area, to be established along Cargo Beach Road immediately northeast of the site. Contaminated soil will be placed in lined intermodal shipping containers for off-island disposal. Wastewater will be cleaned and disposed of on-site. From your email on April 23, 2009, with respect to the potential for migratory ground nesting birds, the crew will evaluate the site prior to beginning work. However, consultation by you with a Bristol employee that has been involved with the project in the past indicated that there is a high fox population on that end of the island which makes the likelihood of ground nesting birds rather low.

As we discussed on April 21, 2009, yellow-billed loons (*Gavia adamsii*, listed as a candidate species in 2009) nest on St. Lawrence Island. However, they are less than likely to nest in the action area because the site is disturbed and lacking vegetation in some places. In addition, the fox population is reported to be high in the action area and the crew will look for migratory bird nests prior to beginning work.

Spectacled eiders (*Somateria fischeri,* listed as threatened in 1993) may stage for migration off the northern coast of the action area from July 15 – October 1. This work is proposed for Summer 2009 and thus spectacled eiders may be present in the vicinity during the action. However, wastewater will be cleaned on-site without an outfall and wastes will be transferred to appropriate containers for storage and off-island disposal.

As a result, we believe the probability that this action will result in the taking of listed species is discountable. As a result, the Service concurs with your determination that the proposed action is not likely to adversely affect listed species or adversely modify critical habitat. Preparation of a biological assessment or further consultation under section 7 of the ESA is not necessary at this time. In view of this, requirements of section 7 have been satisfied. However, obligations under the ESA must be reconsidered if new information reveals project impacts that may affect listed species or critical habitat in a manner not previously considered, if this action is subsequently modified in a manner which was not considered in this assessment, or if a new species is listed or critical habitat is determined that may be affected by the identified action.

This letter relates only to federally listed or proposed species, and/or designated or proposed critical habitat, under our jurisdiction; namely, the Aleutian shield fern (*Polystichum aleuticum*, listed as endangered in 1988), spectacled eider (*Somateria fischeri,* listed as threatened in 1993), North American breeding Steller's eider (*Polysticta stelleri*, listed as threatened in 1997), the southwest distinct population segment of northern sea otter (*Enhydra lutris kenyoni,* listed as threatened in 2005), short-tailed albatross (*Phoebastria albatrus*, listed as endangered in 2000), polar bear (*Ursus maritimus*, listed as threatened in 2008), Kittlitz's murrelet (*Brachyramphus brevirostris,* listed as a candidate species in 2005), and yellow-billed loon (*Gavia adamsii*, listed as a candidate species in 2009). This letter does not address species under the jurisdiction of the National Marine Fisheries Service, or other legislation or responsibilities under the Fish and Wildlife Coordination Act, Clean Water Act, National Environmental Policy Act, Marine Mammal Protection Act, Migratory Bird Treaty Act, or Bald and Golden Eagle Protection Act.

Thank you for your cooperation in meeting our joint responsibilities under section 7 of the ESA. If you have any questions, please contact me at (907) 271-3063 and refer to consultation number 2009-0093.

Sincerely,

Tim Langer

Tim Langer, Ph.D.
Endangered Species Biologist

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APPENDIX B

Response to Comments,
Monthly Status Reports, and Correspondence

Response to Comments

Alaska Department of Environmental Conservation (ADEC)
Contaminated Sites Program
Document Reviewed: Draft January 2013 Northeast Cape 2012 Removal Action Report
Commenter: Curtis Dunkin-ADEC **Date Submitted:** April 01, 2013; ADEC Review of RTCs on April 10, 2013

#	Page #	Section	ADEC Comment	Response
1.	1	1.0	Associate a name with the stated contract numbers for clarity; i.e. is one for site 28 and the other for NEC site wide?	Both are named Northeast Cape HTRW Remedial Actions. ADEC-Accepted April 10, 2013
2.		2.0 General	ADEC has previously submitted numerous comments in past documents (work plans, reports, etc.) which are specific to the subsections of section 2.0. These subsections appear to be cut and pasted from previous Northeast Cape documents and do not include the revisions which ADEC has previously requested. Please refer to ADEC's comments on these sections in previous 2011 and 2012 documents and apply those comments and revision requests to this document.	Bristol will look through 2011 and 2012 reports and comments and compare this information with what is located in the 2012 report. ADEC-Accepted April 10, 2013
3.	14	Table 2-1	The status of the construction of the settling pond should be changed from 'in progress' to 'planned'. ADEC has not received any proposals for this portion of the rememdy for site 28. Revise the remedy action for site 9 to state: 'Investigate shallow metallic anomalies and potential soil and surface water contamination and cap the landfill. State in the Notes at the end of this table on page 15 that the Site 7 Cargo Beach Landfill was addressed in a separate 2009 ROD.	The requested changes will be made. ADEC-Accepted April 10, 2013
4.	18	3.1	The base contract and modifications sections both include the same actions related to site 10. Were these options exercised as both base and modification options; i.e. were two tons of drums, 2000 gallons of liquids, etc. removed from site 10 in 2012?	The modifications at site 10 are in addition to the base exercised options, so totals are: 1,100 gallons liquid; 2 tons drums; and 100 tons soil. Two tons of drums were not removed, nor were 100 tons of soil (59.40 tons of soil were removed), there are

				quantities remaining to be completed in 2013. ADEC-Accepted April 10, 2013; please include the response/clarifications in the associated narrative sections for clarity Bristol response: A bulleted list of remaining work (from 2012, to be completed in 2013) has been added to the Executive Summary.
5.	23	4.1 and 4.1.1	Were work elements associated directly with contaminated sites work completed in the field in 2012 prior to receiving ADEC's approval on the planning document(s)? If so, state these actions.	ADEC tentatively approved the work plan on July 13, 2012. There were no completed elements prior to this approval. ADEC-Accepted April 10, 2013 Final approval was received on November 14, 2012. By this time, Bristol was off-site and all activities had been completed as described in this RA report. ADEC-Accepted April 10, 2013
6.	24	4.1.2	In the bullet point discussing ADEC's tentative and final approval of the work plan, state the date that ADEC was provided with a final copy of the 2012 work plan. This section should also state ADEC's tentative approval for the site 28 removal actions in 2012. The associated emails, September meeting minutes and other documentation need to be included in the regulatory and permit appendix (and/or reference that they are included in the 2012 Phase I Sediment Removal Report).	Bristol submitted the Final 2012 Work Plan on July 25, 2012. ADEC-Accepted April 10, 2013 ADEC tentative approval was received on July 13, 2012. ADEC-Accepted April 10, 2013 Correspondence regarding 2012 planning documents will be gathered and included as recommended. ADEC-Accepted April 10, 2013
7.	32	5.1	First paragraph on this page states that removal actions began on July 12, however section 4.1.2 states that ADEC provided tentative approval of the final work plan via email on July 22, 2012. Similar to comment #5 above, what removal actions were conducted prior to receiving ADEC's	The ADEC's tentative approval date has been updated to July 13, 2012. Removal actions included POL-soil removal which were operating under the 2011 work plan

			approval?	for contract W911KB-06-D-0007, Task Order 0007. Pole removal had been initiated prior to the date of tentative approval. ADEC-Accepted April 10, 2013; please include the response in the narrative for clarity - -Approvals covered in first bullet of Section 4.1.2 (permits and regulatory notifications.
8.	34	5.6	Revise the first sentence of this section to state: '…small amount of work each year…'.	The requested revision has been made to the document. ADEC-Accepted April 10, 2013
9.	35	5.7	Second to last sentence of this section remove 'residual range organics' to simply state DRO/RRO. Re: the last sentence of this section, discuss how overburden material was initially determined to be below cleanup levels. Also discuss the instances in which stockpiled overburden material was initially determined to be clean but was later determined to be contaminated at concentrations exceeding cleanup level.	Residual range organics has been changed to DRO/RRO. ADEC-Accepted April 10, 2013 Additional descriptions of sampling overburden will be added including the determination that some of the stockpile was above cleanup levels. ADEC-Accepted April 10, 2013
10.	39	Table 5.1	Does 'soil container' refer to two bulk bags placed on a shipping container (metal flat or skid)? This should be clarified in the table notes for this and other tables and stated in the narrative for clarity. Site 10 excavation states that more than 50 tons of soil was excavated from site 10, although previous statements reference 50 tons. Also see comment #4 above re: reconciling references to removal volumes.	Containers refers to the individual bulk bags. This will be clarified in the notes. At Site 10, 59.40 tons of soil were removed (scoped for 100). Additional soil will be removed from this site in 2013. ADEC-Accepted April 10, 2013; please include the response in the associated narrative sections and table notes for clarity
11.	45	5.12	Section should be expanded to briefly summarize the environmental sampling that was conducted at sites not discussed; i.e. radar dome road,	Bristol will add brief statements regarding the radar dome, site 10, sites 13 and 31 and

			sites 10, 13, 31, etc. Omit the word 'And' at the beginning of the second to last sentence of this section.	Site 21. ADEC-Accepted April 10, 2013 "And" will be deleted from the beginning of the second to last sentence of this section. ADEC-Accepted April 10, 2013
12.	46	5.12.2	Section needs to discuss the correlation sampling that was required for PCB-contaminated soil analyses being conducted by the field laboratory.	A discussion of the correlation sampling and analysis will be added to the narrative of the report. ADEC-Accepted April 10, 2013 **Awaiting write-up from the USACE**
13.	49	5.12.5	Reference the table that contains the TCLP analytical results discussed at the end of this section.	Reference to the drum waste characterization table will be added to Section 5.12.5. ADEC-Accepted April 10, 2013
14.	53	5.13	Didn't the field laboratory also analyze concrete wipe samples? If so state in this section.	A sentence stating that the field-lab analyzed wipe-samples will be added to this section along with a reference to section 6.5.7. Wipe-sampling is discussed further in section 6.5.7. ADEC-Accepted April 10, 2013
15.	54	6.1.1	Briefly state the rationale that the USACE used to select the listed wells to be included in the groundwater monitoring and MNA in the second paragraph on this page. The end of this section should also include a brief summary statement that the USACE has informed the project delivery team that it intends to install a new network of groundwater wells after removal actions at the MOC are completed in order to continue monitoring groundwater and MNA.	Text will be added describing the rationale of MOC well selection in 2010. Well selection was based on a combination of factors, including the physical condition of the well, location relative to the anticipated excavation area, and presence of groundwater in the well. ADEC-Accepted April 10, 2013
16.	55	6.1.1	State the COC and respective exceedance concentrations that were previously observed in MW88-10 in 2010.	A statement will be added to Section 6.1.1 noting that MW88-10 had a DRO exceedance of 1.6 mg/L in 2010.

				ADEC-Accepted April 10, 2013
17.	56	6.1.3	All of the details regarding the procedure utilized to conduct the referenced well thawing and sampling should be included in section 6.1.2 along with the rationale to utilize this approach. How many wells were sampled after thawing with this method? Sampling of groundwater wells after thawing with a steel rod was not proposed in the 2012 work plan nor was it approved by ADEC. All data associated with samples that were taken after thawing with this method are rejected by ADEC and should be qualified accordingly in all data tables and discussed in the associated narrative sections of the report. The well locations at which exceedances were observed should also be depicted in color.	Additional text will be added to Section 6.1.3 describing the thawing approach and the IDs of the wells that were thawed. Please note this as an item for discussion at the comment resolution meeting. ADEC-Accepted April 10, 2013 Bristol response: additional text was added to section 6.1.2. The thawing rod was only used to thaw ice plugs relatively high in the casing, was decontaminated between wells and it did not enter the groundwater table.
18.	60	6.2.1	End of the first paragraph on this page, state how many instances it has occurred in the past three years (2010-2012) that surface water did not exist within a selected cell. Last paragraph of this page, was BTEX included in the analysis?	Bristol will look for any information regarding whether or not this has happened in the past, and if so, add the information to the narrative. ADEC-Accepted April 10, 2013 BTEX was not included in the surface water analysis. ADEC-Accepted April 10, 2013
19.	61	6.2.1	First paragraph on this page, why was TAqH not incl. w/ TAH for surface water? Revise the discussion re: the silica gel cleanup results of samples at the end of this section (and elsewhere for other similar statements/discussion re: the silica gel cleanup results). ADEC has repeatedly commented in previous NEC work plans and reports in recent years that ADEC requires that a correlation study be conducted and approved prior to utilizing the silica gel cleanup method to determine a ratio of the petrogenic: biogenic fractions in soil analysis results. Include statements in all references to silica gel cleanup that ADEC has not approved its utilization in determining the petrogenic: biogenic fractions in soil analysis results, therefore site decisions will be made based upon the non silica gel	TAH (BTEX) was not included in sampling. Only PAHs were specified in the Scope of Work. ADEC-Accepted April 10, 2013; please include the response in the narrative for clarity A correlation study has been performed following ADEC guidance for silica gel treated results and the results have been discussed in reports. No silica gel treated results have been used to demonstrate that site-specific cleanup levels have been achieved at any locations at NE Cape.

			cleanup results. Last sentence of this section, state whether the reference to 2011 analyses results is based upon the silica gel or non SG results.	Last sentence of Section 6.2.1 will be revised to state that soil analytical results from all DUs were below site-specific cleanup levels for both silica gel treated and untreated samples. ADEC-Accepted April 10, 2013
20.	61	6.2.2	First sentence of this section, what is meant by similar? State the specific differences to the sampling plan in 2012 from previous years and why these changes were made Why were surface water samples within the DUs not collected in 2012? The final 2012 NEC RA Work Plan stated that this would be conducted.	First sentence will be clarified to state that the same sampling procedures were utilized for 2010, 2011 and 2012. ADEC-Accepted April 10, 2013 Surface water samples were collected from each sampled cell within the DUs and analyzed in the fixed-base lab for methane. Surface water sample results for two discrete surface water sample locations were collected and the data are presented in Table F7 in Appendix F. These surface water samples were submitted to TestAmerica for DRO/RRO and PAH analyses. The sample locations are the same as the locations that were sampled in 2010 and 2011. ADEC-Accepted April 10, 2013; please include response in the narrative for clarity
21.	62	6.2.3	The designation of soil vs. sediment needs to be discussed further by the project delivery team. Generally, mineral/organic material that is overlaid by water is considered sediment. For example, mineral and organic deposited material located within a river or drainage would be considered soil during any time that it was not submerged in water.	The previously agreed upon definition of sediment was “naturally occurring loose mineral and organic material found at the base of an active stream channel or pond connected to a stream channel, which was deposited by water during the processes of

				weathering and erosion. Mineral material atop a vegetative mat, or in a predominately peat interval, will not be considered sediment." (2012 Final Work Plan) If this definition is no longer agreed to we can default to the definition found in 18 AAC 70.990: "sediment" means solid material of organic or mineral origin that is transported by, suspended in, or deposited from water; A sediment includes chemical and biochemical precipitates and organic material, such as humus. ADEC-Accepted April 10, 2013; this topic can be further discussed and determined at the resolution mtg. planned for 4-12-13 USACE recognizes that the compact material remaining after the sediment has been removed has the potential to become sediment. Confirmation samples taken from this compact layer will therefore be compared against the established sediment cleanup levels in the 2009 Decision Document. For those potential contaminants not included in the Decision Document the sample results will be evaluated against the Probable Effects Level in the NOAA SQuiRTs. As stated in the January 2013 ADEC sediment

				guidance, SQuiRTs values are for screening purposes only. Any questions regarding protectiveness of the remedy can be posed during the upcoming 5-year review. ADEC-Accepted April 10, 2013
22.	64	6.2.3	In the second full paragraph on this page, state the difference in DRO/RRO values before and after silica gel cleanup. Are determinations and statements re: cleanup levels based upon the 'after silica gel cleanup results' or without? See comment #19 above. Last paragraph on this page, state the differences in concentrations of DRO/RRO from samples collected in the LDU before and after silica gel cleanup.	Additional text will be added to Section 6.2.3 to further clarify sample results for both untreated and silica gel treated results in all DUs, including the LDU. ADEC-Accepted April 10, 2013
23.	65	6.2.3	Last paragraph of this section needs to state that the failure to collect surface water samples from within the decision unit represents a data gap.	Sampling has been conducted in a consistent manner since 2010. Bristol disagrees that there is a data gap. See also comment #20. ADEC-Accepted April 10, 2013; after re-review ADEC concurs re: no data gap
24.	66	6.3.2	First paragraph of this section, do not just state 'per the SOP'. This paragraph should briefly state the sampling tool utilized and the location within each MI DU cell that was targeted for sampling (i.e. complete random, center of cell, etc.). Last sentence on this page, and elsewhere throughout the document, revise statements which state 'soil samples did not exceed cleanup levels' to state: 'Soil analytical results indicated that concentrations of contaminants of concern did not exceed ADEC cleanup levels'. Insert a bold title header (w/ new subsection) for each DU in the MI sampling section.	"per Bristol SOP" will be removed and a more detailed description of sampling protocol will be included. ADEC-Accepted April 10, 2013 Sentences stating "soil samples did not exceed cleanup levels" will be revised to state "soil analytical results indicated that concentrations of COCs did not exceed ADEC cleanup levels". ADEC-Accepted April 10, 2013 Bold headers will be included for each DU subsection as requested.

				ADEC-Accepted April 10, 2013
25.	70	6.4.2.1	Second paragraph on this page references 'samples below cleanup levels' in association with the field laboratory. Were the field lab results below cleanup levels or the field lab action level (80% of the cleanup/site-specific cleanup)? Revise as necessary, here and elsewhere throughout the document.	Text will be clarified to state that field lab results indicated that cleanup levels had been achieved at 80% of the actual cleanup level specified in the Decision Document. Changes will be made throughout text to clarify. ADEC-Accepted April 10, 2013
26.	71	6.4.2.2	Last paragraph on this page, state the depth bgs at the point the excavation was stopped at 2ft. below the water table.	The depth below ground surface (bgs) at which the excavation was stopped will be added to this section. The corresponding elevation will also be added. ADEC-Accepted April 10, 2013
27.	75	6.4.2.4.	Was the one sample referred to in the first sentence of the second paragraph a field laboratory or fixed lab sample?	Text will be added to state that this sample was sent to the fixed lab for confirmation. ADEC-Accepted April 10, 2013
28.	77	6.4.2.6	Why were surface water samples not analyzed for TAH/TAqH? ADEC also requested that increased sampling be conducted during removal activities, not just one sample at the beginning, during and after removal actions. ADEC requested this more frequent sampling during removal so that offsite migration of contamination could be eliminated by installing booms, etc. ADEC disagrees with the last two sentences on this page. These should be omitted or revised since sampling was not conducted to monitor TAH/TAqH levels. This section should clearly explain this and related statements should be revised to clarify that this was an oversight and that impacts are unknown.	Samples were collected per the 2012 SOW and ADEC approved work-plan/QAPP. We believe ADECs request for additional sampling may be referencing RAs at Site 28, which was monitored at a high frequency (1-3X per day) during Phase I removal actions at Site 28. ADEC intended this comment to be specific to surface water sampling down gradient of the E Plume and/or any other removals at the MOC which occurred immediately adjacent to site 28. This can be further discussed at the comment resolution meeting scheduled for 4-12-2013.
29.	78	6.5	State the respective soil concentrations of PCBs at the two soil sample	Text will be added to section 6.5 noting that

			locations; one each at sites 13 and 31 that exceeded the cleanup level.	at Site 13 one sample (12NC113SS231) was 1.6 mg/Kg 1260 and Site 31 had one sample at 1.3 mg/Kg 1260. ADEC-Accepted April 10, 2013
30.	79	6.5.3	Did the stated 215 primary samples include duplicates or were these primary confirmation samples sent to the fixed lab post field lab results indicating below 0.8mg/kg?	Text will added to clarify that 215 primary samples and 22 field duplicates were collected and submitted to TestAmerica after field lab results were reported at less than 0.8 mg/Kg for PCBs. ADEC-Accepted April 10, 2013
31.	80	6.5.3	Second paragraph of this page, state whether or not the samples being discussed were confirmation samples and clarify that 'None of the samples collected…' refers to confirmation samples. Obviously, previous soil screening samples in the A2 plume exceeded the field lab action level of 0.8 mg/kg for PCBs; which resulted in subsequent removals. Revise the statement that '…efforts may commence..' to clarify the soil which has been removed from the A2 plume to date was co-contaminated with PCBs and POL; and that POL will be the only COC regarding the future removals at the A2 plume. Revise/add new statements to also clarify this for the removals conducted in the B plume. Last sentence of this section, was a liner not put in place to separate the area known to still exceed cleanup levels for PCBs from the areas confirmed to be below the cleanup level (as has been required by ADEC in association with previous removal actions)? Also apply this comment to section 6.5.5. Provide more description of what is meant by 'sloping'. Was clean material 'sloped' into/onto the area where the PCB exceedance was observed? Was any backfilling conducted in 2012 at site 13 and/or at plumes A2 and/or B where removal of PCB-POL-contaminated soil occurred? Also apply this comment to section 6.5.5.	Additional text will be added to clarify that the sample locations are confirmation results depicted in Figure 16. Statement regarding "efforts may commence" will be restated as suggested. ADEC-Accepted April 10, 2013 "B" plume statement will be revised as requested and similar to A2 plume. ADEC-Accepted April 10, 2013 During winter shutdown, no material was placed atop the PCB-contaminated location. Excavation sidewalls requiring sloping were not sloped onto the contaminated soil. Backfill was not placed atop the PCB-contaminated soil. The A and B plumes were not backfilled. This will be clarified in the text. ADEC-Accepted April 10, 2013

32.	81-82	6.5.5	See last two paragraphs of comment #31 above.	During winter shutdown, no material was placed atop the PCB-contaminated location. Excavation sidewalls requiring sloping were not sloped onto the contaminated soil. Backfill was not placed atop the PCB-contaminated soil. ADEC-Accepted April 10, 2013; please state the response in the narrative
33.	83	6.5.8	State what was done with the boulders after sample results confirmed that PCB concentrations were below the cleanup level.	Additional text will be added stating that the boulders were/will be used as backfill in the excavations from which they were unearthed. ADEC-Accepted April 10, 2013
34.	84	6.6.1	Second sentence of the first paragraph replace 'decommissioned' with a brief explanation of the removal activities which occurred in association with the infrastructure.	"decommissioned" will be replaced with "removed" along with a better description stating that all concrete was removed and sampling occurred after removal. ADEC-Accepted April 10, 2013
35.	85	6.6.2	Second paragraph on this page, state the estimated area of the second round of excavation and state the depth bgs of the confirmation sample collected from the floor (2 ft bgs?). Was dewatering of excavated soils necessary during any of the 2012 excavations at site 21?	A better description, including the approximate size of the excavation before and after the second round of removal will be added to this paragraph along with the sample depth bgs. ADEC-Accepted April 10, 2013 The soils from the excavation were loaded directly into bulk bags. "Dewatering" consisted of allowing the soils to drain (from the excavator bucket) into the excavation with each scoop. ADEC-Accepted April 10, 2013; please include the response in the narrative

36.	85	6.6.3	Revise the title of this section as also requested for other sections above to correspond with the site (i.e. Site 21 Sample Analysis Results). Similarly revise other section titles throughout the document to be site specific.	Sections and subsection titles will be revised to better describe the site and sub-sites throughout the text as requested. ADEC-Accepted April 10, 2013
37.	86	6.6.3	Second paragraph on this page, briefly state how the 2012 concentrations of arsenic in the floor samples compared to those analyzed in 2011. Last paragraph of this section, state whether the analysis was for dissolved and/or total arsenic and also state the concentrations detected in both samples.	Paragraph will be revised to include comparisons to 2011 results. Last paragraph will be revised to state that the water analysis at Site 21 was for both total and dissolved results along with a discussion of the concentrations. ADEC-Accepted April 10, 2013
38.	87	6.7.1	Last paragraph of this section, briefly state the options that were included. See comment #4 above re: clarifications to stated volumes that were scoped as base and as options.	Last paragraph of this section will be revised to include tonnages in base and exercised options under this contract. ADEC-Accepted April 10, 2013
39.	88	6.7.2	Include a discussion of how the site was overwintered after remedial work was stopped in 2012. Was PCE-contaminated soil not shipped off island in 2012? Is it currently staged onsite? Section needs include a detailed description of how PCE-contaminated soil was removed, handled, screened, and/or stockpiled. ADEC realizes that PCE contamination was not expected and/or previously identified (and therefore was not discussed/included in the 2012 work plan). However, requirements for the handling, stockpiling, and offsite disposal of PCE-contaminated soil are significantly different than metals, POL, and PCB-contaminated soil.	Additional text will be included to describe overwinter activities at Site 10. ADEC-Accepted April 10, 2013 PCE-contaminated soil was not shipped off-island at the end of the 2012 season. Additional text will be added with more detail regarding sampling, removal and bagging of PCE soil. Additional text will be added regarding the PCE soil, which was non-hazardous at reported concentrations. ADEC-Accepted April 10, 2013
40.	92	6.9.2	State the date of the first site visit with the USACE QAR as well as the second site visit with ADEC. Replace 'ADEC personnel' with 'the ADEC NEC project manager' and add the USACE QAR to the second visit.	Site visit dates will be added to Section 6.9.2 along with inclusion of USACE QAR to the second visit. "ADEC personnel" will be replaced with "ADEC NEC project

				manager". ADEC-Accepted April 10, 2013
41.	93	6.10.1	State that the groundwater monitoring wells associated with monitoring the natural attenuation at the MOC were sampled prior to abandonment. Reconcile this and the following associated sections to clarify that a total of 6 monitoring wells were abandoned in 2012. This is only stated in the last sentence of section 6.10.2 and should be summarized in section 6.10.1.	Section 6.10.1 will be revised to state that wells MW88-4 and MW88-5 were sampled prior to removal and wells at Site 9 were not sampled but were removed to mitigate physical hazards. The total number of abandoned wells will be discussed here along with the rationale. ADEC-Accepted April 10, 2013
42.	95	6.10.1	Revise the last sentence of this section to state that NFA is required specifically related to the decommissioning/abandonment of the 6 wells. Include a statement similar to that requested in comment #15 above re: the planned installation of a new network of monitoring wells at the MOC.	Last sentence will be revised regarding the NFA for the 6 wells to clarify that this refers only to the abandonment of the wells. ADEC-Accepted April 10, 2013 A statement will be added regarding the future installation of additional monitoring wells. ADEC-Accepted April 10, 2013
43.	95	Table 6-3	Section 6.10.1 states that monitoring wells 9-1, 9-3, and 26MW3 were filled with bentonite however depth to bentonite in table 6-3 lists 0 ft. bgs for all three wells. Either reconcile this or explain this in the narrative.	Text and table will be revised for clarity. ADEC-Accepted April 10, 2013 All wells were filled with bentonite to the bottom of the wells and wells 9-1, 9-3 and 26MW3 were completely filled with bentonite to the surface (0 ft bgs). Wells ICOMW01, MW 88-4 and 88-5 were filled with bentonite from the base of the well to 10 feet bgs as POL-contaminated soil removal would remove the top 10 feet of surface soil. ADEC-Accepted April 10, 2013
44.	100	6.12	Last bullet on this page, provide more specific reference to the page number in Appendix D, email date(s), etc. for the referenced ADEC approval of the	Additional text will be added referencing email "09-ADECapprvlUndWatSamp.pdf"

			alternative confirmation sampling conducted at POL plumes at 2 ft. bgs. Summarize the rationale for the Corps' request and ADEC's approval of the alternative confirmation sampling procedure.	along with the rationale cited in the email. ADEC-Accepted April 10, 2013
45.		Figure 3	Legend should notate surface water.	Surface water will be added to legend. ADEC-Accepted April 10, 2013
46.		Figure 4	Depict the well locations in color which had contaminant concentrations in groundwater exceeding cleanup levels. Also depict wells that were abandoned in another color.	Wells with exceedances will be noted in a different color than wells without exceedances and abandoned wells will be noted with another color. ADEC-Accepted April 10, 2013
47.		Figure 5	Apply same revisions requested in comment #46.	The revisions will be made as requested. ADEC-Accepted April 10, 2013
48.		Figure 7	What is the polygon with the bold black boundary located immediately south of DUs 12NCBGS02-05?	This is an errant polygon that will be removed from the figure. ADEC-Accepted April 10, 2013
49.		Figure 9	Include a new color depiction in the legend and figure for DUs which were not sampled in 2012 due to bags being stored/overwintered. State in the legend that the green areas are 2012 MI DU and state that the 2012 Bag Storage Area DUs will be MI sampled post season in 2013.	Notation will be added stating that DUs sampled in 2012 will be sampled again in 2013. ADEC-Accepted April 10, 2013
50.		Figure 10	State in this figure's legend (and legends of other figures where applicable) that the blue represents surface water.	This revision will be made as requested. ADEC-Accepted April 10, 2013
51.		Figure 11	Depict the monitoring wells which were abandoned in 2012 in color and notate in the legend. Identify the A and B areas of Site 10. The narrative should discuss and clarify what appears to be a discrepancy with the relationship between the excavation at the J1A plume in 2011 and the excavation at the western most Site 10 area in 2012. Was clean or contaminated backfill removed in 2012 as part of the Site 10 excavation; clean backfill which was placed after the 2011 excavation of J1A?	The abandoned monitoring wells will be noted on the figure. ADEC-Accepted April 10, 2013 Areas A and B at Site 10 will be labeled. ADEC-Accepted April 10, 2013 The polygon representing Site 10 will be revised to encompass the excavated areas. ADEC-Accepted April 10, 2013

			The narrative needs to include more discussion and rationale for why Site 10 is depicted as a much larger polygon than the 2012 excavation areas A and B. What is known about the area within this polygon re: nature and extent of contamination?	The polygon was added to the figure by BERS based on the physical characteristics of the site (it's a gravel pad). The history of the site is included in Section 6.7.1. ADEC-Accepted April 10, 2013
52.		Figure 14	Add a call out for the Site 13 excavation in the southwest corner. State in the legend that the green dot sample locations were below the site specific cleanup level.	Notation will be added to the figure as requested. ADEC-Accepted April 10, 2013
53.		Figure 15	The magenta-colored polygon and incomplete line/boundary require clarification in the figure and in the narrative of the report. Clarify why additional sampling will be necessary and what the magenta boundary represents and why it is depicted as terminating where it does close to sample locations 12NCMOCSS104 and 158. Notate the magenta representations in the legend.	This line/polygon will be clarified in the text and the notes. ADEC-Accepted April 10, 2013 These colored areas are meant to represent areas of the excavation where additional work will commence, be it sampling or excavation. Text will be added in the figure and report to clarify. ADEC-Accepted April 10, 2013
54.		Figure 16	Change the depiction of the perimeter road to another color in order to avoid confusion with this feature as surface water.	The requested change will be made. ADEC-Accepted April 10, 2013
55.		Figure 18	Depict the previous (2010-2011) floor soil sample locations for which the analysis results exceeded the cleanup level. The figure and associated narrative section should clarify whether or not arsenic contamination is being left in place at 2 ft. below the water table. In the legend, state that the black dot soil sample locations were below the cleanup level.	Historical floor confirmation sample locations will be added to the figure. The description for the black dots will be revised as requested. ADEC-Accepted April 10, 2013
56.		Figure 19	Insert call outs that depict the approximate depth(s) of excavations. Depict specifically were PCE-contaminated soil was stockpiled and from where in the excavation it originated. Narrative stated that one location remained where PCE concentrations in soil exceeded cleanup level; depict this location in the figure.	The stockpile area will be shown on the figure and the depth of excavations will be noted on the figure. The sample location 12NC10SS030 will be changed to red on the figure. ADEC-Accepted April 10, 2013

57.		Figure 20	State in the figure and in the narrative whether remaining power poles will be removed in the future or left in place.	Remaining power poles will be removed in the future. This will be stated on the figure and in the text of the report. ADEC-Accepted April 10, 2013
58.		Figure 21	State in the legend that the black dot notation represents the 2012 soil sample locations for which analysis results indicated concentrations that did not exceed cleanup levels. Also state in the legend of this figure which analytes were included in the analysis. Call out the circular feature that is located east of the former quarters.	The requested analyses will be added to the notation of this figure. Descriptions for the black dots will be revised as requested. The circular feature will be identified. ADEC-Accepted April 10, 2013
59.		Figure 22	Revise legend to state: 'Monitoring Well Location Abandoned in 2012'. Also depict MW locations which are still in place that are within the view of this figure.	The requested changes will be made to the figure. ADEC-Accepted April 10, 2013
60.		Figure 23	Notate the 'island' feature in the legend. The figure's legend and associated narrative section should explain/define how an island feature is different from vegetative mat.	Figures 23 and 24 will be removed from this report. The narrative will refer the reader to the Site 28 Phase I Sediment Removal Report. ADEC-Accepted April 10, 2013
61.	39	Appendix B	Photograph 78: Associated narrative section should discuss the buried bulldozer and whether or not it was left in place or removed? The narrative should also discuss how the buried dozer was identified; i.e. observed protruding from the surface. Was sheen observed in the water that filled the excavation?	The buried bulldozer was left in place and will be removed in 2013. It was noticed by heavy-loader operators driving over a protrusion in the sand. This information will be added to the photo description. Sheen was not noted on the water in the excavation. ADEC-Accepted April 10, 2013
62.		Silica Gel Cleanup Chromatograms	Table of contents needs to reference the locations of all chromatograms (hard and electronic draft copies of the report received by ADEC appear to not have the chromatograms attached). All applicable narrative sections need to state that silica gel cleanup chromatogram results where only utilized for general evaluation purposes and were not utilized for the purposes of making removal and/or cleanup level determinations. The narrative should clearly state that ADEC has not approved the use of the silica gel cleanup method in order to	Laboratory hard copies will be submitted with the final report and only contain the results for project samples and QC. ADEC-Accepted April 10, 2013 Complete lab reports with chromatograms are included with the supplemental data. ADEC-Accepted April 10, 2013

			determine whether signatures are bio- or petrogenic.	Text will be clarified to state that silica gel discussion is for general evaluation only and SG results were not be used to demonstrate that site-specific cleanup levels have been achieved. It will also be stated that ADEC has not approved the use of SG treated results to demonstrate that cleanup goals have been achieved. ADEC-Accepted April 10, 2013
63.	App. F	Table F10	Should this table be revised to only represent the results for the MOC since the narrative states that site 26 was not sampled due to bags being stated there until 2013?	There was one MI grid sampled at Site 26, but it did not encompass the entirety of the bag storage. This will be clarified in the text. ADEC-Accepted April 10, 2013
64.	App. F	Table F11	Are these the confirmation sample results? If so then revise the titles to clarify.	Yes, these are confirmation sample results. The titles will be revised for clarity. ADEC-Accepted April 10, 2013
65.	App. F	Table F16	Insert a table note in this and all other surface water sample analysis results tables that all future surface water monitoring will be in accordance w/ 18AAC70 surface water criteria.	A column will be added to tables showing the 18 AAC 70 Water Quality Criteria for Toxics and Other Deleterious Substances (Drinking Water). Sample results exceeding the criteria will be *italicized*. Any TAH and TAqH results exceeding the 2009 Decision Document levels will be **bolded**. ADEC-Accepted April 10, 2013
66.	App. F	F24	The narrative and table notes should state the rationale for all of the analyte cleanup levels which are listed in this and other tables as NS.	The acronym NS will be clarified in table notes. In many tables (re: surface water sample results), the NS acronym will be replaced with values from 18 AAC 70. ADEC-Accepted April 10, 2013
67.		Table 26	There are exceedances in this table which need to be boldened; i.e. DRO in	These values will be revised as necessary

			every sample. Check all other tables to ensure exceedance are properly notated and discussed in the narrative.	and all other tables will be reviewed for accuracy as recommended. ADEC-Accepted April 10, 2013 -Note-Table F26 removed per comments, it is contained in Site 28 Phase I sediment report.
68.		Appendix H	Sample Summary Sheet requires a table notes at the end of the table.	Table notes will be added to the end of the sample summary table. ADEC-Accepted April 10, 2013
69.			**End of ADEC Comments**	

REVIEW COMMENTS

PROJECT: NE Cape HTRW remedial Actions / Contract No. W911KB-12-C-0003
DOCUMENT: HTRW RA Draft Report Rev 0 – Feb 2013 Location: St. Lawrence Island, Alaska

U.S. ARMY CORPS OF ENGINEERS	DATE: 12 March 2013 REVIEWER: Valerie Palmer PHONE: 907-753-2578	Action taken on comment by:

Item No.	Drawing Sheet No., Spec. Para.	COMMENTS	REVIEW CONFERENCE A - comment accepted W - comment withdrawn (if neither, explain)	CONTRACTOR RESPONSE	USAED/ADEC RESPONSE ACCEPTANCE (A-AGREE) (D-DISAGREE)
1.	Section 3.2	Says both optional and unit priced CLINS are summarized in Table 3-2. Optional CLINS are summarized in Table 3-2, which includes some unit-priced work. In Table 3-2, the “options exercised” column seems to be doubling as a work completed column. For example, in CLIN 0006AN (Phase I Site 28), all 140 BCY were exercised at award, but only 20.6 BCY have actually been removed. Please either change the column heading or change the numbers to reflect what’s been awarded/exercised.		The sentence “Unit-priced work is summarized in Table 3-2.” will be removed. The “Options Exercised” column will be edited to display what was awarded, rather than work completed (3 cells will be changed).	A-done
2.	Section 4.1	Please add that you did eventually have an ADEC-approved work plan.		The following text will be added to clarify: ‘The work plan was approved by the ADEC prior to the end of the 2012 field season.	A-done
3.	Section 4.1.1	USACE does not approve planning documents – USACE accepts them. ADEC, however, does approve them. Please see previous comment.		Text has been amended to clarify.	A-done
4.	Section 4.1.2	Lists ADEC approval for the 2011 work plan, but not the 2012 plan. Why is the 2011 plan listed? Was it used to execute the 2012 work?		The following text has been revised in this section: “On July 13, 2012 the Alaska Department of Environmental Conservation (ADEC) provided the USACE with an email tentatively approving the 2012 NE Cape HTRW Removal Actions Work Plan. On November 14, 2012, ADEC sent a letter to the USACE with final approval of the 2012 NE Cape HTRW Removal Actions Work Plan. “	A-done
5.	Section 4.3.7	Ron Broyles is the Contracting Officer’s Representative, not CO.		The text will be modified to clarify.	A-done
6.	Section 5.8	Says 19,500 employee-hours for the FY12 contract and 3,243 hours for T.O. 0007. Were there any lost time accidents or other reportable accidents? Near misses?		There were no lost-time accidents during the 2012 field season. Bristol had one near-miss, when a fire broke out near the trash burner. The	Please include this information. Since you’re including

U.S. ARMY CORPS OF ENGINEERS	DATE: 12 March 2013 REVIEWER: Valerie Palmer PHONE: 907-753-2578	Action taken on comment by:

Item No.	Drawing Sheet No., Spec. Para.	COMMENTS	REVIEW CONFERENCE A - comment accepted W - comment withdrawn (if neither, explain)	CONTRACTOR RESPONSE	USAED/ADEC RESPONSE ACCEPTANCE (A-AGREE) (D-DISAGREE)
				fire was extinguished without harm to personnel. The lessons learned were discussed at the following day's safety meeting. Please advise Bristol on whether or not the USACE wants this statement added to the text.	how many hours were worked you might as well show they were done safely. Shows your emphasis on working safely.
7.	General Section 5	A drum of lab waste was rejected by the TSDF. Please include a paragraph detailing that chain of events. That waste was sent to another TSDF not listed in Table 5-4. Confirm all manifests for this drum are included in the supplemental information. Also, the manifest for this drum (possibly?) (004785942_FLE) is included in the supplemental information, but it is not the come-back copy. It has no transporter or TSDF signatures. Please include a complete copy. We need to close the loop on this waste please.		A brief paragraph describing the rejection of the drum of laboratory waste by the original TSDF will be added to Section 5.10 of the report. The facility information for the alternate disposal facility utilized for final disposal (Clean Harbors [Aragonite], LLC) will be added to Table 5-4. We will confirm that all manifests utilized for this drum are included in the supplemental information. Bristol will confirm that the copy of alternate manifest (004785942FLE) includes the transporter and designated facility owner signatures and will be added to the supplemental information in the final report.	A
8.	Section 5.11	Says excavators working on PCB-contaminated sites were decontaminated using a dry-brush technique prior to moving off site. What was done with excavators at the POL, arsenic or other sites? What was done with the trucks used to haul POL soil to the staging/bagging area?		Excavators working on POL-contaminated sites were brushed clean of gross soil particles prior to moving off site. The excavator tracks did not enter the Site 21 arsenic excavation and the bucket was decontaminated via dry brushing. Trucks were used to haul POL soil from the excavations to the Pad 98 bagging area. These trucks did not enter the contaminated excavations. The beds of the trucks were brushed clean of gross soil	Please include this information in the report. Done

Item No.	Drawing Sheet No., Spec. Para.	COMMENTS	REVIEW CONFERENCE A - comment accepted W - comment withdrawn (if neither, explain)	CONTRACTOR RESPONSE	USAED/ADEC RESPONSE ACCEPTANCE (A-AGREE) (D-DISAGREE)
				particles following hauling activities.	
9.	Section 6.1.3	Says Bristol recommends replacing MW88-4 and MW88-5. There is no mention of why these two wells need replaced until Section 6.10, so please refer the readers to Section 6.10 for more information.		Text will be added referring the reader to section 6.10.2 for further discussion regarding monitoring well abandonment.	A-done.
10.	Table 6-1	Title of this table is “Current and Historical Groundwater Sample Results Exceeding Cleanup Levels” There are quite a few sample results shown that do not exceed cleanup levels. Perhaps rename this table something to the effect of MOC monitoring wells with current and/or historical results exceeding cleanup levels?		The title will be changed to “Current and Historical Groundwater Sample Results for Select Monitoring Wells”	A-done
11.	Section 6.1 general	The SOW states that the report should include the calculations of the biodegradation rate of POLs as well as the timeframe in which site cleanup levels will be achieved. Please provide this information.		Charts have been added to the Figures section to illustrate reduction of PAHs and POL at Site 8. 2011 and 2012 results indicate that Site 8 is below CULs for all specified analytes . A first order linear regression calculation indicates that DRO , 1-methylnaphthalene and 2-methylnapthalene would be non-detect in 2013. [RJ1]	In progress, Site 8 done, MOC GW still needs to be discussed in text and graphs edited and inserted into Appendix F (Tables)
12.	Section 6.2.1	Surface water discussion. Last sentence starting at bottom of page 60 says “One of the surface water samples was collected from near the site’s confluence with the Suqitughneq River, and the other was collected near historical sample 04NE08SD103. Historical results from these two locations have not exceeded cleanup levels for any COCs or the surface water criterion for total aqueous hydrocarbons (TAqH).” Please insert after the word River “(historical surface water sample 04NE08SW101)” and insert the word “sediment” before sample 04NE08SD103. Also, please revise last sentence to say “Historical surface water sampling result from this location has not exceeded		The paragraph now reads as follows: “In addition to samples collected from the DUs, surface water samples from two discrete locations at Site 8, downgradient of the suspected pipeline break location (shown in Figure 6), were collected and analyzed for DRO/RRO and PAHs to monitor for any contaminant migration. One of the surface water samples was collected from near the site’s confluence with the Suqitughneq River (near historical surface water sample	A-done

U.S. ARMY CORPS OF ENGINEERS	**DATE: 12 March 2013** **REVIEWER: Valerie Palmer** **PHONE: 907-753-2578**	**Action taken on comment by:**

Item No.	**Drawing Sheet No., Spec. Para.**	**COMMENTS**	**REVIEW CONFERENCE** **A - comment accepted** **W - comment withdrawn** **(if neither, explain)**	**CONTRACTOR RESPONSE**	**USAED/ADEC RESPONSE ACCEPTANCE (A-AGREE) (D-DISAGREE)**
		the surface water quality criteria for total aqueous hydrocarbons (TAqH)."		04NE08SW101), and the other was collected near historical sediment sample 04NE08SD103. Historical surface water sampling results from these two locations have not exceeded cleanup levels for any COCs or the surface water quality evaluation criteria for total aqueous hydrocarbons (TAqH)."	
13.	Section 6.2.3 second paragraph, top of page 63	Says two surface water samples were collected and analyzed for DRO/RRO and PAH; results were below cleanup levels. There are no surface water cleanup levels for these. Results were below "water quality evaluation criteria".		Bristol will make the distinction between cleanup levels and water quality evaluation criteria throughout the relevant sections of the report per discussions with the USACE. Wording will be changed where necessary.	A-done, may need final check throughout document.
14.	Section 6.2.3, page 65	Second to last sentence: says surface water analysis have never exceeded cleanup levels at Site 8. Reword to "never exceeded water quality evaluation criteria".		Text was reworded as requested.	A-done
15.	Section 6.4.2.6, Page 76	Says "Surface water criteria for the NE Cape site are based on the presence of sheen, total aromatic hydrocarbon (TAH), and TAqH results only; there are no cleanup levels for DRO or RRO." Adjust to include whatever the response to ADEC's comments on the Site 28 report is/was. Be sure to include the reason behind this sampling (ADEC request?) Consider revising this sentence as follows: Numerical surface water cleanup levels for DRO and GRO were not defined in the 2009 Decision Document, the specified water quality criteria requirement is "no sheen". Consider deleting the sentence "TAH and TAqH analyses were not included as part of the SOW".		This sampling was conducted to measure impacts from MOC POL excavations in the waters directly adjacent to the MOC. The surface water sampling described in this section differs from the sampling conducted in the Site 28 drainage to monitor sediment removal. The sampling described in Section 6.4.2.6 is detailed in the SOW under task order 4.4.9, POL-Contaminated Soil Removal, second paragraph. Only DRO/RRO were scoped and analyzed. Additional analyses were conducted for the Site 28 surface water monitoring and are discussed in the Site 28 Phase I Sediment Removal Report. Cleanup level discussions will proceed	A-done.

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				according to Bristol's response to ADEC comment # 10 for the draft Site 28 Phase I Sediment Removal Report. Bristol will add text to state that DRO and RRO cleanup levels are not specified in the 2009 Decision Document, but the specified water quality criteria requirement is "no sheen".	
16.	Section 6.6.2	Refers the reader to Table F22 for arsenic waste characterization samples. All the samples are below the criteria for shipping them as hazardous waste (5 mg/kg), so why were 11 bulk bags manifested as hazardous waste due to arsenic?		In-place soil testing (2011 confirmation sampling) showed arsenic concentrations exceeding RCRA hazardous levels and soils from those locations were placed in bulk bags that were classified as hazardous. Please also refer to Craner comment #8 for a detailed response regarding this matter.	A; please include this info in the report.
17.	Section 6.6.3	Says one surface water sample was collected, analyzed for arsenic, and did not exceed the cleanup level of 0.01 mg/L. 0.01 mg/L is a groundwater cleanup level. Please revise to state: Arsenic was not detected above the most stringent surface water quality criteria of 0.01 mg/L.		Text was amended as requested.	A-done
18.	Page 97 Site 28	"Surface water samples were collected from the drainage basin in 1994, 1996, and 2001. According to the Decision Document (USACE, 2009), concentrations of DRO, total recoverable petroleum hydrocarbons, PCBs, and lead exceeded cleanup levels in 1994…" Quote from 2009 Decision Document is incorrect. Please delete "exceeded cleanup levels in 1994" and replace with "were elevated in 1994"		Sections 6.11.1 thru 6.11.3 will be removed from the report. Section 6.11 will serve to reference the Site 28 Phase I Sediment Removal Report. Figures 23 and 24 will also be removed from the report.	A-done.
19.	Site 28 General	Rather than repeat everything that is already captured in the separate Site 28 report, let's just have a short paragraph directing the reader to that separate report.		Sections 6.11.1 thru 6.11.3 will be removed from the report. Section 6.11 will serve to reference the Site 28 Phase I Sediment Removal Report. Figures 23 and 24 will also be removed	A-done

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				from the report.	
20.	Section 7.2	Says analytical result tables (Appendix F) are flagged in accordance with the QAPP. There are data flags in the tables that are not found in the QAPP or on your lists of data qualifiers contained in this section (such as HL). Please be consistent with the QAPP and SOW.		Flags on tables have been modified to be consistent with the flags in the SOW.	A-done
21.	Figure 5	The notes say water elevations are from 2011. Why not 2012? No water levels are given, either. TOC is listed in the notes but not used on the figure. MW88-4 results for 8/03/2010 have a qualifier on the date but nothing listed in the notes. Title says well locations and sample results, but results are only given for 4 of the 9 wells. Might also be good to note here which of these wells were decommissioned in 2012 rather than having a separate figure.		The notes regarding water elevations will be removed. The TOC definition will be removed. The † symbol will be defined in the notes as an identifier for duplicates. Title will be changed to say "MOC Monitoring Well Locations and Select Sample Results". Labels and leaders will be attached to MWs 88-4 and 88-5 that read "Well was decommissioned in 2012". A similar notation will be added to Figure 11.	A-done
22.	Figure 6	Note says 2012 sampling grids will be determined by a random number generator. Believe this should say "*were* determined using…"		This note will be changed as recommended.	A-done.
23.	Figure 12	A1 excavation: says water level was 15.9 feet and depth was 7-28 feet. If we're only digging to two feet below groundwater why did this excavation go to 28 feet? What type of soil samples were taken? Are these confirmation samples? If so please include sample results per SOW.		Bristol will review the data and denote the appropriate excavation depths. The note describing the excavation depth as 28 feet deep is incorrect and will be corrected. The samples collected here were confirmation samples. A note will be added to Figure 12 stating that all DRO/RRO confirmation sample results were below the site-specific cleanup criteria of 9,200 mg/kg.	A-not done, waiting for survey information.
24.	Figure 13	Same as above – if confirmation samples please include results. Says water level is 68.6 feet and depth is 9.8 feet but the figure shows the whole excavation with water in it.		Excavation depths and water depths/elevations will be clarified in the figure notes. As with the previous comment, the survey data will be	A-not done. Same as comment #23.

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		Please be consistent from figure to figure with the "type" of water depth used (water elevation vs. depth of water). Otherwise the numbers don't match up with the excavation having water in it.		reviewed and adjusted as necessary for accuracy and clarification. A note will be added to the figure stating that all DRO/RRO confirmation sample results collected from the H excavation were below the site-specific cleanup criteria of 9,200 mg/kg.	
25.	Figure 14	Same comments as above. Include sample results.		Bristol will add callout boxes to confirmation samples that exceeded cleanup levels (the red dots) showing the DRO/RRO confirmation sample results. A note will be added to clarify that the green dots represent confirmation sample locations where DRO/RRO results were below the site-specific cleanup criteria of 9,200 mg/kg.	A-not done.
26.	Figure 15	Colors used on the figure don't appear to match the colors in the legend (red lines versus pinkish fill). Also difficult to tell if the outlined area is the proposed excavation area for 2012 or if the filled pinkish area is the proposed excavation. Regardless, figure should show actual excavation area, not the proposed one please. Include samples results if they were confirmation samples.		A legend item will be added for the areas requiring additional excavation and sampling in 2013 (the pinkish areas). A legend item will be added to denote the 2012 excavation extents (currently represented by the black outline). A note will be added to clarify that the green dots represent confirmation sample locations where DRO/RRO results were below the site-specific cleanup criteria of 9,200 mg/kg. Bristol will add callout boxes to confirmation samples that exceeded cleanup levels (the red dots) showing the DRO/RRO confirmation sample results.	A-not done.
27.	Figure 16	This figure is showing the PCB removal area and UVOST does not delineate PCB contamination. Please specify that the UVOST-identified plume is a POL plume. Are the soil samples listed as "below cleanup level" below for both		The legend description for the UVOST plumes will be changed to read "UVOST Delineated POL Plume". A note will be added to the figure stating "PCB confirmation soil samples	A-done.

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		PCBs and POL or just PCBs? Please specify since some of the samples are within areas identified as having both PCBs and POLs.		are depicted on the figure". Additionally, the title will be modified to read "Site 13 Excavation Extents and PCB Confirmation Soil Sample Locations".	
28.	Figure 18	Black dots mean soil sample locations above or below cleanup? Sample results? Red dot – "hot sample" not defined. Just state above cleanup level for arsenic and include sample result.		The description for the black dots will be changed to read "Confirmation Soil Sample Location". The description for the red dots will be changed to read "Confirmation Soil Sample Location Which Exceeds Cleanup Level for Arsenic". Sample results will be added. A note will be added stating the arsenic cleanup level is 11 mg/kg. mg/kg will be defined in the notes as milligrams per kilogram.	A 1 and 2 done, need to include sample results for exceedences.
29.	Figure 19	Please add more information to legend: are black dots soil sample locations without any exceedances from 2012?		The legend will be modified. The black dots will be described as "Confirmation Soil Sample Locations where Contaminant Concentrations Do Not Exceed Cleanup Levels".	A-done
30.	Figure 21	Please add sample results or general comment that all were non-detects or whatever the case was.		The description for the black dot in the legend will be changed to read "Confirmation Soil Sample Location where Contaminant Concentrations Do Not Exceed Cleanup Levels". A note will be added stating "None of the confirmation soil sample results contained concentrations of contaminants which exceeded cleanup levels".	A-done.
31.	Figure 22	Consider removing this figure and adding the information to Figure 5.		Bristol would prefer to leave this figure, since it also shows wells 9-3, 9-1 and 26MW3 which would not appear on Figure 5. Wells 88-4 and 88-5 will be labeled in Figures 5 and 11 as	A-done.

REVIEW COMMENTS **PROJECT: NE Cape HTRW remedial Actions / Contract No. W911KB-12-C-0003**
DOCUMENT: HTRW RA Draft Report Rev 0 – Feb 2013 Location: St. Lawrence Island, Alaska

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				having been decommissioned in 2012.	
32.	Figure 24	Legend says "2012 sediment confirmation sample location". If all sediment was removed there should be no sediment to sample. Confirmation sample should be a soil sample.		Figures 23 and 24 will be removed from the RA report and a reference will be made in the document to the Site 28 Phase I Sediment Removal Report (per Craner Comment #30). The figures will be updated in the Phase I Sediment Removal Report as reflected in comments for this RA report and the Phase I Sediment Removal Report.	A-done
33.	Table F17 and 18	I like that you indicated which sample locations were excavated following receipt of sample result – makes it much easier to tell how the work progressed. Thank you.		Thank you.	A-no edits required.
		----- End of Comments ----			

REVIEW COMMENTS

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DOCUMENT: HTRW RA Draft Report Rev 0 – Feb 2013 Location: St. Lawrence Island, Alaska

U.S. ARMY CORPS OF ENGINEERS	**DATE: 14 March 2013** **REVIEWER: J. Craner** **PHONE: 753-2628**	**Action taken on comment by:**

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1.	General	Overall the report is noticeably much more polished than past RA Rev 0 reports. Generally easy to read and organized. Information is accurate and relevant. Nice work.		Thank you.	
2.	General	Many (not all) locations throughout the report simply reference only “Appendix F,” which contains 26 separate tables, some double-side and on multiple pages. It was cumbersome to have to sort through all tables to find the specific one related to what was being discussed in text. Please reference the specific table that is pertinent to the discussion in the text as appropriate throughout the report.		Throughout Section 6, specific table numbers accompany all references to Appendix F. Section 6.0 states that data tables are provided in Appendix F. A specific table reference in this paragraph is not relevant. Section 7.2 makes a general reference to Appendix F, but no specific table reference is relevant here.	A – I see what you mean after a second look. Thanks.
3.	Page ES-2	Last paragraph, last sentence, change to: “…and 59.40 tons…” (add a sig fig).		The sentence has been changed as requested.	A-done
4.	Page 7, Section 2.5	This section discusses surface water and groundwater. This past summer, I gave Lyndsey and maybe Russell too, a whole bunch of historic figures, well logs, x-sections, etc. If you need me to resend you this info let me know. Please add a new Appendix to this report that contains well logs for the wells that were decommissioned and for those that were sampled. Reference this appendix somewhere in Section 2.5.		Bristol has located the information to which you are referring and will add it as an appendix to the report.	A – Thanks. Done
5.	Page 24, Section 4.1.2	First bullet item: Should this state “On July 22, 201~~1~~2…”?		The statement has been updated with the appropriate dates. It now reads: “On July 13, 2012 the Alaska Department of Environmental Conservation (ADEC) provided the USACE with an email tentatively approving the 2012 NE Cape HTRW Removal Actions Work Plan. On November 14, 2012, ADEC sent a letter to the USACE with final approval of the 2012 NE Cape HTRW Removal Actions Work Plan. “	A-done
6.	Page 35,	Section 5.7 2nd paragraph: This is the first mention of site		DRO, RRO and PCB cleanup levels were added	A-done

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	Sections 5.7 and 5.13	cleanup levels in the report and they are not listed. Section 5.13: This is probably the best location to very clearly list cleanup and field action levels for DRO, RRO, and PCBs. Please do this here.		to the second paragraph in section 5.13 (Field Laboratory). The site-specific cleanup levels and the field lab screening levels (80% of cleanup levels) for DRO and RRO were added to the second paragraph in section 5.7.	
7.	Page 38, Section 5.9	2nd to last paragraph in this section, 2nd sentence: Please change to: "…(~~f~~Figures 7, 8, and 9)."		The suggested change has been made.	A-done
8.	Page 39, Section 5.10	Good totals summary. Mentions that there were 24 bulk bags that contained PCB TSCA soil waste. TSCA waste was put directly into bulk bags based on the in situ field screen value, thus why there is 24 and not a multiple of 7. As stated, arsenic soil is considered a RCRA haz waste if the TCLP value is greater than 5 mg/L. Where are the lab results that back this up? I was unable to locate in the appendices.		PCB bulk bags holding soil from locations where field-screening results indicated concentrations above 50 mg/kg were not composited with other bags; these individual bags had a waste characterization sample collected discretely. A total waste analysis can be used in lieu of the TCLP to determine that a waste does not exhibit the toxicity characteristic. For solids, this is accomplished by dividing the total concentration of a constituent in the waste by 20 (reflecting the weight ratio of solid sample to acetic acid in the TCLP). If this maximum theoretical leachate concentration is lower than the characteristic level for the constituent, the waste cannot exhibit the toxicity characteristic for that constituent, and the TCLP need not be run. For example: If you have a total arsenic result of 190 mg/kg and apply the rule of 20 (divide by 20), then your sample would have a theoretical TCLP value of 9.5 mg/L which exceeds the RCRA regulatory limit of 5 mg/L. This would require your waste to carry the	A – Thanks for clarification. Done I should have looked into this further while in the field and asked questions. I understand the x20 rule and that it may be used in lieu of TCLP. Arsenic waste classification was not explained in text. Table F21 presents in situ confirmation sample results (range from 3.3 – 320 mg/kg). Table F22 presents waste

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				D004 RCRA code for arsenic and would make it a regulated hazardous waste. Tables will be amended to show that the above "rule of 20" rule was applied.-	characterization sample results from bulk bags (range from 22 – 46 mg/kg). Using "Rule of 20", as listed in Table F22, all results less than 5 mg/L. So, why considered haz waste? Bristol used results from Table F21 instead of those from F22. Please explain why this was done and modify tables as mentioned. Done For 2013, if sample results are 100 – 200 mg/kg, please run TCLP to positively confirm haz waste. Will Do.
9.	Page 40	Bullet items: All of a sudden there are periods after bullet items that contain complete sentences. Earlier in report they do not contain periods. Please be consistent throughout.		Bristol will consult our technical editors and edit this section as necessary.	A-done
10.	Page 41	Table 5-2: Please be sure to update the Misc Debris quantity		This table will be updated to show the disposal	A-done

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		in the final report.		quantity for Miscellaneous Debris as 20.67 tons.	
11.	Page 45, Section 5.11	3rd paragraph: Discusses heavy equipment decon at PCB sites using the dry-brush technique. Please also mention that stubborn soil was removed from the tracks using a shovel then dry-brushed prior to exiting the site.		A sentence detailing track cleanout has been added.	A-done
12.	Page 45, Section 5.12	6th sentence: Please revise to: "~~And s~~Surface water samples were also collected from impoundments…"		Sentence has been revised as requested.	A-done
13.	Page 46, Section 5.12.2	2nd paragraph: I am confused with this paragraph. It sounds like field lab samples, as discussed in above paragraph, were collected differently than field screening samples mentioned here. Above paragraph mentions 5-foot spacing…this paragraph throws out a 25-square foot grid with 5 foot markings. Please clarify that both field screening samples and final confirmation samples were collected in the same manner.		Clarification has been added. It now reads: "As with confirmation samples, extensive field laboratory samples were collected at the same frequency and using the same methods as confirmation samples". Additional text was added to expand upon the sampling methods for clarification.	A-done
14.	Page 51, Section 5.13	3rd paragraph: Discusses the sampling iteration for PCB excavations. This is good. However, this topic is not discussed for POL excavations. Please add a similar paragraph below this one that discusses the same for POL excavation.		A paragraph has been added discussing the field lab sampling iteration for POL soils.	A-done
15.	Page 53, Section 6.1	1st sentence states: "Bristol was scoped with collecting groundwater samples from monitoring wells within the MOC, analyzing the results, and comparing the results with historical data to determine whether natural attenuation is occurring in groundwater at the site." Additionally stated in the SOW Section 4.5, "…groundwater MNA monitoring and comparison with data from previous years including: interpretation of data trends for all analytes, calculating the biodegradation rate for POLs as well as the timeframe in which site cleanup levels will be achieved, and conclusions		Bristol will include graphs from the monitoring well results and include a write-up summarizing the MNA results and showing relevant data trends. Methane analyses will be included throughout years 2010, 2011 and 2012.	A-Need to insert graphs into Appendix F and call them out in the document.

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		based on all data…" Listing results in only data tables is not enough here. We have enough data at this point to assess trends. We need to see some graphs for each well that has historic concentrations above cleanup levels that display concentrations vs. time of key analytes to determine slopes (rate of change). This needs to be discussed additionally in this section. Section 6.1.3 discusses overall results and compares 2012 values to historic values nicely. Data interpretation just needs to be taken to the next level. Also, please discuss how you think recent excavation at the MOC has impacted the local groundwater and associated MW analytical results, especially at MW88-1.			
16.	Page 55, Section 6.1.1	Last paragraph: Please reference the new appendix (Comment #4) that will contain all monitoring well boring logs in this section.		This new appendix will be referenced in this section.	A-done
17.	Page 56, Section 6.1.3	1st paragraph, section sentence states: "Frozen wells were thawed using a heated steel rod." Please mention that this rod was decontaminated prior to insertion into each well.		The section has been amended to show that the steel rod was decontaminated between wells.	A-done
18.	Page 59, Section 6.1.3	Last sentence states: "Bristol recommends continued groundwater sampling and MNA at the site and the installation of additional monitoring wells to replace MW88-4 and MW88-5." This is the first mention of well decommissioning. Please mention here that these wells were actually decommissioned in 2012 and reference the appropriate section that discusses well decommissioning.		Text will be added to clarify that these two wells were abandoned in 2012. Additional text will refer the reader to Section 6.10, the section regarding monitoring well abandonment.	A-done
19.	Page 68, Section 6.3.2	Last paragraph, last sentence states: "Sampling will commence in this area as soon as conditions allow." Please state that all MI sampling is planned to be completed in 2013.		The statement "all MI sampling is planned to be complete in 2013." was added to the end of the paragraph.	A-done
20.	Page 71, Section	Please revise last sentence to clarify to: "Original ground surface elevations prior to excavation in the vicinity of the		The change has been made as requested.	A-done

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	6.4.2.2	final extents of the H excavation range from approximately 75 to 80 feet above sea level.”			
21.	Page 75, Section 6.4.2.4	3rd paragraph, last sentence states: “The northern extent of the E plume is bounded by Site 28, the remedy for which will consist of sediment removal (discussed in Section 6.11).” Please clarify here that no confirmation samples are planned for the boundary between Plume E and Site 28. However, we did collect confirmation samples at this similar interface at Plume J1A…. 4th paragraph, 1st sentence states: “One sample, 12NCMOCSS136, was collected from an approximately 2,500-square-foot section of exposed floor.” Please clarify that this is the pink shaded area in Figure15and that this was the only area not under at least 2 feet of water in the entire excavation. 5th paragraph: Please state where the demarcation liner was placed and reference the location(s) on Figure 15. Is the pink shaded boundary around the perimeter of the excavation indicate liner location? Please clarify both in text and on figure.		Post sediment removal confirmation samples were collected from the floor of the sediment removal area (Removal Area 2) at the northern boundary of the E plume. The boundary between the E plume and Removal Area 2 has not had confirmation samples collected, but will. In 2011, with plume J1A, the excavation halted at the boundary of the plume and Site 28 and excavation ceased regardless sample results to avoid excavating in a wetland; this will be the case with the E plume as well. This information will be added to the report. The pink shaded area in Figure 15 will be further discussed in the report and the figure will be updated with additional text for clarification. The pink area on Figure 15 does not represent liner. The extent of demarcation liner will be added to Figure 15.	A, clarify that confirmation sidewall samples will be collected around the entire final perimeter of Plume E. Please also see comment #37. First and second comments-Done 3rd comment and response, figure has been edited (rev 1) but demarcation liner is not shown on figure or in legend.
22.	Page 76 Section 6.4.2.6	Titled “Surface Water Monitoring”. USACE has recently told Bristol that Decision Document “Cleanup Levels” and “Reference Limits” for all media need to be clearly defined and appropriate terminology used. This RA report and the		This report and tables will be updated to differentiate cleanup levels from reference limits.	A-done

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		Phase I sediment removal report need to be consistent with each other. Please be sure to edit as appropriate in this section and in the remainder of this report.			
23.	Appendix F (Results Tables) & Appendix J (Reference Tables and Analytical Limits)	Following on with the above comment, all tables in Appendix F & J need to be modified accordingly to segregate between "Cleanup Levels" and "Reference Limits."		All tables in Appendices F and J will be reviewed and appropriate modifications will be made regarding cleanup levels and reference limits/evaluation criteria.	A-done, tables need final check against text.
24.	Page 78, Section 6.5	Please reference Figures 16 & 17 in this section.		References will be added as requested.	A-done
25.	Page 82, Section 6.5.6	Please reference Figure 17 in this section.		Reference will be made as requested.	A-done.
26.	Page 83, Section 6.5.8	Add a sentence following the last sentence of this section that states: "Therefore, these rocks will be placed into each associated excavation as backfill in 2013."		The following sentence was added: "Boulders recovered in PCB excavations will be used as fill in their associated excavation."	A-done
27.	Page 86, Section 6.6.3	1st paragraph, 5th sentence, revise to: "Confirmation sidewall samples 12NC21SS017, 12NC21SS018, 12NC21SS019, and 12NC21SS020 …."		The change has been made as recommended.	A-done
28.	Page 93, Section 6.10.1	Please reference the new appendix that will contain all well boring logs here.		Bristol will reference the new appendix that contains the well information.	A-done, Appendix L
29.	Page 93, Section 6.10.2	Please reference Figure 22 in this section.		Figure 22 will be referenced.	A-done.
30.	Page 95/96, Section 6.11	This section is titled "Site 28 Sediment Mapping and Phase I Sediment Removal" and references the Phase I sediment removal report for information. It order to maintain accuracy		Sections 6.11.1 thru 6.11.3 will be removed from the report. Section 6.11 will serve to reference the Site 28 Phase I Sediment Removal	A-done, Section 6.11still remains and references

Item No.	Drawing Sheet No., Spec. Para.	COMMENTS	REVIEW CONFERENCE A - comment accepted W - comment withdrawn (if neither, explain)	CONTRACTOR RESPONSE	USAED/ADEC RESPONSE ACCEPTANCE (A-AGREE) (D-DISAGREE)
		and consistency for the Site 28 work, and the fact that we have a Phase I report that details this info already, I suggest removing entirely Sections 6.11.1, 6.11.2, and 6.11.3 from this report (and associated tables and Figures) and leaving simply the reference to the Phase I report. I still made comments to these sections, see below.		Report. Figures 23 and 24 will also be removed from the report.	Phase I report.
31.	Page 98, Section 6.11.2, Figure and Table	3rd paragraph: Confirmation samples need to be specifically called SOIL confirmation samples. All sediment was removed and only soil remains. Please make this very clear in this section and on Figure 24 (which calls these samples “sediment confirmation samples”). These results should be compared to appropriate soil levels in Table 26. Table 26 needs to be revised to compare to SOIL “Cleanup Levels” and “Reference Limits” in Cleanup Levels column of table.		This section will be removed from the report.	A-done, removed
32.	Page 99, Section 6.11.3	Same as comment above. Clearly state that these are SOIL confirmation samples. Then, discuss comparison of soil confirmation sample results to “Cleanup Levels” and “Reference Limits.” Will need to adjust terminology here too. 2nd paragraph, 2nd sentence, revise to: “However, removal areas may present difficulties with access that would require the construction of a road, a relatively costly and highly invasive measure.”		This section will be removed from the report.	A-done, removed
33.	Page 107, Table 7-1	Was TCLP (EPA 1311 or similar) done for arsenic? I believe it was, so shouldn’t this be added to Table 7-1?		TCLP analysis was not performed. A total waste analysis can be used in lieu of the TCLP to determine that a waste does not exhibit the toxicity characteristic. For solids, this is accomplished by dividing the total concentration of a constituent in the waste by 20 (reflecting the weight ratio of solid sample	See comment #8. Comment accepted, future samples greater than 100 mg/kg will be TCLP analyzed for hazard characterization.

Item No.	**Drawing Sheet No., Spec. Para.**	**COMMENTS**	**REVIEW CONFERENCE** **A - comment accepted** **W - comment withdrawn** **(if neither, explain)**	**CONTRACTOR RESPONSE**	**USAED/ADEC RESPONSE ACCEPTANCE (A-AGREE) (D-DISAGREE)**
				to acetic acid in the TCLP). If this maximum theoretical leachate concentration is lower than the characteristic level for the constituent, the waste cannot exhibit the toxicity characteristic for that constituent, and the TCLP need not be run. For example: If you have a total arsenic result of 190 mg/kg and apply the rule of 20 (divide by 20), then your sample would have a theoretical TCLP value of 9.5 mg/L which exceeds the RCRA regulatory limit of 5 mg/L. This would require your waste to carry the D004 RCRA code for arsenic and would make it a regulated hazardous waste. Tables will be amended to show that the above "rule of 20" rule was applied.-	Done
34.	Figures	It is difficult to determine which samples are sidewall samples and which are floor samples around the perimeter of the excavations in all figures that present sample locations/results. But, the text does state which is which, so I was constantly flipping back and forth between text and figure to see if a particular floor location or sidewall location was clean/dirty. I suggest making separate symbols for floor and sidewall samples for all figures that this relates to – this would eliminate the confusion.		An identifier will be added to the figures to clearly distinguish confirmation sidewall samples from confirmation floor samples.	A Figures still need to be updated as of 4-19.
35.	Figure 4	Please add a couple of "Groundwater Flow" arrows that run perpendicular to groundwater contours. Add arrow to legend.		Groundwater flow arrows will be added to the figure.	A-Figure still needs update.
36.	Figure 5	In "Note" section in legend: states "water elevations are from 2011" but there are no groundwater contours. Please delete.		The notes will be deleted as recommended and updated to reflect comments issued by V.	A-done

U.S. ARMY CORPS OF ENGINEERS	DATE: 14 March 2013 REVIEWER: J. Craner PHONE: 753-2628	Action taken on comment by:

Item No.	Drawing Sheet No., Spec. Para.	COMMENTS	REVIEW CONFERENCE A - comment accepted W - comment withdrawn (if neither, explain)	CONTRACTOR RESPONSE	USAED/ADEC RESPONSE ACCEPTANCE (A-AGREE) (D-DISAGREE)
		DTW and TOC are also listed but are not used anywhere on the figure. Please delete.		Palmer.	
37.	Figure 15	Need to define pink shading in legend. Why is there pink around the perimeter? Please clarify what this represents. Liner?		The pink areas represent portions of the excavation that will require additional excavation and/or sampling in 2013. For example, the southern and southwestern sidewalls (pink highlighted outlines) of the excavation will be excavated in 2013 to the extents of the UVOST delineated plume; the western and northern sidewalls of the excavation will require additional confirmation soil sampling; and the southeastern pink shaded area of the excavation will require additional confirmation soil samples.	A, the southeastern pink shaded area should be designated as an area that will require additional excavation pending initial confirmation sample results.
38.	Figures 16 and 17	For notes that indicate “Excavation Depth”, please add a “bgs” after ft.		“bgs” will be added as recommended.	A-done
39.	Figure 18	In legend: Revise red dot label to “Soil ~~Hot~~ Sample Location Where Arsenic….”		The description for the black dots will be changed to read “Confirmation Soil Sample Location”. The description for the red dots will be changed to read “Confirmation Soil Sample Location Which Exceeds Cleanup Level for Arsenic”. Sample results will be added. A note will be added stating the arsenic cleanup level is 11 mg/kg. mg/kg will be defined in the notes as milligrams per kilogram.	A
40.	Figures 23 & 24	I don’t see the purpose of having two figures that show almost the same stuff…suggest getting rid of Figure 23 and keeping Figure 24. Figure 23: In legend, no symbols for sample locations. Replace 2012 “sediment” with 2012 “soil” sample location.		Figures 23 and 24 will be removed from the RA report and a reference will be made in the document to the Site 28 Phase I Sediment Removal Report (per Craner Comment #30). The figures will be updated in the Site 28	A Done

U.S. ARMY CORPS OF ENGINEERS	DATE: 14 March 2013 REVIEWER: J. Craner PHONE: 753-2628	Action taken on comment by:

Item No.	Drawing Sheet No., Spec. Para.	COMMENTS	REVIEW CONFERENCE A - comment accepted W - comment withdrawn (if neither, explain)	CONTRACTOR RESPONSE	USAED/ADEC RESPONSE ACCEPTANCE (A-AGREE) (D-DISAGREE)
		Why is "Vegetative Mat Boundary" the only symbol capitalized? Be consistent. Figure 24: In legend, replace 2012 "sediment" with 2012 "soil" sample location. Why is "Vegetative Mat Boundary" the only symbol capitalized? Be consistent.		Phase I Sediment Removal Report as reflected in comments for this RA report and the Phase I Sediment Removal Report.	
		----- End of Comments ----			

REVIEW COMMENTS **PROJECT: NE Cape HTRW Remedial Actions / Contract No. W911KB-12-C-0003**
DOCUMENT: HTRW RA Draft Report Rev 0 – Feb 2013 Location: St. Lawrence Island, Alaska

U.S. ARMY CORPS OF ENGINEERS	**DATE: 1 March 2013** **REVIEWER: Teresa Lee** **PHONE: 753-2788**	**Action taken on comment by:**

Item No.	Drawing Sheet No., Spec. Para.	COMMENTS	REVIEW CONFERENCE A - comment accepted W - comment withdrawn (if neither, explain)	CONTRACTOR RESPONSE	USAED/ADEC RESPONSE ACCEPTANCE (A-AGREE) (D-DISAGREE)
1.	MED	The disc is missing the PDF laboratory report for 580-34330.		The PDF for 580-34330 will be added to the supplemental file.	
2.	MED	SOW requires SEDD version 5.2. All SEDD EDDs supplied are version 5.0. Please supply an error free SEDD version 5.2 for each SDG as required by the SOW.		Bristol is currently working with Mike Utley and TestAmerica to provide error free-SEDD 5.2 deliverables. As of 3-29-13 a test SEDD file has been delivered to Utley for evaluation. Once all issues have been worked out, all SEDD deliverables will be 5.2 compliant and error free.	
3.	CDQR	Page 3, in the list of laboratories, there is an extra inc. that needs to be removed.		The extra inc. will be removed from the CDQR.	
4.	CDQR	Somewhere in the introduction it should be stated who conducted the review.		"AECOM" added to first sentence in second paragraph of introduction.	
5.	CDQR Page 6	Data qualifiers should be defined as specified in the SOW. Please remove the reference to an "H" qualifier.		Data qualifiers will be modified to match SOW in CDQR and tables.	
6.	Report Section 7.2 CDQR page 102 Page 57 Page 58 Page 60 page 108 page 119 Data Tables ADEC Checksheet	Data qualifiers should be defined as specified in the SOW. Please remove the reference to the H qualifier and utilize the appropriate QN, QL, or QH qualifier as deemed necessary by the data reviewer. For instance VOCs analyzed outside of hold time should be qualified QL instead of H (Page 57) for volatiles run outside of hold time would have a low bias. Be sure to follow through with these changes throughout the data tables, CDQR, and checksheets as well.		Qualifiers in the CDQR, ADEC checklists and tables will be modified where needed to be consistent with qualifiers in the SOW. The H has been changed to QL.	
7.	Figure 5	Why are water levels from 2011 utilized? What does the		The water level note will be removed from the	

U.S. ARMY CORPS OF ENGINEERS	**DATE: 1 March 2013** **REVIEWER: Teresa Lee** **PHONE: 753-2788**	**Action taken on comment by:**

Item No.	Drawing Sheet No., Spec. Para.	COMMENTS	REVIEW CONFERENCE A - comment accepted W - comment withdrawn (if neither, explain)	CONTRACTOR RESPONSE	USAED/ADEC RESPONSE ACCEPTANCE (A-AGREE) (D-DISAGREE)
		cross after some sample dates for MW88-4 denote? Any figures representing data must list all associated data qualifiers. It was noted on figure 5 that the RRO result for MW88-10 is presented without its J qualifier. Please review all figures and apply all qualifiers as assigned throughout.		figure legend. The elevations shown are ground contours, no water elevations are shown on the Figure.	
8.	CDQR Section 2.1	Holy sample tracking failure batman! Many many many discrepancies between sample labeling and COCs. How is this going to be remedied in future efforts?		CoC templates with sample IDs have already been created for the 2013 work along with Sample ID check sheets. CoCs and sample IDs will be double checked by a second field sampler for correctness and consistency.	
9.	CDQR Page 52	There should be qualification in association with samples for Site 21 (Lab Work Order 580-34828-1): The filtered water samples collected for metals analysis were not preserved in the field and required preservation upon sample receipt.		Dissolved arsenic results for dissolved arsenic samples in SDG 580-34828 will be QL qualified. Tables and CDQR will be modified with flag changes. The results still indicate that arsenic concentrations are less than MCLs.	
10.	CDQR	The CDQR lacks a discussion of sensitivity. Please review actual LOQs/LODs/DLs achieved for suitability with clean up levels.		A sensitivity section has been added to the CDQR.	
11.	Chemical Data Tables	ND Results with LOD/LOQs above project limits have to be flagged in some way. I noted that they are highlighted in bold, however this is the same way that results exceeding project limits is displayed. The indicator for these two situations should not be the same.		Bold highlighting will remain for positive results exceeding cleanup levels. ND results exceeding cleanup levels will have the respective cells yellow highlighted to indicate ND results above CULs.	
		----- End of Comments ----			

REVIEW COMMENTS **PROJECT: NE Cape HTRW Remedial Actions / Contract No. W911KB-12-C-0003**
DOCUMENT: HTRW RA Draft Report Rev 0 – Feb 2013 Location: St. Lawrence Island, Alaska

U.S. ARMY CORPS OF ENGINEERS	**DATE: 1 March 2013** **REVIEWER: Teresa Lee** **PHONE: 753-2788**	**Action taken on comment by:**

Item No.	**Drawing Sheet No., Spec. Para.**	**COMMENTS**	**REVIEW CONFERENCE** **A - comment accepted** **W - comment withdrawn** **(if neither, explain)**	**CONTRACTOR RESPONSE**	**USAED/ADEC RESPONSE ACCEPTANCE (A-AGREE) (D-DISAGREE)**
1.	MED	The disc is missing the PDF laboratory report for 580-34330.		The PDF for 580-34330 will be added to the supplemental file.	A-Done
2.	MED	SOW requires SEDD version 5.2. All SEDD EDDs supplied are version 5.0. Please supply an error free SEDD version 5.2 for each SDG as required by the SOW.		Bristol is currently working with Mike Utley and TestAmerica to provide error free-SEDD 5.2 deliverables. As of 3-29-13 a test SEDD file has been delivered to Utley for evaluation. Once all issues have been worked out, all SEDD deliverables will be 5.2 compliant and error free.	A-still in progress, MEH
3.	CDQR	Page 3, in the list of laboratories, there is an extra inc. that needs to be removed.		The extra inc. will be removed from the CDQR.	A-Done
4.	CDQR	Somewhere in the introduction it should be stated who conducted the review.		"AECOM" added to first sentence in second paragraph of introduction.	A-Done
5.	CDQR Page 6	Data qualifiers should be defined as specified in the SOW. Please remove the reference to an "H" qualifier.		Data qualifiers will be modified to match SOW in CDQR and tables.	A-Done
6.	Report Section 7.2 CDQR page 102 Page 57 Page 58 Page 60 page 108 page 119 Data Tables ADEC Checksheet	Data qualifiers should be defined as specified in the SOW. Please remove the reference to the H qualifier and utilize the appropriate QN, QL, or QH qualifier as deemed necessary by the data reviewer. For instance VOCs analyzed outside of hold time should be qualified QL instead of H (Page 57) for volatiles run outside of hold time would have a low bias. Be sure to follow through with these changes throughout the data tables, CDQR, and checksheets as well.		Qualifiers in the CDQR, ADEC checklists and tables will be modified where needed to be consistent with qualifiers in the SOW. The H has been changed to QL.	A-Done
7.	Figure 5	Why are water levels from 2011 utilized? What does the		The water level note will be removed from the	A-done

REVIEW COMMENTS

PROJECT: NE Cape HTRW Remedial Actions / Contract No. W911KB-12-C-0003
DOCUMENT: HTRW RA Draft Report Rev 0 – Feb 2013 Location: St. Lawrence Island, Alaska

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		cross after some sample dates for MW88-4 denote? Any figures representing data must list all associated data qualifiers. It was noted on figure 5 that the RRO result for MW88-10 is presented without its J qualifier. Please review all figures and apply all qualifiers as assigned throughout.		figure legend. The elevations shown are ground contours, no water elevations are shown on the Figure.	
8.	CDQR Section 2.1	Holy sample tracking failure batman! Many many many discrepancies between sample labeling and COCs. How is this going to be remedied in future efforts?		CoC templates with sample IDs have already been created for the 2013 work along with Sample ID check sheets. CoCs and sample IDs will be double checked by a second field sampler for correctness and consistency.	A-Done
9.	CDQR Page 52	There should be qualification in association with samples for Site 21 (Lab Work Order 580-34828-1): The filtered water samples collected for metals analysis were not preserved in the field and required preservation upon sample receipt.		Dissolved arsenic results for dissolved arsenic samples in SDG 580-34828 will be QL qualified. Tables and CDQR will be modified with flag changes. The results still indicate that arsenic concentrations are less than MCLs.	A-done
10.	CDQR	The CDQR lacks a discussion of sensitivity. Please review actual LOQs/LODs/DLs achieved for suitability with clean up levels.		A sensitivity section has been added to the CDQR.	A-done
11.	Chemical Data Tables	ND Results with LOD/LOQs above project limits have to be flagged in some way. I noted that they are highlighted in bold, however this is the same way that results exceeding project limits is displayed. The indicator for these two situations should not be the same.		Bold highlighting will remain for positive results exceeding cleanup levels. ND results exceeding cleanup levels will have the respective cells yellow highlighted to indicate ND results above CULs.	A-DONE
		----- End of Comments ----			

Monthly Status Reports

111 W. 16th Avenue, Third Floor
Anchorage, AK 99501
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fax (907) 563-6713
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2011-2012 Northeast Cape HTRW Remedial Actions
Contracts: W911KB-06-D-0007 Task Order 0007
W911KB-12-C-0003
Monthly Status Report
April 2012
Submitted on 05/10/12

Summary of Work Performed

Subcontractors

- During the month of April Bristol received and paid invoices to subcontractors for the overwinter rental costs of the camp, vehicles, equipment, and ambulance stored at NE Cape.
- 516 bulk bags were delivered to the Port of Seattle by Pac-Tec and shipped to Anchorage by Northland Services.
- Continued corresponding with Northland Services about 2012 mobilization, barge schedule and bags overwintered at NE Cape and in Nome. M. Welker told them that Bristol is uncertain about whether we will receive funding from the USACE for overwintering equipment and camp in 2012.
- Working on Subcontracts/Work Authorizations with Global Services, Eco-land, Fairweather, and AECOM for the 2012 contract.
- Continuing to negotiate with TestAmerica-Anchorage for field laboratory analyst services. Lab interns have been hired.

USACE and ADEC Correspondence

- Bristol has not heard back on the Request for an Equitable Adjustment that was submitted to the USACE on 3/6/12 for the fuel surcharge incurred during the field effort at NE Cape in 2011. Bristol requested an update on the status of the request on 4/10/12 and 5/1/12. D. West stated on 5/2/12 that she would get back to M. Welker within a week.
- Bristol received the COR Designation letter from M. Abbott on 4/6/12 for the 2012 Contract.
- The 2011 NE Cape Monthly Status Report for March 2012 and the Exposure Hour Form was submitted to the USACE on 4/10/12.
- C. Cossaboom sent M. Welker an email on 4/13/12 about the Final Site 28 Tech Memorandum including chemistry EDD issues and a request for the native files of the boring logs. M. Welker replied to this email on 4/16/12.
- M. Welker sent C. Cossaboom the Response to Comment forms for the 2011 NE Cape HTRW Report on 4/18/12. Received approval and additional comments from the USACE on 4/26/12 and M. Welker responded on 4/30/12. Unresolved is the Supplemental Folder issue from T. Lee comment.

- On 4/30/12 M. Welker requested a meeting to discuss the UFP-QAPP and to schedule a 2012 Kick-off Meeting. UFP-QAPP meeting scheduled for 5/16/12.

Work Underway

- Bristol is working on the 2012 Draft Work Plan, revising the SPCC, updating AHA forms, incorporating the new SWPPP format, developing the MI sampling protocols, and finalizing the draft UFP-QAPP.
- M. Welker working with S. Luetters on the 2012 permits from NOAA-NMFS, ADNR, and USFWS.
- Submitted the revised 2012 Schedule of Values and working on revising the 2012 Project Schedule.
- Bristol is continuing to work on the 2012 NE Cape mobilization and planning for the 2012 field effort.
- Bristol is working on finalizing the 2012 Quarry Agreement with J. Reichlin and the tribal corporations in Gambell and Savoonga.

Work Planned for the Upcoming Month

- Bristol will continue to plan for the 2012 field effort and submit the Draft 2012 Work Plans.
- Bristol and the USACE and ADEC will meet to discuss the UFP-QAPP on May 16, 2012 at 1 p.m.
- Bristol hopes to receive the Temporary Use of Water Permit from ADNR by the end of the month for the 2012 NE Cape project.
- The temporary field crew will be hired and Bristol will schedule their physicals and drug testing.

Status of Laboratory Reports

- Bristol is negotiating with TestAmerica-Anchorage laboratory on the Subcontract/Work Authorization for the 2012 field lab support.
- Bristol is working on a Subcontract/Work Authorization with AECOM for the 2012 CDQR.
- Bristol is working with TestAmerica-Tacoma on the UFP-QAPP lab issues.

Pay Estimates

- No invoice was submitted in April.

Accident/Exposure Hours

- The March 2012 Monthly Record of Work–Related Injuries/Illnesses & Exposure Form was submitted on 4/10/12 to R. Broyles.

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2011-2012 Northeast Cape HTRW Remedial Actions
Contracts: W911KB-06-D-0007 Task Order 0007
W911KB-12-C-0003
Monthly Status Report
May 2012

Submitted on 06/11/12

Summary of Work Performed

Subcontractors

- During the month of May Bristol received and paid invoices to subcontractors for the overwinter rental costs of the camp, vehicles, equipment, and ambulance stored at NE Cape.
- 265 bulk bags were delivered to the Port of Seattle by Pac-Tec and will be shipped to Anchorage by Northland Services in June 2012.
- Continued corresponding with Northland Services about 2012 mobilization, barge and landing craft schedules. Held a teleconference with Northland Services on 5/8/12.
- Requested that Bering Air do an over-flight of the NE Cape runway prior to the mobilization tentatively scheduled for June 18, 2012.
- Working on Subcontracts/Work Authorizations with Global Services, Eco-land, Fairweather, TestAmerica, and AECOM for the 2012 contract.
- Continued to discuss the field laboratory analytical services that will be provided by TestAmerica-Anchorage at NE Cape and about the fixed analytical services provided by TestAmerica-Tacoma.
- Corresponded with Waste Management about manifests and 2012 disposal facility issues. Met with Waste Management project management team in Anchorage on 5/9/12.

USACE and ADEC Correspondence

- Bristol corresponded with D. West about the status of the 2011 Request for an Equitable Adjustment (REA) related to fuel surcharges on 5/1/12. The REA was denied on 6/1/12.
- Bristol requested and received FUDS information numbers for the 2012 Work Plan and SWPPP from C. Cossaboom on 5/1/12.
- The 2011 NE Cape Monthly Status Report for April 2012 was submitted on 5/10/12 and the Exposure Hour Forms were submitted to the USACE on 5/4/12.
- Bristol submitted the 2012 Project Schedule and Schedule of Values (SOV) to R. Broyles on 5/1/12. Correspondence between M. Welker and the USACE about the revisions to the Project Schedule and SOV occurred through 5/14/12. Bristol received C-0002 Response to Project Schedule and Bid Breakdown Submittal Letter from J. Craner on 5/29/12.

- Bristol received Contract Administration Requirement Letter from J. Craner and other contractual forms for the 2012 Contract on 5/8/12.
- Bristol worked to set up the UFP-QAPP meeting with the USACE starting on 5/10/12. Kick-off meeting was eventually scheduled for May 16th at 1:30 p.m. Bristol received edits to the UFP-QAPP from J. Craner and C. Cossaboom on 5/17/12. And also received information back from C. Dunkin in an email about the Site 28 mapping and sediment removal effort in 2012 on 5/17/12. Minutes of the UFP-QAPP meeting were submitted to the USACE and ADEC on 5/18/12. C. Cossaboom had minor revisions to the minutes. Corresponded with J. Craner about the SOPs in the UFP-QAPP on 5/21/12.
- Bristol received an email from R. Broyles with approval to combine the Monthly Status Reports for the 2011 and 2012 contracts into one report on 5/10/12.
- M. Welker submitted the POA Form 15 for Invoice 06 for 2011 contract to R. Broyles and J. Craner on 5/10/12. Correspondence continued until USACE approved and signed it on 5/25/12. Bristol submitted the complete Invoice 06 packet on 5/30/12.
- Bristol received an email from C. Cossaboom about a request from ADEC to include an Excavation Closure Letter from ADEC into the 2011 Final Report and the 2012 Work Plan on 5/14/12.
- Bristol received the ADEC comments on the 2011 HTRW Final Report from C. Cossaboom on 5/14/12.
- On 5/21/12 M. Welker and C. Cossaboom corresponded about the 2012 Kick-off Meeting that was scheduled for 5/23/12 at 1:30 p.m. Also received contact information on C. Dale, the KO, from C. Cossaboom.
- Bristol received an email on 5/21/12 from T. Lee about UTV training requirements discussed in the UFP-QAPP meeting.
- C. Cossaboom sent an email to M. Welker about the Supplemental Folder for the 2011 HTRW Final Report on 5/23/12.
- Bristol submitted the 2012 Work Plan to the USACE on 5/29/12 and received confirmation that it was delivered by R. Broyles.
- The Bristol Certificate of Insurance was submitted to the USACE on 5/31/12.

Work Underway

- Bristol is working on the 2011 HTRW Final Report while waiting to receive ADEC approval of the Response to Comment forms.
- Bristol's chemist worked on the EDDs for the Site 28 Tech Memorandum and the 2011 HTRW Report and is compiling the revised MED for the Site 28 Technical Memorandum based on comments received from C. Cossaboom.
- Bristol working on the manifests and profiles for the waste generated at NE Cape in 2012 with Waste Management, Inc.
- Scheduled the bottle orders with TestAmerica-Tacoma for the 2012 field effort.
- Corresponded with J. Reichlin about the 2012 Quarry Agreement. Received a signature on the Quarry Agreement from the Sivuqaq, Inc. and left phone messages in Savoonga for Morris Toolie, Jr. about his signature on the agreement.

- Ordered equipment and supplies for the Site 28 Phase I Sediment Removal task.
- Bristol continues to plan and prepare for the 2012 field effort including the MI sampling, pole removal, permits, and subcontractor requirements.

Work Planned for the Upcoming Month

- Bristol will continue to plan for the 2012 mobilization, field effort, and revise the Draft 2012 Work Plans based on comments from the USACE and ADEC.
- Bristol has requested that the Temporary Use of Water Permit from ADNR be approved prior to 2012 field effort.
- The temporary field crew will be hired and Bristol will schedule their physicals and drug testing.

Status of Laboratory Reports

- Bristol is discussing the lab analyst travel schedule with TestAmerica-Anchorage laboratory for the 2012 field lab support.
- Bristol is working on a Subcontract/Work Authorization with AECOM for the 2012 CDQR.
- Bristol is working with TestAmerica-Tacoma on the UFP-QAPP lab issues and bottle order.

Pay Estimates

- Invoice06 was submitted and approved in May 2012.

Accident/Exposure Hours

- The April 2012 Monthly Record of Work–Related Injuries/Illnesses & Exposure Form was submitted on 5/4/12 to R. Broyles.

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2011-2012 Northeast Cape HTRW Remedial Actions
Contracts: W911KB-06-D-0007 Task Order 0007
W911KB-12-C-0003
Monthly Status Report
June 2012

Submitted on 07/11/12

Summary of Work Performed

Subcontractors

- During the month of June Bristol received and paid invoices to subcontractors for the overwinter rental costs of the camp, vehicles, equipment, and ambulance stored at NE Cape.
- Bristol paid invoices to vendors in June for supplies related to the NE Cape mobilization effort, transportation and disposal of bulk bags, and for material and supplies needed for the field tasks.
- Bristol finalized 2012 subcontracts with Global, Ecoland, Fairweather, AECOM, and TestAmerica.
- On 6/1/12 Bristol received revised EDDs from TestAmerica for the 2011 final report.
- In June Bristol had correspondence with Northland Services and Waste Management about profiles, transport of bulk bags from Port of Seattle (POS) to Alaska Street Transfer Facility, and about the coordination of the 80 bulk bags that were delivered to the POS on 6/25/12 for disposal.
- Bering Air conducted an over-flight and inspection of the NE Cape runway and overwintered camp on 6/15/12.
- Corresponded with Northland Services about barge arrival at NE Cape on 6/27/12.

USACE and ADEC Correspondence

- D. West sent Bristol a letter denying the 2011 Request for an Equitable Adjustment (REA) related to fuel surcharges on 6/1/12.
- Bristol received an approval letter from ADEC on 6/5/12 for the Final Site 28 Technical Memorandum.
- On 6/5/12 and 6/6/12 Bristol corresponded with C. Cossaboom about the ADEC concerns for the Draft NE Cape Work Plan and also received USACE comments on the 2012 Draft NE Cape Work Plan.
- Bristol sent the USACE the responses to comments (RTC) from the ADEC on the Draft 2011 NE Cape Removal Action Report. C. Cossaboom replied on the RTC and forwarded them to ADEC on 6/6/12.
- The 2011 NE Cape Monthly Status Report for May 2012 was submitted on 6/11/12 and the Exposure Hour Forms were submitted to the USACE on 6/5/12.

- Bristol corresponded with J. Craner about POA Forms 15 for Invoice 07 for Contract W911KB-06-D-0007 and Invoice 01 for Contract W911KB-12-C-0003 on 6/11/12.
- Bristol sent an email with an update on the mobilization plans for NE Cape to the USACE on 6/12/12 and scheduled the QAR flight with Security Aviation on 6/13/12.
- Bristol submitted the complete invoice packet to the USACE for Invoice 07 (Contract W911KB-06-D-0007) on 6/13/12. It was approved by the USACE on 6/15/12 and payment was received on 6/20/12.
- On 6/14/12 Bristol submitted the complete invoice packet to the USACE for Invoice 01 (Contract W911KB-12-C-0003) on 6/14/12. It was approved by the USACE on 6/15/12 and payment received on 6/20/12.
- C. Cossaboom sent Bristol comments on the 2012 NE Cape APP/SSHP from D. Prado on 6/20/12.
- Bristol corresponded with C. Cossaboom about getting Kukulget's signature on the 2012 Quarry Agreement on 6/13/12 and 6/20/12.
- Bristol submitted nine CDs containing MED information for the 2011 Site 28 Technical Memorandum to the USACE on 6/15/12.
- C. Cossaboom sent Bristol RTC forms from him and R. Scrudato on the 2012 Draft NE Cape Work Plan on 6/20/12.
- Bristol received notice from USACE on additional funding to over-winter equipment in 2012 on 6/20/12.
- On 6/21/12 Bristol received approval from ADEC on the RTC form for the 2011 Draft NE Cape Removal Action Report.
- Bristol sent R. Broyles a 2012 invoice forecast on 6/25/12.
- On 6/25/12 Bristol corresponded with C. Cossaboom about the remaining chemistry issue for the Site 28 Technical Memorandum MED.
- Bristol discussed, received, and addressed comments about the 2012 NE Cape SWPPP from C. Cossaboom and E. Marcellus on 6/26/12.

Work Underway

- Bristol's field team is moving forward on the field tasks at NE Cape. POL- and PCB-contaminated soil will be removed; bulk bags manifested and moved to Cargo Beach for scheduled landing craft, surface water and ground water samples from the MOC will be shipped to TestAmerica, and Site 28 mapping and sampling will be conducted.
- Bristol will continue to incorporate ADEC and USACE comments into the Draft 2012 NE Cape Work Plan and submit it to USACE.

Work Planned for the Upcoming Month

- Bristol will continue to discuss Site 28 issues with the USACE and ADEC.
- Continue the project management and field work related to scope of work for 2011 and 2012 contracts.
- Bristol will coordinate with Northland Services on the landing craft schedule and track the bulk bags being shipped and disposed.

Status of Laboratory Reports

- Bristol's chemist is overseeing the field screening laboratory that is being run by lab analysts from TestAmerica-Anchorage.
- Bristol's chemist is addressing COC issues with the field team and coordinating with TestAmerica-Tacoma on the first shipment of surface water, ground water, and soil confirmation samples.

Pay Estimates

- Bristol received payment for Invoice 06 for Contract W911KB-06-D-0007 on 6/6/12.
- Invoice07 (Contract W911KB-06-D-0007) and Invoice01 (Contract W911KB-12-C-0003) were submitted and approved in June 2012.

Accident/Exposure Hours

- The May 2012 Monthly Record of Work–Related Injuries/Illnesses & Exposure Forms were submitted on 6/5/12 to R. Broyles.

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2011-2012 Northeast Cape HTRW Remedial Actions
Contracts: W911KB-06-D-0007 Task Order 0007
W911KB-12-C-0003
Monthly Status Report
July 2012

Submitted on 08/13/12

Summary of Work Performed

Summary of Work Tasks

During the month of July, Bristol mobilized to the site and started excavation and soil removal activities. Bristol also completed the Site 28 mapping and sampling effort. During this period, Bristol has performed the following:

- Performed MI sampling at Cargo Beach, the MOC, and Site 6.
- Performed Site 28 sediment mapping and sampling.
- Located, removed, and stockpiled 3.5 tons of debris/metal.
- Located, removed, and stockpiled 158 wooden poles with a total weight of 29.14 tons.
- Recovered 10 gallons of POL liquids.
- Excavated, removed, and bagged 3154.5 tons of PCB contaminated soil from Sites 13 and 31 under Contract W911KB-12-C-0003.
- Excavated, removed, and bagged 1207.04 tons of POL soil under Contract W911KB-06-D-0007.
- Site visit was performed on 7/31 for discussion of Site 28 sediment removal task. Attendees included C. Cossaboom, J. Craner, A. Shewman, J. Clark, C. Dunkin, G. Jarrell, and B. Burke.

Subcontractors

- During the month of July Bristol received and paid invoices to subcontractors for the rental of equipment, remote camp support, laboratory analytical services, site medical services, and marine transportation.
- Bristol paid invoices to vendors in July for supplies related to the NE Cape mobilization effort, transportation and disposal of bulk bags, and for material and supplies needed for the field tasks.

Mobilization

- Bristol’s Superintendent and mobilization crew arrived on 6/18 and 6/21.
- Bristol’s environmental team, medical personnel, and remainder of operators and laborers arrived on 7/3, 7/5, and 7/6.

USACE and ADEC Correspondence

- On 7/2 & 7/15 Bristol corresponded with E. Marcellus (USACE) regarding the NOI for the SWPP.
- Bristol received comments related to the 2012 Work Plan from C. Dunkin (ADEC).
- On 7/5 Bristol sent C. Cossaboom a progress update related to the Work Plan.
- On 7/5 Bristol sent T. Lee correspondence related to correlation samples/study discussed during the Mutual Understanding Meeting held with J. Craner onsite.
- On 7/6, 7/9, and 7/10 Bristol and C. Cossaboom had numerous emails related to work plan comments and responsed.
- On 7/6 Bristol received additional responses to comments from C. Dunkin.
- Bristol received correspondence on 7/6 from T. Lee verifying information related to the sample correlation study.
- On 7/9, 7/10, and 7/11 numerous emails between Bristol, USACE (C. Cossaboom), and the ADEC (C. Dunkin) occurred related to figure revisions for the Work Plan.
- On 7/11 Bristol received correspondence from A. Shewman to schedule a teleconference to finalize comment resolution. Teleconference was held on 7/13 between Bristol, USACE, and ADEC.
- On 7/13 Bristol (and USACE) received email from C. Dunkin relaying the ADEC's tentative approval of the Work Plan provided that comments/responses were incorporated into the document.
- On 7/17, and 7/18 Bristol corresponded with C. Cossaboom and C. Dunkin regarding questions on preliminary map for Site 28.
- On 7/20 Bristol Received approval from C. Dunkin of the response to comments related to the Work Plan figures.
- On 7/23 Bristol received additional comments by the ADEC from C. Cossaboom related to the UFP QAPP.

Work Underway

- Bristol's field team is performing field tasks at NE Cape. POL- and PCB-contaminated soil will be removed; bulk bags manifested and moved to Cargo Beach for scheduled landing craft, confirmation samples will continue to be collected and shipped to TestAmerica in Seattle.
- Bristol will continue to incorporate ADEC and USACE comments into the Draft 2012 NE Cape Work Plan and submit it to USACE.

Work Planned for the Upcoming Month

- Bristol will continue to discuss Site 28 issues with the USACE and ADEC, and complete the Site 28 Technical Memorandum.
- Continue the project management and field work related to scope of work for 2011 and 2012 contracts.
- Bristol will coordinate with Northland Services on the landing craft schedule and track the bulk bags being shipped and disposed.
- Anticipate commencement of Site 28 Sediment Removal.

Status of Laboratory Reports

- Bristol's chemist is overseeing the field screening laboratory that is being run by lab analysts from TestAmerica.
- Field screening results have been provided to the USACE onsite QAR upon completion.
- Laboratory analytical reports from TestAmerica have been reviewed for quality and completeness upon receipt.

Pay Estimates

- Bristol submitted POA 15 forms for Invoice08 (Contract W911KB-06-D-0007) and Invoice02 (Contract W911KB-12-C-0003)to R. Broyles on 7/16.
- Invoices were approved on 7/23 and Bristol received payment on 7/26.

Accident/Exposure Hours

- The July 2012 Monthly Record of Work–Related Injuries/Illnesses & Exposure Forms were submitted on 8/3/2012 to R. Broyles.

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2011-2012 Northeast Cape HTRW Remedial Actions
Contracts: W911KB-06-D-0007 Task Order 0007
W911KB-12-C-0003
Monthly Status Report
August 2012
Submitted on 09/12/12

Summary of Work Performed

Summary of Work Tasks

During the month of August, Bristol continued excavation and soil removal activities. During this period, Bristol has performed the following:

- Performed MNA sampling at Site 8.
- Performed MI sampling at the MOC and Site 6, as well as monitoring at the MOC during site activities.
- Performed sampling at the Radar Dome Site.
- Located, emptied, containerized contents, and removed .96 tons of drums.
- Recovered approximately 900 gallons of drum liquids.
- Excavated, removed, and bagged 2,273.75 tons of POL soil, 47.06 tons of arsenic soil, and 1,151.13 tons of PCB contaminated soil from Sites 13 and 31 under Contract W911KB-12-C-0003.
- Excavated, removed, and bagged 3574.96 tons of POL soil under Contract W911KB-06-D-0007.
- Transported 2,219.9 tons of PCB soil and 2014.8 tons of POL soil off island for disposal on 9 landing craft loads.
- Bristol completed and submitted the draft Site 28 Technical Memorandum (2012).
- Bristol submitted an NOI under the State of Alaska General Discharge Permit for activities at Site 28.

Subcontractors

- During the month of August Bristol received and paid invoices to subcontractors for the rental of equipment, remote camp support, laboratory analytical services, site medical services, and marine transportation.
- Bristol paid invoices to vendors in August for supplies related to the NE Cape mobilization effort, transportation and disposal of bulk bags, and for material and supplies needed for the field tasks.

USACE and ADEC Correspondence

- On 8/7 Bristol and R. Broyles corresponded regarding a possible injury to a subcontractor’s employee.
- On 8/9 & 8/10 Bristol & C. Cossaboom corresponded regarding responses to ADEC’s comments on the UFP QAPP.
- On 8/15 S. Johnson & G. Jarrell (Bristol) had a meeting with R. Broyles in the Bristol office. Items discussed included modifications for additional PCB and POL soil, future billing cycle, potential for trading “haz soil” line item from contract W911KB-06-D-0007 to “non-haz” soil. R. Broyles also indicated that the possible injury issue with subcontractor’s employee was a closed matter as far as USACE was concerned.
- On 8/15 Bristol corresponded with C. Dunkin (ADEC) regarding a meeting on 8/16
- On 8/16 Bristol met with C. Dunkin to discuss Site 28 water discharge issues.
- On 8/16 Bristol and C. Cossaboom discussed addressing C. Dunkin’s comments to the final UFP-QAPP
- On 8/16 Bristol emailed C. Cossaboom related to the increase in sample quantities required at Site 10 due to the increase in aerial extent.
- On 8/17 Bristol sent B. Smyth (ADEC) and email as per previous meeting with C. Dunkin on 8/16 regarding questions related to General Discharge Permit.
- On 8/17 Bristol received email correspondence from T. Lee relating concurrence on a solution to MED deliverable problem for 2011 Site 28 document.
- On 8/20 Bristol received transmittal of government’s RFP letter for proposed modification No. 004 (contract W911KB-12-C-0003).
- On 8/21 Bristol attempted to contact B. Smyth via telephone after no response to previous email; left a voice message.
- On 8/22 Bristol contacted B. Smyth at the ADEC regarding discharge at Site 28. Bristol transmitted some information regarding the site to Mr. Smyth who then referred Bristol to J. Greuey (ADEC) for further direction.
- On 8/23 Bristol was included on email from C. Cossaboom to ADEC related to sample quantities for excavation floor areas inundated with water.
- On 8/23 Bristol received email from R. Broyles concerned about turnaround times for analytical samples delivered to the laboratory. (Bristol contacted the laboratory and discussed the issue, the laboratory agreed to distribute project samples to other labs within their network).
- On 8/24 Bristol conversed with J. Greuey at ADEC regarding special notification under General Permit. He advised Bristol on the process.
- On 8/27 Bristol received email correspondence from M. Utley accepting the final MED deliverable changes for the 2011 Site 28 Tech Memo.
- On 8/28 Bristol was included on correspondence between C. Cossaboom and C. Dunkin related to the sampling frequency required for excavations unundated by water.
- On 8/28 Bristol received email correspondence from C. Dunkin related to his conversations with J. Greuey at the ADEC regarding an NOI for special dispensation under the General Discharge Permit.

- On 8/28 Bristol received email correspondence from C. Cossaboom allowing Bristol to deliver draft version of the 2012 Tech Memo directly to C. Dunkin.
- On 8/29 Bristol received correspondence from M. Utley regarding laboratory certifications for TestAmerica's Denver lab. (Bristol provided the required certifications to M. Utley).
- 8/29 & 8/30 Bristol corresponded with R. Broyles regarding PCB haz vs. non-haz in the 2011 contract.
- On 8/31 Bristol received correspondence from C. Cossaboom with his comments on the Site 28 Tech Memo (2012).

Work Underway

- Bristol's field team is performing field tasks at NE Cape. POL- and PCB-contaminated soil will be removed; bulk bags manifested and moved to Cargo Beach for scheduled landing craft, confirmation samples will continue to be collected and shipped to TestAmerica in Seattle.
- Bristol will continue to incorporate ADEC and USACE comments into the 2012 NE Cape Site 28 Technical Memorandum and submit it to USACE.

Work Planned for the Upcoming Month

- Bristol will perform sediment removal tasks at Site 28, and complete the Site 28 Technical Memorandum.
- Continue the project management and field work related to scope of work for 2011 and 2012 contracts.
- Bristol will coordinate with Northland Services on the landing craft schedule and track the bulk bags being shipped and disposed.
- Anticipate completion of onsite field task activities and initiation of site demobilization on or about September 25, 2012.

Status of Laboratory Reports

- Bristol's chemist is overseeing the field screening laboratory that is being run by lab analysts from TestAmerica.
- Field screening results have been provided to the USACE onsite QAR upon completion.
- Laboratory analytical reports from TestAmerica have been reviewed for quality and completeness upon receipt.

Pay Estimates

- Bristol submitted complete invoice packages for Invoice09 (Contract W911KB-06-D-0007) and Invoice03 (Contract W911KB-12-C-0003) to R. Broyles on 8/22/12.

Accident/Exposure Hours

- The August 2012 Monthly Record of Work–Related Injuries/Illnesses & Exposure Forms were submitted on 9/6/2012 to R. Broyles.

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2011-2012 Northeast Cape HTRW Remedial Actions
Contracts: W911KB-06-D-0007 Task Order 0007
W911KB-12-C-0003
Monthly Status Report
September 2012
Submitted on 10/11/12

Summary of Work Performed

Summary of Work Tasks

During the month of September, Bristol continued excavation and soil removal activities. During this period, Bristol has performed the following:

- Located, consolidated, and containerized 9.29 tons of miscellaneous wire and debris.
- Recovered approximately 300 gallons of drum liquids.
- Constructed and tested Site 28 impoundments, sediment trap, and dewatering area.
- Performed sediment removal at Site 28.
- Excavated, removed, and bagged 1,258.37 tons of POL soil from the main MOC area, 59.4 tons of contaminated soil from Site 10, 55.66 tons of arsenic soil, 26.82 tons of sediment from Site 28, and 579.10 tons of PCB contaminated soil from Sites 13 and 31 under Contract W911KB-12-C-0003.
- Collected, transported, processed, and sampled PCB boulders/rocks for laboratory analysis in accordance with Modification P00004.
- Transported 5,650.58 tons of contaminated soil on 13 landing craft loads.
- Science and laboratory personnel demobilized from the island September 23rd (craft/break down crew remained on island).

Subcontractors

- During the month of September Bristol received and paid invoices to subcontractors for the rental of equipment, remote camp support, laboratory analytical services, site medical services, air transport, and marine transportation.
- Bristol paid invoices to vendors in September for supplies related to the NE Cape mobilization effort, transportation and disposal of bulk bags, and for material and supplies needed for the field tasks.

USACE and ADEC Correspondence

- On 9/7 Bristol and C. Cossaboom corresponded regarding comments related to the Site 28 Technical memorandum.
- On 9/7 Bristol, C. Cossaboom, and C. Dunkin (ADEC) corresponded regarding ADEC comments/concerns about water discharge permit at NE Cape.
- On 9/10 Bristol and USACE discussed backfill material issues related to clean backfill from the borrow source.

- On 9/11 Bristol emailed C. Cossaboom regarding final comments from ADEC on the Site 28 Technical Memorandum (note: comments never received)
- On 9/14 Bristol and R. Broyles conversed regarding the accidental submission of two serialized letters with the same number, numbering issue has been resolved.
- On 9/14 Bristol received correspondence from C. Cossaboom regarding Site 28 Tech Memo comments from ADEC (ADEC did not submit to USACE) and sampling scheme for Site 28 water.
- On 9/18 Bristol received correspondence from USACE regarding sampling scheme/process for Site 28.
- On 9/19 Bristol sent USACE minutes from the teleconference related to Site 28 held on September 7.
- On 9/20 Bristol received correspondence from R. Broyles regarding the EPA clause to be added to Modification P00004.
- On 9/24 Bristol received the RFP for Modification P00004 from A. Graham (USACE).
- On 9/25 Bristol corresponded with A. Graham regarding suggested changes/revisions to language in the SOW in the RFP for Modification P00004.

Work Underway

- Onsite demobilization/winterization tasks have commenced.

Work Planned for the Upcoming Month

- Bristol will perform demobilization for the 2012 season.
- Continue the project management and field work related to scope of work for 2011 and 2012 contracts.
- Bristol will coordinate with Northland Services on the landing craft schedule and track the bulk bags being shipped and disposed.
- Anticipate completion of onsite demobilization activities by October 5, 2012.
- Commence writing report(s) for Site 28 activities as well as remedial action reporting for the 2012 season.

Status of Laboratory Reports

- Onsite laboratory has been winterized and packed up.
- Laboratory analytical reports from TestAmerica continue to be reviewed for quality and completeness upon receipt.
- Third party review of laboratory data has begun.
-

Pay Estimates

- Bristol submitted complete invoice packages for Invoice10 (Contract W911KB-06-D-0007) and Invoice04 (Contract W911KB-12-C-0003) to R. Broyles on 9/11/12.

Accident/Exposure Hours

- The September 2012 Monthly Record of Work–Related Injuries/Illnesses & Exposure Forms were submitted on 10/8/2012 to R. Broyles.

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2011-2012 Northeast Cape HTRW Remedial Actions
Contracts: W911KB-06-D-0007 Task Order 0007
W911KB-12-C-0003
Monthly Status Report
October 2012

Submitted on 11/27/12

Summary of Work Performed

Summary of Work Tasks

During the month of October, Bristol ceased soil removal activities and demobilized from NE Cape. During this period, Bristol has performed the following:

- Global Services continued to provide camp services and onsite breakdown until final demobilization.
- Bristol and all of the subcontractors demobilized from the Island on October 4, 2012.
- Bristol has received all of the laboratory data from TestAmerica and our chemist is working with the lab to resolve some minor EDD issues.
- Bristol has provided the data to our subcontractor for 3rd party independent review.
- Shipped one last landing craft load from the site prior to final demobilization with approximately 295 tons of contaminated soil.

Subcontractors

- During the month of October Bristol received and paid invoices to subcontractors for the rental of equipment, remote camp support and demobilizaiton, laboratory analytical services, site medical services, air transport, waste disposal, and marine transportation.

USACE and ADEC Correspondence

- On 10/3 Bristol and J. Craner discussed pay estimates 5 and 11.
- On 10/4 questions related to pay estimates 5 and 11 were resolved and signed by USACE.
- On 10/4 C. Cossaboom and Bristol discussed the schedule for the RAB meeting to be held in Savoonga, AK.
- On 10/15 C. Cossaboom and Bristol discussed schedule for project deliverable delivery, particularly the Site 28 Technical Memorandum and associated MED.
- On 10/24 C. Cossaboom sent out an email correspondence setting the RAB meeting date for November 28, 2012.
- On 10/26 C. Cossaboom sent out an email to request input for a different date for the RAB meeting due to an attendee conflict.
- On 10/30 C. Cossaboom emailed some questions and an action item related to the winter shutdown under the SWPP.

Work Underway

- Bristol is working on the Site 28 Sediment Removal Report and the HTRW Remedial Action Report.
- Bristol is also preparing ADEC checklists and laboratory data QC.
- Bristol's sub is also performing the 3rd party data verification for the CDVR.

Work Planned for the Upcoming Month

- Bristol will continue preparation of the required report submittals.
- Continue to track the bulk bags and containers with material sent for disposal.
- Attend the annual RAB meeting in Savoonga, Alaska on December 5, 2012.
- Continue the project management and field work related to scope of work for 2011 and 2012 contracts.
- Continue writing report(s) for Site 28 activities as well as remedial action reporting for the 2012 season.

Status of Laboratory Reports

- Onsite laboratory has been winterized and packed up.
- Laboratory analytical reports from TestAmerica continue to be reviewed for quality and completeness upon receipt.
- Third party review of laboratory data has begun.
-

Pay Estimates

- Bristol submitted complete invoice packages for Invoice11 (Contract W911KB-06-D-0007) and Invoice05 (Contract W911KB-12-C-0003) to R. Broyles on 10/05/12.

Accident/Exposure Hours

- The October 2012 Monthly Record of Work–Related Injuries/Illnesses & Exposure Forms were submitted on 11/02/2012 to R. Broyles.

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Contracts: W911KB-06-D-0007 Task Order 0007
W911KB-12-C-0003
Monthly Status Report
November 2012

Submitted on 12/12/2012

Summary of Work Performed

Summary of Work Tasks

During the month of November, Bristol performed the following:

- Commenced preparation of the Draft HTRW report.
- Continued preparing ADEC Checklists, performing data review, compiling survey data, and reviewing 3rd party deliverables.
- Continued preparation of the Site 28 Sediment Removal Report.
- Prepared, negotiated, and finalized proposal for 2013 work, under new contract #W911KB-13-C-0004
- Prepared the PowerPoint presentation for RAB meeting in Savoonga.
- Prepared and submitted a modification to the SWPP to the ADEC.

Subcontractors

- During the month of December Bristol received and paid invoices to subcontractors for the rental of equipment, remote camp support and demobilization, laboratory analytical services, site medical services, air transport, waste disposal, and marine transportation.
- Approximately 660 bulk bags remain at the Northland Services Marine Terminal in Seattle. Bags are currently being transported to Waste Management's facility in Arlington, Oregon for disposal as trucks and rail capacity becomes available. Bristol expects all bags to be transported to final locations by mid-December.

USACE and ADEC Correspondence

- On 11/1 Bristol received additional comments on the Site 28 Technical Addendum from C. Dunkin (ADEC).
- On 11/1 Bristol corresponded with C. Cossaboom regarding additional information to be submitted as a SWPP modification.
- On 11/7 &11/8 Bristol and C. Cossaboom corresponded regarding the CDQR requirements for the various submittals and confirmed that the same CDQR can be presented in both the HTRW Report and the Site 28 Soil Removal Report.
- On 11/13 Bristol and R. Broyles corresponded via email about a manifest correction/update.
- On 11/15 Bristol and USACE received the final approval letter for the 2012 NE Cape Work Plan.

- On 11/16 Bristol re-sent our response to comments related to the Site 28 Technical Memorandum to C. Dunkin (ADEC)
- On 11/21 Bristol received final confirmation and scheduling information related to the RAB meeting to be held in Savoonga on December, 5 from C. Cossaboom.
- On 11/25 Bristol received the final agenda for the RAB meeting from C. Cossaboom.
- On 11/29 Bristol sent the final electronic version of our RAB presentation to C. Cossaboom.

Work Underway

- Bristol is working on the Site 28 Sediment Removal Report and the HTRW Remedial Action Report.
- Bristol is reviewing and checking SEDD deliverable data and working with the lab to finalize this deliverable.
- Bristol is also preparing and performing QC on ADEC checklists and laboratory data.
- Bristol's sub is also performing the 3rd party data verification for the CDVR.

Work Planned for the Upcoming Month

- Bristol will continue preparation of the required report submittals, and anticipates delivery of the Draft HTRW Report and Draft Site 28 Sediment Removal Report.
- Continue to track the bulk bags and containers with material sent for disposal.
- Attend the annual RAB meeting in Savoonga, Alaska on December 5, 2012.
- Continue the project management and field work related to scope of work for 2011 and 2012 contracts.

Status of Laboratory Reports

- Laboratory analytical reports from TestAmerica continue to be reviewed and being revised due to some errors discovered during QC tasks.
- Third party review of laboratory data is almost complete and

Pay Estimates

- Bristol did not submit any pay estimates during the period but will submit two during the month of December.

Accident/Exposure Hours

- The November 2012 Monthly Record of Work–Related Injuries/Illnesses & Exposure Forms were submitted on 12/10/2012 to R. Broyles.

Correspondence

From: Jarrell, Greg

Sent: Tuesday, August 28, 2012 8:43 AM

To: Hannah, Marty; James, Russell; Croley, Chuck (ccroley@bristol-companies.com)

Subject:FW: Underwater sampling (UNCLASSIFIED)

Importance: High

Russell & Marty,

It looks like we can sample at a reduced frequency in those areas under water. Please decide which samples should be analyzed from the shipment currently on hold and let the lab know.

Greg Jarrell

Environmental Division Manager

Bristol Environmental Remediation Services, LLC

(907) 563-0013

-----Original Message-----

From: Dunkin, Curtis S (DEC) [mailto:curtis.dunkin@alaska.gov]

Sent: Tuesday, August 28, 2012 8:35 AM

To: 'Cossaboom, Carey C POA'

Cc: Jarrell, Greg; Shewman, Aaron F POA; Geist, Lisa K POA; Broyles, Ronald S POA; Craner, Jeremy POA

Subject: RE: Underwater sampling (UNCLASSIFIED)

Carey, thank you for the update. I apologize I was not able to respond to your email sooner. The sampling frequency and rationale you propose in your email below (Aug. 23, 2012) is reasonable and adequate. This email serves as ADEC's approval of the proposed underwater soil sampling frequency for the subject plume excavations listed below. Please include this email in the 2012 RA report and contact me if you have any questions.

Thanks and regards

Curtis Dunkin

Environmental Program Specialist

ADEC Contaminated Sites Program

555 Cordova Street

Anchorage, AK 99501

Phone: 907-269-3053

-----Original Message-----

From: Cossaboom, Carey C POA [mailto:Carey.C.Cossaboom@usace.army.mil]

Sent: Thursday, August 23, 2012 2:47 PM

To: Dunkin, Curtis S (DEC)

Cc: Jarrell, Greg; Shewman, Aaron F POA; Geist, Lisa K POA; Broyles, Ronald S POA; Craner, Jeremy POA

Subject: Underwater sampling (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

Curtis,

We know you've suggested that we should take samples from the floor of contaminated excavations that we are abandoning due to water. We agree this could be worthwhile information. However, due to the fact that we are not seeking clean closure, and that getting representative samples underwater is problematic at best, we believe the amount of meaningful sampling is limited. We suggest that sampling at a rate of one sample for every 1,600 (40'x40') of excavation bottom would be sufficient, with a minimum of 2 samples per smaller excavations. What do you think?.

FYSA, the floor areas of inundated excavations to date have been:

G = 4,563 sf

H = 2,400 sf

E = 16,850 sf

Bristol has already taken several samples, and they are currently being held until we decide how much sampling is warranted.

Carey Cossaboom

Project Manager

U.S. Army Corps of Engineers

907-753-2689 (ph.)

907-753-2829 (fax)

carey.c.cossaboom@usace.army.mil

Classification: UNCLASSIFIED

Caveats: NONE

THE STATE
of ALASKA
GOVERNOR SEAN PARNELL

Department of Environmental Conservation

DIVISION OF SPILL PREVENTION & RESPONSE
Contaminated Sites Program

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File No: 475.38.013

November 14, 2012

US Army Corps of Engineers USACE, AK District
Attn: Mr. Carey Cossaboom
CEPOA-PM-ESP
P.O. Box 6898
JBER, AK 99506-0898

Re: ADEC Approval of the Responses to Comments (RTC) on the Draft 2012 Northeast Cape Removal Action (RA) Work Plan

Dear Mr. Cossaboom;

Thank you for providing the Alaska Department of Environmental Conservation's Contaminated Sites Program (ADEC) with a copy of the Draft Northeast Cape RA Work Plan which is dated May 2012 and was received by ADEC on June 01, 2012.

ADEC previously completed its review of the draft work plan and electronically submitted three batches of comments via email to the project delivery team for review. The batch names/submission dates included the following:
1) 475.38.013 draft May12 NEC RA Work Plan adec comments 6-26-2012/July 02, 2012
2) 475.38.013 draft May12 NEC RA Work Plan figures 1-12 adec comments 7-3-2012/July 3, 2012
3) 475.38.013 draft May12 NEC RA work plan UFP-QAPP+appendices adec comments 7-10-2012/July 10, 2012.

ADEC tentatively approved portions of the draft work plan via a July12, 2012 email which was attached to ADEC's July 23, 2012 letter to the Army Corps of Engineers (Corps) (which included copies of ADEC's original formal comments for the Corps' records). This letter serves as ADEC's comprehensive approval of all RTCs to the three batches of comments listed above, including responses to additional ADEC comments prior to ADEC tentatively approving the work plan to be implemented in the field via its July 13, 2012 email to the project team; a copy of which is attached to this letter for reference. Copies of ADEC's comment templates which include dated notations of

ADEC's approval of the RTCs are attached to this letter for your records. Also attached to this letter is a copy of ADEC's July 20, 2012 email to the project team, with which ADEC approved the RTCs on the figures associated with the draft 2012 RA work plan.

Thank you also for providing ADEC with a copy of the final 2012 Northeast Cape RA Work Plan which is dated July 2012 and was received by ADEC on September 13, 2012. ADEC is completing its review of the final document and will send a separate letter pending approval.

Please contact me at curtis.dunkin@alaska.gov or at (907)269-3053 if you have any questions regarding this letter.

Sincerely,

Curtis Dunkin
Environmental Program Specialist

cc: Greg Jarrell and Julie Clark – BERS (via email)

Alaska Department of Environmental Conservation (ADEC)
Contaminated Sites Program
Document Reviewed: Draft May 2012 Northeast Cape Removal Action Work Plan
Commenter: Curtis Dunkin-ADEC Date Submitted: July 2, 2012 ADEC responses to RTCs noted in red; resubmitted on July 6, 2012 after a comment resolution telephone discussion w/ USACE project manager C. Cossaboom; ADEC responses to additional RTCs on July 11, 2012
Additional ADEC responses to RTCs on July 13, 2012

Comment #	Page #	Section	ADEC Comment	Response
1.			**Comments on draft 2012 NEC Work Plan Narrative**	
2.	1	Introduction	**Bullets outlining the scope of work in this and other sections need to include site 28 sediment sampling and characterization, site 21 surface water sampling, backfilling of excavations where contaminant concentrations remain above ADEC cleanup level(s), off site removal of overwintered sacks containing contaminated soil, miscellaneous correlation sampling, and all other major activities planned for the 2012 RA.** RTC in the right column is ADEC-Accepted; however, the tasks which are not scoped for 2012 still require ADEC review and approval prior to implementing therefore the work plan should state addendums to the work plan will be submitted at a later date.	**Additional Scope of Work bullet points have been added (e.g., Site 28 & 21). Items not currently part of Scope of Work that will be completed in 2012 will be noted in the final report (e.g., correlation sampling; overwintering of bulk bags). Bristol will plan to make addendums to the Work Plan when additional options and tasks are funded by the USACE. The addendums will be submitted to the ADEC for approval (7/10/12)ADEC-Accepted (7-11-12)**
3.	8	2.5	**Last paragraph of this section, replace the uses of 'this stream' with 'the Suqitughneq River' or 'the Suqi' or 'this river' for clarity – or are the references to another stream(s) other than the Suqi River?**	**The text has been changed to "Suqitughneq River".** ADEC-Accepted
4.	9	2.8	**Rephrase the sentence 'More than 1,000 reindeer…' to state 'A population of approximately 1000 reindeer inhabit the island.'**	**The text has been changed in accordance with the comment** ADEC-Accepted

5.	10	2.8	Add the sand hill crane to avian species known to inhabit the island.	Sandhill Crane was added to avian species ADEC-Accepted
6.	10	2.9	Responses to previous ADEC inquiries re: whether or not Gambell residents inhabit NEC have been that only Savoonga residents are known to visit and temporarily inhabit the NEC area.	There are fewer residents of Gambell coming by NE Cape in the summer, but with snow machines, they all travel far in the winter. They also tend to gather at their own hunting camps. The fish camp at NE Cape is a rest stop. ADEC-Accepted, state this in the narrative
7.	11	2.11	Is Sivuqaq, Inc. associated specifically with Gambell, and are they Gambell Native and Savoonga Corporations or the Native Village of Gambell and NVS?	Sivuqaq, Inc. is the village corporation associated with Gambell. Kukulget, Inc. is the village corporation associated with Savoonga. ADEC-Accepted; state this in the narrative
8.	13	3.0	States that 2,600 tons are scoped for PCB-contaminated soil removal, but later references in the work plan state otherwise (Tables 4-3 and 4-4 page 61). Same comment re: conflicting references to the scoped PCS volumes to be removed throughout the document. See comment #1 above re: other planned 2012 activities.	Text and tables have been corrected and updated through Modification P00001 (27-June-2012) ADEC-Accepted
9.	16	Table 3-1	Insert a footnote for the reference to 'cleanup level' that states 'ADEC Table C Groundwater Cleanup Level'.	Row heading in Table 3-1 has been changed to "ADEC Table C….." ADEC-Accepted

10.	20	3.2.5	References to 'Kg', K should be capitalized (also elsewhere in document). Last sentence of this section needs to better define the conditions under which 'no petrogenic sheen was observed'. Was any sheen and/or odors (biogenic or petrogenic) observed at this site? Have either sheen(s) or odor(s) been previously observed at this site; whether sediments and/or water were or were not disturbed? ADEC-Accepted RTC in right column re: addition to the text, however the current work plan and future documents should also include an explanation in the narrative re: the fuel odor that continues to be '...evident when a person walks across the vegetative mat...' as stated on page 59 of the QAPP	Bristol uses the proper scientific abbreviation for Kilogram, which is kg. ADEC-Accepted The following text has been added: "There is no record of any biogenic or petrogenic sheen at this location and none were observed during the sample collection. Sediments were not disturbed during the collection of surface water samples." The statement will be added.... This vegetation does not appear stressed, though petroleum odor is evident when a person walks across the vegetative mat (7/10/12) ADEC-Accepted (7-11-12)
11.	21	3.2.6	Last paragraph on this page, insert '...of 1.5 mg/L.' at the end of the sentence starting w/ 'DRO was detected at...'.	Text has been changed accordingly ADEC-Accepted
12.	22	3.2.6	Include soil samples in the first sentence on this page (soil and sediment samples were collected in 2011). State that contaminant exceedances were observed in sediment and soil samples.	Text has been adjusted accordingly ADEC-Accepted
13.	23	4.0	See comment #1 above.	See response #1 ADEC-Accepted
14.	36	4.2	Clarify why there are two task orders for POL-contaminated soil. See comment #13 above re: conflicting references re: scoped volumes and weights.	Volumes of soil have been updated ADEC-Accepted

15.	37	4.2/Figure 4	Do the polygons for the site 13 excavation as depicted in Figure 4 represent the excavation footprint to date (post 2011 removal activities) or do they represent what is planned/anticipated for 2012? Per the 2011 report and recent discussion at the May 16, 2012 technical planning meeting, ADEC's understanding is that the site 13 excavation has not yet entered any POL plumes; only that the NW corner was approaching plume A2. Figure 4 also depicts the site 13 excavation with encroachments on the B1 and B2 plumes. The 'proposed excavation area' depiction in Figure 4 should be clarified in the legend whether this represents the original estimated boundary of the plume or the proposed area of work for 2012. These issues need to be clarified in all associated figures and narrative sections where applicable. Last sentence of third paragraph on this page needs to be rephrased; PCBs are the driving contaminant of concern in regards to waste disposal requirements therefore soils contaminated with both POL and PCBs above cleanup levels must be screened, removed, and disposed of based on PCB concentrations. Also state for clarification that once confirmation samples indicate that PCB concentrations in remaining soils are below the cleanup level, that remaining POL-contaminated soils adjacent to the PCB site will be screened, removed, and disposed of based on POL criteria only. Last paragraph of page 37, more discussion is required re: the status of and any planned 2012 work associated w/ plume J1A. RTC in the right column re: figure revisions is ADEC-Accepted; please provide ADEC with copies of the revised figures for review and approval prior to submitting a revised copy of the work plan. Note: ADEC also submitted separate comments on just the work plan figures which should also be addressed and submitted to ADEC for review and approval prior to submitting a revised copy of the work plan.	All figures have been updated to better indicate existing vs. proposed excavation areas. Text has been added detailing the nature of PCBs vs. POL soils at Site 13 ADEC-Accepted As discussed during the NE Cape UFP-QAPP meeting, there are no plans to reopen the excavation at J1A. The remaining contamination is in wetland/tundra areas off of the pad. ADEC-Accepted; state this in the work plan for clarity; the only reference to J1A in the narrative is 'excavation was initiated in 2011'. Text will be clarified to state that at this time there are no plans to reopen and excavate more soil at J1A. ADEC-Accepted (7-11-12) Revised figures sent to ADEC on 7/9/12 and revisions to figures suggested by ADEC will be incorporated into the next revision of the figures (7/10/12). ADEC-Accepted (7-11-12)

16.	38	4.2	Second to last paragraph on this page, state the purpose of surface water sampling. More detailed information should be stated re: how long before, when during, and how long after excavation activities occur/have occurred. Re: clarification questions in comment #15 above related to depictions of excavation footprints and proposed excavation areas in Figure 4 (and other Figures) are the I plumes proposed to be excavated in 2012? If so, then more sampling locations need to be proposed that are further down gradient of the currently depicted locations prior to and in situ of the excavation reaching the depicted 'ponding' area(s). More frequent monitoring and sampling of the down gradient surface waters is necessary during excavation activities associated with the MOC plumes. Narrative needs to include more discussion re: the response plan in the event contaminant migration is observed. Re: the discussion of time constraints and end of field season, more discussion is necessary re: the potential risks (contaminant migration, erosion, etc.) associated with over wintering an open excavation near areas with shallow groundwater and/or surface waters (specifically the site 28 drainage) and how those risks will be mitigated. RTC in the right column does not adequately address ADEC's comments. Note: after a comment resolution telephone discussion w/ the Corps project manager C. Cossaboom on July 6, 2012, ADEC's concerns were in large part addressed by clarifying that no excavation activities would occur in the I plume in 2012. However, more frequent sampling of the surface waters down gradient of the MOC should be implemented and the work plan should state mitigation procedures in the event contaminant migration is observed. C. Cossaboom (7/6/12) note: Some excavation may occur on the I Plume as indicated in the Bristol RTC. The majority of the I Plume is in wetland area that is not currently slated for excavation.	Text has been added ADEC-Accepted Additional text has been added to further clarify approximate timing. ADEC-Accepted Please see response to #15, additionally, no further excavation of I plume is anticipated with the exception of the small portion remaining on the pad (I1 area) that will not affect the locations of water sample collection points. (no change in text) ADEC-Accepted; clarify in the narrative that the majority of the 'I' plume is in the wetland drainage and is proposed to not be excavated to avoid adverse impacts. This will be clarified in the Work Plan ADEC-Accepted (7-11-12) Mitigation procedures will be expanded in the Work Plan to include visual monitoring of increased turbidity and/or effluent that shows up downgradient at the time of the MOC excavation The USACE has agreed to collect additional samples to determine the impact of the effluent to the wetlands (7/10/12). ADEC-Accepted (7-11-12)
17.		4.2	This section needs to discuss how G and H plumes will be further investigated to determine whether or not the suspected perched water table, as observed in 2011, is seasonal or year-round	The following information will be added to the Work Plan: In 2011 when excavation began

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			and how contamination associated with these plumes will be addressed (either removal and/or further characterization and monitoring). RTC in the right column does not adequately address ADEC's comments. Note: after a comment resolution telephone discussion w/ the Corps project manager C. Cossaboom on July 6, 2012, ADEC and the Corps concurred that further investigation of suspected perched water tables will be necessary. The current work plan section 4.2 nor the QAPP discuss how this issue will be addressed, and instead insinuate that the G&H plumes will be readdressed the same way they were in 2011, except in 2012 to 2ft below the water table. C. Cossaboom (7/6/12) note: May need clarification yet. Work Plans need to state how sampling will proceed where water table prevents further excavation. **ADEC appreciates the 7-10-12 RTC in the right column being added to the narrative and QAPP of the draft work plan; however, the RTC does not address the further investigation requested by ADEC as well as the 7-6-12 request by the USACE above (determine extent and status of suspected perched groundwater, a sampling plan in the event water table is encountered prior to contamination which includes sampling the groundwater and soil above the contaminated horizon(s) as well as digging to the depth of contamination to collect characterization samples, etc.). (7-11-12)**	on the G and H plumes, relatively shallow groundwater infiltrated the excavations. The excavation at the H plume showed groundwater at approximately 5.2 feet bgs. Two UVOST points were installed within the H plume area in 2010, 10NC27 UV-110 and 10NC27 UV-111. UV-110 indicated that DRO contamination exceeding cleanup levels begins at 7.5 feet bgs (based on a 9.2 percent Laser-Induced Fluorescence [LIF] response), and UV-111 did not show indications of contaminants that exceeded cleanup levels until a depth of approximately 10.5 feet was reached. Groundwater infiltrated the excavation at approximately 5 feet bgs in the H plume near UVOST location 10NC27 UV-110. Since the top of the contaminated zone of soil is located approximately 2.5 feet below groundwater in this area, no soil was removed. Likewise at 10NC27 UV-111 (also located within the H plume), the contaminated zone of soil was in excess of 2 feet below groundwater. One

				UVOST point was installed within the G1 plume (10NC27 UV-108) and indicated a contaminated zone located approximately 11 feet bgs. Excavations in and near plume G1 were infiltrated with groundwater at approximately 7 feet bgs. Since the contaminated zone of soil is in excess of 2 feet below groundwater in plume G1, no soil was removed from this location. The depth to contamination in the G2 plume is 8 feet bgs, and excavations encountered groundwater at approximately 7 feet bgs. UVOST locations 10NC27 UV-93 and UV-94 are located within the G2 plume and show a depth to contamination of 8 feet and 9 feet bgs, respectively. No soil was excavated from this area in 2011, but excavation may be possible in 2012 if groundwater conditions are similar or if the groundwater table is lower. (7/10/12). See Left Column Previous Page (7-11-12) **Based on the Comment Resolution Teleconference Meeting with ADEC and USACE (7/13/12)**

				Bristol will collect a sidewall sample above the groundwater and floor samples 2' below the water table if we encounter groundwater in the G&H plumes. These confirmation samples will be collected if groundwater is encountered during the excavation and it is at a level above the targeted contamination layers shown by the UVOST logs in these plumes. These confirmation samples will also be collected if Bristol is able to excavate the contaminated layers in these plumes. No groundwater samples will be collected. A groundwater monitoring network will be installed at the MOC when the soil removal tasks are completed. Bristol will also provide more information on the 12' deep test pit that was dug to determine if we will encounter shallow groundwater again in this area in 2012. A GPS location will be provided and Bristol will document if groundwater fills this test pit, if sheen is observed, and if any odor is detected. ADEC-Accepted (7-13-12)

18.	46	4.4	**The excavation area of site 21 where contamination exceeding cleanup levels remains at 2 feet below the water table will need to be backfilled with clean material to achieve protectiveness. Confirmation soil samples need to be collected to determine what residual contamination is left in place below 2 feet of the water table. ADEC also requests further investigation of this site (in addition to the ADEC-requested 2012 surface water and confirmation sampling of the contaminated soil/sediment which is left in place 2 feet below the water table) in order to determine whether or not down gradient migration of As is occurring. Future monitoring and/or institutional controls for this site may be necessary.** RTC in the right column does not adequately address ADEC's comments. Note: after a comment resolution telephone discussion w/ the Corps project manager C. Cossaboom on July 6, 2012, ADEC and the Corps concur that residual contamination left in place two ft. below the water table needs to be sampled and characterized in order to determine further action required to achieve protectiveness at this site. Backfilling should occur after it is confirmed that all contamination down to two feet below the water table has been removed to contaminant concentrations below cleanup level. **ADEC-Accepted (7-11-12); Confirmation samples should be collected as requested in 2012 in the same manner they were collected in 2011 (and this should be detailed in associated sections of the narrative and QAPP of the work plan. ADEC acknowledges the challenges that may be associated with backfilling this site and will discuss further w/ the Corps after review of the 2012 RA report.**	According to the USACE backfilling of Site 21 may occur in the future after the sampling results are evaluated from the confirmation samples collected in 2012. Backfilling Site 21 will require a road/pad be constructed out to the site to allow for a heavy rock truck to reach the site with the clean borrow pit material. In 2011 at Site 21, the confirmation samples were taken from beneath the water table and were collected from the excavator bucket. The excavator pulled up soil from beneath the water, drained the water from the bucket, moved the bucket near the sampler and the sampler took the sample from the bucket. In 2012 contaminated soil will be excavated up to 2 feet below groundwater in accordance with ADEC requirements (7/10/12) See left column (7-11-12) **Based on the Comment Resolution Meeting with ADEC and USACE on 7/13/12 Bristol will collect floor confirmation samples in the Site 21 excavation area. The backfilling of Site 21 will be delayed until the 2012 confirmation samples are summarized and evaluated.** ADEC-Accepted (7-13-12)

19.	47	4.5	**A sample should also be collected from a location where vegetation is vigorous and does not appear to be stressed.** What is meant by 'acknowledged?' RTC in the right column does not adequately address ADEC's comment. Note: after a comment resolution telephone discussion w/ the Corps project manager C. Cossaboom on July 6, 2012, ADEC and the Corps concur that two samples should be conducted in locations where vegetation appears to be vigorous and healthy. ADEC's rationale for this is in the event that contaminants are detected at low levels in 'stressed vegetation areas' but not exceeding cleanup levels, that any detections in soil sample results from 'non-stressed vegetation' locations could provide a correlation. ADEC understands that conditions might be such that the project team could observe no discernible differences in vegetative vigor associated with the site.	**Comment acknowledged.** **Bristol will modify the Work Plan to include the information in this comment related to collecting 2 samples where the vegetation is vigorous and does not appear stressed (7/10/12).** **ADEC-Accepted (7-11-12)**
20.	48	4.6	**The stated definition of sediment needs to be changed to '…naturally occurring mineral and organic material found at the base…'. Organic material needs to be defined as not including actively growing vegetation or the vegetative mat. State that the mineral material atop the vegetative mat will be considered soil (in addition to not being considered sediment).** Re: RTC in the right column - Note: after a comment resolution telephone discussion w/ the Corps project manager C. Cossaboom on July 6, 2012, ADEC and the Corps concur that ADEC's requested definition revision of sediment will be utilized. Sediment will be defined as: all loose mineral and organic material that is not actively growing vegetation or part of the vegetative mat. ADEC's rationale is that significant contaminant concentrations in loose organic sediment could be overlooked if only 'mineral' sediment is addressed for characterization and removal.	**The definition of sediment was specifically called out in Bristol's SOW from USACE; therefore the USACE will have to agree to this additional information for the definition of sediment,** **The Work Plan will be modified to include the definition of sediment as suggested in this comment (7/10/12)** **ADEC-Accepted (7-11-12)**

21.		4.6	State the number/ration of silica gel cleanup samples that are proposed. It should be discussed in the narrative that the referenced 'historically contaminated locations' were part of transect sample lines which were conducted to characterize sediment in general areas throughout the drainage, and not to thoroughly characterize all of the sediment within the drainage. It needs to also state that the proposed 54 sediment samples collected at the proposed sampling intervals (stream and pond) may not be sufficient to adequately characterize all the sediment throughout the drainage. Pond sample densities and locations should be based on two criteria: 1) the surface area of the pond and 2) the amount of sediment within the pond's surface area (as determined from the mapping results) – not just three samples per pond. RTCs in the right column pertaining to all of ADEC's comments in this section - Note: after a comment resolution telephone discussion w/ the Corps project manager C. Cossaboom on July 6, 2012, ADEC and the Corps concur that the Site 28 mapping, sampling, and removal action should be done in three separate stages in the 2012 season, which should build upon each other to approve the effectiveness of the remedial effort. ADEC tentatively approved the mapping effort for site 28 to be implemented by the field team on July 6, 2012 via email to the project team and that the mapping effort incorporate the agreed upon definition of sediment as discussed in comment #20 above. ADEC requests that addendums to the work plan be submitted to the project team for review and ADEC approval for the sediment sampling effort (after the results of the mapping effort are made available to the project team for review via a technical memorandum), and similarly an addendum to the work plan be submitted for the phase I sediment removal after the sediment sample results are made available to the project team for review via a technical memorandum. **ADEC Accepted; however, ADEC requests that the mapping results be provided to the project team for review to allow for inputs to the decisions for determining the sediment sampling locations due to the many unknowns (i.e. concentrations of sediment and their locations, proximity of larger concentrations of sediment to areas known to be contaminated, etc.). (7-11-12)**	Text has been changed to include frequency of silica gel cleanup samples ADEC-Accepted, state the frequency. Frequency will be stated (7/10/12). **ADEC-Accepted (7-11-12)** The following text has been added: "Transect lines were placed to include areas of historical contamination and were analyzed to gain a general understanding of the potential contaminants throughout the drainage and did not result in a full characterization of the drainage system." The number of samples and locations will be determined after the sediment mapping is completed. At least 54 samples will be collected. All mapping and sample results will be sent to ADEC for approval prior to the sediment removal task which will be described in an addendum to the Work Plan and in the addendum to the Site 28 Technical Memorandum. Please note that at this time the current SOW & Bristol's plan is to perform mapping and sediment sampling prior to production of the technical memorandum addendum. (7/10/12) See Left Column (7-11-12)

				Based on the Comment Resolution Meeting on 7/13/12 with USACE and ADEC Bristol has been approved to collect sediment samples to characterize the sediment that will allow Bristol to provide a map of the sediment areas and sample results to the ADEC and USACE prior to the Phase 1 Sediment Removal effort. ADEC-Accepted (7-13-12)
22.		4.7	ADEC will submit comments within the week of July 2, 2012 on section 4.7 and 4.7.1 and related activities. ADEC has numerous comments and questions on the activities and methods proposed in this work plan.	Acknowledged Please see RTC # 21 above re Site 28 Drainage Remedial Actions ADEC-Accepted (7-11-12)
23.	54	4.8.1	The DUs should be sampled at 50 incremental units. The northern boundary of the Cargo Beach sampling effort should encompass the entire area that has been previously used as a staging/transport area. No sampling depth is stated. State the COC's based on historical activity at the site and the laboratory analysis analytes.	Text changed to read "approximately 50 incremental units…." As well as sample depth. Northern boundary definition encompasses the entire area that has been previously used as a staging/transport area ADEC-Accepted; state the sampling depth and COCs
24.	55	4.8.2	Same as comment # 54 re: No sampling depth, COCs, proposed sample analytes, etc.	See #23 response ADEC-Accepted; state the sampling depth and COCs
25.	56	4.8.3	Same as comments # 54 and 55 above.	See #23 response ADEC-Accepted, state the sampling depth and COCs

26.	56	4.9	**Has previous site characterization confirmed that POL contaminants are the only COC's? If so state and reference this. If not, other COCs should be screened and sampled for both characterization and confirmation. Is there a maximum volume of contaminated soil scoped for this site in 2012?** RTCs in the right column - Note: after a comment resolution telephone discussion w/ the Corps project manager C. Cossaboom on July 6, 2012, ADEC and the Corps concur that because of the unknowns, regardless of what drums and/or stained soil are/are not observed and/or removed from the site, because no previous investigation has occurred, the entirety of what is considered/agreed to be the footprint of site 10 requires soil characterization sampling for the full suite of contaminants. Further characterization and subsequent confirmation samples will be required if contamination is discovered and removal activities are required. Since ICs are not proposed for this site at this time, it is not acceptable to only sample any drum liquids for just POL and metals and to remove any stained soil; and for that to be the basis for determining future actions. C. Cossaboom (7/6/12) note: The drums found in 2011 were at the boundary of Sites 10 and 11. The Corps agrees that soil should be tested in this area where drums are discovered and excavated, for a full suite of potential contaminants. Site 10 has had previous investigation. There are no current plans to re-investigate the entirety of Site 10.	An area of surface soil contamination was documented in 1994 along the western edge of the gravel pad at the Site 10 Buried Drums site. The maximum concentration of DRO was 26,500 mg/kg. Additional surface soil samples were collected in 1996 and the maximum DRO was 17,000 mg/kg. Soil borings were completed in 2004 and demonstrated that subsurface soils are not significantly impacted; the maximum DRO result was 619 mg/kg. The extent of the buried drums, drum liquids, and associated contaminated soil at Site 10 is currently unknown. Data gathered during removal this construction season will be used to determine whether or not further removal is necessary in the future. The maximum volume of contaminated soil removal scoped for this site in 2012 is 50 tons. Soil confirmation samples will be collected and analyzed for a full suite of potential contaminants (GRO/BTEX; DRO/RRO; PAHS, PCBs, and metals) (7/10/12) **ADEC-Accepted; all of this info should be included in the narrative and QAPP of the work plan (7-11-12)**

27.	57-59	4.10		Surface water and soil samples should be collected in the order beginning with the most down gradient (LDU) in an upgradient direction towards the UDU.	Noted and text added ADEC-Accepted
28.	59	4.12		Narrative should state that ADEC has requested that any abandoned/demolished monitoring wells will be reinstalled as soon as site conditions allow.	USACE plans to install additional wells at the MOC following completion of soil removal ADEC-Accepted, state this in the narrative
29.	60	4.13		Corps of Engineers confirmed to ADEC that the holes remaining after stump removal are not backfilled with new material, rather the soil and material that comes out of the hole when removing the stump is put back in the hole. Narrative should briefly state this.	Text added accordingly ADEC-Accepted
30.	62	4.15		Include addendums and technical memorandums.	Addendums and memorandums are mentioned in the last paragraph of 4.15 ADEC-Accepted
31.	69	5.2.4		The names and qualifications of the two laboratory analysts for the field lab should be included.	Names and qualifications will be added ADEC-Accepted
32.	73	7.0		State the 2012 reporting deliverables and target dates.	Additional deliverable dates have been added. ADEC-Accepted
33.				**End of ADEC Comments on NEC Work Plan Narrative (except for sections 4.7 and 4.71 of the work plan narrative, which along with and ADEC comments on the work plan figures and UFP-QAPP will be submitted separately) within the week of July 2, 2012.** Note: many of ADEC's remaining comments which pertain to the QAPP portion of the work plan have been addressed as a result of the comment resolution telephone discussion w/ the Corps project manager C. Cossaboom on July 6, 2012. ADEC will submit any remaining comments that are not addressed via ongoing resolution of these and other comments and responses to RTCs already submitted if necessary prior to finalizing the work plan.	

Ariel, Callianne E (DEC)

From:	Dunkin, Curtis S (DEC)
Sent:	Friday, July 20, 2012 4:32 PM
To:	'Cossaboom, Carey C POA'; 'Shewman, Aaron F POA'; 'Craner, Jeremy POA'
Cc:	'Welker, Molly'; 'Jarrell, Greg'
Subject:	ADEC review and approval of responses to ADEC's comments on the draft 2012 NEC RA work plan figures
Attachments:	ADEC review of figures RTCs_NEC Work Plan_7-20-12.docx

Carey, thank you for providing the subject response to comments, for which I have completed review and determined them all to be adequate and acceptable; as notated in red font in the attached template. I will mail/email the project team a copy of this template w/ a cover letter on Monday for the Corps' records. Please contact me if you have any questions.
Thank you and regards

Curtis Dunkin
Environmental Program Specialist
ADEC Contaminated Sites Program
555 Cordova Street
Anchorage, AK 99501
Phone: 907-269-3053

Ariel, Callianne E (DEC)

From:	Dunkin, Curtis S (DEC)
Sent:	Friday, July 13, 2012 4:58 PM
To:	'Welker, Molly'; Cossaboom, Carey C POA; Shewman, Aaron F POA
Cc:	Jarrell, Greg
Subject:	RE: 2012 NE Cape Comment Resolution Meeting
Attachments:	ADEC review of addntl RTC_Comments_NEC Work_Plan_ 7-13-12.docx

Molly, thank you for providing the additional responses to the remaining additional ADEC comments on the draft 2012 NEC RA work plan, all of which I've determined adequately address ADEC's comments and revision requests. Pending that ADEC's remaining revision requests for the figures and UFP-QAPP associated with this work plan are incorporated into the revised work plan as agreed upon by the project delivery team during today's resolution meeting, ADEC tentatively approves the revised work plan to be implemented in the field. ADEC requests that the revised final work plan be completed and provided to project members as soon as possible, such that it is also available for reference in the field. I will send out a formal tentative approval letter to the project members on Monday. Please contact me if you have any questions.

Curtis Dunkin
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ADEC Contaminated Sites Program
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Anchorage, AK 99501
Phone: 907-269-3053

From: Welker, Molly [mailto:mwelker@bristol-companies.com]
Sent: Friday, July 13, 2012 4:43 PM
To: Cossaboom, Carey C POA; Dunkin, Curtis S (DEC); Shewman, Aaron F POA
Cc: Jarrell, Greg
Subject: 2012 NE Cape Comment Resolution Meeting

Please find attached the additional comments related to the Site 28, G & H Plumes at the MOC, and Site 21 that were discussed this morning during the Comment Resolution teleconference meeting.

Bristol appreciates the feedback and will move forward on the sediment sampling, making the revisions to the figures and work plan, and continuing to send the PDT information related to issues and results at NE Cape.

If you have any additional comments please contact me at 743-9341.

Thanks,

Molly

Molly Welker
Senior Project Manager
Bristol Environmental Remediation Services, LLC
111 W. 16th Avenue, Third Floor
Anchorage, AK 99501-5109
Phone : (907) 563-0013
FAX : (907) 563-6713
mwelker@bristol-companies.com
http://www.bristol-companies.com/

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Alaska Department of Environmental Conservation (ADEC)
Contaminated Sites Program
Document Reviewed: Draft May 2012 Northeast Cape Removal Action Work Plan Figures 1-12
Commenter: Curtis Dunkin-ADEC Date Submitted: July 3, 2012; ADEC reviewed RTCs on 7-20-12

Comment #	Page #	Section	ADEC Comment	Response
1.			**Comments on the Draft 2012 NEC RA Work Plan Figures 1-12**	
2.		Figures General	In the legends of all figures, state the year associated with all actions whether historical, future, proposed, etc. This should include all referenced samples, water in excavation (when observed), year an excavation boundary was proposed, year of the status of a depicted excavated footprint, etc.	Figures will be revised as suggested ADEC-Accepted (7-20-12)
3.		Figure 3	Include both references to the site number and name when calling out all sites (i.e. site 10 buried drums (only states site 10). Call out the roofing tar site which was discovered in 2010 and removed in 2011. The approximate Site 28 Drainage basin area should be outlined in red. The 'Barge Landing Area' as depicted should be included in the Cargo Beach MI sampling and discussed in the narrative. It would be helpful to have a new figure (similar to the format of figure 3) which expands the area of interest immediately surrounding and within the MOC that calls out all of the sites; include the POL soil dewatering impoundment sites in this figure. It would be helpful to better discern the water bodies, ponds, streams and rivers by making those associated lines and polygons blue.	Figure will be revised to include site name, roofing tar, outlining Site 28. ADEC-Accepted (7-20-12) Barge landing area will be included in the narrative on the MI sampling ADEC-Accepted (7-20-12) Water bodies will be denoted in blue ADEC-Accepted (7-20-12)
4.		Figure 4	Clarification is required re: the difference between the colored-hatched areas associated with (what the legend states to be) the area of any given excavation and the red lines which the legend states as 'proposed excavation area'. Perhaps there needs to be a different color of border added to the legend and the figure – one for proposed areas (currently the red border) which have not yet been excavated, and one for 'originally proposed' area, for areas where excavation activities have	Areas have been differentiated on the revised Figure 4 ADEC-Accepted (7-20-12)

			already occurred. Call out the name of the concrete pad in the center of the figure south of plume H. Call out the IDs of the monitoring wells. Call out lines should be a different color than black since they get lost within the topo lines.	Concrete Pad and MW will be called on figure Call out lines have been denoted in blue ADEC-Accepted (7-20-12)
5.		Figure 6	Overlay the originally proposed (postulated) plume boundary. The draft work plan narrative on page 37 should discuss more details of the information presented in Figure 6; for example 1) the fact that the excavation depths of most of the excavation footprint to date have gone to two feet below ground water; 2) that residual contamination remains both exceeding the alternative soil cleanup level and presumably Table C groundwater cleanup levels; 3) what is the basis for the 'proposed excavation area' – presumably the 2010 UVOST SI; 4) discuss the depicted sample location 11NCMOCSS068 (assuming sample was taken 2 ft below water table?); and 5) it is unclear what is meant by the legend reference to 'adjacent to' in regards to the curtain liners – are the curtain liners not 'overlying' those areas rather than being adjacent to? Brief discussion should be included in the narrative re: confirmation samples of the sidewalls of this excavation and the figure should depict any backfilling that has already occurred and when. This should be applied to other figures where backfilling has also occurred.	The original A1 plume delineated by the UVOST will be included in the figure. ADEC-Accepted (7-20-12) The text will be expanded as suggested. ADEC-Accepted (7-20-12) The proposed excavation area is based on sidewall Sample 11NCMOCSS068 being above the cleanup level. Liners were used to delineate the laterally extent of the excavation and were draped over the sidewalls (not the floor of the excavation since the floor was filled with water). The legend will be modified to clarify what is meant by 'adjacent' A note will be added to the figure that states this excavation was totally backfilled in 2011. As was J1A

				excavation at the MOC and this will be explained in the text. **ADEC-Accepted (7-20-12)**

6.		Figure 7	POL plumes and PCB excavation boundaries should be depicted with different colors rather than all black. All POL plume IDs should be called out in the figure. The PCB excavation footprint boundary should be depicted where confirmation samples have determined that soil contaminant concentrations are below ADEC cleanup level. Include a depiction in the legend for the numbers in the figure associated with the elevation contours. The narrative should clearly explain why a stockpile area is depicted over the same area where 2011 soil sample results were above the cleanup level. Should also clarify dates associated with the stockpile areas.	Revised figure shows the POL plumes in hatched red colors and IDs added. ADEC-Accepted (7-20-12) The intent of the PCB footprint boundaries, excavation locations, samples, etc. on Figure 7 is to provide enough surveyed reference point information for field operations related to the proposed excavation activities in 2012. ADEC-Accepted (7-20-12) The text will better explain that Fig 7 shows areas remaining above the cleanup level that will be targeted for removal in 2012, and more information to explain the stockpile results. ADEC-Accepted (7-20-12) A depiction in the legend for the numbers in the figure associated with the elevation contours has been added. ADEC-Accepted (7-20-12)

7.		Figure 8	Same comments and clarifications referenced in comment # 6 above for Figure 7. Any previously removed concrete should be depicted on the figure and in the legend. Also for both Figures 7 and 8, any previous PCB-wipe sample locations and the results (<1, >1, or >50 mg/Kg) should also be depicted.	No concrete was removed at Site 31. The concrete pad that was removed at Site 13 is shown in the legend of Fig 7. All of the concrete wipe-samples yielded results less than the cleanup level of 10 ug/100 square centimeters. Note: The PCB wipes are not recorded as mg/kg. Bristol will attempt to add PCB wipe locations to Figure 7 and 8 based on their locations documented in the field notes. Note: PCB wipe locations were not located with GPS as per the 2011 NE Cape Work Plan addendum. ADEC-Accepted (7-20-12)
8.		Figure 9	State in the figure and in the narrative of the work plan whether the 2011 samples as depicted were prior to or post excavation. Narrative should discuss briefly what information/data was used to determine that Arsenic contamination in soils exceeded cleanup levels which remained post 2011 removal.	Text added to figure legend "post excavation" ADEC-Accepted (7-20-12) The text will be clarified to state the following: "Following soil removal in 2011, discrete soil confirmation samples were collected from the

				excavation at the locations shown on Fig. 9. Confirmation samples were collected from the excavator bucket due to the excavation being inundated with water. " **ADEC-Accepted (7-20-12)**

9.		Figure 10	The figure does not adequately discern between what is considered to be the pond or stream features. Per the narrative of the work plan, ten ponds are proposed for sampling however, this figure depicts what appears to be more than 15 ponds. The figure and narrative should clarify whether 2011 delineated areas are considered to be a pond or a stream. A new figure for site 28 should be added which includes a specific ID for each pond feature and for what may be considered to be uniquely different reaches of the stream. Figures # 6 and 17 from the final February 2012 site 28 Technical Memorandum should be included in this work plan. Post mapping efforts, these figures should be updated with depictions of mapping results and the proposed 2012 sediment sampling locations and be submitted to ADEC for review and approval prior to collecting sediment samples. The same will be necessary to update these figures once 2012 sediment sample results are available to be included in the draft 2012 addendum; all of which the project team will utilize to determine the best path forward for removal actions; specifically Phase I. Has the depicted sediment trap been installed? If so state the date installed; if not rename proposed sediment trap. Call out the various concrete pad locations including the removed ones. What is the date of the aerial/ortho imagery? This should be stated in this and all other figures. Any significant changes to the drainage observed during the mapping effort (erosion, stream width and flow direction changes, etc. that have occurred since the ortho imagery was taken or since the 2011 delineation) should be depicted in the new figures.	This is a wetland area with dynamic fluctuations in water levels and features, and Bristol has delineated to the best of our ability in the work plan where the surface water bodies and ponding has occurred. Given the annual variability of the hydrology/surface runoff at NE Cape, specific hydrologic features related to the efforts/tasks at Site 28 will be better delineated after the 2012 mapping effort. And therefore Bristol disagrees with adding an additional figure until the 2012 mapping effort is completed. ADEC-Accepted (7-20-12) Figs 6 and 17 will be included in work plan and be revised after the sediment mapping is completed and sample results evaluated in 2012. All sample results and maps of the Site 28 that are generated in 2012 will be sent to ADEC for approval prior to the Phase 1 sediment removal. ADEC-Accepted (7-20-12) Sediment trap will be renamed to: Approximate location of proposed sediment trap. ADEC-Accepted (7-20-12) Concrete pads will be identified on the figure as well as the two pads that have been removed. Date of satellite image will be noted on all figures. All new survey data and ponding and stream data will be included in the amended Site 28 Tech Memo that will be sent to ADEC for approval ADEC-Accepted (7-20-12)

10.		Figure 11	All references in the legend samples collected need to state the matrix sampled. Call out what the arrow to the left of each decision unit represents. The down gradient direction in relationship to the both the decision units and the Suqi River need to be depicted. The location of the spring located near the Suqi River which has been previously samples should be depicted.	Revised figures will include soil and surface water sample matrix. ADEC-Accepted (7-20-12) The arrow on the left of each DU will be defined as the Grid Row Unit and down gradient direction will be shown on figure. ADEC-Accepted (7-20-12) The 2010 surface water sample (green dot) is shown on the figure ADEC-Accepted (7-20-12)
11.		Figure 12	Monitoring well locations should be depicted in color. Include the locations of the 2009 ISCO pilot study injection points in this figure and in future figures depicting the MOC monitoring well locations. Call out lines are very difficult to discern and should be changed to a color.	Figure will be revised as suggested ADEC-Accepted (7-20-12)
12.			**End of ADEC Comments on the Draft 2012 NEC RA Work Plan Figures 1-12**	

THE STATE
of ALASKA
GOVERNOR SEAN PARNELL

Department of
Environmental Conservation

DIVISION OF SPILL PREVENTION & RESPONSE
Contaminated Sites Program

555 Cordova Street
Anchorage, Alaska 99501
Phone: 907.269.7503
Fax: 907.269.7649
dec.alaska.gov

File No: 475.38.013

November 14, 2012

US Army Corps of Engineers USACE, AK District
Attn: Mr. Carey Cossaboom
CEPOA-PM-ESP
P.O. Box 6898
JBER, AK 99506-0898

Re: ADEC Approval of the Final 2012 Northeast Cape Removal Action (RA) Work Plan

Dear Mr. Cossaboom;

Thank you for providing the Alaska Department of Environmental Conservation's Contaminated Sites Program (ADEC) with a copy of the Final Northeast Cape RA Work Plan which is dated July 2012 and was received by ADEC on September 13, 2012.

ADEC has completed its review of the final work plan and determined that all of ADEC's comments and revision requests have been adequately addressed. ADEC provided the Army Corps of Engineers (Corps) with tentative approval to implement the work plan (via ADEC's July 13, 2012 email to the Corps) per final revisions to be made to the work plan as agreed upon by the project team after resolving numerous rounds of comments. This letter serves as ADEC's approval of the final work plan which ADEC has filed as the formal document on record.

Please contact me at curtis.dunkin@alaska.gov or at (907)269-3053 if you have any questions regarding this letter.

Sincerely,

Curtis Dunkin
Environmental Program Specialist

cc: Greg Jarrell and Julie Clark – BERS (via email)

Bristol

ENVIRONMENTAL
REMEDIATION SERVICES, LLC

111 W. 16th Avenue, Third Floor
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May 4, 2012

Curtis Dunkin
Alaska Department of Environmental Conservation
Contaminated Sites
555 Cordova St.
Anchorage, Alaska 99501

Transmittal of Pre-Draft UFP-QAPP
W911KB-12-C-0003 2012 Northeast Cape Remedial Actions
Northeast Cape, St. Lawrence Island, Alaska

Dear Curtis:

Enclosed is one electronic copy of the Pre-Draft UFP-QAPP for the 2012 NE Cape HTRW Remedial Actions project. Bristol is submitting this copy for your review before we meet to discuss this with you and the USACE. A meeting has been tentatively scheduled for the week of May 14th. Electronic copies have also been delivered to the USACE.

If you have any questions, please contact me at 743-9341.

Sincerely,
Bristol Environmental Remediation Services, LLC

Molly Welker
Senior Project Manager

Enclosure

From: Lee, Teresa POA
To: Hannah, Marty;
Subject: RE: Variance Request from 580-34701-1 NE Cape HTRW (UNCLASSIFIED)
Date: Monday, September 17, 2012 10:35:30 AM

Classification: UNCLASSIFIED
Caveats: NONE

Considering hold time has expired, variance granted.

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Friday, September 14, 2012 10:07 AM
To: Lee, Teresa POA
Subject: FW: Variance Request from 580-34701-1 NE Cape HTRW

Here's another variance request for NE Cape. The sample results are greatly below cleanup levels. Can we also get a variance granted for this sample? It's from the Radar Dome.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: Armstrong, Melissa [mailto:melissa.armstrong@testamericainc.com]
Sent: Friday, September 14, 2012 10:01 AM
To: Jarrell, Greg; Clark, Julie; Hannah, Marty
Subject: Variance Request from 580-34701-1 NE Cape HTRW

Per the lab for AK102/103:
Both surrogates in sample 34701-4 were failing low. O-Terphenyl recovered at 32% and n-Triacontane-d62 at 37%. Holding time expired 9/8/12.

Additional Information:
There were small detections of DRO at 2.9 mg/Kg and RRO at 27 mg/Kg.

Regards,

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: Project Feedback <https://secure.testamericainc.com/snaponline/surveylogin.asp?k=121632876991>

MELISSA ARMSTRONG

TestAmerica Seattle
THE LEADER IN ENVIRONMENTAL TESTING

Tel: 253.922.2310 x135
www.testamericainc.com

Reference: [077932]
Attachments: 1

From: Lee, Teresa POA
To: Hannah, Marty;
cc: terri.torres@testamericainc.com;
Subject: RE: Variance Request from 580-34748-1 NE Cape HTRW (UNCLASSIFIED)
Date: Monday, September 17, 2012 10:37:11 AM

Classification: UNCLASSIFIED
Caveats: NONE

Variance granted.

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Friday, September 14, 2012 10:05 AM
To: Lee, Teresa POA
Subject: FW: Variance Request from 580-34748-1 NE Cape HTRW

Happy Friday Teresa. We have a variance request for NE Cape on Site 8 soil samples. The PAH concentration is well below cleanup levels in the one sample and ND in the rest.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: Armstrong, Melissa [mailto:melissa.armstrong@testamericainc.com]
Sent: Friday, September 14, 2012 9:31 AM
To: Jarrell, Greg; Clark, Julie; Hannah, Marty
Subject: Variance Request from 580-34748-1 NE Cape HTRW

Per the lab for 8270SIM:
The LCS recovered high for anthracene (111%) and acenaphthylene (109%). Anthracene was detected in sample 34748-1 at the concentration of 27 ug/kg. All other samples were ND. The associated LCSD was in control.
Regards,

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: Project

Feedback <https://secure.testamericainc.com/snaponline/surveylogin.asp?k=121632876991>

MELISSA ARMSTRONG

TestAmerica Seattle
THE LEADER IN ENVIRONMENTAL TESTING

Tel: 253.922.2310 x135
www.testamericainc.com

Reference: [077930]
Attachments: 1

Classification: UNCLASSIFIED
Caveats: NONE

From:	teresataylorson@aol.com
To:	Hannah, Marty; Michael.D.Utley@usace.army.mil; Terri.Torres@testamericainc.com;
cc:	Teresa.A.Lee@usace.army.mil;
Subject:	RE: 34102 8082 LCSD issue (UNCLASSIFIED)
Date:	Wednesday, August 01, 2012 6:47:31 AM

I am still in Unalakleet. Thanks Mike for keeping things moving along in my absence and Marty for keepig me in the loop. I concur with Mike. I will be back on the 11th of August.

Thanks,

Teresa

-----Original Message-----
From: Hannah, Marty <mhannah@bristol-companies.com>
To: Utley, Michael D POA <Michael.D.Utley@usace.army.mil>; Torres, Terri <Terri.Torres@testamericainc.com>
Cc: teresataylorson <teresataylorson@aol.com>; Lee, Teresa POA <Teresa.A.Lee@usace.army.mil>
Sent: Tue, Jul 31, 2012 4:22 pm
Subject: RE: 34102 8082 LCSD issue (UNCLASSIFIED)

Thanks Mike. Is Teresa still in Unalakleet? I figured it wasn't a big deal and the results are being used for characterization, not closure.

Marty Hannah

Project Chemist/Environmental Scientist

Bristol Environmental Remediation Services, LLC

(907) 563-0013

-----Original Message-----

From: Utley, Michael D POA [mailto:Michael.D.Utley@usace.army.mil]

Sent: Tuesday, July 31, 2012 4:01 PM

To: Hannah, Marty; Torres, Terri

Cc: teresataylorson@aol.com; Lee, Teresa POA

Subject: RE: 34102 8082 LCSD issue (UNCLASSIFIED)

Classification: UNCLASSIFIED

Caveats: NONE

I'm OK with not re-extracting - but give Teresa a bit to respond.

Mike

-----Original Message-----

From: Hannah, Marty [mailto:mhannah@bristol-companies.com]

Sent: Tuesday, July 31, 2012 3:30 PM

To: Torres, Terri

Cc: teresataylorson@aol.com; Lee, Teresa POA; Utley, Michael D POA

Subject: RE: 34102 8082 LCSD issue

I forwarded the variance request to Teresa Lee (USACE project chemist) but she still may be at a remote site so I'm forwarding this to Mike Utley as well. Hold off on the re-extract and just qualify the data as preliminary until I hear back from either Teresa or Mike.

Teresa-Mike, Bristol wishes to request a variance on PCB analysis due to TCMX recoveries below acceptance limits in the LCSD. DCB (surrogate) and the spike recoveries were within limits. See email string below.

Marty Hannah

Project Chemist/Environmental Scientist

Bristol Environmental Remediation Services, LLC Phone : (907) 563-0013

From: Torres, Terri [mailto:Terri.Torres@testamericainc.com]

Sent: Tuesday, July 31, 2012 3:00 PM

To: Hannah, Marty

Subject: RE: 34102 8082 LCSD issue

Yes spike recovery in limits - just the one surrogate out.

From: Hannah, Marty [mailto:mhannah@bristol-companies.com]

Sent: Tuesday, July 31, 2012 3:45 PM

To: Torres, Terri

Subject: RE: 34102 8082 LCSD issue

Is the LCSD spike recovery within limits?

Marty Hannah

Project Chemist/Environmental Scientist

Bristol Environmental Remediation Services, LLC Phone : (907) 563-0013

From: Torres, Terri [mailto:Terri.Torres@testamericainc.com]

Sent: Tuesday, July 31, 2012 2:43 PM

To: Hannah, Marty

Subject: FW: 34102 8082 LCSD issue

Importance: High

From: Kimura, Evan K.

Sent: Tuesday, July 31, 2012 2:09 PM

To: Torres, Terri

Cc: McKean, Colin

Subject: 34102 8082 LCSD issue

Importance: High

Hi Terri,

One of the batches of the large Bristol project has low TCMX (only) recovery in the LCSD. The MB, LCS, client samples (so far), and the MS/MSD are all passing, pointing to an isolated event with the LCSD. The spike recoveries and DCB surrogate recovery in the LCSD is passing, so I'm lead to believe that this issue is due to a boiling down/concentration step issue.

Can you check with Marty to see if we can get a variance to report the data as it is with the appropriate narrative?

Kind regards,

Evan K. Kimura

Analyst III - SVOA

TestAmerica

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Fife, WA 98424

Tel 253.922.2310 | Fax 253.922.5047

www.testamericainc.com <http://www.testamericainc.com/>

Classification: UNCLASSIFIED

Caveats: NONE

From: Lee, Teresa POA
To: Hannah, Marty;
Subject: RE: 34609 - Variance (UNCLASSIFIED)
Date: Tuesday, September 11, 2012 4:23:55 PM

Classification: UNCLASSIFIED
Caveats: NONE

Granted.

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Tuesday, September 11, 2012 4:19 PM
To: Lee, Teresa POA
Subject: FW: 34609 - Variance

Bristol wishes to request a variance for 8260 analyses with xylenes detected in the method blank greater than ½ the LOQ. It shouldn't affect the results other than a B flag. The sample results are 20 times lower than ADEC cleanup levels.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: Armstrong, Melissa [mailto:Melissa.Armstrong@testamericainc.com]
Sent: Tuesday, September 11, 2012 4:05 PM
To: Hannah, Marty
Subject: FW: 34609 - Variance

Per lab for 8260:

One last issue, I need to know the clients action limit for m/p-Xylene. The situation is as follows:

There are two batches with "J" flagged m/p-Xylene detections in the method blank. Both are just above one half of the LOQ. Several associated samples also have "J" flagged detections between one half of the LOQ and the LOQ. One of the associated samples has a m/p-Xylene detection at a concentration of 1.5 the LOQ. The range of detections (moisture corrected) is from 10 U to 31 mg/kg. If there action limit is greater than 310 mg/kg, I can use the 10x rule to report the data. If not, 21 samples will need to be reanalyzed out of hold for m/p-Xylene only.

MELISSA ARMSTRONG

Project Manager

TestAmerica

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www.testamericainc.com <blocked::http://www.testamericainc.com/>

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Classification: UNCLASSIFIED
Caveats: NONE

From:	Lee, Teresa POA
To:	Hannah, Marty;
Subject:	RE: about job 34701-2 (UNCLASSIFIED)
Date:	Tuesday, September 11, 2012 9:16:32 AM

Classification: UNCLASSIFIED
Caveats: NONE

Granted.

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Tuesday, September 11, 2012 8:45 AM
To: Lee, Teresa POA
Subject: FW: about job 34701-2

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: Hannah, Marty
Sent: Wednesday, September 05, 2012 3:40 PM
To: 'Lee, Teresa POA'
Cc: 'Torres, Terri'; Jarrell, Greg
Subject: FW: about job 34701-2

TestAmerica has asked for 2 variance requests noted below for 580-34701, which are the radar dome samples. It sounds like the results are non-detect as far as GRO and RRO goes.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: Torres, Terri [mailto:Terri.Torres@testamericainc.com]

Sent: Wednesday, September 05, 2012 3:13 PM
To: Hannah, Marty
Subject: FW: about job 34701-2

Marty,

I have a couple of variance requests for the NE Cape project, 1st one for AK101 for surrogate failure in the LCS/LCSD. 2nd one for AK102/103 for high surrogate failure in sample 12NCRDSS02 (580-34701-2).

Thanks,

Terri

Hi Terri,

The LCS and LCSD for these samples had high surrogate (TFT). Surrogate is within range in all of the samples and they are all ND except the trip blank but that has been mass spec identified as siloxanes. Can I get a variance?

Thanks

Gina

Terri,

In this sample, the surrogate n-tricontane was over the upper limit, but there is no detection in C10-C25 and C25-C36 ranges. Could you please ask the client if they want us to report the data with NCM or re-analyze the sample?

Thank you.

John

Classification: UNCLASSIFIED
Caveats: NONE

From:	James, Russell
To:	terri.torres@testamericainc.com; McKean Colin; Wunderlich David; Jarrell, Greg; Clark, Julie; Hannah, Marty;
cc:	melissa.armstrong@testamericainc.com;
Subject:	RE: Changed Information Notification for 580-34594
Date:	Tuesday, August 28, 2012 1:18:42 PM

Forgot one...
Please also analyze the following sample:
12NCMOCSS117
Thank you,

Russell James
Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: James, Russell
Sent: Tuesday, August 28, 2012 1:01 PM
To: 'terri.torres@testamericainc.com'; McKean Colin; Wunderlich David; Jarrell, Greg; Clark, Julie; Hannah, Marty
Subject: RE: Changed Information Notification for 580-34594

Ok. We've figured it out.
We would like to analyze the following samples from work order 34594:
12NCMOCSS083
12NCMOCSS090
12NCMOCSS094
12NCMOCSS098
12NCMOCSS099
12NCMOCSS104
12NCMOCSS108
The remaining samples will not be analyzed.
Thank you,
Russell

Russell James
Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: Torres, Terri [mailto:terri.torres@testamericainc.com]
Sent: Friday, August 24, 2012 7:31 AM
To: McKean Colin; Wunderlich David; Jarrell, Greg; Clark, Julie; Hannah, Marty; James, Russell; Torres Terri L
Subject: Changed Information Notification for 580-34594

Hello,
Please hold (do not yet analyze) the samples related to work order 34594. We may not have to analyze all of them and would appreciate some time to decide how to proceed. Is this possible?
Thank you,
Russell James
580-34594-1 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-1 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-1 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-2 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-2 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-2 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-3 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-3 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-3 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-4 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-4 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-4 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-5 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-5 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-5 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-6 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-6 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-6 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-7 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-7 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-7 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-8 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-8 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-8 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-9 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-9 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-9 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-10 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-10 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-10 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-11 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-11 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-11 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-12 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-12 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-12 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-13 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-13 Method: AK102_103 had it's condition changed from Active to On_Hold.

580-34594-13 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-14 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-14 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-14 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-15 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-15 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-15 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-16 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-16 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-16 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-17 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-17 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-17 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-18 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-18 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-18 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-19 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-19 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-19 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-20 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-20 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-20 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-21 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-21 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-21 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-22 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-22 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-22 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-22 MS Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-22 MS Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-22 MSD Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-22 MSD Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-23 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-23 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-23 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-24 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-24 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-24 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-25 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-25 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-25 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-26 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-26 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-26 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-27 Method: 3550B had it's condition changed from Active to On_Hold.

580-34594-27 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-27 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-28 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-28 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-28 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-29 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-29 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-29 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-30 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-30 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-30 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-31 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-31 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-31 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-32 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-32 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-32 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-33 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-33 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-33 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-34 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-34 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-34 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-35 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-35 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-35 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-36 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-36 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-36 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-37 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-37 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-37 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-38 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-38 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-38 Method: Moisture had it's condition changed from Active to On_Hold.
580-34594-38 MS Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-38 MS Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-38 MSD Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-38 MSD Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-39 Method: 3550B had it's condition changed from Active to On_Hold.
580-34594-39 Method: AK102_103 had it's condition changed from Active to On_Hold.
580-34594-39 Method: Moisture had it's condition changed from Active to On_Hold.

TERRI L TORRES

TestAmerica Seattle
THE LEADER IN ENVIRONMENTAL TESTING

Tel: 253.922.2310 x134
www.testamericainc.com

Reference: [076778]

From:	Lee, Teresa POA
To:	Hannah, Marty; Utley, Michael D POA;
cc:	James, Russell; James, Russell; Craner, Jeremy POA;
Subject:	RE: SGS certification and limits (UNCLASSIFIED)
Date:	Wednesday, September 19, 2012 10:00:18 AM

Classification: UNCLASSIFIED
Caveats: NONE

Hello Marty,

I have reviewed the method limits and ELAP certifications. The use of SGS for the below mentioned samples is approved. Have a safe trip back!

Thanks,

Teresa Lee
Project Chemist

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Wednesday, September 19, 2012 9:31 AM
To: Lee, Teresa POA; Utley, Michael D POA
Cc: James, Russell; James, Russell
Subject: FW: SGS certification and limits

Good morning Teresa. We've been having turnaround time issues with TestAmerica this summer so we're asking permission to use SGS to characterize the impoundment water for Site 28 from the pre-and post treatment containment ponds in order to get timely results so we can discharge the water and keep the sediment dredging moving along. It's one of the last tasks for this field season and I wouldn't mind seeing how SGS does. We're definitely going to have more laboratory alternatives in place for next year due to the generally lackluster performance of TestAmerica this year.

The certifications and laboratory reporting limits are attached. We'd like to ship out samples today so a timely response would be greatly appreciated. I'm out at the Cape right now and will be leaving today, weather permitting.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC

Phone : (907) 563-0013

From: Clark, Julie
Sent: Wednesday, September 19, 2012 8:33 AM
To: Hannah, Marty
Cc: Jarrell, Greg; James, Russell
Subject: SGS certification and limits

Marty~

Attached are SGS's DoD certification and method limits. Do you have time to take a quick look and verify that they look okay? And do you want to forward on to Teresa Lee for approval, or do you need me to do it?

Thanks!

Julie Clark
Project Manager/Environmental Scientist
Bristol Environmental Remediation Services, LLC
111 W.16th Avenue, Third Floor
Anchorage, AK 99501-5109
Phone : (907) 563-0013
FAX : (907) 563-6713
jclark@bristol-companies.com
http://www.bristol-companies.com/

Classification: UNCLASSIFIED
Caveats: NONE

From: Lee, Teresa POA
To: Hannah, Marty;
Subject: RE: Variance request 580-35021 NECape (UNCLASSIFIED)
Date: Friday, October 12, 2012 12:19:36 PM

Classification: UNCLASSIFIED
Caveats: NONE

Granted.

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Friday, October 12, 2012 11:18 AM
To: Lee, Teresa POA
Subject: RE: Variance request 580-35021 NECape

Bristol wishes to make a variance request for SDG 580-35021 (NE Cape) for 8260 analyses. As noted below the LCS had a high recovery for 1,2-Dichloropropane, which was not detected above the LOQ in any samples. The results will be used for disposal of bulk soil waste from the Site 10 drum area.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: Torres, Terri [mailto:Terri.Torres@testamericainc.com]
Sent: Friday, October 12, 2012 11:01 AM
To: Hannah, Marty
Subject: Variance request

I don't remember this one going up to you so I may be repeating. I have a high LCS recovery for 1,2-Dichloropropane for the NE Cape job 580-35021 with no hits above the LOQ in the associated samples.

TERRI TORRES

Client Services Manager

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

5755 8th Street East

Tacoma, WA 98466

Tel 253-922-2310 I Cel 253-380-6537

www.testamericainc.com

Classification: UNCLASSIFIED
Caveats: NONE

From: Lee, Teresa POA
To: Hannah, Marty;
Subject: RE: Variance request for 580-35021, NE Cape (UNCLASSIFIED)
Date: Wednesday, October 10, 2012 11:10:19 AM

Classification: UNCLASSIFIED
Caveats: NONE

Granted.

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Tuesday, October 09, 2012 11:40 AM
To: Lee, Teresa POA
Cc: Torres, Terri
Subject: FW: Variance request for 580-35021, NE Cape

Bristol wishes to request a variance for 8260 analyses with 2 analytes out of calibration on the CCV, carbon disulfide and acetone. The soil samples were submitted for waste profiling and disposal from the Site 10 drum removal area. I've attached the preliminary results as reference. I looked at the sample results and only BW04 has acetone reported at low levels, the rest are ND. The data is to be used for waste disposal purposes only. Please see the information from the laboratory below regarding the calibrations. The acetone calibration was high so it would easily detect any hits near regulatory levels.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: Torres, Terri [mailto:Terri.Torres@testamericainc.com]
Sent: Tuesday, October 09, 2012 11:04 AM
To: Hannah, Marty
Subject: Variance request for 580-35021, NE Cape

Need to request a variance for NE Cape 8260. Job 580-35021 the CCV failed low for Carbon Disulfide (23.6%) and high for Acetone (26.6%). If we re-analyze we will have to re-analyze out of holding time. Can we narrate and report?

Terri

TERRI TORRES

Client Services Manager

TestAmerica

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5755 8th Street East

Tacoma, WA 98466

Tel 253-922-2310 I Cel 253-380-6537

www.testamericainc.com

Classification: UNCLASSIFIED
Caveats: NONE

From:	Lee, Teresa POA
To:	Hannah, Marty;
Subject:	RE: Variance request for 580-35021, NE Cape (UNCLASSIFIED)
Date:	Wednesday, October 10, 2012 11:10:19 AM

Classification: UNCLASSIFIED
Caveats: NONE

Granted.

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Tuesday, October 09, 2012 11:40 AM
To: Lee, Teresa POA
Cc: Torres, Terri
Subject: FW: Variance request for 580-35021, NE Cape

Bristol wishes to request a variance for 8260 analyses with 2 analytes out of calibration on the CCV, carbon disulfide and acetone. The soil samples were submitted for waste profiling and disposal from the Site 10 drum removal area. I've attached the preliminary results as reference. I looked at the sample results and only BW04 has acetone reported at low levels, the rest are ND. The data is to be used for waste disposal purposes only. Please see the information from the laboratory below regarding the calibrations. The acetone calibration was high so it would easily detect any hits near regulatory levels.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: Torres, Terri [mailto:Terri.Torres@testamericainc.com]
Sent: Tuesday, October 09, 2012 11:04 AM
To: Hannah, Marty
Subject: Variance request for 580-35021, NE Cape

Need to request a variance for NE Cape 8260. Job 580-35021 the CCV failed low for Carbon Disulfide (23.6%) and high for Acetone (26.6%). If we re-analyze we will have to re-analyze out of holding time. Can we narrate and report?

Terri

TERRI TORRES

Client Services Manager

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

5755 8th Street East

Tacoma, WA 98466

Tel 253-922-2310 I Cel 253-380-6537

www.testamericainc.com

Classification: UNCLASSIFIED
Caveats: NONE

From: Lee, Teresa POA
To: Hannah, Marty;
Subject: RE: Variance Request from 580-34609-1 NE Cape HTRW (UNCLASSIFIED)
Date: Tuesday, September 11, 2012 9:17:16 AM

Classification: UNCLASSIFIED
Caveats: NONE

Granted.

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Tuesday, September 11, 2012 8:44 AM
To: Lee, Teresa POA
Subject: FW: Variance Request from 580-34609-1 NE Cape HTRW

HI Teresa, the variance request below is for Site 10 drum soil. We've hit about 20-25 drums on the low end of the MOC and these are the soils from it. We've detected glycol and used motor oil so far. The VOCs are the last analyses we're waiting for in this work order. We have the drum contents at TA as well. Let me know if you have any questions. Can we get a variance? I also sent a variance request last week that I'll forward again.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: Armstrong, Melissa [mailto:melissa.armstrong@testamericainc.com]
Sent: Monday, September 10, 2012 3:11 PM
To: Jarrell, Greg; Clark, Julie; Hannah, Marty
Subject: Variance Request from 580-34609-1 NE Cape HTRW

Per the lab for 8260:

Can you please ask the client for a variance request for an indicated high bias with no samples detected above one half of the LOQ for the following analytes: Bromomethane (+52.7%); Chloroethane (+39.0); and 1,2,3-Trichloropropane (+26.6%). The surrogate Ethylbenzene-d10 also recovered above criteria at

20.5%. Ethylbenzene met QC criteria in all associated analytical and QC samples.

Regards,

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: Project Feedback <https://secure.testamericainc.com/snaponline/surveylogin.asp?k=121632876991>

MELISSA ARMSTRONG

TestAmerica Seattle
THE LEADER IN ENVIRONMENTAL TESTING

Tel: 253.922.2310 x135
www.testamericainc.com

Reference: [077670]
Attachments: 1

Classification: UNCLASSIFIED
Caveats: NONE

From: Lee, Teresa POA
To: Hannah, Marty;
Subject: RE: 34609-41, AK101 (UNCLASSIFIED)
Date: Thursday, August 30, 2012 9:36:14 AM

Classification: UNCLASSIFIED
Caveats: NONE

I did see it. Go ahead and report those as well. Have a great Thursday!

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Thursday, August 30, 2012 9:24 AM
To: Lee, Teresa POA; Torres, Terri
Subject: RE: 34609-41, AK101 (UNCLASSIFIED)

Thanks for the prompt reply Teresa. Terri, variance is granted for the below referenced sample (trip blank). By chance did you have time to look at the variance request sent yesterday at 3 pm for 580-34609? The CCV had a high recovery for acetone and the method blank had methylene chloride, which is a common lab contaminant. We have not had any reportable methylene chloride or acetone identified at the site since I've started on it.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
(907) 563-0013
-----Original Message-----
From: Lee, Teresa POA [mailto:Teresa.A.Lee@usace.army.mil]
Sent: Thursday, August 30, 2012 9:16 AM
To: Hannah, Marty
Subject: RE: 34609-41, AK101 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Variance granted.

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Thursday, August 30, 2012 8:38 AM
To: Lee, Teresa POA
Cc: Torres, Terri

Subject: FW: 34609-41, AK101

Good morning Teresa. Can we get a variance for the trip blank analysis by AK101. TFT (field surrogate) came back above acceptance criteria but it was ND and still very usable for project purposes. We'll be sure its noted in the case narrative and discussed in the CDQR.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC Phone : (907) 563-0013

From: Torres, Terri [mailto:Terri.Torres@testamericainc.com]
Sent: Thursday, August 30, 2012 8:34 AM
To: Hannah, Marty
Subject: FW: 34609-41, AK101

Marty - another request for variance on one of the AK101 samples (TripBlank082012-04)

From: Hanlon, Gina
Sent: Thursday, August 30, 2012 8:20 AM
To: Torres, Terri
Subject: 34609-41, AK101

Hi Terri,

TFT failed high in this sample but it is ND. Can I report it?

Thanks

Gina

is prohibited. If you are not the intended recipient, please contact the
sender and destroy all copies of the original document.

Classification: UNCLASSIFIED
Caveats: NONE

From: Lee, Teresa POA
To: Hannah, Marty;
Subject: RE: DOD variance - job 34609 (UNCLASSIFIED)
Date: Tuesday, September 04, 2012 11:11:15 AM

Classification: UNCLASSIFIED
Caveats: NONE

Variance granted.

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Tuesday, September 04, 2012 11:03 AM
To: Lee, Teresa POA
Cc: Torres, Terri
Subject: FW: DOD variance - job 34609

Hi Teresa, TestAmerica and Bristol are asking for a variance for PAHs from samples for the Site 10 drums as noted below. The concentrations are well below cleanup levels.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
Phone : (907) 563-0013

From: Torres, Terri [mailto:Terri.Torres@testamericainc.com]
Sent: Tuesday, September 04, 2012 10:59 AM
To: Hannah, Marty
Subject: FW: DOD variance - job 34609

Marty - see below:

This exceeds the # of allowed marginal exceedances (1 exceedance for 11-30 compounds) but are within the marginal exceedance limits.

Please let me know how you would like us to proceed.

From: Pham, Ai
Sent: Tuesday, September 04, 2012 11:55 AM
To: Torres, Terri
Subject: DOD variance - job 34609

8270Sim analysis:

The LCS/LCSD recovered high for acenaphthylene(108-110%) and anthracene (106%).

Acenaphthylene was detected in the sample 13 @120 ug/kg and sample 34 @ 6.8 ug/kg.

Athracene was found in sample 14 @ 7.8 ug/kg.

The rest were ND.

Samples are out of hold. Please let me know how to proceed. Thanks.

Ai

Classification: UNCLASSIFIED
Caveats: NONE

From: Lee, Teresa POA
To: Hannah, Marty;
Subject: RE: 34609-41, AK101 (UNCLASSIFIED)
Date: Thursday, August 30, 2012 9:36:14 AM

Classification: UNCLASSIFIED
Caveats: NONE

I did see it. Go ahead and report those as well. Have a great Thursday!

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Thursday, August 30, 2012 9:24 AM
To: Lee, Teresa POA; Torres, Terri
Subject: RE: 34609-41, AK101 (UNCLASSIFIED)

Thanks for the prompt reply Teresa. Terri, variance is granted for the below referenced sample (trip blank). By chance did you have time to look at the variance request sent yesterday at 3 pm for 580-34609? The CCV had a high recovery for acetone and the method blank had methylene chloride, which is a common lab contaminant. We have not had any reportable methylene chloride or acetone identified at the site since I've started on it.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC
(907) 563-0013
-----Original Message-----
From: Lee, Teresa POA [mailto:Teresa.A.Lee@usace.army.mil]
Sent: Thursday, August 30, 2012 9:16 AM
To: Hannah, Marty
Subject: RE: 34609-41, AK101 (UNCLASSIFIED)

Classification: UNCLASSIFIED
Caveats: NONE

Variance granted.

-----Original Message-----
From: Hannah, Marty [mailto:mhannah@bristol-companies.com]
Sent: Thursday, August 30, 2012 8:38 AM
To: Lee, Teresa POA
Cc: Torres, Terri

Subject: FW: 34609-41, AK101

Good morning Teresa. Can we get a variance for the trip blank analysis by AK101. TFT (field surrogate) came back above acceptance criteria but it was ND and still very usable for project purposes. We'll be sure its noted in the case narrative and discussed in the CDQR.

Marty Hannah
Project Chemist/Environmental Scientist
Bristol Environmental Remediation Services, LLC Phone : (907) 563-0013

From: Torres, Terri [mailto:Terri.Torres@testamericainc.com]
Sent: Thursday, August 30, 2012 8:34 AM
To: Hannah, Marty
Subject: FW: 34609-41, AK101

Marty - another request for variance on one of the AK101 samples (TripBlank082012-04)

From: Hanlon, Gina
Sent: Thursday, August 30, 2012 8:20 AM
To: Torres, Terri
Subject: 34609-41, AK101

Hi Terri,

TFT failed high in this sample but it is ND. Can I report it?

Thanks

Gina

Classification: UNCLASSIFIED
Caveats: NONE

Classification: UNCLASSIFIED
Caveats: NONE

APPENDIX C

Photograph Log

PHOTO	DATE	LOCATION	DESCRIPTION OF PHOTOGRAPH	VIEW DIRECTION	PHOTOGRAPHER/COMMENTS
1	July 6, 2012	MOC	Eco-Land surveying near the MOC.	north	Eric Barnhil
2	July 6, 2012	MOC	Sampling surface water at the MOC.	northwest	Eric Barnhil
3	July 8, 2012	Site 31	Liner and overburden being removed from the Site 31 excavation.	north	Russell James
4	July 8, 2012	Site 10	The staging area for drums, debris and poles at Site 10.	north	Russell James
5	July 9, 2012	Cargo Beach	Multi Incremental sampling decision units at Cargo Beach.	west	Russell James
6	July 9, 2012	MOC	Groundwater sampling at MOC monitoring well MW88-1.	west	Russell James
7	July 10, 2012	Site 28	Sediment mapping at the Site 28 Drainage.	west	Russell James
8	July 11, 2012	Site 10	The excavation at Site 10 with an oil/sheen on the water surface.	southwest	Russell James
9	July 12, 2012	Site 10	Antifreeze leaking from exposed drums at Site 10.	east	Russell James
10	July 13, 2012	Cargo Beach	The hydraulic spill area at Cargo Beach. The sand in the center contains the spilled oil.	southwest	Russell James
11	July 13, 2012	Cargo Beach	Cargo Beach bulk bag staging area.	west	Russell James
12	July 14, 2012	MOC	A lined containment area with bermed sides at the MOC.	north	Russell James
13	July 14, 2012	Site 31	A bulk bag at Site 31 loaded with soil getting zipped shut in the loading frame.	west	Russell James
14	July 15, 2012	Cargo Beach	A bulk bag being transported from Site 6 to Cargo Beach.	northwest	Russell James
15	July 16, 2012	Site 31	Collecting PCB samples for the field lab at Site 31.	northwest	Russell James
16	July 17, 2012	Site 13	The excavation at Site 13.	northwest	Russell James
17	July 18, 2012	Site 28	Sediment sampling at Site 28.	south	Russell James
18	July 19, 2012	Cargo Beach	Loading the landing craft at Cargo Beach.	east	Russell James
19	July 21, 2012	MOC	The curtain liner in the A1 excavation at the MOC	southwest	Russell James
20	July 21, 2021	Site 13	Getting ready for bulk bagging at Site 13.	southeast	Russell James
21	July 22, 2012	MOC	The H Plume excavation following soil removal.	east-northeast	Russell James
22	July 23, 2012	MOC	POL contaminated stockpile at Pad 98.	south	Russell James
23	July 24, 2012	Site 13	The western extent of the Site 13 excavation in the foreground and the A1 excavation in the background.	southwest	Russell James
24	July 25, 2012	MOC	Excavators were used for sampling deep excavations.	west	Russell James

PHOTO	DATE	LOCATION	DESCRIPTION OF PHOTOGRAPH	VIEW DIRECTION	PHOTOGRAPHER/COMMENTS
25	July 25, 2012	MOC	Samples were collected from the excavator bucket.	south	Russell James
26	July 26, 2012	MOC	Screened material from Pad 98. Material shown here was reject rock exceeding 2 inches in diameter.	east	Russell James
27	July 26, 2012	Cargo Beach	Bulk bags loaded on a landing craft ready to head to Nome, AK.	north	Russell James
28	July 28, 2012	MOC	Screening operation at Pad 98.	west	Russell James
29	July 29, 2012	MOC	The G Plume excavation at the MOC.	southwest	Russell James
30	July 30, 2012	Site 31	A concrete sidewall exposed in the Site 31 excavation. Sidewalls were wipe sampled and submitted for PCB analysis.	north	Russell James
31	July 31, 2012	Site 31	Bulk bagging operations at Site 31.	southwest	Russell James
32	August 1, 2012	Site 28	Examining a sediment boring from the Site 28 Drainage.	southwest	Russell James
33	August 2, 2012	MOC	A drum with unknown liquid removed from the E4 excavation. This drum was placed into an over-pack container.	west	Russell James
34	August 3, 2012	MOC	The Silt Fence and boom at the border between the MOC Pad (near the E Plume) and Site 28.	northeast	Russell James
35	August 5, 2012	Site 13	Collecting confirmation samples at Site 13.	north	Russell James
36	August 5, 2012	MOC	Excavating at the E3 Plume at the MOC. The tracked excavator is loading the rock truck, which will transport the soil to Pad 98.	southwest	Russell James
37	August 6, 2012	MOC	POL Stockpile at Pad 98.	northwest	Russell James
38	August 7, 2012	MOC	Bagging operations at Pad 98.	south	Russell James
39	August 7, 2012	Site 13	Confirmation sampling for PCBs at Site 13.	southeast	Russell James
40	August 9, 2012	Site 31	A newly excavated section of Site 31.	south	Russell James
41	August 9, 2012	MOC	Excavating POL-contaminated soil at the E3 Plume.	east	Russell James
42	August 10, 2012	MOC	Over pack drums and the drum containment area.	northeast	Russell James
43	August 11, 2012	Site 31	Bulk waste characterization sampling at Site 31.	northeast	Russell James
44	August 12, 2012	MOC	Characterization sampling of MOC impoundment water.	northeast	Russell James
45	August 12, 2012	MOC	Sampling at the Stockpile.	southwest	Russell James
46	August 13, 2012	MOC	New bung-top drums were filled with liquid product from drums recovered at Site 10.	northwest	George Mack
47	August 14, 2012	MOC	Collecting field screening samples from the sidewalls of the E Plume excavation.	north	Russell James
48	August 15, 2012	Site 21	The arsenic soil removal at Site 21.	northwest	Russell James

PHOTO	DATE	LOCATION	DESCRIPTION OF PHOTOGRAPH	VIEW DIRECTION	PHOTOGRAPHER/COMMENTS
49	August 16, 2012	MOC	Excavating contaminated soil at the E Plume.	northeast	Russell James
50	August 17, 2012	MOC	New liner installed at the fuel containment.	northeast	Russell James
51	August 19, 2012	Site 13	The bagging crew loads a bag into the frame at the Site 13 PCB excavation.	west	Russell James
52	August 21, 2012	MOC	Site 10, extracting drum samples with a drum thief.	Interiot	Russell James
53	August 24, 2012	MOC	Backfilling the E Plume excavation. Floor samples were collected as backfilling progressed.	west	Russell James
54	August 25, 2012	Radar Dome Rd	Sample locations are marked with pin flags on Radar Dome Road.	southeast	Russell James
55	August 26, 2012	MOC	Boom installed at the E Plume excavation to control petroleum sheen on the surface of the water.	northwest	Russell James
56	August 27, 2012	MOC	Dust control at the MOC.	southwest	Russell James
57	August 28, 2012	Site 8	Surface water sampling at Site 8.	southwest	Russell James
58	August 28, 2012	Cargo Beach	Staging bulk bags on shipping flats at Cargo Beach.	east	Russell James
59	August 29, 2012	MOC	Backfilling operations at the H Plume.	west	Russell James
60	August 31, 2012	MOC	A drum of Trichloroethylene pulled from Site 10.	NA	Russell James
61	September 2, 2012	MOC	Waste samples collected from the drums of liquid recovered at Site 10.	NA	Russell James
62	September 2, 2012	MOC	A drum containing very thick oil or tar from Site 10.	NA	Russell James
63	September 3, 2012	Cargo Beach	Bulk bags stacked on shipping flats at Cargo Beach.	west	Russell James
64	September 4, 2012	Site 21	The Site 21 arsenic excavation is shown in the background; pin flags mark the sample locations.	northwest	Russell James
65	September 6, 2012	Site 13	Concrete wipe sampling at Site 13.	south	Russell James
66	September 7, 2012	Site 28	Construction of the sediment trap that was utilized during Site 28 sediment removal activities.	northwest	Russell James
67	September 8, 2012	MOC	Site 10 following drum removal activities.	northwest	Russell James
68	September 10, 2012	Site 28	MI Sampling at the Site 28 Impoundment/Work Pad.	north	Russell James
69	September 11, 2012	Site 31	PCB contaminated soil excavated from Site 31. Bags are marked for identification.	south	Russell James
70	September 12, 2012	MOC	Area E backfill progress. Back fill is shown close to completion.	north	Russell James
71	September 13, 2012	Site 28	Site 28 water impoundment with sediment collection tubes.	north	Russell James
72	September 14, 2012	Site 26	Bulk bags staged at Site 26, the Former Construction Camp.	north	Russell James

PHOTO	DATE	LOCATION	DESCRIPTION OF PHOTOGRAPH	VIEW DIRECTION	PHOTOGRAPHER / COMMENTS
73	September 15, 2012	Site 28	The sediment trap installed and functional.	northeast	Russell James
74	September 16, 2012	Site 28	MI Sampling decision units lined out at Site 28.	northwest	Russell James
75	September 17, 2012	Site 28	The secondary impoundment at Site 28 with the pump in place.	east	Russell James
76	September 17, 2012	Site 28	Dredging at Area4 in Site 28.	southeast	Russell James
77	September 18, 2012	Site 28	The primary and secondary impoundments for water dredged from Site 28.	north	Russell James
78	September 19, 2012	Cargo Beach	Buried bulldozer exposed at Cargo Beach. To be removed in 2013. Discovered by operator on beach. No sheen noted on water.	west-southwest	Russell James
79	September 21, 2012	NE Cape	A pole removal location.	southwest	Russell James
80	September 22, 2012	Site 31	The Site 31 excavation.	west	Russell James

Photograph 1 Eco-Land surveying near the MOC. Direction: North
July 6, 2012

Photograph 2 Sampling surface water at the MOC. Direction: Northwest
July 6, 2012

Photograph 3 Liner and overburden being removed from the Site 31 excavation. Direction: North
July 8, 2012

Photograph 4 The staging area for drums, debris and poles at Site 10. Direction: North
July 8,2012

Photograph 5 Multi Incremental sampling decision units at Cargo Beach. Direction: West
July 9,2012

Photograph 6 Groundwater sampling at MOC monitoring well MW88-1. Direction: West
July 9, 2012

Photograph 7 Sediment mapping at the Site 28 Drainage. Direction: West
July 10,2012

Photograph 8 The excavation at Site 10 with an oil/sheen on the water surface. Direction: Southwest
July 11,2012

Photograph 9 Antifreeze leaking from exposed drums at Site 10. Direction: East
July 12, 2012

Photograph 10 The hydraulic spill area at Cargo Beach. Direction: Southwest
The sand in the center contains the spilled oil.
July 13,2012

Photograph 11 Cargo Beach bulk bag staging area. Direction: West
July 13,2012

Photograph 12 A lined containment area with bermed sides at the MOC. Direction:North
July 14, 2012

Photograph 13 A bulk bag at Site 31 loaded with soil getting zipped shut in the loading frame. Direction: West
July 14,2012

Photograph 14 A bulk bag being transported from Site 6 to Cargo Beach. Direction: Northwest
July 15,2012

Photograph 15 Collecting PCB samples for the field lab at Site 31. Direction: Northwest
July 16, 2012

Photograph 16 The excavation at Site 13. Direction: Northwest
July 17, 2012

Photograph 17 Sediment sampling at Site 28. Direction: South
July 18, 2012

Photograph 18 Loading the landing craft at Cargo Beach. Direction: East
July 19, 2012

Photograph 19 The curtain liner in the A1 excavation at the MOC. Direction: Southwest
July 21, 2012

Photograph 20 Getting ready for bulk bagging at Site 13. Direction: Southeast
July 21, 201

Photograph 21 The H Plume excavation following soil removal. Direction: East-northeast
July 22, 2012

Photograph 22 POL contaminated stockpile at Pad 98. Direction: South
July 23, 2012

Photograph 23 The western extent of the Site 13 excavation in the foreground and the A1 excavation in the background. Direction: Southwest
July 24, 2012

Photograph 24 Excavators were used for sampling deep excavations. Direction: West
July 25, 2012

Photograph 25 Samples were collected from the excavator bucket. Direction: South
July 25, 2012

Photograph 26 Screened material from Pad 98. Material shown here was reject rock exceeding 2 inches in diameter. Direction: East
July 26, 2012

Photograph 27 Bulk bags loaded on a landing craft ready to head to Nome, AK. Direction: North
July 26, 2012

Photograph 28 Screening operation at Pad 98. Direction: West
July 28, 2012

Photograph 29 The G Plume excavation at the MOC. Direction: Southwest
July 29, 2012

Photograph 30 A concrete sidewall exposed in the Site 31 excavation. Direction: north
Sidewalls were wipe-sampled and submitted for PCB analysis.
July 30, 2012

Photograph 31 Bulk bagging operations at Site 31. Direction: Southwest
July 31, 2012

Photograph 32 Examining a sediment boring from the Site 28 Drainage. Direction: Southwest
August 1, 2012

Photograph 33 A drum with unknown liquid removed from the E4 excavation. Direction: West
This drum was placed in an over-pack container.
August 2, 2012

Photograph 34 The Silt Fence and boom at the border between the MOC Pad (near the E Plume) and Site 28. Direction: Northeast
August 3, 2012

Photograph 35 Collecting confirmation samples at Site 13. Direction: North
August 5, 2012

Photograph 36 Excavating at the E3 Plume at the MOC. The tracked excavator is loading the rock truck, which will transport the soil to Pad 98. Direction: Southwest
August 5, 2012

Photograph 37 POL Stockpile at Pad 98. Direction: Northwest
August 6, 2012

Photograph 38 Bagging operations at Pad 98. Direction: South
August 7, 2012

Photograph 39 Confirmation sampling for PCBs at Site 13. Direction: Southeast
August 7, 2012

Photograph 40 A newly excavated section of Site 31. Direction: South
August 9, 2012

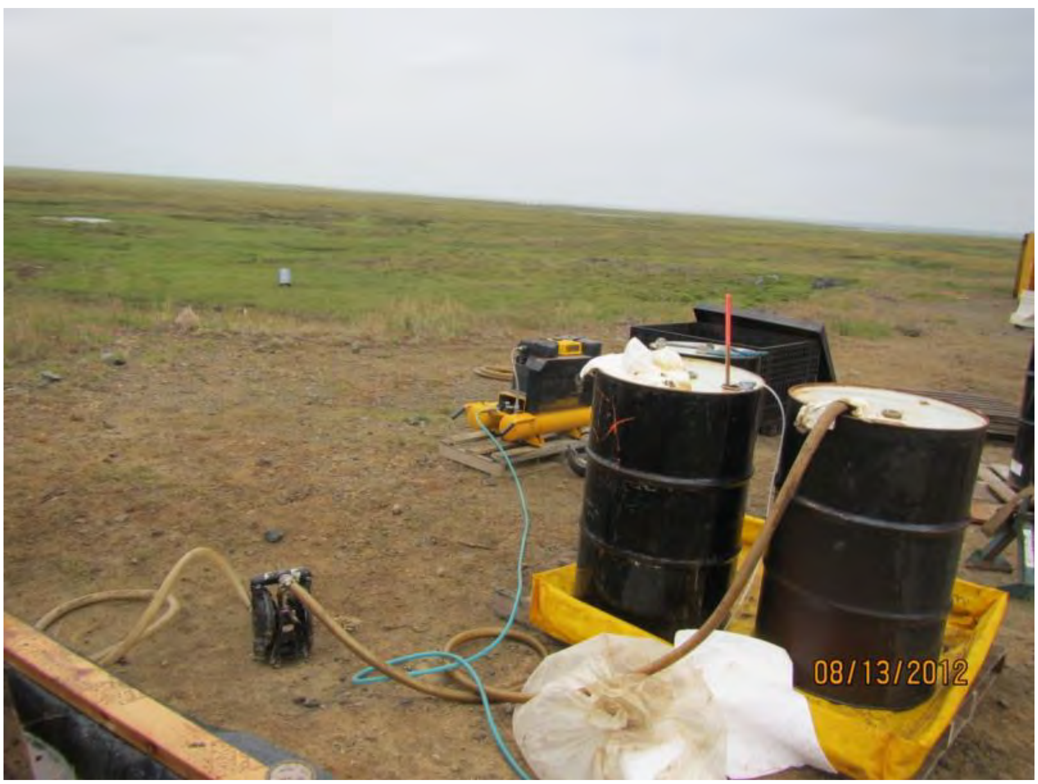
Photograph 41 Excavating POL-contaminated soil at the E3 Plume. Direction: East
August 9, 2012

Photograph 42 Over pack drums and the drum containment area. Direction: Northeast
August 10, 2012

Photograph 43 Bulk waste characterization sampling at Site 31. Direction: Northeast
August 11, 2012

Photograph 44 Characterization sampling of MOC Impoundment water. Direction: Northeast
August 12, 2012

Photograph 45 Sampling at the Stockpile. Direction: Southwest
August 12, 2012



Photograph 46 New bung-top drums were filled with liquid product from drums recovered at Site 10. Direction: Northwest
August 13, 2012

Photograph 47 Collecting field screening samples from the sidewalls of the E-Plume excavation. Direction: North
August 14, 2012

Photograph 48 The arsenic soil removal at Site 21. Direction: Northwest
August 15, 2012

Photograph 49 Excavating contaminated soil at the E plume. Direction: Northeast
August 16, 2012

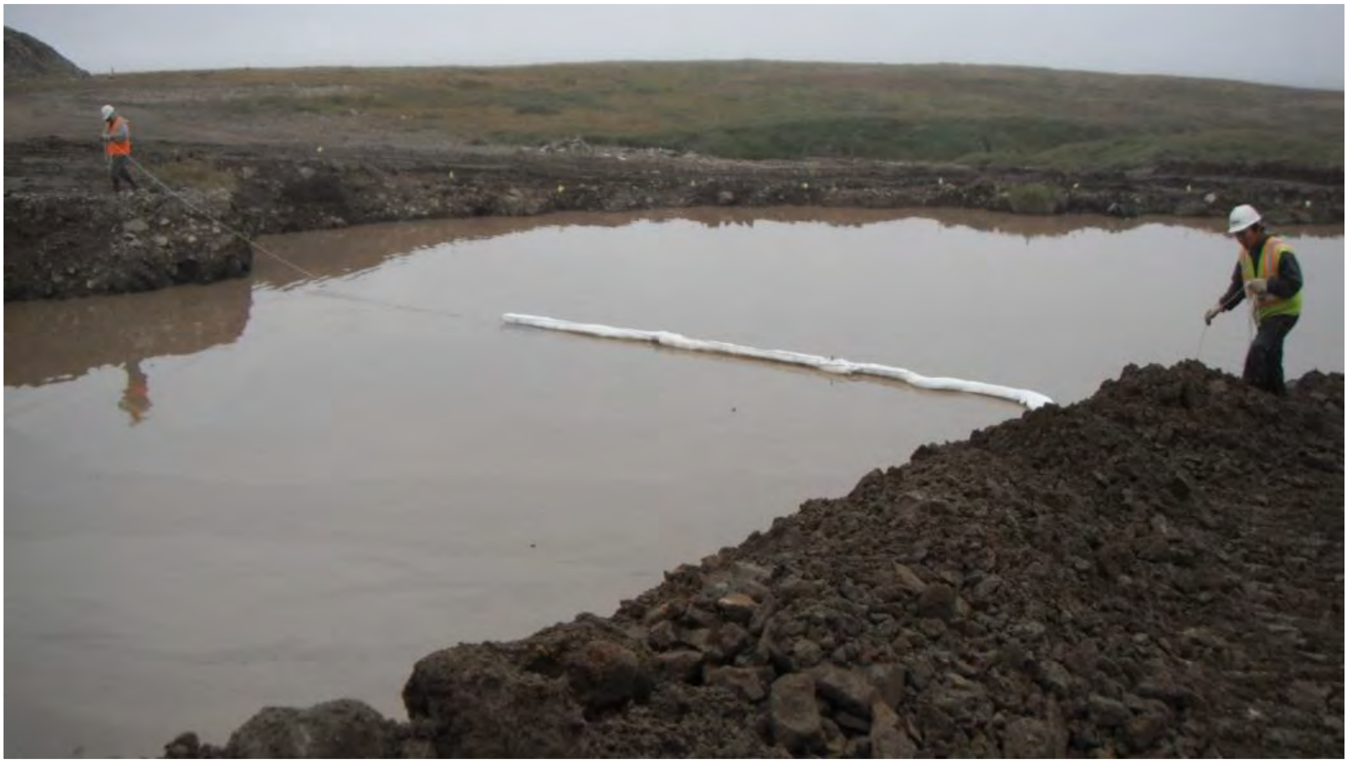
Photograph 50 New liner installed at the fuel containment. Direction: Northeast
August 17, 2012

Photograph 51 The bagging crew loads a bag into the frame at the Site 13 PCB excavation. Direction: West
August 19, 2012

Photograph 52 Site 10, extracting drum samples with a drum thief.
Direction: NA, interior of shipping container
August 21, 2012

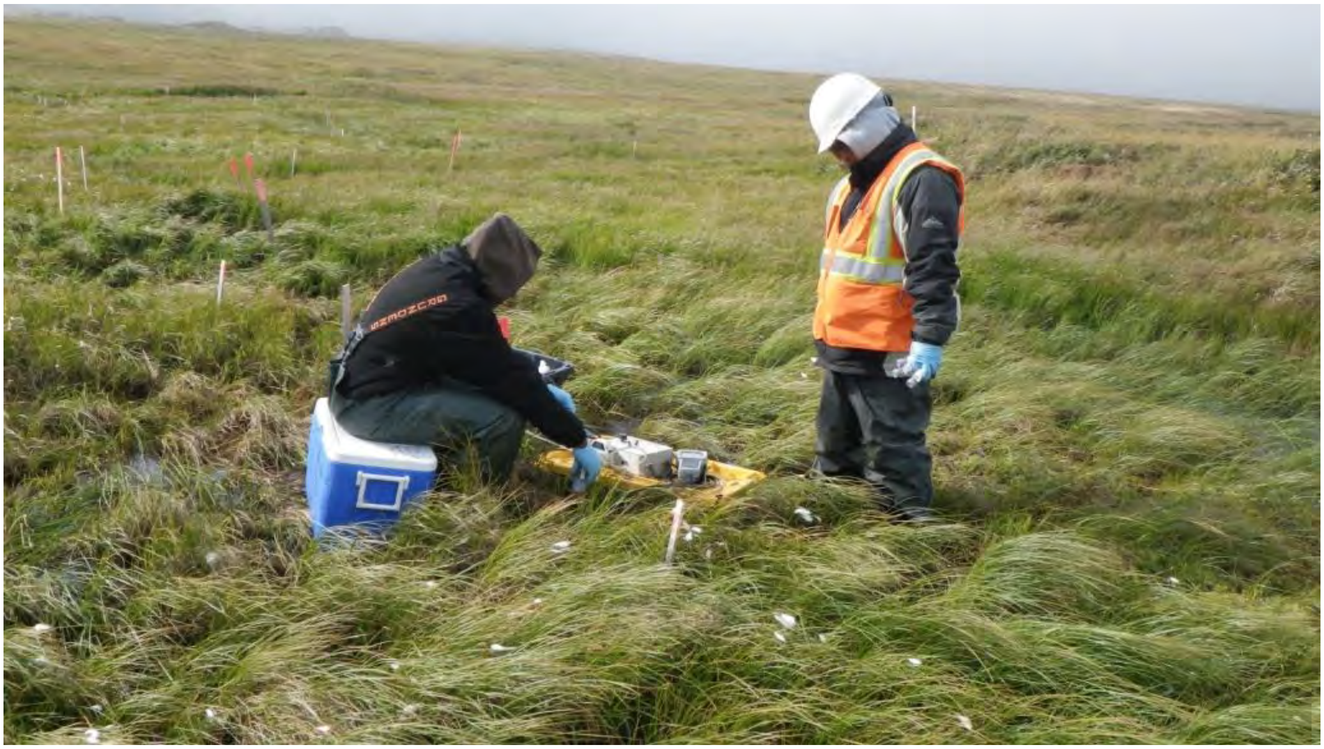
Photograph 53 Backfilling the E-Plume excavation. Direction: West
Floor samples were collected as backfilling progressed.
August 24, 2012

Photograph 54 Sample locations are marked with pin flags on Radar Dome Road Direction: Southeast
August 25, 2012



Photograph 55 Boom installed at the E Plume excavation to control petroleum sheen on the surface of the water. Direction: northwest
August 26, 2012

Photograph 56 Dust control at the MOC. Direction: Southeast
August 27, 2012



Photograph 57 Surface water sampling at Site 8. Direction: Southwest
August 28, 2012

Photograph 58 Staging bulk bags on shipping flats at Cargo Beach. Direction: East
August 28, 2012

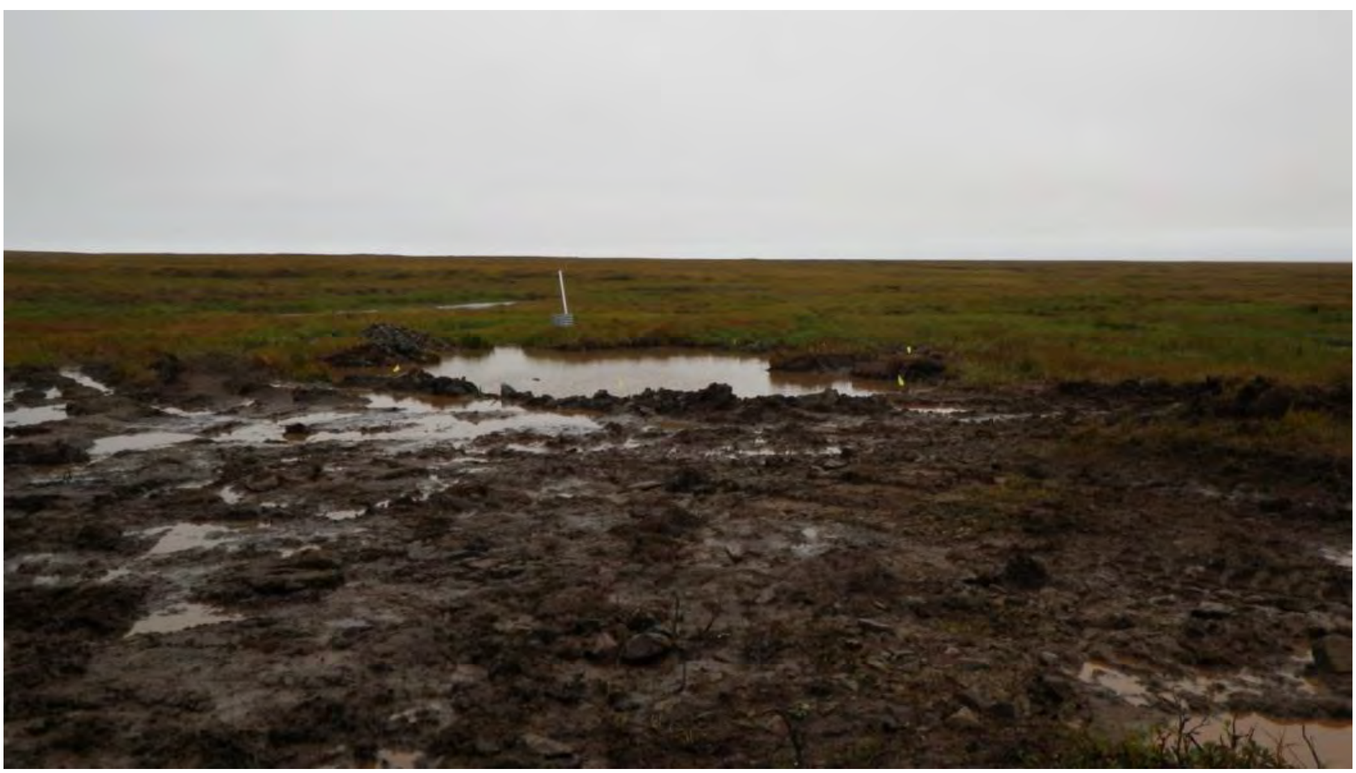
Photograph 59 Backfilling operations at the H Plume. Direction: West
August 29, 2012

Photograph 60 A drum of Trichloroethylene pulled from Site 10. Direction: NA
August 31, 2012

Photograph 61 Waste samples collected from the drums of liquid recovered at Site 10. Direction: NA
September 2, 2012

Photograph 62 A drum containing very thick oil or tar from Site 10. Direction: NA
September 2, 2012

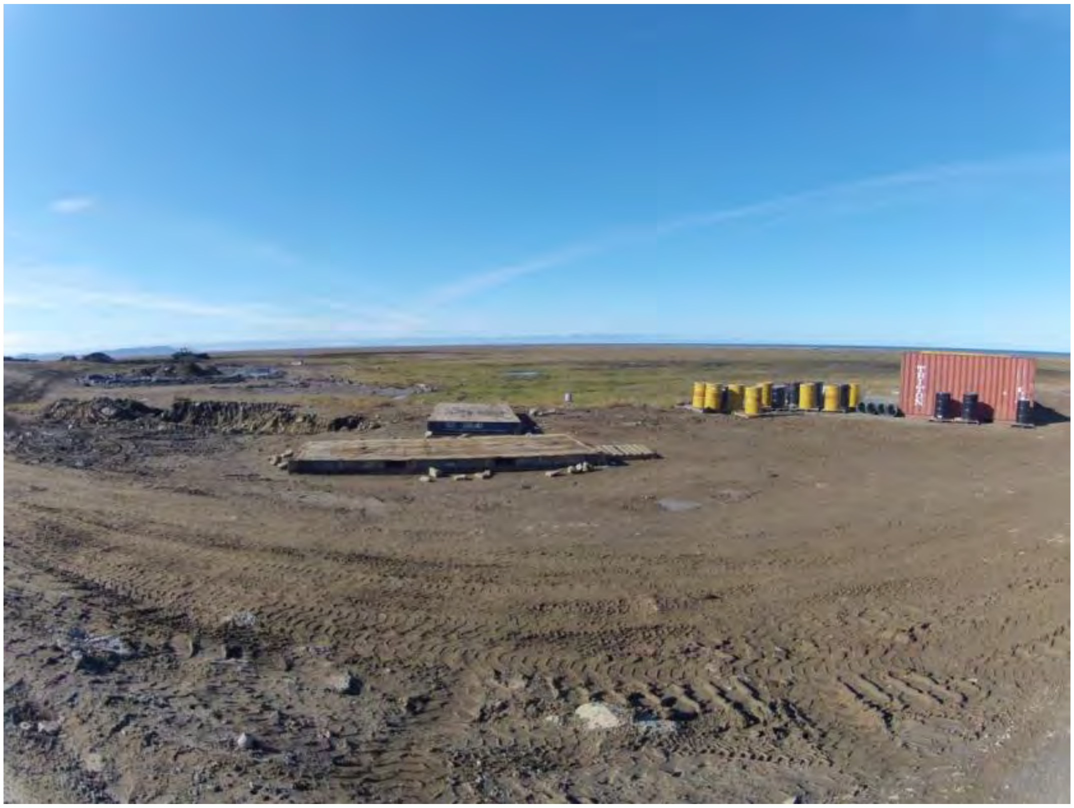
Photograph 63 Bulk bags stacked on shipping flats at Cargo Beach. Direction: West
September 3, 2012



Photograph 64 The Site 21 arsenic excavation is shown in the background; pin flags mark the sample locations. Direction: Northwest
September 4, 2012

Photograph 65 Concrete wipe sampling at Site 13. Direction: South
September 6, 2012

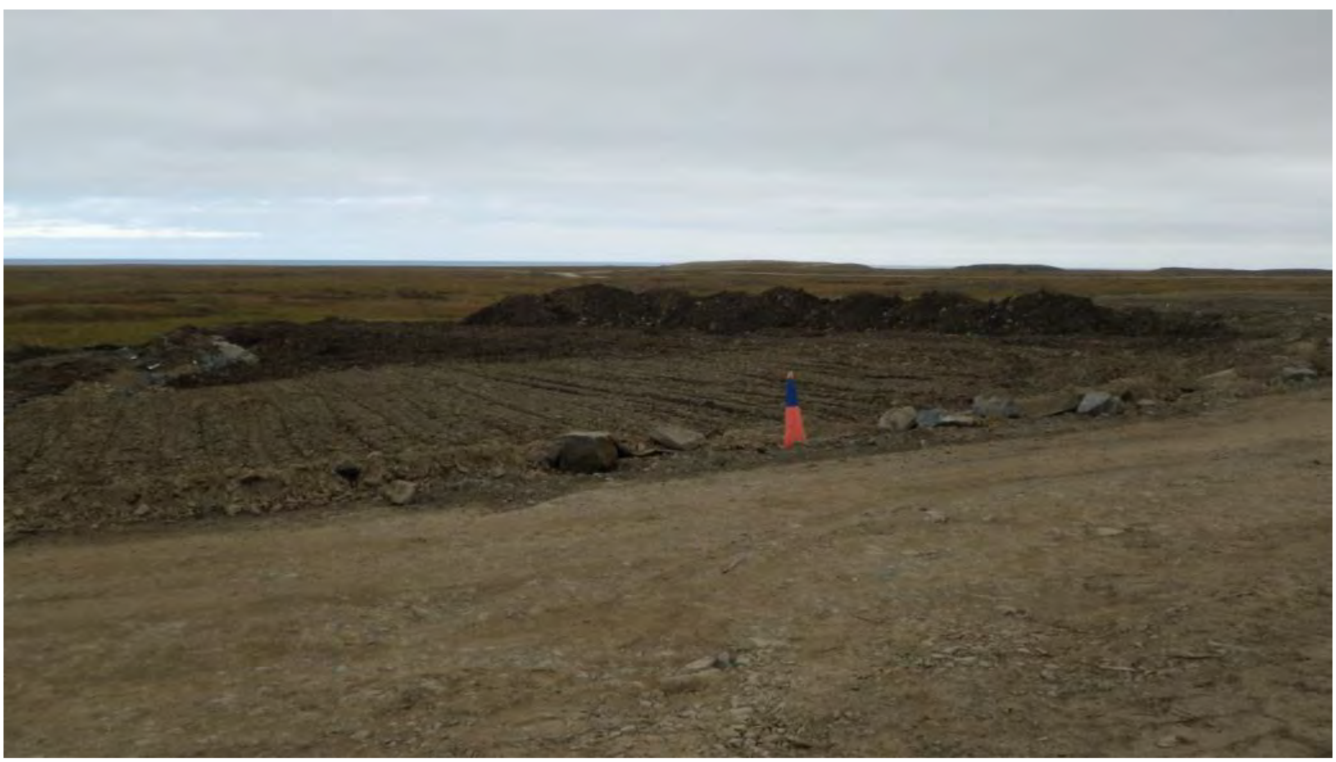
Photograph 66 Construction of the sediment trap that was utilized during Site 28 sediment removal activities. Direction: Northwest
September 7, 2012



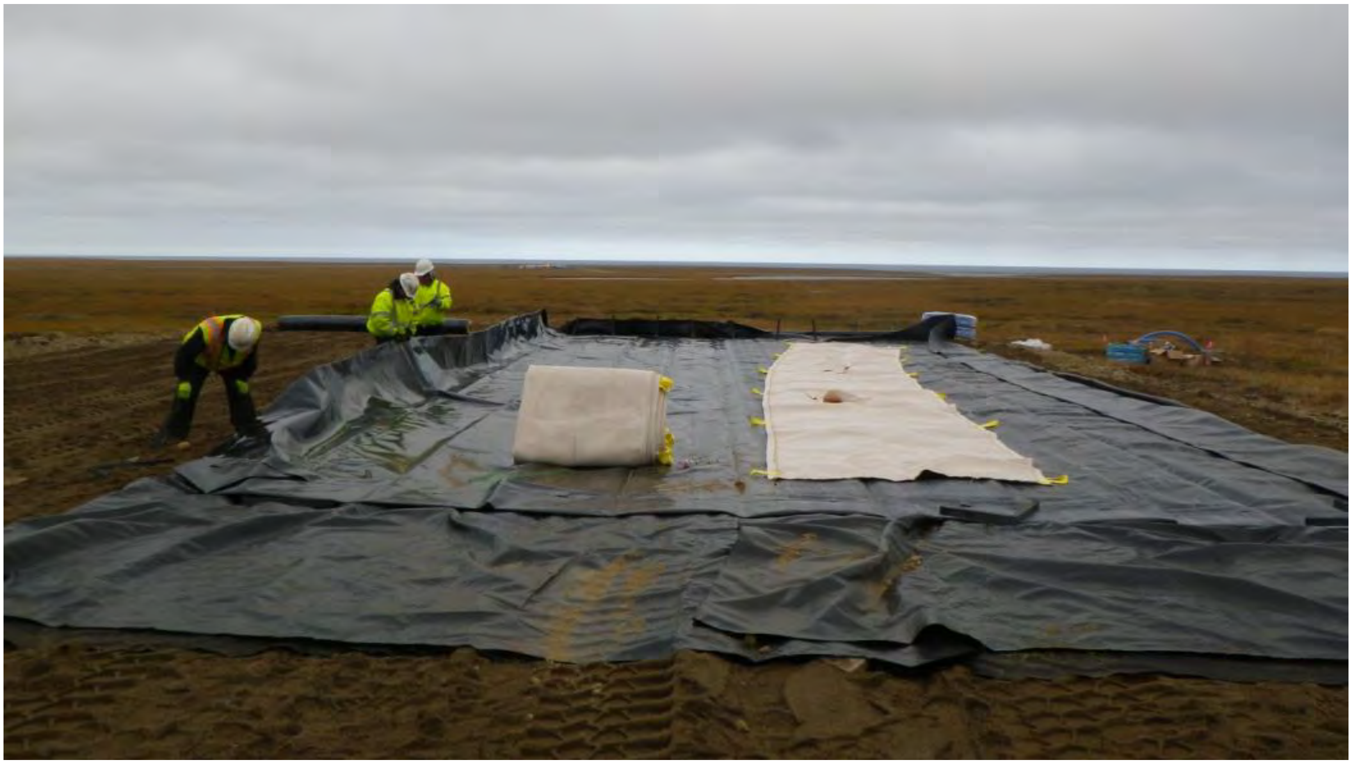
Photograph 67 Site 10 following drum removal activities. Direction: Northwest
September 8, 2012

Photograph 68 MI Sampling at the Site 28 Impoundment/Work Pad. Direction: North
September 10, 2012

Photograph 69 PCB-contaminated soil excavated from Site 31. Direction: South
Bags are marked for identification.
September 11, 2012



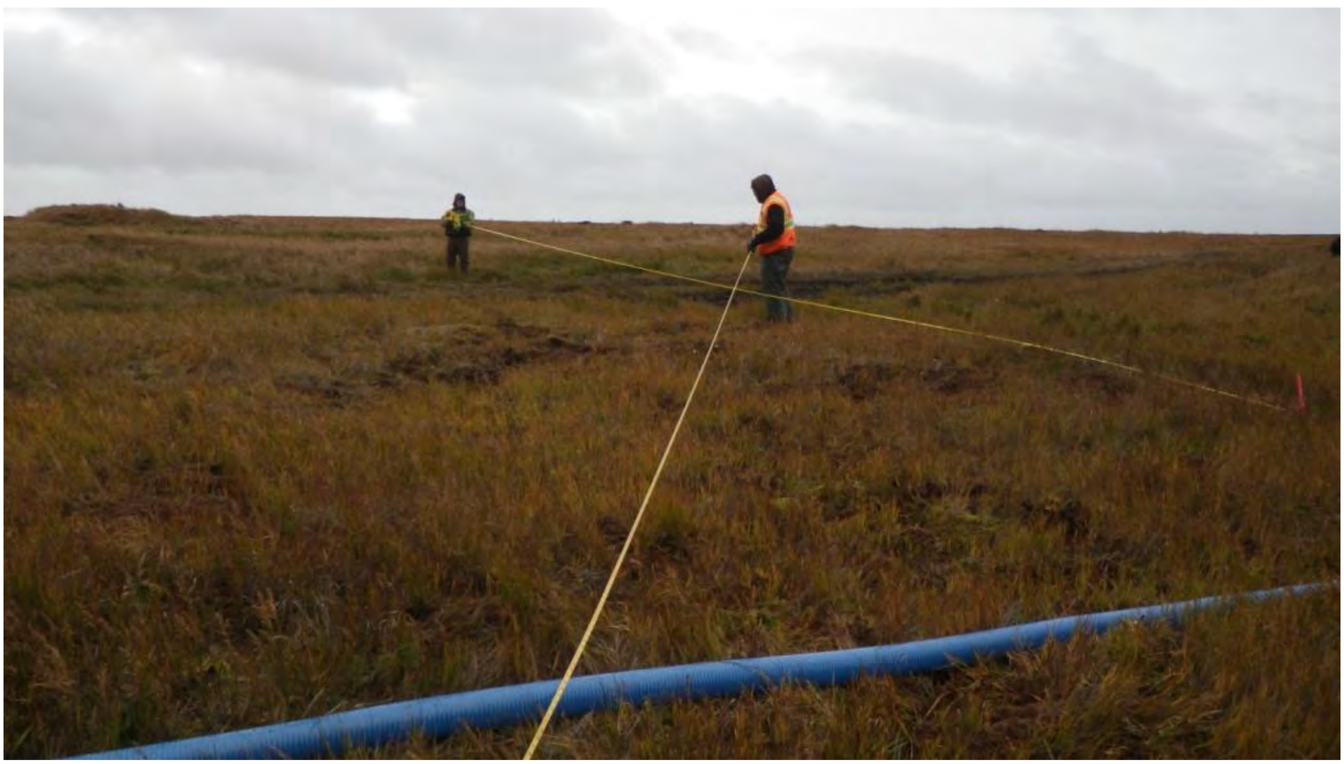
Photograph 70 Area E backfill progress. Back fill is shown close to completion. Direction: North
September 12, 2012



Photograph 71 The Site 28 water impoundment with sediment collection tubes. Direction: North
September 13, 2012

Photograph 72 Bulk bag staged at Site 26, Former Construction Camp. Direction: North
September 14, 2012

Photograph 73 The sediment trap installed and functional. Direction: Northeast
September 15, 2012



Photograph 74 MI Sampling decision units lined out at Site 28. Direction: Northwest
September 16, 2012

Photograph 75 The secondary impoundment at Site 28 shown with the pump in place. Direction: East
September 17, 2012

Photograph 76 Dredging at Area 4 in Site 28. Direction: Southeast
September 17, 2012

Photograph 77 The primary and secondary impoundments for water dredged from Site 28. Direction: North
September 18, 2012

Photograph 78 Buried bulldozer exposed at Cargo Beach. To be removed in 2013. Discovered by operator on beach. No sheen noted on water. Direction: West-southwest
September 19, 2012

Photograph 79 A pole removal location. Direction: Southwest
September 21, 2012

Photograph 80 The Site 31 excavation. Direction: West
September 22, 2012

APPENDIX D

Waste Profiles

Re-Certification of Generator's Non-Hazardous Waste Profile Sheet

WASTE MANAGEMENT

Profile #: 100052AK New Expiration Date: ________

A. GENERATOR INFORMATON

1. Generator Name: U.S. Army Corps of Engineers, Alaska District
2. Address: St. Lawrence NEC Facility-Wide, NE Cape, St. Lawrence Island, Savoonga, Alaska, 99769
3. Technical Contact: Tyler Ellingboe Title: Project Manager/Sr. Waste Specialist
4. Telephone: (907) 563-0013 Fax #: (907) 563-6713
5. Email: tellingboe@bristol-companies.com

B. BILLING INFORMATION - Optional (Mail WM Invoices To:) ☐ Same as above

1. Company Name: Bristol Environmental Remediation Services, LLC
2. Address: 111 W. 16th Avenue, Third Floor, Anchorage, Alaska, 99501
3. Contact: Molly Welker/Greg Jarrell Title: Project Manager
4. Telephone: (907) 563-0013 P.O. Box: ________
5. Special Billing Requirements: ________
6. Email: mwelker@bristol-companies.com , gjarrell@bristol-companies.com

C. RECERTIFICATION INFORMATION

1. Waste Name: Petroleum Contaminated Soil (Diesel Fuel)
2. Have you obtained any laboratory analysis of this waste within the past year? ☐ Yes ☑ No
3. Have you changed the raw materials used in the waste generating process or the process itself? ☐ Yes ☑ No
4. Is the laboratory analysis and/or other pertinent information previously submitted still representative of the waste as presently generated? ☑ Yes ☐ No

NOTE: IF YOU ANSWERED YES TO QUESTION 2 OR 3 LISTED ABOVE, PLEASE ATTACH APPROPRIATE DOCUMENTATION.

D. RECERTIFICATION STATEMENT.

By signing this form, the generator hereby certifies: The information provided in this document, the attached Waste Management Generator's Waste Profile Sheet, and all other attached documents contain ture and accurate descriptions of this waste material. All new information regarding known or suspected hazards in the possession of the generator has been disclosed. The Generator hereby certifies this waste is not a "Hazardous Waste" as defined by the USEPA or Canadian Federal regulation and/or the state/province and this waste does not contain regulated radioactive materials or regulated concentrations of PCB's.

Name: (Print) Tyler Ellingboe Title: Project Manager/Sr. Waste Specialist

Signature: Tyler S. Ellingboe Date: June 25, 2012

This is an extension of the original WM Decision. All conditions continue to apply.

Acceptable for use in the following states as sanctioned by Waste Management's waste review and approval process. Some waste streams will require the use of a new profile rather than the re-certification form.

AK, AL, AR, CO, DE, FL, GA, HI, IL, IN, KY, LA, MA, MD, ME, MI, MS, NC, NH, NY, OK, OR, SC, TX, VA & WA.

FOR WM USE ONLY

Management Method: ☐ Landfill ☐ Bioremediation Approval Decision: ☐ Approved ☐ Not Approved

☐ Non-hazardous solidification ☐ Other: ________ Waste Approval Expiration Date: ________

☐ Transfer ☐ See attached conditions

Management Facility Precautions, Special Handling Procedures or Limitation on approval: ________

☐ Shall not contain free liquid
☐ Shipment must be scheduled into disposal facility
☐ Approval number must accompany each shipment
☐ Waste Manifest must accompany load

WM Authorization Name / Title: ________ Date: ________

State Authorization (if Required): ________ Date: ________

Columbia Ridge Landfill

18177 Cedar Springs Lane, Arlington Oregon 97812

Profile # 100052AK

PERMIT TO DISPOSE OF NON-HAZARDOUS MATERIALS

This permit authorizes disposal of Customer's waste materials in accordance with the Industrial Waste & Disposal Services Agreement dated _____ __________.

EXPIRES: 8/20/13

GENERATOR: US ARMY ENGINEER DISTRICT, AK

DESCRIPTION: *PCS*	**VOLUME:** *11,000 tons*
☐ **SPECIAL WASTE** ☒ **PCS** ☐ **CLEAN-UP MATERIAL**	
LOCATION: *ST. LAWRENCE ISLAND, SAVOONGA, ALASKA* *ST. LAWRENCE NEC FACILITY WIDE, NE CAPE*	**COUNTY:***
CONTACT: *TYLER ELLINGBOE*	**PHONE:** *907-563-0013*
	FAX : *907-563-6713*

BILLING: *Landfill account BRISTOL ENVIRONMENTAL REMEDIATION SERVICES*	**PO#:** *N/A*	**JOB#:** *N/A*

TYPE OF DISPOSAL/ SPECIAL HANDLING/LOAD TYPE: ***BULK, ADC OR CO-MINGLE AT LANDFILL DISCRETION, NO FREE LIQUIDS***
6/21/2011 SAMPLES WILL BE TAKEN IN FIELD, ANALYZED AND SUBMITTED PRIOR TO SHIPPING

****

ALL LOADS MUST BE SCHEDULED 24 HOURS IN ADVANCE.
CONTACT GREG AT 541-454-3220 OR JULIE AT 541-454-3310

APPROVED: KC ***KRISTIN CASTNER*** DATE: ***09/27/12 10:42:24 AM***

A COPY OF THIS PERMIT MUST BE SHOWN BY EACH DRIVER

WM

WASTE MANAGEMENT

HAZARDOUS WASTE IS STRICTLY PROHIBITED

WASTE MANAGEMENT

Re-Certification of Generator's Non-Hazardous Waste Profile Sheet

Profile #: 107102OR New Expiration Date: ____

A. GENERATOR INFORMATON

1. Generator Name: U.S. Army Corps of Engineers, Alaska District
2. Address: St. Lawrence NEC Facility-Wide, NE Cape, St. Lawrence Island, Savoonga, Alaska, 99769
3. Technical Contact: Carey Cossaboom Title: Project Manager
4. Telephone: (907) 753-2689 Fax #: (907) 753-2829
5. Email: carey.c.cossaboom@usace.army.mil

B. BILLING INFORMATION - Optional (Mail WM Invoices To:) ☐ Same as above

1. Company Name: Bristol Environmental Remediation Services, LLC
2. Address: 111 W. 16th Avenue, Third Floor, Anchorage, Alaska, 99501
3. Contact: Tyler Ellingboe Title: Project Manager/Sr. Waste Specialist
4. Telephone: (907) 563-0013 P.O. Box: ____
5. Special Billing Requirements: ____
6. Email: tellingboe@bristol-companies.com

C. RECERTIFICATION INFORMATION

1. Waste Name: Construction and Demolition Debris
2. Have you obtained any laboratory analysis of this waste within the past year? ☐ Yes ☑ No
3. Have you changed the raw materials used in the waste generating process or the process itself? ☐ Yes ☑ No
4. Is the laboratory analysis and/or other pertinent information previously submitted still representative of the waste as presently generated? ☑ Yes ☐ No

NOTE: IF YOU ANSWERED YES TO QUESTION 2 OR 3 LISTED ABOVE, PLEASE ATTACH APPROPRIATE DOCUMENTATION.

D. RECERTIFICATION STATEMENT.

By signing this form, the generator hereby certifies: The information provided in this document, the attached Waste Management Generator's Waste Profile Sheet, and all other attached documents contain ture and accurate descriptions of this waste material. All new information regarding known or suspected hazards in the possession of the generator has been disclosed. The Generator hereby certifies this waste is not a "Hazardous Waste" as defined by the USEPA or Canadian Federal regulation and/or the state/province and this waste does not contain regulated radioactive materials or regulated concentrations of PCB's.

Name: (Print) Tyler Ellingboe Title: Project Manager/Sr. Waste Specialist

Signature: Tyler S. Ellingboe Date: July 20, 2012

This is an extension of the original WM Decision. All conditions continue to apply.

Acceptable for use in the following states as sanctioned by Waste Management's waste review and approval process. Some waste streams will require the use of a new profile rather than the re-certification form.

AK, AL, AR, CO, DE, FL, GA, HI, IL, IN, KY, LA, MA, MD, ME, MI, MS, NC, NH, NY, OK, OR, SC, TX, VA & WA.

FOR WM USE ONLY

Management Method: ☐ Landfill ☐ Bioremediation ☐ Non-hazardous solidification ☐ Other: ____ ☐ Transfer ☐ See attached conditions

Approval Decision: ☐ Approved ☐ Not Approved

Waste Approval Expiration Date: ____

Management Facility Precautions, Special Handling Procedures or Limitation on approval: ____

☐ Shall not contain free liquid
☐ Shipment must be scheduled into disposal facility
☐ Approval number must accompany each shipment
☐ Waste Manifest must accompany load

WM Authorization Name / Title: ____ Date: ____

State Authorization (if Required): ____ Date: ____

Alaska Street Reload and Recycling

70 South Alaska Street, Seattle Washington 98134

Profile # 110831OR

PERMIT TO DISPOSE OF NON-HAZARDOUS MATERIALS

This permit authorizes disposal of Customer's waste materials in accordance with the Industrial Waste & Disposal Services Agreement dated ___ ___________.

EXPIRES: 6/1/2013

GENERATOR: US ARMY ENGINEER DISTRICT, AK

DESCRIPTION: *PCS*	**VOLUME:** *14000TONS*
☐DRUMS ☐BR ☒ADC ☐CLEAN UP	
LOCATION: *ST. LAWRENCE ISLAND, SAVOONGA AK*	**COUNTY:*** *NOME*
CONTACT: *TYLER ELLINGBOE*	**PHONE:** *907-563-0013*
	FAX: *907-563-6713*
Recertification: ☐Yes ☐ No	

BILLING: *LANDFILL ACCOUNT BRISTOL ENVIRONMENTAL REMEDIATION SRVS*	**PO#:** *34120057*	**JOB#:** *N/A*

TYPE OF DISPOSAL/SPECIAL HANDLING : *BULK, ADC, NO FREE LIQUIDS*

********* FAILURE TO SCHEDULE LOADS MAY RESULT IN REFUSAL AT GATE********

APPROVED: KC *KRISTIN CASTNER* DATE: *09/27/12 10:42:42 AM*

A COPY OF THIS PERMIT MUST BE SHOWN BY EACH DRIVER

PROJECTS MUST BE SCHEDULED PRIOR TO SHIPPING CALL : 206-763-5025

WM

WASTE MANAGEMENT

HAZARDOUS WASTE IS STRICTLY PROHIBITED

Northland Services
MARINE TRANSPORTATION

P.O. BOX 24527 • SEATTLE, WA 98124
(206) 763-3000 (800) 426-3113 FAX: (206) 767-5579

202837

STRAIGHT BILL OF LADING – SHORT FORM
ORIGINAL – NOT NEGOTIABLE

BILL OF LADING INSTRUCTIONS AS GIVEN BY SHIPPER OR HIS REPRESENTATIVE

DATE	BOOKING NO.	VESSEL AND VOYAGE NO.	NSI CONTROL NOL.
9/22/12			
PORT OF LOADING NE Cape, AK	PORT OF DISCHARGE Seattle, WA	DESTINATION	BEYOND CARRIER

CONSIGNEE	SHIPPER	COLLECT ☐ PREPAID ☐ OTHER ☒ Please Specify
Emerald Services, Inc.	USACE, AK District, NE Cape	Account
1825 Alexander Avenue	St. Lawrence Island NEC Facility	BILL TO: Please show complete address - include zip Bristol Environmental Remediation Services LLC
Tacoma, WA 98421	NE Cape, St. Lawrence Island	111 W. 16th Ave. Third Floor
	Savoonga, AK 99769	Anchorage, AK 99501
TELEPHONE (253) 627-4822	TELEPHONE (907) 753-2689	(907) 563-0013

INCOMING CARRIER ______ INCOMING CARRIER'S ADVANCE CHARGES: $______

CONTAINER OR P.F.	NO. OF PIECES	KIND OF PACKAGE	COMMODITY DESCRIPTION	GROSS WEIGHT
TTNU226697	1	20' Connex	See Attached Manifests: NEC01	16400
(20' Connex)			004376112FLE	
			004376113FLE	
			Placards Provided: Class 3	
			Class 8	
			Class 9	
			For 24-Hour Emergency Response, Call 1-800-424-9300	
			Tare	4920
			(29 Total Pieces) Net	11480

* Notify Tyler Ellingboe (Bristol) upon arrival at POS (907) 563-0013

In accepting this bill of lading the shipper agrees that the custody and carriage of the goods identified shall be subject to the terms and conditions of this bill of lading and carrier's tariff or applicable contract of affreightment, which shall govern the relations, whatsoever they may be, between the carrier and the shipper, owner and/or consignee of the goods, in every contingency and whensoever occurring.

I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labelled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

SHIPPER: Tyler G. Ellingboe DATE: 9/22/12 BY: ______

It is declared that the packing of the container has been carried out in accordance with the provisions of 49 CFR 176.27(c).

SHIPPER: Tyler G. Ellingboe DATE: 9/22/12 BY: ______

NSI RECEIVING STAMP

Date: ______

Received By: ______

Quantity: ______

Equipment Number: ______

Where rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property. THE AGREED OR DECLARED VALUE OF THE PROPERTY IS HEREBY SPECIFICALLY STATED BY THE SHIPPER TO BE NOT EXCEEDING $ ______ PER ______.

WHITE – Original CANARY – Wharf Copy PINK – Memo Copy GOLDENROD – Memo Copy

*** IN CASE OF EMERGENCY CALL 1-800-424-9300 Contract# 7619 *** AK17782 (RP)

NON-HAZARDOUS WASTE MANIFEST

Please print or type (Form designed for use on elite (12 pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST	1. Generator's US EPA ID No. AK0000228395	Manifest Document No. NEC01	2. Page 1 of 1
3. Generator's Name and Mailing Address: USACE, AK DISTRICT, NE CAPE / PO BOX 6898, CEPOA-EN-EE-ER / JBER, AK 99506-6898	Site Address: USACE, AK, NEC FACILITY WIDE / NE CAPE, ST LAWRENCE ~~ISLAND~~ / SAVOONGA, AK 99769	CAREY COSSABOOM	
4. Generator's Phone (907) 753-2689			
5. Transporter 1 Company Name: NORTHLAND SERVICES, INC.	6. US EPA ID Number: WAD981773005	A. State Transporter's ID	
		B. Transporter 1 Phone (800) 426-3113	
7. Transporter 2 Company Name: EMERALD SERVICES, INC.	8. US EPA ID Number: WAD058364647	C. State Transporter's ID	
		D. Transporter 2 Phone (206) 832-3000	
9. Designated Facility Name and Site Address: EMERALD SERVICES INC - AIRPORT / 1500 AIRPORT WAY S. / SEATTLE, WA 98134	10. US EPA ID Number: WAD058367152	E. State Facility's ID	
		F. Facility's Phone (206) 832-3090	

HM	11. WASTE DESCRIPTION	12. Containers No.	Type	13. Total Quantity	14. Unit Wt./Vol.
X	a. NA1993, COMBUSTIBLE LIQUID, N.O.S. (DIESEL FUEL), COMBUSTIBLE, PGIII	2	DM	900	P
	b. MATERIAL NOT REGULATED BY D.O.T.	9	DM	3800	P
	c.				
	d.				

G. Additional Descriptions for Materials Listed Above

1)G02901DK DIESEL FUEL (6,23)
2)G02907 USED OIL (7,8,9,11,12,15,18,19,21)

H. Handling Codes for Wastes Listed Above

2)NA

15. Special Handling Instructions and Additional Information

Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation. Please mail original manifest and CD to: Bristol Environmental Remediation Services, LLC, Attn: Tyler Ellingboe, 111 W. 16th Avenue, Third Floor, Anchorage, AK 99501.

16. **GENERATOR'S CERTIFICATION:** I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name	Signature	Date Month	Day	Year
Ron Broyles	Ron Broyles on behalf of DoD	09	20	12

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month	Day	Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month	Day	Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name	Signature	Date Month	Day	Year

GENERATOR / TRANSPORTER / FACILITY / NON-HAZARDOUS WASTE

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Manifest Tracking Number
AK0000228395	2	1-800-424-9300	004376112 FLE

5. Generator's Name and Mailing Address USACE, AK District, NE Cape
P.O. Box 6898, CEPOA-EN-EE-ER
JBER, AK 99506-6898
Generator's Phone: 907-753-2689

Generator's Site Address (if different than mailing address)
USACE, AK District
St. Lawrence Island NEC Facility-Wide, NE Cape
St. Lawrence Island, Savoonga, AK 99769

6. Transporter 1 Company Name: Northland Services, Inc. — U.S. EPA ID Number: WAD981773005

7. Transporter 2 Company Name: Emerald Services, Inc. — U.S. EPA ID Number: WAD 05864647

8. Designated Facility Name and Site Address
Emerald Services, Inc.
1825 Alexander Avenue
Tacoma, WA 98421 253-627-4822
Facility's Phone:
U.S. EPA ID Number: WAD981769110

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
RQ	1. UN1993, Waste Flammable Liquids, n.o.s. (Hexane, Acetone), 3, PGII, (D001), ERG #128 (Flashpoint > -23C c.c.)	001	DM	100	P	D001 F003
RQ	2. UN3082, Waste Environmentally Hazardous Substances, ~~Material Not Regulated by D.O.T.~~ liquid, n.o.s. (Tetrachloroethylene, Ethylene glycol), 9, PGIII, (D039), ERG #171	001	DM	450	P	D039
RQ	3. UN3082, Waste Environmentally hazardous substances, liquid, n.o.s. (Benzene, Ethylene Glycol), 9, PGIII, (D018), ERG#171	002	DM	900	P	D018
RQ	4. UN3082, Waste Environmentally hazardous substances, liquid n.o.s. (Arsenic, Ethylene Glycol)9, PGIII, (D004), ERG#171	001	DM	450	P	D004

14. Special Handling Instructions and Additional Information
1. 45081 Hexane/Acetone(ML-1) Please mail original manifest and CD to: Bristol Environmental
45464 2. ~~45082~~ Ethylene Glycol(3) Remediation Services, LLC, Attn: Tyler Ellingboe
3. 45084 A/F wtih Benzen(1,5) 111 W. 16th Ave., Third Floor, Anchorage, AK 99501
4. 45084 A/F with Arsenic(4)

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Ron Broyles
Signature: Ron Broyles on behalf of DoD
Month Day Year: 09 20 12

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name — Signature — Month Day Year
Transporter 2 Printed/Typed Name — Signature — Month Day Year

18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
18b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:
18c. Signature of Alternate Facility (or Generator) — Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)
1. 2. 3. 4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name — Signature — Month Day Year

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

EPA Form 8700-22 (Rev. 3-05) Previous editions are obsolete.

DESIGNATED FACILITY TO DESTINATION STATE (IF REQUIRED)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)

21. Generator ID Number: AKC000228395

22. Page: 2 of 2

23. Manifest Tracking Number: 004376112 FLE

24. Generator's Name: USACE, AK District, NE Cape

25. Transporter ___ Company Name — U.S. EPA ID Number

26. Transporter ___ Company Name — U.S. EPA ID Number

GENERATOR

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes		
RQ	UN1993, Waste Flammable Liquids, n.o.s. (methyl ethyl ketone, methanol), 3, PGII (D001), ERG#128 (Flashpoint>-9C c.c.)	003	DM	4350	P	D001		
RQ	UN 1993 Waste Flammable Liquids n.o.s. (diesel fuel, chromium), 3, PGIII, (D007) ERG#128 (Flashpoint>54C c.c.)	003 ~~001~~	DM	1350	P	D001 D039	D007	D008
RQ	UN1993 Waste Flammable Liquids, n.o.s. (diesel fuel, ethylene glycol), 3, PGIII, (D001) ERG#128 (Flashpoint>48.9C c.c.)	001	DM	450	P	D001		

32. Special Handling Instructions and Additional Information
1. 45085 MEK/Methanol (10,13,17)
2. 45086 Tar/Diesel (OD1,OD2,OD3)
3. 45087 Diesel/Antifreeze (2)

TRANSPORTER

33. Transporter ___ Acknowledgment of Receipt of Materials
Printed/Typed Name — Signature — Month Day Year

34. Transporter ___ Acknowledgment of Receipt of Materials
Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

LDR NOTIFICATION FORM

Generator Name USACE, AK District, NE Cape **Manifest No.** 004376112FLE

Pursuant to 40 CFR §268.7(a), I hereby notify that this shipment contains waste restricted under 40 CFR Part 268 Land Disposal Restrictions (LDR).

A. GENERAL WASTE NOTIFICATION

Form Line No.	Profile No.	EPA Waste Codes & LDR Subcategories (if any) *List codes or use Attachment 1*	NWW	WW	UHC Waste Constituent Notification *Check the "None" box or List Legend Constituent # or use Attachment 2*
1	45081	D001, F003 (Acetone) ☒ Check if Attachment 1 has been used	☒	☐	☒ None ☐ Check if Attachment 2 has been used
2	45084	D018 ☒ Check if Attachment 1 has been used	☒	☐	Ethylbenzene, Xylene, Toluene, Naphthalene ☐ None ☒ Check if Attachment 2 has been used
3	45084	D004 ☒ Check if Attachment 1 has been used	☒	☐	☒ None ☐ Check if Attachment 2 has been used
4	45085	D001 ☒ Check if Attachment 1 has been used	☒	☐	☒ None ☐ Check if Attachment 2 has been used
5	45086	D001, D007, D008, D039 ☒ Check if Attachment 1 has been used	☒	☐	Barium ☐ None ☒ Check if Attachment 2 has been used
6	45087	D001 ☒ Check if Attachment 1 has been used	☒	☐	☒ None ☐ Check if Attachment 2 has been used

B. HAZARDOUS DEBRIS NOTIFICATION

☐ This hazardous debris, as identified above on Line No(s). ______ is subject to the alternative treatment standards of 40 CFR §268.45.

The waste contains the following contaminants subject to treatment (check all that apply):
☐ Toxicity characteristic debris ☐ Debris contaminated with listed waste ☐ Cyanide reactive debris

C. CONTAMINATED SOIL NOTIFICATION & CERTIFICATION

☐ This contaminated soil, as identified above on Line No(s). ______ is subject to the alternative treatment standards of 40 CFR §268.49(c).

Complete the following: "I certify under penalty of law that I personally have examined this contaminated soil & it [☐does/ ☐does not] contain listed hazardous waste & [☐does / ☐does not] exhibit a characteristic of hazardous waste & [☐is subject to / ☐complies with] soil treatment standards as provided by §268.49(c) or the universal treatment standards". *Note: Constituents subject to treatment are any constituents listed in 40 CFR §268.48 Universal Treatment Standards that are reasonably expected to be present in any given volume of contaminated soil, except fluoride, selenium, sulfides, vanadium & zinc, & are present at concentrations greater than ten times the universal treatment standard.*

D. LAB PACK (INCINERATION) NOTIFICATION & CERTIFICATION

☐ This lab pack, as identified above on Line No(s). ______ is subject to the alternative treatment standards of 40 CFR §268.42(c).

"I certify under penalty of law that I personally have examined & am familiar with the waste & that the lab pack contains only wastes that have not been excluded under Appendix IV to 40 CFR Part 268 & that this lab pack will be sent to a combustion facility in compliance with the alternative treatment standards for lab packs at 40 CFR §268.42(c). I am aware that there are significant penalties for submitting a false certification, including the possibility of fine or imprisonment".

E. EXTENSIONS & VARIANCES

☐ This waste, as identified above on Line No(s). ______ is not prohibited from land disposal & is subject to a deadline extension or variance, e.g., treatability variance, case-by-case extension. *Describe below any extension or variance that applies to this waste & include applicable dates:*

Ron Broyles — Generator's Authorized Signature

Ron Broyles, Supervisory Engr — Name & Title (Printed or Typed)

09 / 20 / 12 — Date

LDR ATTACHMENT 1: EPA WASTE CODE LISTING

Note: If this form is necessary for notification purposes, it must be used in conjunction with the Notification form and/or Certification form.

Generator ______________________ **Manifest** ______________________

Line #'s	EPA Code	Line #'s	EPA Code	Line #'s	EPA Code	Line #'s	EPA Code	Line #'s	EPA Code	Line #'s	EPA Code
					"D" Characteristic Codes						
	D001 ICW	3	D004		D009 HM (Organic)		D017		D026		D035
1,4,5,6	D001 LQ (≥10% TOC)		D005		D009 HM (Inorganic)	2	D018		D027		D036
	D002		D006		D010		D019		D028		D037
	D003 EX		D006 CB		D011		D020		D029		D038
	D003 OR	5	D007		D012		D021		D030	5	D039
	D003 RC	5	D008		D013		D022		D031		D040
	D003 RS		D008 LB		D014		D023		D032		D041
	D003 UO		D009 LM-NRR		D015		D024		D033		D042
	D003 WR		D009 LM-RR		D016		D025		D034		D043
					"F" Listed Codes						
	F001		F006		F011		F022		F027		F037
	F002		F007		F012		F023		F028		F038
1	F003		F008		F019		F024		F032		F039
	F004		F009		F020		F025		F034		
	F005		F010		F021		F026		F035		
					"K" Listed Codes						
	K001		K022		K043		K086		K109		K144
	K002		K023		K044		K087		K110		K145
	K003		K024		K045		K088		K111		K147
	K004		K025		K046		K093		K112		K148
	K005		K026		K047		K094		K113		K149
	K006 AN		K027		K048		K095		K114		K150
	K006 HY		K028		K049		K096		K115		K151
	K007		K029		K050		K097		K116		K156
	K008		K030		K051		K098		K117		K157
	K009		K031		K052		K099		K118		K158
	K010		K032		K060		K100		K123		K159
	K011		K033		K061		K101		K124		K161
	K013		K034		K062		K102		K125		K169
	K014		K035		K069 CS		K103		K126		K170
	K015		K036		K069 NCS		K104		K131		K171
	K016		K037		K071 RR		K105		K132		K172
	K017		K038		K071 NRR		K106 LM-RR		K136		
	K018		K039		K073		K106 LM-NRR		K140		
	K019		K040		K083		K106 HM		K141		
	K020		K041		K084		K107		K142		
	K021		K042		K085		K108		K143		
					"P" Listed Codes						
	P001		P012		P024		P038		P049		P064
	P002		P013		P026		P039		P050		P065 NIRR
	P003		P014		P027		P040		P051		P065 LM-IR
	P004		P015		P028		P041		P054		P065 LM-RR
	P005		P016		P029		P042		P056		P065 HM- IRR
	P006		P017		P030		P043		P057		P066
	P007		P018		P031		P044		P058		P067
	P008		P020		P033		P045		P059		P068
	P009		P021		P034		P046		P060		P069
	P010		P022		P036		P047		P062		P070
	P011		P023		P037		P048		P063		P071

Note: The Line #'s are from the Notification Form, not the hazardous waste manifest.

LDR ATTACHMENT 1: EPA WASTE CODE LISTING - PAGE 2 MANIFEST NO.: 004376112FLE

Line #'s	EPA Code	Line #'s	EPA Code	Line #'s	EPA Code	Line #'s	EPA Code	Line #'s	EPA Code	Line #'s	EPA Code
	P072		P087		P097		P110		P122		P196
	P073		P088		P098		P111		P123		P197
	P074		P089		P099		P112		P127		P198
	P075		P092 NIRR		P101		P113		P128		P199
	P076		P092 LM-		P102		P114		P185		P201
	P077		P092 LM-RR		P103		P115		P188		P202
	P078		P092 HM-IRR		P104		P116		P189		P203
	P081		P093		P105		P118		P190		P204
	P082		P094		P106		P119		P191		P205
	P084		P095		P108		P120		P192		
	P085		P096		P109		P121		P194		
"U" Listed Codes											
	U001		U045		U089		U133		U174		U221
	U002		U046		U090		U134		U176		U222
	U003		U047		U091		U135		U177		U223
	U004		U048		U092		U136		U178		U225
	U005		U049		U093		U137		U179		U226
	U006		U050		U094		U138		U180		U227
	U007		U051		U095		U140		U181		U228
	U008		U052		U096		U141		U182		U234
	U009		U053		U097		U142		U183		U235
	U010		U055		U098		U143		U184		U236
	U011		U056		U099		U144		U185		U237
	U012		U057		U101		U145		U186		U238
	U014		U058		U102		U146		U187		U239
	U015		U059		U103		U147		U188		U240 (2,4-D)
	U016		U060		U105		U148		U189		U240 (2,4-D Salts)
	U017		U061		U106		U149		U190		U243
	U018		U062		U107		U150		U191		U244
	U019		U063		U108		U151 LM-NRR		U192		U246
	U020		U064		U109		U151 LM-RR		U193		U247
	U021		U066		U110		U151 HM		U194		U248
	U022		U067		U111		U152		U196		U249
	U023		U068		U112		U153		U197		U271
	U024		U069		U113		U154		U200		U278
	U025		U070		U114		U155		U201		U279
	U026		U071		U115		U156		U202		U280
	U027		U072		U116		U157		U203		U328
	U028		U073		U117		U158		U204		U353
	U029		U074		U118		U159		U205		U359
	U030		U075		U119		U160		U206		U364
	U031		U076		U120		U161		U207		U367
	U032		U077		U121		U162		U208		U372
	U033		U078		U122		U163		U209		U373
	U034		U079		U123		U164		U210		U387
	U035		U080		U124		U165		U211		U389
	U036		U081		U125		U166		U213		U394
	U037		U082		U126		U167		U214		U395
	U038		U083		U127		U168		U215		U404
	U039		U084		U128		U169		U216		U408
	U041		U085		U129		U170		U217		U409
	U042		U086		U130		U171		U218		U410
	U043		U087		U131		U172		U219		U411
	U044		U088		U132		U173		U220		

***Note:** The Line #'s are from the Notification Form, not the hazardous waste manifest.*

LDR ATTACHMENT 2: UHC WASTE CONSTITUENT NOTIFICATION

Note: If this form is necessary for notification purposes, it must be used in conjunction with the Notification form and/or Certification form.

Generator USACE, AK District, NE Cape **Manifest** 004376112FLE

LDR Inorganic Constituents (40 CFR §268.48)

Line #'s	Constituent	Legend #	Line #'s	Constituent	Legend #	Line #'s	Constituent	Legend #
	Antimony	246		Cyanides (Total)	252		Nickel	258
	Arsenic	247		Cyanides (Amenable)	253		Selenium [1]	259
5	Barium	248		Fluoride [1]	254		Silver	260
	Beryllium	249		Lead	255		Sulfide [1]	261
	Cadmium	250		Mercury - NWW from Retort	256		Thallium	262
	Chromium (Total)	251		Mercury - All others	257		Vanadium [1]	263
							Zinc	298

LDR Organic Constituents (40 CFR §268.48)

Line #'s	Constituent	Legend #	Line #'s	Constituent	Legend #	Line #'s	Constituent	Legend #
	Acenaphthene	49		2-sec-Butyl-4,6- dinitrophenol (Dinoseb)	79		o,p'-DDT	112
	Acenaphthylene	50		Carbaryl *	270		p,p'-DDT	113
	Acetone	51		Carbenzadim *	271		Dibenz(a,h)anthracene	114
	Acetonitrile	52		Carbofuran *	272		Dibenz(a,e)pyrene	115
	Acetophenone	53		Carbofuran phenol *	273		1,2-Dibromo-3-chloropropane	104
	2-Acetylaminofluorene	54		Carbon disulfide	80		1,2-Dibromoethane (Ethylene dibromide)	105
	Acrolein	55		Carbon tetrachloride	81		Dibromomethane	106
	Acrylamide *	56		Carbosulfan *	274		m-Dichlorobenzene	116
	Acrylonitrile	57		Chlordane (alpha & gamma isomers)	82		o-Dichlorobenzene	117
	Aldicarb sulfone *	265		p-Chloroaniline	83		p-Dichlorobenzene	118
	Aldrin	58		Chlorobenzene	84		Dichlorodifluoromethane	119
	4-Aminobiphenyl	59		Chlorobenzilate	85		1,1-Dichloroethane	120
	Aniline	60		2-Chloro-1,3-butadiene	86		1,2-Dichloroethane	121
	Anthracene	61		Chlorodibromomethane	87		1,1-Dichloroethylene	122
	Aramite	62		Chloroethane	88		trans-1,2-Dichloroethylene	123
	Barban *	266		bis(2- Chloroethoxy) methane	89		2,4-Dichlorophenol	124
	Bendiocarb *	267		bis(2-Chloroethyl)ether	90		2,6-Dichlorophenol	125
	Benomyl *	268		2-Chloroethyl vinyl ether *	94		2,4-D (2,4-Dichlorophenoxy-acetic acid)	107
	Benz(a)anthracene	68		Chloroform	91		1,2-Dichloropropane	126
	Benzal chloride *	69		bis(2-Chloroisopropyl)ether	92		cis-1,3-Dichloropropylene	127
	Benzene	67		p-Chloro-m-cresol	93		trans-1,3-Dichloropropylene	128
	Benzo(b)fluoranthene	70		Chloromethane (Methyl chloride)	95		Dieldrin	129
	Benzo(k) fluoranthene	71		2-Chloronaphthalene	96		Diethyl phthalate	130
	Benzo(g,h,i) fluoranthene	72		2-Chlorophenol	97		p-Dimethylaminoazobenzene *	140
	Benzo(a)pyrene	73		3-Chloropropylene	98		2-4-Dimethyl phenol	131
	alpha-BHC	63		Chrysene	99		Dimethyl phthalate	132
	beta-BHC	64		o-Cresol	100		Di-n-butyl phthalate	133
	delta-BHC	65		m-Cresol	101		1,4-Dinitrobenzene	134
	gamma-BHC	66		p-Cresol	102		4,6-Dinitro-o-cresol	135
	Bromodichloromethane	74		m-Cumenyl methylcarbamate *	275		2,4-Dinitrophenol	136
	Bromomethane (Methyl bromide)	75		Cyclohexanone	103		2,4-Dinitrotoluene	137
	4-Bromophenyl phenyl ether	76		o,p'-DDD	108		2,6-Dinitrotoluene	138
	n-Butyl alcohol	77		p,p'-DDD	109		Di-n-octyl phthalate	139
	Butyl benzyl phthalate	78		o,p'-DDE	110		Di-n-propylnitrosamine	141
	Butylate *	269		p,p'-DDE	111		1,4-Dioxane	142

[1] Regulated under F039 only; not a UHC   ** Constituent not regulated under F039*   *Note: Line # 's are from the Notification Form, not the hazardous waste manifest.*

LDR ATTACHMENT 2: WASTE CONSTITUENT NOTIFICATION - PAGE 2 MANIFEST

Line #'s	Constituent	Legend #	Line #'s	Constituent	Legend #	Line #'s	Constituent	Legend #
	Diphenylamine	143		Methyl ethyl ketone	184		Physostigmine salicylate *	287
	Diphenylnitrosamine	144		Methyl isobutyl ketone	185		Promecarb *	288
	1,2-Diphenylhydrazine	145		Methyl methacrylate	186		Pronamide *	218
	Disulfoton	146		Methyl methansulfonate	187		Propham *	289
	Dithiocarbamates (total) *	276		Methyl parathion	188		Propoxur *	290
	Endosulfan I	147		3-Methylcholanthrene	181		Prosulfocarb *	291
	Endosulfan II	148		4,4-Methylene bis(2-chloro-aniline)	182		Pyrene	219
	Endosulfan sulfate	149		Methylene chloride	183		Pyridine	220
	Endrin	150		Metolcarb *	281		Safrole	221
	Endrin aldehyde	151		Mexacarbate *	282		Silvex (2,4,5-TP)	222
	EPTC	277		Molinate *	283		TCDDs (All Tetrachloro-dibenzo-p-dioxins)	225
	2-Ethoxyethanol **	32	2	Naphthalene	189		TCDFs (All Tetrachloro-dibenzofurans)	226
	Ethyl acetate	152		2-Naphthylamine	190		1,2,4,5-Tetrachlorobenzene	224
2	Ethyl benzene	154		o-Nitroaniline *	191		1,1,1,2-Tetrachloroethane	227
	Ethyl cyanide	153		p-Nitroaniline	192		1,1,2,2,-Tetrachloroethane	228
	Ethyl ether	155		Nitrobenzene	193		Tetrachloroethylene	229
	Ethyl methacrylate	157		5-Nitro-o-toluidine	194		2,3,4,6-Tetrachlorophenol	230
	Ethylene oxide	158		o-Nitrophenol *	195		Thiodicarb *	292
	bis(2-Ethylhexyl) phthalate	156		p-Nitrophenol	196		Thiophanate-methyl *	293
	Famphur	159		2-Nitropropane **	33	2	Toluene	231
	Fluoranthene	160		N-Nitrosodiethylamine	197		Toxaphene	232
	Fluorene	161		N-Nitrosodimethylamine	198		Triallate *	294
	Formetanate hydrochloride *	278		N-Nitroso-di-n-butylamine	199		Tribromomethane (Bromoform)	233
	Heptachlor	162		N-Nitrosomethylethylamine	200		2,4,6-Tribromophenol	295
	Heptachlor epoxide	163		N-Nitrosomorpholine	201		1,2,4-Trichlorobenzene	234
	Hexachlorobenzene	164		N-Nitrosopiperidine	202		1,1,1-Trichloroethane	235
	Hexachlorobutadiene	165		N-Nitrosopyrrolidine	203		1,1,2-Trichloroethane	236
	Hexachlorocyclopentadiene	166		Oxamyl *	284		Trichloroethylene	237
	Hexachloroethane	169		Parathion	204		Trichloromonofluoromethane	238
	Hexachloropropylene	170		Total PCBs	205		2,4,5-Trichlorophenol	239
	HxCDDs (All Hexachloro-dibenzo-p-dioxins)	167		Pebulate *	285		2,4,6-Trichlorophenol	240
	HxCDFs (All Hexachloro-dibenzofurans)	168		Pentachlorobenzene	206		2,4,5-T (2,4,5-Trichloro-phenoxyacetic acid)	223
	Indeno (1,2,3-c,d) pyrene	171		PeCDDs (All Pentachloro-dibenzo-p-dioxins)	207		1,2,3-Trichloropropane	241
	Iodomethane	172		PeCDFs (All Pentachloro-dibenzofurans)	208		1,1,2-Trichloro-1,2,2,-trifluoroethane	242
	Isobutyl alcohol	173		Pentachloroethane *	209		Triethylamine *	296
	Isodrin	174		Pentachloronitrobenzene	210		tris-(2,3-Dibromopropyl)	243
	Isosafrole	175		Pentachlorophenol	211		Vernolate *	297
	Kepone	176		Phenacetin	212		Vinyl chloride	244
	Methacrylonitrile	177		Phenanthrene	213	2	Xylenes- mixed isomers	245
	Methanol	178		Phenol	214			
	Methapyrilene	179		Phorate	215			
	Methiocarb *	279		Phthalic acid *	216			
	Methomyl *	280		Phthalic anhydride	217			
	Methoxychlor	180		Physostigmine *	286			

** Constituent not regulated under F039.* *** F005 wastes containing no other F001-F005 solvents*

Note: Line # 's are from the Notification Form, not the hazardous waste manifest

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST	1. Generator ID Number AK0000228395	2. Page 1 of 2	3. Emergency Response Phone 1-800-424-9300	4. Manifest Tracking Number 004376113 FLE

GENERATOR

5. Generator's Name and Mailing Address: USACE, AK District, NE Cape
P.O. Box 6898, CEPOA-EN-EE-ER
JBER, AK 99506-6898
Generator's Phone: 907-753-2689

Generator's Site Address (if different than mailing address): USACE, AK District, NEC Facility Wide
NE Cape, St. Lawrence Island,
Savoonga, AK 99769

6. Transporter 1 Company Name: Northland Services, Inc. — U.S. EPA ID Number: WAD981773005

7. Transporter 2 Company Name: Emerald Services, Inc. — U.S. EPA ID Number: WAD058364647

8. Designated Facility Name and Site Address: US Ecology Idaho, Inc.
20400 Lemley Road
Grand View, ID 83624 208-834-2275
Facility's Phone:
U.S. EPA ID Number: IDD073114654

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
RQ	1. UN3082, Waste environmentally hazardous substances, liquid, n.o.s. (Arsenic, Petroleum Hydrocarbons), 9, III, (D004), ERG#171	001	DM	450	P	D004
RQ	2. UN3082, Waste environmentally hazardous substances, liquid, n.o.s. (lead, petroleum hydrocarbons), 9, III, (D008), ERG#171	004	DM	1800	P	D008
X	3. UN1832, Waste sulfuric acid, spent, 8, II, (D002), ERG#137	001	DF	25	P	D002
	4.					

14. Special Handling Instructions and Additional Information
1. USE29446 oil/water (14) Please mail original manifest and CD to: Bristol Environmental
2. USE29446 oil/water Remediation Services, LLC, Attn: Tyler Ellingboe, 2.(16,20,22,24)
3. 16560 sulfuric acid (ML2) 111 W. 16th Ave., Third Floor, Anchorage, AK 99501

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.
I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offeror's Printed/Typed Name: Ron Broyles — Signature: Ron Broyles on behalf of DoD — Month 09 Day 20 Year 12

INT'L

16. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

17. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name — Signature — Month Day Year
Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

18. Discrepancy
18a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
18b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:
18c. Signature of Alternate Facility (or Generator) — Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.	2.	3.	4.

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a
Printed/Typed Name — Signature — Month Day Year

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)	21. Generator ID Number	22. Page	23. Manifest Tracking Number
	AK0000228395	2 of 2	004376113 FLE

GENERATOR

24. Generator's Name
USACE, AK District, NE Cape

25. Transporter 3 Company Name Steve Forler Trucking
U.S. EPA ID Number WAR000001263

26. Transporter ______ Company Name
U.S. EPA ID Number

27a. HM	27b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	28. Containers No.	28. Containers Type	29. Total Quantity	30. Unit Wt./Vol.	31. Waste Codes

32. Special Handling Instructions and Additional Information

TRANSPORTER

33. Transporter 3 Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

34. Transporter ______ Acknowledgment of Receipt of Materials
Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

35. Discrepancy

36. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

Emerald Alaska, Inc. RCRA Land Disposal Restriction Notification Form EZ
(This form is applicable to characteristic (D codes), listed waste (F, K, U and P codes), Contaminated Soil and Hazardous Debris)

Generator: USACE, AK District, NE Cape
Profile #:

U.S. E.P.A. I.D. #: AK0000228395
Manifest #: 004376113FLE

The wastes identified in this form are subject to the land disposal restrictions of 40CFR Part 268. The wastes do not meet the treatment standards specified in Part 268 , Subpart D or do not meet the applicable prohibition levels specified in 268.32 or RCRA Section 3004(d). Pursuant to 40CFR 256.7(a), the required information applicable to each waste is identified below *(check all boxes that apply):*

Treatability Group: ☐ Wastewater ■ Non-Wastewater

(Wastewaters containing less than 1% filterable solids and less than 1% Total Organic Carbon)

- ☐ **D001 Ignitable (except for high TOC) managed in non-CWA/non-CWA equivalent non-Class I SDWA systems** *(Complete Form U.C. Underlying hazardous constituents need not be addressed if the waste is to be combusted or recovered.)*
- ☐ D001 Ignitable (except for high TOC) managed in CWA/CWA-equivalent /Class I SDWA systems
- ☐ D001 High TOC Ignitable (Greater than 10% organic carbon)
- ☐ **D002 Corrosive managed in non-CWA/non-CWA-equivalent/non Class I SDWA systems** *(Complete Form U.C.)*
- 1c ☒ D002 Corrosive managed in CWA/CWA-equivalent /Class I systems
- ☐ D003 Reactive Sulfides based on 261.23(a)(5)
- ☐ D003 Reactive Cyanides based on 261.23(a)(5)
- ☐ **D003 Water Reactives based on 261.23(a)(2), (3), and (4) managed in non-CWA/non-CWA-equivalent/non-Class I SDWA systems** *(Complete Form U.C.)*
- ☐ D003 Water Reactives based on 261.23(a)(2), (3) and (4) managed in CWA/CWA-equivalent /Class I SDWA systems
- ☐ D003 Other Reactives based on 261.23(a)(1)

If D004 – D043 boxes are checked, complete and attach Form U.C. to address underlying hazardous constituents (unless these wastes are to be managed in a CWA/CWA-equivalent/Class I SDWA system):

- ☒ D004 Arsenic 1a
- ☐ D005 Barium
- ☐ D006 Cadmium
- ☐ D007 Chromium
- ☒ D008 Lead 1b
- ☐ D009 Mercury
- ☐ D010 Selenium
- ☐ D011 Silver
- ☐ D012 Endrin
- ☐ D013 Lindane
- ☐ D014 Methoxychlor
- ☐ D015 Toxaphene
- ☐ D016 2,4-D
- ☐ D017 2,4,5-TP (Silvex)
- ☐ D018 Benzene
- ☐ D019 Carbon Tetrachloride
- ☐ D020 Chlordane
- ☐ D021 Chlorobenzene
- ☐ D022 Chloroform
- ☐ D023 *o*-Cresol
- ☐ D024 *m*-Cresol
- ☐ D025 *p*-Cresol
- ☐ D026 Cresols (Total)
- ☐ D027 *p*-Dichlorobenzene
- ☐ D028 1,2-Dichloroethane
- ☐ D029 1,1-Dichloroethylene
- ☐ D030 2,4-Dinitrotoluene
- ☐ D031 Heptachlor
- ☐ D032 Hexachlorobenzene
- ☐ D033 Hexachlorobutadiene
- ☐ D034 Hexachloroethane
- ☐ D035 Methyl Ethyl Ketone
- ☐ D036 Nitrobenzene
- ☐ D037 Pentachlorophenol
- ☐ D038 Pyridine
- ☐ D039 Tetrachloroethylene
- ☐ D040 Trichloroethylene
- ☐ D041 2,4,5-Trichlorophenol
- ☐ D042 2,4,6-Trichlorophenol
- ☐ D043 Vinyl Chloride

<u>In addition, the following wastes are included in this shipment:</u>

- ☐ F001 – F005 Spent Solvents. (If this box is checked, complete F001-F005 section on the back of this form. Check the hazardous number(s) that apply and identify the constituents likely to be present in the waste.)
- ☐ **F039 Multisource Leachate. If this box is checked, complete and attach Form U.C. to identify the individual constituents.**
- ☐ Contaminated Soil that meets the LDR standard found in 268 Subpart D (If this box is checked, complete the Contaminated Soil section on the back of this form.)
- ☐ Hazardous Debris (If this box is checked, complete the Hazardous Debris section on the back of this form.)

If this shipment carries additional waste codes that are not addressed above, identify them here:

EPA Waste Code	Subcategory (if any)	EPA Waste Code	Subcategory (if any)	EPA Waste Code	Subcategory (if any)

F001 – F005 Spent Solvents (Form EZ Page 2)

Check the box (es) that apply. Identify the individual constituents likely to be present.

Hazardous Waste Description	Regulated Hazardous Constituents	
☐ F001 Spent Halogenated Solvents used in Degreasing	☐ Carbon Tetrachloride	☐ Methylene Chloride
	☐ Tetrachloroethylene	☐ 1,1,1-Trichloroethane
	☐ Trichloroethylene	☐ 1,1,2-Trichloro-1,2,2-trifluoroethane
	☐ Trichloromonofluoromethane	
☐ F002 Spent Halogenated Solvents	☐ Carbon Tetrachloride	☐ Methylene Chloride
	☐ Tetrachloroethylene	☐ 1,1,1-Trichloroethane
	☐ Trichloroethylene	☐ 1,1,2-Trichloro-1,2,2-trifluoroethane
	☐ Trichloromonofluoromethane	
☐ F003 Spent Non-Halogenated Solvents	☐ Acetone	☐ *n*-Butyl Alcohol
	☐ Cyclohexanone *	☐ Ethyl Acetate
	☐ Ethyl Benzene	☐ Ethyl Ether
	☐ Methanol *	☐ Methyl Isobutyl Ketone
	☐ Xylenes (Total)	
☐ F004 Spent Non-Halogenated Solvents	☐ *m*-Cresol	☐ *o*-Cresol
	☐ *p*-Cresol	☐ Cresol Mixed Isomers (Cresylic Acid)
	☐ Nitrobenzene	
☐ F005 Spent Non-Halogenated Solvents	☐ Benzene	☐ Carbon Disulfide *
	☐ 2-Ethoxyethanol	☐ Isobutyl Alcohol
	☐ Methyl Ethyl Ketone	☐ 2-Nitropropane
	☐ Pyridine	☐ Toluene

** The treatment standards for carbon disulfide, cyclohexanone and methanol non-wastewaters are based on the TCLP and apply to spent solvent non-wastewaters containing only one, two or all three of these constituents. The treatment standards for these three constituents do no apply when any of the other F001-F005 constituents are present in the waste.*

Contaminated Soil Waste

☐ This shipment contain contaminated soil with listed hazardous waste and does not exhibit a characteristic of hazardous waste and is subject to the soil treatment standards as provided by 268.49(c) of the universal treatment standards.

☐ This shipment contains contaminated soil which does not contain hazardous waste and does not exhibit a characteristic of hazardous waste and complies with the soil treatment standards as provided by 268.49(c) of the universal treatment standards.

Hazardous Debris

The definition of "debris" and "hazardous debris" are in 40CFR 268.2. Per 268.45, hazardous debris must be treated for each "contaminant subject to treatment." To determine these, look up the waste code in 268.40 and list the regulated hazardous constituents for each code. Check the box that applies.

☐ This shipment contains hazardous debris that will be treated to comply with the alternative treatment standards of 268.45 (e.g. macroencapsulation or abrasive blasting).

☐ This shipment contains hazardous debris that will be treated to meet the 258.40 treatment standards for the waste(s) contaminating the debris.

The contaminants subject to treatment for this debris are identified below:

EPA Waste Code	Subcategory (if any)	Contaminants Subject to Treatment
____________	____________	____
____________	____________	____
____________	____________	____

Emerald Alaska, Inc. RCRA Land Disposal Restriction Notification Form UC

Generator: USACE, AK District, NE Cape
Profile #:

U.S. E.P.A. I.D. #: AK0000228395
Manifest #: 004376113FLE

In accordance with 40CFR 268.7(a), the underlying hazardous constituents must be addressed in the waste Per 268.2(l), "underlying hazardous constituents means any constituent listed in 268.48, Table UTS Universal Treatment Standards, except zinc, which can reasonably be expected to be present at the point of generation of the hazardous waste, at a concentration above the constituent-specific UTS treatment standard." Refer to Form EZ (attached) for the waste code(s), Treatability group, and Subcategory applicable to this waste. This form may also be used to identify F039 constituents.

Please check the appropriate box:

☐ This waste includes F039 multisource leachate. The individual constituents likely to be present are identified below:

☒ 1a 1b This shipment includes D001[other than (1) High TOC ignitables or (2) other ignitables that will be combusted or recovered], D002, D003 [other than (1) Reactive Sulfides or (2) Reactive Cyanides or (3) Other Reactives] and/or D004-D043 Characteristic Wastes. The wastes will not be managed in CWA/CWA-equivalent/Class I SDWA Systems. The underlying hazardous constituents must be addressed for this waste.

In order to address underlying hazardous constituents in characteristic wastes, please check the appropriate box:

☒ 1a I have reviewed the UTS list of 268.48 and 268.7(a), and I have determined that there are no underlying hazardous constituents reasonably expected to be present in this waste.

☒ 1b I have reviewed the UTS list of 268.48 and 268.7(a), and I have determined that underlying hazardous constituents are present in this waste. The underlying hazardous constituents are identified as:

The determination of underlying hazardous constituents was based on:

☐ Generators Knowledge of the waste

☒ 1a 1b Analysis

Generator's Certification:

I certify that I have personally examined and am familiar with the waste through analysis and testing, or through knowledge of the waste to support this certification. I certify that as an authorized representative of the generator named above, all the information submitted in this notification is true and correct to the best of my knowledge.

Printed Name: Ron Broyles Title Supervisory Engineer

Signature: Ron Broyles Date 20 Sep 2012

Underlying Hazardous Waste Constituents (Form UC Page 2)

Circle or otherwise identify the underlying hazardous constituents (or F039 constituents) present in the waste:

Acenapthene
Acenaphthylene
Acetone
Acetonitrile
Acetophenone
2-Acetylaminofluorene
Acrolein
Acrylamide
Acrylonitrile
Aldrin
4-Aminobiphenyl
Aniline
Anthracene
Aramite
Alpha-BHC
Beta-BHC
Delta-BHC
Benz(a)anthracene
Benzal Chloride*
Benzene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Benzo(p,h,I)perylene
Bis(2-chloroethoxy)methane
Bis(2-chloroethyl)ether
Bis(2-chloroisopropyl)ether
Bis(2-ethylhexyl)phthalate
Bromodichloromethane
Bromomethane (Methyl Bromide)
4-Bromophenol Phenyl Ether
n-Butyl Alcohol
Butyl Benzyl Phthalate
2-*sec*-Butyl-4,6-dinitrophenol (Dinoseb)
Carbon Disulfide
Carbon Tetrachloride
Chlordane (alpha and gamma isomers)
p-Chloroaniline
Chlorobenzene
Chlorobenzilate
2-Chloro-1,3-butadiene
Chlorodibromomethane
Chloroethane
Chloroform
p-Chloro-*m*-cresol
2-Chloro Vinyl Ether
Chloromethane (Methyl Chloride)
2-Chloronaphthylene
2-Chlorophenol
3-Chloropropylene

Chrysene
o-Cresol
m-Cresol
p-Cresol
Cyclohexanone
o,p'-DDD
p,p'-DDD
o,p'-DDE
p,p'-DDE
o,p'-DDT
p,p'-DDT
Dibenz(a,b)anthracene
Dibenz(a,e) pyrene
1,2-Dibromo-3-chloropropane
1,2-Dibromoehtane (Ethylene Dibromide)
Dibromomethane
m-Dichlorobenzene
o-Dichlorobenzene
p-Dichlorobenzene
Dichlorodifluoromethane
1,1-Dichloroethane
1,2-Dichloroethane
1,1-Dichloroethylene
trans-1,2-Dichloroethylene
2,4-Dichlorophenol
2,6-Dichlorophenol
2,4-Dichlorophenoxyacetic Acid (2,4-D)
1,2-Dichloropropane
cis-1,3-Dichloropropylene
trans-1,3-Dichloropropylene
Dieldrin
Diethyl Phthalate
p-Dimethylaminoazaobenzene*
2,4-Dimethyl Phenol
Dimethyl Phthalate
Di-*n*-butyl Phthalate
1,4-Dinitrobenzene
2.4.6-Dinitro-*o*-cresol
2,4-Dinitrophenol
2,4-Dinitrotoluene
2,6-Dinitrotoluene
Di-*n*-octyl Phthalate
Di-*n*-propylnitrosamine
1,4-Dioxane
Diphenlyamine
Diphenylnitrosamine
1,2-Diphenly Hydrazine
Disulfoton
Endosulfan I
Endosulfan II

Endosulfan Sulfate
Endrin
Endrin Aldehyde
Ethyl Acetate
Ethyl Benzene
Ethyl Ether
Ethyl Methacrylate
Ethylene Oxide
Famphur
Fluoranthene
Fluorene
Heptachlor
Heptachlor Epoxide
Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclopentadiene
Hexachlorodibenzo-*p*-dioxins
Hexachlorodibenzofurans
Hexachloroethane
Hexachloropropylene
Indeno(1,2,3-c,d)pyrene
Indomethane
Isobutyl Alcohol
Isodrin
Isosafrole
Kepone
Methacrylonitrile
Methanol
Methapyrilene
Methoxychlor
3-Methylcholanithrene
4,4-Methylene-bis(2-chloroaniline)
Methylene Chloride
Methyl Ethyl Ketone
Methyl Isobutyl Ketone
Methyl Methacrylate
Methyl Methansulfonate
Methyl Parathion
Naphthalene
2-Naphthylamine
o-Nitroaniline*
p-Nitroaniline
Nitrobenzene
5-Nitro-*o*-toluidine
o-Nitrophenol
p-Nitrophenol
N-Nitrosodiethylamine
N-Nitrosodimethylamine
N-Nitrosodi-*n*-butylamine
N-Nitrosomethylethylamine
N-Nitrosmorpholine
N-Nitrosopiperidine

N-Nitrosopyrrolidine
Parathion
PCBs (Total)
Pentachlorobenzene
Pentachlorodibenzo-*p*-dioxins
Pentachlorodibenzofurans
Pentachloroethane*
Pentachloronitrobenzene
Pentacholorphenol
Phenacetin
Phenanthrene
Phenol
Phorate
Phthalic Acid*
Phthalic Anhydrice
Pronamide
Propanenitrile (Ethyl Cyanide)
Pyrene
Pyridine
Safrole
Silvex (2,4,5-TP)
1,2,4,5-Tetrachlorobenzene
Tetrachlorodibenzo-*p*-dioxins
Tetrachlorodibenzofurans
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroehtane
Tetrachloroethylene
2,3,4,6-Tetrachlorophenol
Toluene
Toxaphene
Tribromomethane (Bromoform)
1,2,4-Trichlorobenzene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethylene
Trichloromonofluoromethane
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
2,4,5-Trichlorophenoxyacetic Acid (2,4,5-T)
1,2,3-Trichloropropane
1,1,2-Trichloro-1,2,2-trifluoro-ethane
Tris(2,3-dibromopropyl) Phosphate
Vinyl Chloride
Xylenes (Total)

Antimony
Arsenic
Barium
Beryllium

Cadmium 1b
Chromium (total)
Cyanide (total)
Cyanide (amenable)

Mercury (retort residues)*
Mercury (all others)
Fluoride
Lead

Nickel
Selenium
Silver
Sulfide

Thallium
Vanadium

MOVEMENT DOCUMENT / MANIFEST
DOCUMENT DE MOUVEMENT / MANIFESTE

This Movement document/manifest conforms to all federal and provincial transport and environmental legislation.
Ce document de mouvement/manifeste est conforme aux législations fédérale et provinciale sur l'environnement et le transport.

BE78136-0
Movement Document / Manifest Reference No. / N° de référence du document de mouvement/manifeste

A — Generator / consignor / Producteur / expéditeur
Registration No. / Provincial ID No. / N° d'immatriculation - d'id. provincial (1): AK0000228395
Company name / Nom de l'entreprise: US Army Corps of Engineers, AK District
Mailing address / Adresse postale: P.O. Box 6898 Elmendorf AFB, AK 99506
E-mail / Courrier électronique: carey.c.cossaboom@usace.army.mil
Shipping site address / Adresse de lieu de l'expédition: St. Lawrence Island NEC Facility Wide
Tel. No. / N° de tél.: 9077532689
NE Cape, St. Lawrence Island, Savoonga
City / Ville: Savoonga Province: AK Postal code / Code postal: 99769

Intended Receiver / consignee / Réceptionnaire / destinataire prévu (2): Emerald Recycling
Registration No. / Provincial ID No.: WAD058367152
Mailing address / Adresse postale: Same As Below
E-mail / Courrier électronique: jons@emeraldnw.com Tel. No. / N° de tél.: 2068323191
Receiving site address / Adresse de lieu de l'expédition: 1500 Airport Way South
City / Ville: Seattle Province: WA Postal code / Code postal: 98134

B — Carrier / Transporteur
Registration No. / Provincial ID No. / N° d'immatriculation - d'id. provincial (23): WAD981773005
Company name / Nom de l'entreprise: Northland Services, Inc.
Mailing address / Adresse postale: P.O.Box 24527 City / Ville: Seattle Province: WA Postal code / Code postal: 98124
E-mail / Courrier électronique: randyp@northlandservices.com Tel. No. / N° de tél.: 800 4263113
Vehicle / Véhicule — Registration No. / N° d'immatriculation — Prov. (24)
Trailer - Rail car No. 1 / 1re remorque - wagon:
Trailer - Rail car No. 2 / 2e remorque - wagon:
Port of entry / Point d'entrée: Dixon Entrance (International use only)
Port of exit / Point de sortie (25): Strait of San Juan de Fuca

Carrier Certification: I certify that I have received waste or recyclable material from the generator / consignor for delivery to the receiver / consignee as set out in Part A and that the information contained in Part B is complete and correct. / Attestation du transporteur : J'atteste avoir reçu les déchets ou matières recyclables du producteur / expéditeur en vue de leur livraison au réceptionnaire / destinataire, tels qu'ils figurent à la partie A et que les renseignements inscrits à la partie B sont exacts et complets. (26)

Name of authorized person (print): / Nom de l'agent autorisé (caractères d'imprimerie) :
Tel. No. / N° de tél. ( )
Year / Année — Month / Mois — Day / Jour — Signature :

C — Receiver / consignee / Réceptionnaire / destinataire
Reference Nos. of other movement document(s)/manifest(s) used / N° de référence des autres documents de mouvement/manifestes utilisés
Registration No. / Provincial ID No. / N° d'immatriculation - d'id. provincial
Receiver / consignee information same as in Part A / Les renseignements du réceptionnaire / destinataire est la même qu'à la Partie A
☒ Yes / Oui ☐ No, complete the box below / Non, remplir la case ci-dessous
Company name / Nom de l'entreprise:
Mailing address / Adresse postale:
City / Ville — Province — Postal code / Code postal
E-mail / Courrier électronique — Tel. No. / N° de tél. ( )
Receiving site address / Addresse de lieu de destination:
Date received / Date de réception (29): Year / Année — Month / Mois — Day / Jour — Time / Heure ☐ A.M. ☐ P.M.
If waste or recyclable material is to be transferred, specify intended company name / Si les déchets ou matières recyclables doivent être transférés, préciser le nom du destinataire (30)
Registration No./Provincial ID No. / N° d'immatriculation/d'id provincial

	Prov. code / Code prov. (3)	Shipping name / Appellation réglementaire (4)	Class / Classe Sub. class(es) / Classe(s) sub. (5)	UN No. / N°NU (6)	Packing / risk gr. / Gr. d'emballage/de risque (7)	Quantity shipped / Quantité expédiée	Units L or / ou Kg / Unités (8)	Packaging No. / N° (9)	Codes Int.–ext.	Phys. state / État phys. (10)	Quantity received / Quantité reçue	Units L or / ou Kg / Unités (31)	Comments / Commentaires	Handling Code / Code de manutention	Shipment / Envoi Accepted / Accepté	Refused / Refusé	Decont. Pack. Cont.	Veh. / Véh.
(i)	N/A	Waste Flammable liquids, n.o.s. (Diesel Fuel)	3	UN1993	III	408	KG	02	01	L								
(ii)	N/A	Material Not Regulated by D.O.T. (Used Oil)	N/A	N/A	N/A	1724	KG	09	01	L								
(iii)																		
(iv)																		

	Notice No. / N° de notification	Notice Line No / N° de ligne de la notification (11)	Shipment / Envoi (12)	Of / De	D or R code / Code É ou R (13)	C code / Code C (14)	Basel Annex VIII or OECD Code / Annexe VIII de Bâle ou Code OCDE (15)	H code / Code H (16)	Y code / Code Y (17)	Export / Exportation (18)	Import / Importation	Customs code(s) / Code(s) de douanes (19)
(i)	530026	5	1	10	R1	C44	A4060	H3	Y9	USA	USA	2710.12.9014
(ii)	530026	1	1	10	R1	C51	A4060	H12	Y9	USA	USA	2709.00.0021
(iii)												
(iv)												

International use only

If handling code "Other" (specify) / Si code de manutention « autre » (spécifier) (36)

Receiver / consignee certification: I certify that the information contained in Part C is correct and complete. / Attestation du réceptionnaire / destinataire : J'atteste que tous les renseignements à la partie C sont exacts et complets. (37)
Name of authorized person (print) / Nom de l'agent autorisé (caractère d'imprimerie)
Signature — Tel. No. / N° de tél. ( )

Special handling / Manutention spéciale: For 24 Hour Emergency Response Call 1-800-424-9300
☐ Attached / Ci-joint ☒ As follows / Ci-contre :

Generator / consignor certification: I certify that the information contained in Part A is correct and complete. / Attestation du producteur / expéditeur: J'atteste que tous les renseignements à la partie A sont exacts et complets. (20)
Name of authorized person (print) / Nom de l'agent autorisé (caractère d'imprimerie): Tyler Ellingboe
Signature: Tyler A Ellingboe
Tel. No. / N° de tél.: 9075630013

Date shipped / Date d'expédition (21): Year / Année — Month / Mois — Day / Jour — Time / Heure ☐ A.M. ☐ P.M.
Scheduled arrival date / Date d'arrivée prévue: Year / Année — Month / Mois — Day / Jour

MOE 04-1917 (06/05)

Instructions for completion and distribution on reverse / Instructions pour compléter et distribuer au verso

Copy / Copie 1 (white / blanche

MOVEMENT DOCUMENT / MANIFEST
DOCUMENT DE MOUVEMENT / MANIFESTE

This Movement document/manifest conforms to all federal and provincial transport and environmental legislation.
Ce document de mouvement/manifeste est conforme aux législations fédérale et provinciale sur l'environnement et le transport.

BE78137-8

Movement Document / Manifest Reference No.
N° de référence du document de mouvement/manifeste

A Generator / consignor / Producteur / expéditeur

Registration No. / Provincial ID No. / N° d'immatriculation - d'id. provincial (1): AK0000228395

Company name / Nom de l'entreprise: US Army Corps of Engineers AK District CEPOA-EN-EE-ER

Mailing address / Adresse postale, City / Ville, Province, Postal code / Code postal: P.O.Box 6898 Elmendorf AFB AK 99506

E-mail / Courrier électronique: carey.c.cossaboom@usace.army.mil — Tel. No. / N° de tél.: 9077532689

Shipping site address / Adresse de lieu de l'expédition: St. Lawrence Island NEC Facility Wide

City / Ville, Province, Postal code / Code postal: NE Cape St. Lawrence Island Savoonga AK 99769

Intended Receiver / consignee / Réceptionnaire / destinataire prévu: Emerald Recycling

Registration No. / Provincial ID No. / N° d'immatriculation - d'id. provincial (2): WAD981769110

Mailing address / Adresse postale: Same as below

E-mail / Courrier électronique: sheilas@emeraldnw.com — Tel. No. / N° de tél.: 2068323100

Receiving site address / Adresse de lieu de l'expédition: ~~Tacoma~~ 1825 Alexander Avenue

City / Ville: Tacoma — Province: WA — Postal code / Code postal: 98421

B Carrier / Transporteur

Registration No. / Provincial ID No. / N° d'immatriculation - d'id. provincial (23): WAD981773005

Company name / Nom de l'entreprise: Northland Services, Inc.

Mailing address / Adresse postale, City / Ville, Province, Postal code / Code postal: P.O.Box 24527 Seattle WA 98124

E-mail / Courrier électronique: randyp@northlandservices.com — Tel. No. / N° de tél.: 800 426 3113

Vehicle / Véhicule — Registration No. / N° d'immatriculation — Prov. (24)
Trailer - Rail car No. 1 / 1er remorque - wagon:
Trailer - Rail car No. 2 / 2e remorque - wagon:

Port of entry / Point d'entrée: Dixon Entrance — Port of exit / Point de sortie (25): Strait of San Juan de Fuca

Carrier Certification : I certify that I have received waste or recyclable material from the generator / consignor for delivery to the receiver / consignee as set out in Part A and that the information contained in Part B is complete and correct. (26)
Attestation du transporteur : J'atteste avoir reçu les déchets ou matières recyclables du producteur / expéditeur en vue de leur livraison au réceptionnaire / destinataire, tels qu'ils figurent à la partie A et que les renseignements inscrits à la partie B sont exacts et complets.

Name of authorized person (print) / Nom de l'agent autorisé (caractères d'imprimerie):
Tel. No. / N° de tél.: ( )

Year / Année — Month / Mois — Day / Jour — Signature:

Reference Nos. of other movement document(s)/manifest(s) used / N° de référence des autres documents de mouvement/manifestes utilisés

C Receiver / consignee / Réceptionnaire / destinataire

Registration No. / Provincial ID No / N° d'immatriculation - d'id. provincial

Receiver / consignee information same as in Part A / Les renseignements du réceptionnaire / destinataire est la même qu'à la Partie A
☒ Yes / Oui ☐ No, complete the box below / Non, remplir la case ci-dessous

Company name / Nom de l'entreprise:
Mailing address / Adresse postale:
City / Ville — Province — Postal code / Code postal:
E-mail / Courrier électronique — Tel. No. / N° de tél. ( )
Receiving site address / Adresse de lieu de destination:

Date received / Date de réception: Year / Année — Month / Mois — Day / Jour — Time / Heure (29) ☐ A.M. ☐ P.M.

If waste or recyclable material to be transferred, specify intended company name / Si les déchets ou matières recyclables doivent être transférés, préciser le nom du destinataire (30) — Registration No./Provincial ID No. / N° d'immatriculation/d'id provincial

	Prov. code / Code prov. (3)	Shipping name / Appellation réglementaire (4)	Class / Classe Sub. class(es) / Classe(s) sub. (5)	UN No. / N°NU (6)	Packing / risk gr. / Gr. d'emballage/ de risque (7)	Quantity shipped / Quantité expédiée	Units L or/ou Kg / Unités (8)	Packaging / Contenant No. / N° (9)	Codes Int.–ext.	Phys. state / État phys. (10)	Quantity received / Quantité reçue	Units L or/ou kg / Unités (31)	Comments / Commentaires (32)	Handling Code / Code de manutention (33)	Shipment / Envoi Accepted / Accepté (34)	Refused / Refusé	Decont. Pack. Cont. (35)	Veh. / Véh.
(i)	N/A	Waste Flammable Liquids, n.o.s. (Hexane, Acetone)	3	UN1993	II	1474	KG	08	01	L								
(ii)	N/A	Waste Environmentally Hazardous substances, liquid, n.o.s (Benzene, ethylene glycol)	N/A	N/A	N/A	~~408~~ 612	KG	~~02~~ 03	01	L								
(iii)	N/A	Waste Environmentally Hazardous substances, liquid, n.o.s. (Arsenic)	N/A	N/A	N/A	204	KG	01	01	L								
(iv)																		

	Notice No. / N° de notification	Notice Line No / N° de ligne de la notification (11)	Shipment / Envoi	Of / De (12)	D or R code / Code É ou R (13)	C code / Code C (14)	Basel Annex VIII or OECD Code / Annexe VIII de Bâle ou Code OCDE (15)	H code / Code H (16)	Y code / Code Y (17)	Export / Exportation	Import / Importation (18)	Customs code(s) / Code(s) de douanes (19)
(i)	530027	1	1	10	R1	C42 C41	A3140	H3	Y6 Y42 Y41	USA	USA	2914.11.00 00
(ii)	530027	4	1	10	R1	C41 C42	A3150	H13	Y41 Y42	USA	USA	2707.50.00 10
(iii)	530027	5	1	10	R14	C18 C9 C11	A1020	H13	Y31 Y25 Y26	USA	USA	7802.00.00 90
(iv)												

If handling code "Other" (specify) / Si code de manutention « autre » (spécifier)

Receiver / consignee certification : I certify that the information contained in Part C is correct and complete. / Attestation du réceptionnaire / destinataire : J'atteste que tous les renseignements à la partie C sont exacts et complets. (37)

Name of authorized person (print) / Nom de l'agent autorisé (caractère d'imprimerie)

Signature — Tel. No. / N° de tél. ( )

Special handling / Manutention spéciale (38): For 24 Hour Emergency Response Call 1-800-424-9300
☐ Attached / Ci-joint ☒ As follows / Ci-contre :

Generator / consignor certification: I certify that the information contained in Part A is correct and complete.
Attestation du producteur / expéditeur: J'atteste que tous les renseignements à la partie A sont exacts et complets.

Name of authorized person (print) / Nom de l'agent autorisé (caractère d'imprimerie): Tyler Ellingboe — Signature: [signature] — Tel. No. / N° de tél. (20): 9075630013

Date shipped / Date d'expédition (21): Year / Année — Month / Mois — Day / Jour — Time / Heure ☐ A.M. ☐ P.M.
Scheduled arrival date / Date d'arrivée prévue: Year / Année — Month / Mois — Day / Jour

MOE 04-1917 (06/05)

Instructions for completion and distribution on reverse / Instructions pour compléter et distribuer au verso

Copy / Copie 1 (white / blanche)

MOVEMENT DOCUMENT / MANIFEST
DOCUMENT DE MOUVEMENT / MANIFESTE

This Movement document/manifest conforms to all federal and provincial transport and environmental legislation.
Ce document de mouvement/manifeste est conforme aux législations fédérale et provinciale sur l'environnement et le transport.

BE78138-6
Movement Document / Manifest Reference No. / N° de référence du document de mouvement/manifeste

A Generator / consignor / Producteur / expéditeur — Registration No. / Provincial ID No.: AK0000228395 / D981765894
Company name: US Army Corps of Engineers, AK District — CEPOA-EN-EE-CR
Mailing address: P.O. Box 6898 Elmendorf AFB AK 99506
E-mail: carey.c.cossaboom@usace.army.mil — Tel. No.: 907 753 2689
Shipping site address: St. Lawrence Island NEC Facility wide
City: NE Cape St Lawrence Island Savoonga AK 99769

Intended Receiver / consignee — Registration No.: IDD073114654
US Ecology Idaho, Inc.
Mailing address: Same as below
E-mail: mmcmonigle@usecology.com — Tel. No.: 800 274 1516
Receiving site address: 20400 Lemley Road
City: Grand View — Province: ID — Postal code: 83624

B Carrier / Transporteur — Registration No.: WAD981773005
Company name: Northland Services, Inc.
Mailing address: P.O. Box 24527 Seattle WA 98124
E-mail: randyp@northlandservices.com — Tel. No.: 800 426 3113
Vehicle / Véhicule — Registration No. / N° d'immatriculation — Prov.
Trailer - Rail car No. 1 / 1er remorque - wagon
Trailer - Rail car No. 2 / 2e remorque - wagon
Port of entry / Point d'entrée: Dixon Entrance — Port of exit / Point de sortie: Strait of San Juan de Fuca

Carrier Certification: I certify that I have received waste or recyclable material from the generator / consignor for delivery to the receiver / consignee as set out in Part A and that the information contained in Part B is complete and correct.
Attestation du transporteur : J'atteste avoir reçu les déchets ou matières recyclables du producteur / expéditeur en vue de leur livraison au réceptionnaire / destinataire, tels qu'ils figurent à la partie A et que les renseignements inscrits à la partie B sont exacts et complets.
Name of authorized person (print): — Tel. No.: ( )
Year / Month / Day — Signature:

Reference Nos. of other movement document(s)/manifest(s) used / N° de référence des autres documents de mouvement/manifestes utilisés

C Receiver / consignee / Réceptionnaire / destinataire — Registration No. / Provincial ID No.
Receiver / consignee information same as in Part A: [X] Yes / Oui — [ ] No, complete the box below
Company name / Mailing address / City / Province / Postal code / E-mail / Tel. No. ( ) / Receiving site address
Date received: Year / Month / Day — Time: [ ] A.M. [ ] P.M.
If waste or recyclable material to be transferred, specify intended company name — Registration No./Provincial ID No.

	Prov. code	Shipping name	Class / Sub. class(es)	UN No.	Packing / risk gr.	Quantity shipped	Units L or Kg	Packaging No.	Packaging Codes	Phys. state
(i)	N/A	Waste Environmentally Hazardous Substances, liquid, n.o.s. (lead, arsenic)	NA	N/A	N/A	1021	KG	05	01	L
(ii)	N/A	Waste Sulfuric Acid, Spent	8	UN1832	II	12	KG	01	01	L
(iii)										
(iv)										

	Quantity received	Units	Comments	Handling Code	Accepted	Refused	Decont. Pack	Decont. Veh.
(i)								
(ii)								
(iii)								
(iv)								

International use only

	Notice No.	Notice Line No.	Shipment	Of	D or R code	C code	Basel Annex VIII or OECD Code	H code	Y code	Export	Import	Customs code(s)
(i)	530029	3	1	10	D5	C18 C11	A1020	H13	Y31 Y26	USA	USA	7802.00.0090
(ii)	530029	2	1	10	D5	C23	A4090	H8	Y34	USA	USA	2807.00.0000
(iii)												
(iv)												

If handling code "Other" (specify) / Si code de manutention « autre » (spécifier)

Receiver / consignee certification: I certify that the information contained in Part C is correct and complete. / Attestation du réceptionnaire / destinataire : J'atteste que tous les renseignements à la partie C sont exacts et complets.
Name of authorized person (print) — Signature — Tel. No. ( )

Special handling / Manutention spéciale: [ ] Attached — [X] As follows: For 24-Hour Emergency Response Call 1-800-424-9300

Generator / consignor certification: I certify that the information contained in Part A is correct and complete.
Attestation du producteur / expéditeur: J'atteste que tous les renseignements à la partie A sont exacts et complets.
Name of authorized person (print): Tyler Ellingboe — Signature: [signature] — Tel. No.: 907 563-0013
Date shipped: Year / Month / Day — Time: [ ] A.M. [ ] P.M. — Scheduled arrival date: Year / Month / Day

MOE 04-1917 (06/05)

Instructions for completion and distribution on reverse / Instructions pour compléter et distribuer au verso

Copy / Copie 1 (white / blanche)

EMERALD SERVICES INC - AIRPORT

Waste Profile Questionnaire #: G02901DK

A. Generator Information

EPA ID AK0000228395 Generator Status LQG

Generator Name USACE, AK, NEC FACILITY WIDE Phone (907) 753-2689

Site Address NE CAPE, ST LAWRENCE ISLAND City ST Zip SAVOONGA, AK 99769 Fax ( ) -

Contact/Title CAREY COSSABOOM Sulfide Producing Industry: N

B. Shipping Information

Proper Shipping Name Combustible liquid, n.o.s. (diesel, kerosene)

DOT ID NA1993 Hazard Class Combustible Packing Group III ERG ___ RQ ___

C. Regulatory Information

Name of Material Diesel and/or kerosene Generating Proces Off-spec product

Form Code ___ Source Code ___ Origin Code ___ System Code ___

EPA Codes ___ State Codes ___

Container Type DM55 Number of Units 2 Frequency Year

D. Chemical / Constituent Composition

Constituent	PPM	% Volume	Constituent	PPM	% Volume
Diesel		0-100	Kerosene		0-100
Kerosene or diesel sludge		<10	Other fuels		<20

E. Physical Characteristics

Physical State (Including Range) % Liquid >90 % Sludges/Solid <10 / ___ Bi-Layer Liqui ___ Color brown/tan

Odor / Describe diesel/kerosene Specific Gravity ___ BTUs / Lb ___ pH: ☐ <= 2 ☐ >2 and <12.5 ☐ >=12.5 ☐ N/A

FlashPt: ☐ <100F (38C) ☐ 100-140F (38-60C) ☒ 141-200F (61-93C) ☐ >200F (93C) ☐ None

F. Comments

Generator's Certification USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
SAVOONGA, AK 99769

I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omissions of composition properties exist and that all known or suspected hazards have been disclosed. I certify that the materials tested are representative of all material described by this profile.

Generator's Authorized Signature: Tyler G Ellingboe **Date** 9/19/2012

Name (Print) Tyler Ellingboe **Title** Project Manager

TSDF's Certification EMERALD SERVICES INC - AIRPORT
1500 AIRPORT WAY S.
SEATTLE, WA 98134

As an authorized representative of Emerald Services, Inc. I certify, by my signature below, that Emerald Services, Inc. has the necessary permits to accept and properly manage the waste stream identified above.

TSDF's Authorized Signature: ___ **Date** ___

Reviewer Information Only VOC Level 1 ☐ < 11.1 psia ☐ >= 11.1 psia ☐ NA At Risk Waste Steam___

Process ☐ Storage ☐ FB ☐ OB ☐ RY ☐ RR ☐ AF ☐ UW ☐ RY150 ☐ MT Initials ___

EMERALD SERVICES INC - AIRPORT

Waste Profile Questionnaire #: G02907

A. Generator Information

EPA ID AK0000228395   Generator Status LQG

Generator Name USACE, AK, NEC FACILITY WIDE   Phone (907) 753-2689

Site Address NE CAPE, ST LAWRENCE ISLAND   City ST Zip SAVOONGA, AK 99769   Fax ( ) -

Contact/Title CAREY COSSABOOM   Sulfide Producing Industry: N

B. Shipping Information

Proper Shipping Name Non Regulated Waste - Liquid

DOT ID ____ Hazard Class ____ Packing Group ___ ERG ___ RQ ____

C. Regulatory Information

Name of Material USED OIL   Generating Proces MAINTENANCE/TANK CLEANING/PUMPING

Form Code ____ Source Code G09   Origin Code ____   System Code NA

EPA Codes ____   State Codes ____

Container Type DM55   Number of Units 9   Frequency Year

D. Chemical / Constituent Composition

Constituent	PPM	% Volume	Constituent	PPM	% Volume
OIL		90-100	SOLIDS		0-10
WATER		1-10			

E. Physical Characteristics

Physical State (Including Range) % Liquid 90-100% % Sludges/Solid ____ / 0-10% Bi-Layer Liqui ___ Color VARIES

Odor / Describe MILD   Specific Gravity 1.2   BTUs / Lb >5000   pH: ☐ <= 2 ☐ >2 and <12.5 ☐ >=12.5 ☒ N/A

FlashPt: ☐ <100F (38C) ☐ 100-140F (38-60C) ☐ 141-200F (61-93C) ☒ >200F (93C) ☐ None

F. Comments

Generator's Certification

USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
SAVOONGA, AK 99769

I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omissions of composition properties exist and that all known or suspected hazards have been disclosed. I certify that the materials tested are representative of all material described by this profile.

Generator's Authorized Signature: Tyler G Ellingboe   **Date** 9/19/2012

Name (Print) Tyler Ellingboe   **Title** Project Manager

TSDF's Certification

EMERALD SERVICES INC - AIRPORT
1500 AIRPORT WAY S.
SEATTLE, WA 98134

As an authorized representative of Emerald Services, Inc. I certify, by my signature below, that Emerald Services, Inc. has the necessary permits to accept and properly manage the waste stream identified above.

TSDF's Authorized Signature: TIM BERRANS   ENV. MANAGER   **Date** 1/4/2002 12:00:00AM

Reviewer Information Only   VOC Level 1 ☐ < 11.1 psia ☐ >= 11.1 psia ☐ NA   At Risk Waste Steam__

Process ☐ Storage ☐ FB ☐ OB ☐ RY ☐ RR ☐ AF ☐ UW ☐ RY150 ☐ MT   Initials ____

EMERALD SERVICES INC

Waste Profile Questionnaire #: 45081

A. Generator Information

EPA ID AK0000228395 Generator Status LQG

Generator Name USACE, AK, NEC FACILITY WIDE Phone (907) 753-2689

Site Address NE CAPE, ST LAWRENCE ISLAND City ST Zip SAVOONGA, AK 99769 Fax ( ) -

Contact/Title CAREY COSSABOOM Sulfide Producing Industry: N

B. Shipping Information

Proper Shipping Name Waste flammable liquids, n.o.s. (HEXANE, ACETONE)

DOT ID UN1993 Hazard Class 3 Packing Group II ERG 128 RQ 100

C. Regulatory Information

Name of Material HEXANE/ACETONE/WATER MIXTURE Generating Proces LABORATORY ANALYSIS

Form Code W219 Source Code G09 Origin Code 1 System Code H061

EPA Codes D001 F003 State Codes

Container Type DF30 Number of Units 1 Frequency Year

D. Chemical / Constituent Composition

Constituent	PPM	% Volume
Acetone		10-50
SOIL		0-10
PCB	1.5	

Constituent	PPM	% Volume
Hexane		40-80
WATER		0-20

E. Physical Characteristics

Physical State (Including Range) % Liquid 90-100 % Sludges/Solid / 0-10 Bi-Layer Liqui Y Color COLORLESS

Odor / Describe ACETONE/HEXANE Specific Gravity 0.6-1.1 BTUs / Lb >5000 pH: [ ] <= 2 [X] >2 and <12.5 [ ] >=12.5 [ ] N/A

FlashPt: [X] <100F (38C) [ ] 100-140F (38-60C) [ ] 141-200F (61-93C) [ ] >200F (93C) [ ] None

F. Comments

PROFILE CONSTITUENTS UPDATED TO BETTER REPRESENT WASTE PER GENERATOR 9-7-10
UPON ARRIVAL SEND SAMPLE TO APW FOR PCB TEST PRIOR TO OUTBOUND OR FUEL BLEND

Generator's Certification

USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
SAVOONGA, AK 99769

I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omissions of composition properties exist and that all known or suspected hazards have been disclosed. I certify that the materials tested are representative of all material described by this profile.

Generator's Authorized Signature: Tyler G. Ellingboe **Date** 9/19/2012

Name (Print) Tyler Ellingboe **Title** Project Manager

TSDF's Certification

EMERALD SERVICES INC
1825 ALEXANDER AVE
TACOMA, WA 98421

As an authorized representative of Emerald Services, Inc., I certify, by my signature below, that Emerald Services, Inc. has the necessary permits per WAC 173-303-290(3) and 40CFR 264.12(b) to accept and properly manage the waste stream identified above.

TSDF's Authorized Signature: **Date**

Reviewer Information Only VOC Level 1 [ ] < 11.1 psia [ ] >= 11.1 psia [ ] NA At Risk Waste Steam__

Process [ ] Storage [ ] FB [ ] OB [ ] RY [ ] RR [ ] AF [ ] UW [ ] RY150 [ ] MT Initials

EMERALD SERVICES INC

Waste Profile Questionnaire #: 45464

A. Generator Information

EPA ID AK0000228395 Generator Status LQG

Generator Name USACE, AK, NEC FACILITY WIDE Phone (907) 753-2689

Site Address NE CAPE, ST LAWRENCE ISLAND City ST Zip SAVOONGA, AK 99769 Fax ( ) -

Contact/Title CAREY COSSABOOM Sulfide Producing Industry: N

B. Shipping Information

Proper Shipping Name WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (TETRACHLOROETHYLENE, ETHYLENE GLYCOL)

DOT ID UN3082 Hazard Class 9 Packing Group III ERG 171 RQD039

C. Regulatory Information

Name of Material ETHYLENE GLYCOL C/W TETRACHLOROETHYLENE Generating Proces LANDFILL/EXCAVATION

Form Code W219 Source Code G44 Origin Code 2 System Code

EPA Codes D039 State Codes

Container Type DM55 Number of Units 1 Frequency Year

D. Chemical / Constituent Composition

Constituent	PPM	% Volume	Constituent	PPM	% Volume
ETHYLENE GLYCOL		90	WATER		10
BARIUM	0.027		Lead	0.065	
Methylene chloride	0.180		Selenium	0.23	
Ethylbenzene	0.250		Tetrachloroethylene	0.710	
XYLENE	0.860		Arsenic	0.98	

E. Physical Characteristics

Physical State (Including Range) % Liquid 100 % Sludges/Solid 0 / 0 Bi-Layer Liqui N Color GREEN

Odor / Describe HYDROCARBON Specific Gravity 1.2 BTUs / Lb <5000 pH: ☐ <= 2 ☒ >2 and <12.5 ☐ >=12.5 ☐ N/A

FlashPt: ☐ <100F (38C) ☐ 100-140F (38-60C) ☐ 141-200F (61-93C) ☒ >200F (93C) ☐ None

F. Comments

Generator's Certification USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
SAVOONGA, AK 99769

I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omissions of composition properties exist and that all known or suspected hazards have been disclosed. I certify that the materials tested are representative of all material described by this profile.

Generator's Authorized Signature: Tyler Ellingboe On Behalf Of USACE, AK District Date 10/29/12

Name (Print) Tyler Ellingboe **Title** Project Manager

TSDF's Certification EMERALD SERVICES INC
1825 ALEXANDER AVE
TACOMA, WA 98421

As an authorized representative of Emerald Services, Inc., I certify, by my signature below, that Emerald Services, Inc. has the necessary permits per WAC 173-303-290(3) and 40CFR 264.12(b) to accept and properly manage the waste stream identified above.

TSDF's Authorized Signature: Date

Reviewer Information Only VOC Level 1 ☐ < 11.1 psia ☐ >= 11.1 psia ☐ NA At Risk Waste Steam

Process ☐ Storage ☐ FB ☐ OB ☐ RY ☐ RR ☐ AF ☐ UW ☐ RY150 ☐ MT Initials

Waste Profile Questionnaire #: 45084

A. Generator Information

EPA ID AK0000228395 Generator Status LQG

Generator Name USACE, AK, NEC FACILITY WIDE Phone (907) 753-2689

Site Address NE CAPE, ST LAWRENCE ISLAND City ST Zip SAVOONGA, AK 99769 Fax ( ) -

Contact/Title CAREY COSSABOOM Sulfide Producing Industry: N

B. Shipping Information

Proper Shipping Name WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (ETHYLENE GLYCOL, BENZENE, ARSENIC)

DOT ID UN3082 Hazard Class 9 Packing Group III ERG 171 RQBENZENE

C. Regulatory Information

Name of Material ANTIFREEZE CONTAMINATED WITH BENZENE AND/OR ARSENICIGenerating Proces LANDFILL EXCAVATION

Form Code W219 Source Code G49 Origin Code 2 System Code

EPA Codes D004 D018 State Codes

Container Type DM55 Number of Units 10 Frequency Year

D. Chemical / Constituent Composition

Constituent	PPM	% Volume	Constituent	PPM	% Volume
Ethylene glycol		25-75	WATER		25-75
Benzene	1.9		Arsenic	6.9	

E. Physical Characteristics

Physical State (Including Range) % Liquid 100 % Sludges/Solid / Bi-Layer Liqui N Color GREEN/BLUE

Odor / Describe SLIGHT HYDROCARBO Specific Gravity 1.1 BTUs / Lb <5000 pH: ☐ <= 2 ☒ >2 and <12.5 ☐ >=12.5 ☐ N/A

FlashPt: ☐ <100F (38C) ☐ 100-140F (38-60C) ☐ 141-200F (61-93C) ☒ >200F (93C) ☐ None

F. Comments

Generator's Certification

USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
SAVOONGA, AK 99769

I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omissions of composition properties exist and that all known or suspected hazards have been disclosed. I certify that the materials tested are representative of all material described by this profile.

Generator's Authorized Signature: Tyler S. Ellingboe **Date** 9/19/12

Name (Print) Tyler Ellingboe **Title** Project Manager

TSDF's Certification

EMERALD SERVICES INC
1825 ALEXANDER AVE
TACOMA, WA 98421

As an authorized representative of Emerald Services, Inc., I certify, by my signature below, that Emerald Services, Inc. has the necessary permits per WAC 173-303-290(3) and 40CFR 264.12(b) to accept and properly manage the waste stream identified above.

TSDF's Authorized Signature: **Date**

Reviewer Information Only VOC Level 1 ☐ < 11.1 psia ☐ >= 11.1 psia ☐ NA At Risk Waste Steam__

Process ☐ Storage ☐ FB ☐ OB ☐ RY ☐ RR ☐ AF ☐ UW ☐ RY150 ☐ MT Initials

EMERALD SERVICES INC

Waste Profile Questionnaire #: 45085

A. Generator Information

EPA ID AK0000228395 Generator Status LQG

Generator Name USACE, AK, NEC FACILITY WIDE Phone (907) 753-2689

Site Address NE CAPE, ST LAWRENCE ISLAND City ST Zip SAVOONGA, AK 99769 Fax ( ) -

Contact/Title CAREY COSSABOOM Sulfide Producing Industry: N

B. Shipping Information

Proper Shipping Name WASTE FLAMMABLE LIQUIDS, N.O.S. (METHYL ETHYL KETONE, METHANOL)

DOT ID UN1993 Hazard Class 3 Packing Group II ERG 128 RQD001

C. Regulatory Information

Name of Material METHANOL SOLVENT WITH MEK Generating Proces LANDFILL EXCAVATION

Form Code W203 Source Code G49 Origin Code 2 System Code

EPA Codes D001 State Codes

Container Type DM55 Number of Units 3 Frequency Year

D. Chemical / Constituent Composition

Constituent	PPM	% Volume
DEISEL		10
METHYL ETHYL KETONE (UHC)	48	

Constituent	PPM	% Volume
Methanol		90

E. Physical Characteristics

Physical State (Including Range) % Liquid 100 % Sludges/Solid / Bi-Layer Liqui N Color CLEAR

Odor / Describe ALCOHOL Specific Gravity 0.7 BTUs / Lb >5000 pH: ☐ <= 2 ☐ >2 and <12.5 ☐ >=12.5 ☒ N/A

FlashPt: ☒ <100F (38C) ☐ 100-140F (38-60C) ☐ 141-200F (61-93C) ☐ >200F (93C) ☐ None

F. Comments

Generator's Certification USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
SAVOONGA, AK 99769

I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omissions of composition properties exist and that all known or suspected hazards have been disclosed. I certify that the materials tested are representative of all material described by this profile.

Generator's Authorized Signature: Tyler S. Ellingboe **Date** 9/19/12

Name (Print) Tyler Ellingbre **Title** Project Manager

TSDF's Certification EMERALD SERVICES INC
1825 ALEXANDER AVE
TACOMA, WA 98421

As an authorized representative of Emerald Services, Inc., I certify, by my signature below, that Emerald Services, Inc. has the necessary permits per WAC 173-303-290(3) and 40CFR 264.12(b) to accept and properly manage the waste stream identified above.

TSDF's Authorized Signature: **Date**

Reviewer Information Only VOC Level 1 ☐ < 11.1 psia ☐ >= 11.1 psia ☐ NA At Risk Waste Steam

Process ☐ Storage ☐ FB ☐ OB ☐ RY ☐ RR ☐ AF ☐ UW ☐ RY150 ☐ MT Initials

EMERALD SERVICES INC | **Waste Profile Questionnaire #: 45086** |

A. Generator Information

EPA ID AK0000228395 | Generator Status LQG

Generator Name USACE, AK, NEC FACILITY WIDE | Phone (907) 753-2689

Site Address NE CAPE, ST LAWRENCE ISLAND | City ST Zip SAVOONGA, AK 99769 | Fax ( ) -

Contact/Title CAREY COSSABOOM | Sulfide Producing Industry: N

B. Shipping Information

Proper Shipping Name WASTE FLAMMABLE LIQUIDS, N.O.S. (DIESEL FUEL, CHROMIUM)

DOT ID UN1993 | Hazard Class 3 | Packing Group III | ERG 128 | RQ D001

C. Regulatory Information

Name of Material TAR/DIESEL WITH LEAD AND CHROMIUM | Generating Proces LANDFILL EXCAVATION

Form Code W606 | Source Code G49 | Origin Code 2 | System Code

EPA Codes D001,D007,D008,D039 | State Codes

Container Type DM55 | Number of Units 1 | Frequency Year

D. Chemical / Constituent Composition

Constituent	PPM	% Volume	Constituent	PPM	% Volume
DIESEL		40	TAR		60
WATER		2	Tetrachloroethylene	30	
Lead	6.9		Chromium	63	

E. Physical Characteristics

Physical State (Including Range) % Liquid 40 | % Sludges/Solid 60 / | Bi-Layer Liqui Y | Color BLACK

Odor / Describe HYDROCARBON | Specific Gravity 0.9 | BTUs / Lb >5000 | pH: ☐ <= 2 ☒ >2 and <12.5 ☐ >=12.5 ☐ N/A

FlashPt: ☐ <100F (38C) ☒ 100-140F (38-60C) ☐ 141-200F (61-93C) ☐ >200F (93C) ☐ None

F. Comments

Generator's Certification

USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
SAVOONGA, AK 99769

I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omissions of composition properties exist and that all known or suspected hazards have been disclosed. I certify that the materials tested are representative of all material described by this profile.

Generator's Authorized Signature: Tyler S Ellingboe | **Date** 9/19/2012

Name (Print) Tyler Ellingboe | **Title** Project Manager

TSDF's Certification

EMERALD SERVICES INC
1825 ALEXANDER AVE
TACOMA, WA 98421

As an authorized representative of Emerald Services, Inc., I certify, by my signature below, that Emerald Services, Inc. has the necessary permits per WAC 173-303-290(3) and 40CFR 264.12(b) to accept and properly manage the waste stream identified above.

TSDF's Authorized Signature: | **Date**

Reviewer Information Only VOC Level 1 ☐ < 11.1 psia ☐ >= 11.1 psia ☐ NA | At Risk Waste Steam__

Process ☐ Storage ☐ FB ☐ OB ☐ RY ☐ RR ☐ AF ☐ UW ☐ RY150 ☐ MT | Initials

EMERALD SERVICES INC **Waste Profile Questionnaire #: 45087**

A. Generator Information

EPA ID AK0000228395 Generator Status LQG

Generator Name USACE, AK, NEC FACILITY WIDE Phone (907) 753-2689

Site Address NE CAPE, ST LAWRENCE ISLAND City ST Zip SAVOONGA, AK 99769 Fax ( ) -

Contact/Title CAREY COSSABOOM Sulfide Producing Industry: N

B. Shipping Information

Proper Shipping Name WASTE FLAMMABLE LIQUIDS, N.O.S. (DIESEL FUEL, ETHYLENE GLYCOL)

DOT ID UN1993 Hazard Class 3 Packing Group III ERG 128 RQ D001

C. Regulatory Information

Name of Material DIESEL FUEL AND ANTIFREEZE Generating Proces LANDFILL EXCAVATION

Form Code W219 Source Code G49 Origin Code 2 System Code

EPA Codes D001 State Codes

Container Type DM55 Number of Units 2 Frequency Year

D. Chemical / Constituent Composition

Constituent	PPM	% Volume	Constituent	PPM	% Volume
DIESEL		32	Ethylene glycol		30
MOTOR OIL		18	WATER		20

E. Physical Characteristics

Physical State (Including Range) % Liquid 100 % Sludges/Solid / Bi-Layer Liqui Y Color BROWN

Odor / Describe HYDROCARBON Specific Gravity 0.8-1.0 BTUs / Lb >5000 pH: ☐ <= 2 ☒ >2 and <12.5 ☐ >=12.5 ☐ N/A

FlashPt: ☐ <100F (38C) ☒ 100-140F (38-60C) ☐ 141-200F (61-93C) ☐ >200F (93C) ☐ None

F. Comments

Generator's Certification

USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
SAVOONGA, AK 99769

I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omissions of composition properties exist and that all known or suspected hazards have been disclosed. I certify that the materials tested are representative of all material described by this profile.

Generator's Authorized Signature: Tyler S. Ellingboe **Date** 9/19/2012

Name (Print) Tyler Ellingboe **Title** Project Manager

TSDF's Certification

EMERALD SERVICES INC
1825 ALEXANDER AVE
TACOMA, WA 98421

As an authorized representative of Emerald Services, Inc., I certify, by my signature below, that Emerald Services, Inc. has the necessary permits per WAC 173-303-290(3) and 40CFR 264.12(b) to accept and properly manage the waste stream identified above.

TSDF's Authorized Signature: **Date**

Reviewer Information Only VOC Level 1 ☐ < 11.1 psia ☐ >= 11.1 psia ☐ NA At Risk Waste Steam__

Process ☐ Storage ☐ FB ☐ OB ☐ RY ☐ RR ☐ AF ☐ UW ☐ RY150 ☐ MT Initials

US ECOLOGY IDAHO, INC.

Waste Profile Questionnaire #: USE29446

A. Generator Information

EPA ID AK0000228395 Generator Status LQG

Generator Name USACE, AK, NEC FACILITY WIDE Phone (907) 753-2689

Site Address NE CAPE, ST LAWRENCE ISLAND City ST Zip SAVOONGA, AK 99769 Fax ( ) -

Contact/Title CAREY COSSABOOM Sulfide Producing Industry: N

B. Shipping Information

Proper Shipping Name WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (LEAD, ARSENIC)

DOT ID UN3082 Hazard Class 9 Packing Group III ERG 171 RQ LEAD

C. Regulatory Information

Name of Material OILY WATER WITH METALS Generating Proces SITE CLEAN-UP

Form Code W101 Source Code G16 Origin Code System Code H131

EPA Codes D004 D008 State Codes

Container Type Number of Units Frequency

D. Chemical / Constituent Composition

Constituent	PPM	% Volume
OIL		5-10
Arsenic	14	
Lead	23	

Constituent	PPM	% Volume
WATER		90-95
Acetone - UHC	200	

E. Physical Characteristics

Physical State (Including Range) % Liquid 100 % Sludges/Solid / Bi-Layer Liqui N Color BLACK

Odor / Describe HYDROCARBON Specific Gravity 1.0 BTUs / Lb N/A pH: ☐ <= 2 ☒ >2 and <12.5 ☐ >=12.5 ☐ N/A

FlashPt: ☐ <100F (38C) ☐ 100-140F (38-60C) ☐ 141-200F (61-93C) ☐ >200F (93C) ☒ None

F. Comments

Generator's Certification USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
SAVOONGA, AK 99769

I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omissions of composition properties exist and that all known or suspected hazards have been disclosed. I certify that the materials tested are representative of all material described by this profile.

Generator's Authorized Signature: ______ **Date** ______

Name (Print) ______ **Title** ______

TSDF's Certification US ECOLOGY IDAHO, INC.
20400 LEMLEY RD
GRAND VIEW, ID 83624

As an authorized representative of Emerald Services, Inc. I certify, by my signature below, that Emerald Services, Inc. has the necessary permits to accept and properly manage the waste stream identified above.

TSDF's Authorized Signature: ______ **Date** ______

Reviewer Information Only VOC Level 1 ☐ < 11.1 psia ☐ >= 11.1 psia ☐ NA At Risk Waste Steam__

Process ☐ Storage ☐ FB ☐ OB ☐ RY ☐ RR ☐ AF ☐ UW ☐ RY150 ☐ MT Initials ______

US ECOLOGY IDAHO, INC.

Waste Profile Questionnaire #: 16560

A. Generator Information

EPA ID AK0000228395 Generator Status LQG

Generator Name USACE, AK, NEC FACILITY WIDE Phone (907) 753-2689

Site Address NE CAPE, ST LAWRENCE ISLAND City ST Zip SAVOONGA, AK 99769 Fax ( ) -

Contact/Title CAREY COSSABOOM Sulfide Producing Industry: N

B. Shipping Information

Proper Shipping Name Waste sulfuric acid

DOT ID UN1830 Hazard Class 8 Packing Group II ERG 137 RQ100

C. Regulatory Information

Name of Material SULFURIC ACID Generating Proces SITE CLEANUP/FACILITY CLOSURE

Form Code W105 Source Code G44 Origin Code 2 System Code H129

EPA Codes D002 State Codes

Container Type Number of Units Frequency

D. Chemical / Constituent Composition

Constituent	PPM	% Volume	Constituent	PPM	% Volume
Sulfuric acid		95-95	WATER		5-5

E. Physical Characteristics

Physical State (Including Range) % Liquid 100 % Sludges/Solid / Bi-Layer Liqui ___ Color VARIES

Odor / Describe NONE Specific Gravity 1.841 BTUs / Lb NA pH: [X] <= 2 [ ] >2 and <12.5 [ ] >=12.5 [ ] N/A

FlashPt: [ ] <100F (38C) [ ] 100-140F (38-60C) [ ] 141-200F (61-93C) [ ] >200F (93C) [X] None

F. Comments

DISPOSAL AT US ECOLOGY - MIKE MECHALIS PROJECT (SEE HIM FOR PRICING INFO) [MLH]

Generator's Certification

USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
SAVOONGA, AK 99769

I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omissions of composition properties exist and that all known or suspected hazards have been disclosed. I certify that the materials tested are representative of all material described by this profile.

Generator's Authorized Signature: ______________ **Date** ______

Name (Print) ______________ **Title** ______________

TSDF's Certification

US ECOLOGY IDAHO, INC.
20400 LEMLEY RD
GRAND VIEW, ID 83624

As an authorized representative of Emerald Services, Inc. I certify, by my signature below, that Emerald Services, Inc. has the necessary permits to accept and properly manage the waste stream identified above.

TSDF's Authorized Signature: TIFFANY MYERS **Date** 12/20/2005 12:00:00AM

Reviewer Information Only VOC Level 1 [ ] < 11.1 psia [ ] >= 11.1 psia [ ] NA At Risk Waste Steam__

Process [ ] Storage [ ] FB [ ] OB [ ] RY [ ] RR [ ] AF [ ] UW [ ] RY150 [ ] MT Initials ______

WASTE MANAGEMENT, INC ....NON HAZARDOUS WASTE DISPOSAL SOLUTIONS FOR THE PACIFIC NORTHWEST

Columbia Ridge Landfill

18177 Cedar Springs Lane, Arlington Oregon 97812

Profile # 109338OR

PERMIT TO DISPOSE OF NON-HAZARDOUS MATERIALS

This permit authorizes disposal of Customer's waste materials in accordance with the Industrial Waste & Disposal Services Agreement dated _____ __________.

EXPIRES: 10/26/2013

GENERATOR: US ARMY CORPS OF ENGINEERS, AK DISTRICT

DESCRIPTION: *ROOFING TAR (SOLID) SOILS, VEGETATION*	**VOLUME:** *225 tons*
☒SPECIAL WASTE ☐PCS ☒CLEAN-UP MATERIAL	
LOCATION: *SAVOONGA, ALASKA ST LAWRENCE ISLAND NEC FACILITY*	**COUNTY:***
CONTACT: *TYLER ELLINBOE*	**PHONE:** *907-563-0013*
	FAX : *907-563-6713*

BILLING: *Landfill account BRISTOL ENVIRONMENTAL*	**PO#:** *34110008*	**JOB#:** *N/A*

TYPE OF DISPOSAL/ SPECIAL HANDLING/LOAD TYPE: *BULK, CO-MINGLE, NO FREE LIQUIDS*

****

ALL LOADS MUST BE SCHEDULED 24 HOURS IN ADVANCE.
CONTACT GREG AT 541-454-3220

APPROVED: KC *KRISTIN CASTNER* DATE: *09/12/12 1:05:51 PM*

A COPY OF THIS PERMIT MUST BE SHOWN BY EACH DRIVER

WASTE MANAGEMENT

WASTE MANAGEMENT

EZ PROFILE™

Requested Facility: Columbia Ridge Landfill ☐ Unsure Profile Number: 110831OR

☐ Check if there are multiple generator locations. Attach locations.

☐ Renewal? Original Profile Number: ____

A. GENERATOR INFORMATION (MATERIAL ORIGIN)

1. Generator Name: US Army Engineer District, AK
2. Site Address: St Lawrence NEC Facility Wide NE Cape
   (City, State, ZIP) St Lawrence Island, Savoonga AK 99769
3. County: Nome
4. Contact Name: Carey Cossaboom
5. Email: carey.c.cossaboom@usace.army.mil
6. Phone: (907) 753-2689 7. Fax: (907) 753-5626
8. Generator EPA ID: AK0000228395 ☐ N/A
9. State ID: ____ ☐ N/A

B. BILLING INFORMATION ☐ SAME AS GENERATOR

1. Billing Name: Bristol Environmental Remediation Srvs
2. Billing Address: 111 West 16th Ave Third Floor
   (City, State, ZIP) Anchorage AK 99501
3. Contact Name: Tyler Ellingboe
4. Email: tellingboe@bristol-companies.com
5. Phone: (907) 563-0013 6. Fax: (907) 563-6713
7. WM Hauled? ☐ Yes ☐ No
8. P.O. Number: 34120057

C. MATERIAL INFORMATION

1. Common Name: Petroleum Contaminated Soil

Describe Process Generating Material: ☐ See Attached

Removal of petroleum stained soil from an old military landfill site

2. Material Composition and Contaminants: ☐ See Attached

1. Soil/Rocks	95 - 100 %
2. Plastic/Wood/Debris	0 - 5 %
3. Lead (TCLP Metals) (mg/L)	0 - 1.4
4. Diesel Range Organics (mg/kg)	0 - 11,000
5. Polychlorinated Biphenyls (mg/kg)	0-1 ≥100%

3. State Waste Codes: ____ ☑ N/A
4. Color: Varies
5. Physical State at 70°F: ☑ Solid ☐ Liquid ☐ Other: ____
6. Free Liquid Range Percentage: ____ to ____ ☑ N/A (Solid)
7. pH: ____ to ____ ☑ N/A (Solid)
8. Strong Odor: ☐ Yes ☑ No Describe: ____
9. Flash Point: ☐ <140°F ☐ 140°-199°F ☐ ≥200° ☑ N/A (Solid)

D. REGULATORY INFORMATION

1. EPA Hazardous Waste? ☐ Yes* ☑ No
   Code: ____
2. State Hazardous Waste? ☐ Yes ☑ No
   Code: ____
3. Excluded waste under 40 CFR 261.4 (a) or (b)? ☐ Yes* ☑ No
4. Contains Underlying Hazardous Constituents? ☐ Yes* ☑ No
5. Contains benzene **and** subject to Benzene NESHAP? ☐ Yes* ☑ No
6. Facility remediation subject to 40 CFR 63 GGGGG? ☐ Yes* ☑ No
7. CERCLA or State-mandated clean-up? ☐ Yes* ☑ No
8. NRC or State-regulated radioactive or NORM waste? ☐ Yes* ☑ No

***If Yes, see Addendum (page 2) for additional questions and space.**

9. Contains PCBs? → If Yes, answer a, b and c. ☒ Yes ☐ No
   a. Regulated by 40 CFR 761? ☐ Yes ☒ No
   b. Remediation under 40 CFR 761.61 (a)? ☐ Yes ☒ No
   c. Were PCB imported into the US? ☐ Yes ☒ No
10. Regulated and/or Untreated Medical/Infectious Waste? ☐ Yes ☑ No
11. Contains Asbestos? ☐ Yes: Friable ☐ Yes: Non-Friable ☑ No

E. ANALYTICAL AND OTHER REPRESENTATIVE INFORMATION

1. Analytical attached ☐ Yes

Please identify applicable samples and/or lab reports:

2. Other information attached (such as MSDS)? ☐ Yes

F. SHIPPING AND DOT INFORMATION

1. ☐ One-Time Event ☑ Repeat Event/Ongoing Business
2. Estimated Quantity/Unit of Measure: ~~2000~~ 9000
   ☑ Tons ☐ Yards ☐ Drums ☐ Gallons ☐ Other: ____
3. Container Type and Size: Bulk bags (7 yd3)
4. USDOT Proper Shipping Name: ☐ N/A
   Material Not Regulated by D.O.T.

G. GENERATOR CERTIFICATION (PLEASE READ AND CERTIFY BY SIGNATURE)

By signing this EZ PROFILE™ form, I hereby certify that all information submitted in this and all attached documents contain true and accurate descriptions of this material, and that all relevant information necessary for proper material characterization and to identify known and suspected hazards has been provided. Any analytical data attached was derived from a sample that is representative as defined in 40 CFR 261 - Appendix 1 or by using an equivalent method. All changes occurring in the character of the material (i.e., changes in the process or new analytical) will be identified by the Generator and be disclosed to Waste Management prior to providing the material to Waste Management.

If I am an agent signing on behalf of the Generator, I have confirmed with the Generator that information contained in this Profile is accurate and complete.

Name (Print): Tyler Ellingboe Date: 6/1/12

Title: Project Manager/Sr. Waste Specialist

Company: Bristol Environmental Remediation Srvs.

Certification Signature

Tyler G. Ellingboe

WASTE MANAGEMENT, INC ....NON HAZARDOUS WASTE DISPOSAL SOLUTIONS FOR THE PACIFIC NORTHWEST

Columbia Ridge Landfill

18177 Cedar Springs Lane, Arlington Oregon 97812

Profile # 100514AK

PERMIT TO DISPOSE OF NON-HAZARDOUS MATERIALS

This permit authorizes disposal of Customer's waste materials in accordance with the Industrial Waste & Disposal Services Agreement dated _____ _________.

EXPIRES: 4/30/2013

GENERATOR: US ARMY CORPS OF ENGINEERS, ALASKA DISTRICT

DESCRIPTION: *TREATED WOOD*	**VOLUME:** *10*
☒SPECIAL WASTE ☐PCS ☐CLEAN-UP MATERIAL	
LOCATION: *SAVOONGA, ALASKA ST. LAWRENCE NEC FACILITY -WIDE, NE CAPE*	**COUNTY:***
CONTACT: *TYLER ELLINGBOE*	**PHONE:** *907-563-0013*
	FAX : *907-563-6713*

BILLING: *Landfill account BRISTOL ENVIRONMENTAL REMEDIATION*	**PO#:** *32110002*	**JOB#:** *N/A*

TYPE OF DISPOSAL/ SPECIAL HANDLING/LOAD TYPE: *BULK, CO-MINGLE, NO FREE LIQUIDS*

****

ALL LOADS MUST BE SCHEDULED 24 HOURS IN ADVANCE.
CONTACT GREG AT 541-454-3220 OR JULIE AT 541-454-3310

APPROVED: KC *KRISTIN CASTNER* DATE: *03/02/12 10:32:33 AM*

A COPY OF THIS PERMIT MUST BE SHOWN BY EACH DRIVER

WM

WASTE MANAGEMENT

EMERALD SERVICES INC — **Waste Profile Questionnaire #: 45464**

A. Generator Information

EPA ID AK0000228395 Generator Status LQG

Generator Name USACE, AK, NEC FACILITY WIDE Phone (907) 753-2689

Site Address NE CAPE, ST LAWRENCE ISLAND City ST Zip SAVOONGA, AK 99769 Fax ( ) -

Contact/Title CAREY COSSABOOM Sulfide Producing Industry: N

B. Shipping Information

Proper Shipping Name WASTE ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S. (TETRACHLOROETHYLENE, ETHYLENE GLYCOL)

DOT ID UN3082 Hazard Class 9 Packing Group III ERG 171 RQD039

C. Regulatory Information

Name of Material ETHYLENE GLYCOL C/W TETRACHLOROETHYLENE Generating Proces LANDFILL/EXCAVATION

Form Code W219 Source Code G44 Origin Code 2 System Code

EPA Codes D039 State Codes

Container Type DM55 Number of Units 1 Frequency Year

D. Chemical / Constituent Composition

Constituent	PPM	% Volume
ETHYLENE GLYCOL		90
BARIUM	0.027	
Methylene chloride	0.180	
Ethylbenzene	0.250	
XYLENE	0.860	

Constituent	PPM	% Volume
WATER		10
Lead	0.065	
Selenium	0.23	
Tetrachloroethylene	0.710	
Arsenic	0.98	

E. Physical Characteristics

Physical State (Including Range) % Liquid 100 % Sludges/Solid 0 / 0 Bi-Layer Liqui N Color GREEN

Odor / Describe HYDROCARBON Specific Gravity 1.2 BTUs / Lb<5000 pH: ☐ <= 2 ☒ >2 and <12.5 ☐ >=12.5 ☐ N/A

FlashPt: ☐ <100F (38C) ☐ 100-140F (38-60C) ☐ 141-200F (61-93C) ☒ >200F (93C) ☐ None

F. Comments

Generator's Certification

USACE, AK, NEC FACILITY WIDE
NE CAPE, ST LAWRENCE ISLAND
SAVOONGA, AK 99769

I hereby certify that the above and attached description is complete and accurate to the best of my knowledge and ability to determine that no deliberate or willful omissions of composition properties exist and that all known or suspected hazards have been disclosed. I certify that the materials tested are representative of all material described by this profile.

Generator's Authorized Signature: Tyler J. Ellingboe On Behalf Of USACE, AK District **Date** 10/29/12

Name (Print) Tyler Ellingboe **Title** Project Manager

TSDF's Certification

EMERALD SERVICES INC
1825 ALEXANDER AVE
TACOMA, WA 98421

As an authorized representative of Emerald Services, Inc., I certify, by my signature below, that Emerald Services, Inc. has the necessary permits per WAC 173-303-290(3) and 40CFR 264.12(b) to accept and properly manage the waste stream identified above.

TSDF's Authorized Signature: **Date**

Reviewer Information Only VOC Level 1 ☐ < 11.1 psia ☐ >= 11.1 psia ☐ NA At Risk Waste Steam__

Process ☐ Storage ☐ FB ☐ OB ☐ RY ☐ RR ☐ AF ☐ UW ☐ RY150 ☐ MT Initials

CHEMICAL WASTE MANAGEMENT OF THE NORTHWEST
A WASTE MANAGEMENT COMPANY

17629 Cedar Springs Lane
Arlington, OR 97812
(541) 454-2643

April 31, 2012

US ARMY CORPS OF ENGINEERS, AK DISTRICT
ST LAWRENCE ISLAND NEC FACILITY WIDE
SAVOONGA AK 99769

RE: APPROVAL LETTER

ATTENTION: TYLER ELLINGBOE

We are pleased to confirm Waste Management's approval of your waste material as described in the profile listed below. Waste Management prepared a profile for the waste material based upon the information provided by you. It is important that no changes be made to the profile without Waste Management's consent. If the profile meets with your approval, then you are ready to schedule shipment of your waste.

Profile Number: OR306129
Approved Management Facility: CHEMICAL WASTE MANAGEMENT
Waste Name: PCB CONTAMINATED SOIL 50-500 PPM
Disposal Method: DIRECT LANDFILL
Approval Conditions:
SECTION 13 OF THE MANIFEST WILL REQUIRE X002, OR
STATE WASTE CODE FOR TSCA.
WEIGHTS MUST BE MANIFESTED IN KILOGRAMS OUT OF SERVICE DATES MUST BE ON MANIFEST.
DRUM LOADS REQUIRE UNIQUE DRUM NUMBERS, INDIVIDUAL WEIGHTS IN KILOS AND INDIVIDUAL OUT OF SERVICE
DATES. CONTACT CSR FOR MANIFEST ATTACHMENT FORMS.
Must meet applicable DOT packaging, labeling, shipping and manifesting requirements per 49 CFR
Expiration Date: 09-09-2013

All waste coming to Chemical Waste Management must be scheduled twenty-four hours in advance with Greg Marrett. If you cannot reach Greg, you can contact our Customer Service Rep, Sue McAhren at 541-454-3215. Unscheduled loads may be delayed several hours or even rejected.
All waste coming to Alaska Street Ten Day Facility must be scheduled at least twenty-four hours in advance with Amanda Payne. If you are not able to reach Amanda, you can contact the scale house at 206-763-5025. Unscheduled loads may be delayed several hours or even rejected.
As required by 40 CFR 264.12(b), Waste Management is notifying you that this facility has the appropriate permit(s) for, and will accept, the waste you the generator is shipping.

Listed below are people you may contact in addition to your Sales Representative if you have any questions.

Greg Marrett: Scheduling & Transportation 541-454-3220
Amanda Payne: Alaska St. Ten Day Facility 206-763-8943
Linda Wimmer: Sales 206-384-5760
Troy Tyacke: Sales 360-507-6613
Mark Krening: Sales 503-519-3959
Michael McQuarrie: Sales 360-913-4781
Ken Nystrom Sales 206-423-4018

Heidi Smith: Technical Service Center 503-528-0687

Thank you,
Waste Management

APPENDIX E

Field Reference Documents

TABLE OF CONTENTS

SECTION **PAGE**

TABLES

ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
AK102	Alaska Method determination of DRO
AK103	Alaska Method determination RRO
ASE	accelerated solvent extractor
CVS	Calibration Verification Standard
DCS	diesel calibration standard
DE	Diatomaceous Earth
DRO	diesel range organics
FID	flame-ionization detector
GC	gas chromatographic or gas chromatograph
ICAL	initial calibration
LCS	laboratory control sample
LFB	laboratory-fortified blank
MDL	method detection limit
mg/kg	milligrams per kilogram
mg/L	milligram per liter
mL	microliter
MSDS	Material Safety Data Sheet
NOM	naturally occurring materials
OTP	ortho-terphenyl
PQLS	practical quantitation limits
psi	pounds per square inch
QC	quality control
RCS	residual calibration standard
RRO	residual range organics (motor oil range)
RSD	relative standard deviation
RTW	retention time window
SOP	Standard Operation Procedure
VOA	volatile organic analysis

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1.0 SCOPE AND APPLICATION

This Standard Operating Procedure (SOP) describes the procedures for determining the concentration of diesel range organics and residual range organics (DRO/RRO) in soil using methodology developed by the Alaska Department of Environmental Conservation (ADEC), and described in the *Underground Storage Tank Procedures Manual* (ADEC, 2002).

1.1 OBJECTIVES

The objectives in the use of this method are to accurately determine the concentrations of diesel and residual range organics in soil.

1.1.1 Scope of Method

These methods are designed to measure the concentration of DRO and RRO in soil. DRO is determined by method AK102, and RRO is determined by method AK103. The diesel range corresponds to an n-Alkane range from the beginning of C_{10} to the beginning of C_{25}, and a boiling point range of approximately 170 degrees Celsius (°C) to 400 °C. An n-Alkane is a chemical compound that consists of only hydrogen and carbon, linked in a single bond in a straight chain. The residual range corresponds to an n-alkane range from the beginning of C_{25} to the end of C_{36}, and a boiling range of 400 °C to 500 °C. Both methods are performed sequentially on a single sample extract, and a single analytical run on a gas chromatograph. The methods differ in the range of quantitation, based on the elution of n-alkanes on the gas chromatographic (GC) column.

1.1.2 Practical Quantitation Limits

The practical quantitation limits (PQLs) for these methods have been adjusted to reflect site-specific cleanup levels. The PQLs for DRO and RRO have been elevated to approximately 500 milligrams per kilogram (mg/kg).

1.1.3 Dynamic Range

The dynamic range for method AK 102 is 500 milligrams per liter (mg/L) to 25,000 mg/L. The dynamic range for method AK 103 is 500 mg/L to 25,000 mg/L. The dynamic ranges reflect the concentration of target analytes in the sample extract. Dilutions may be performed as necessary to put the chromatographic envelope (sample extract concentration) within the linear range of the method. The determination of soil concentrations is based on the sample weight and the percent moisture in the sample (Sections 9.12.1 and 9.12.2).

2.0 METHOD SUMMARY

2.1 METHOD PROCEDURE

This method provides GC conditions for the detection of semivolatile petroleum products, such as diesel and motor oil. Other non-petroleum compounds with similar characteristics and boiling points may also be detected with this method.

Samples are extracted from approximately 20 grams of soil using methylene chloride as the solvent. A surrogate mixture of known concentration is spiked into all field and quality control (QC) samples to evaluate the efficiency of the extraction process. An aliquot (2 micro liters [µL]) of the extract is injected into a gas chromatograph equipped with a capillary column and a flame ionization detector (FID). The GC is temperature programmed to facilitate separation of organic compounds.

2.1.1 DRO Range

Quantitation of DRO is performed by comparing the total chromatographic area between and including the peak start of C_{10} to the peak start of C_{25}, including both resolved and unresolved compounds, based on the FID response compared to a diesel calibration standard. Integration is performed using forced baseline-baseline integration.

2.1.2 RRO Range

Quantitation of RRO is performed by comparing the total chromatographic area between and including the peak start of C_{25} to the peak end of C_{36}, including both resolved and unresolved components. Integration is performed using forced baseline-baseline integration.

2.2 METHOD DEVELOPMENT

This method was developed by the ADEC and is based, in part, on a modification of the American Petroleum Institute consensus “Method for the Determination of Diesel Range Organics,” Revision 2, 2/5/92, supplemented with information gathered by the State of Alaska, Department of Environmental Conservation, State Chemistry Laboratory, with support from the Storage Tank Program. It is also based in part on EPA Methods 8000 and 8100, SW – 846, *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* [1], adopted by reference in Title 18 Alaska Administrative Code, Chapter 78.090(i) [18 AAC

78.090(i)], Method OA-2 [2] and work by the EPA Total Petroleum Hydrocarbons Method Committee [3], and the State of Oregon, "Total Petroleum Hydrocarbon Methods" QAR 340-122-350, dated December 11, 1990.

3.0 DEFINITIONS

3.1 DIESEL RANGE ORGANICS (DRO)

All chromatographic peaks for DRO, both resolved and unresolved, eluting between the peak start of n-decane (C_{10}) and the peak start of n-pentacosane (C_{25}). Quantitation is based on direct comparison of the area within this range to the total area over the same (C_{10} - C_{25}) range of the calibration standard, as determined by FID response using forced baseline-baseline integration. Surrogate peak areas shall be determined by valley to valley integration.

3.2 RESIDUAL RANGE ORGANICS (RRO)

All chromatographic peaks for RRO, both resolved and unresolved, eluting between the peak start of n-pentacosane (C_{25}) and the peak end of n-hextriacontane (C_{36}). Quantitation is based on direct comparison of the area within this range to the total area over the same (C_{25} – C_{36}) range of the calibration standard, as determined by FID response using forced baseline-baseline integration. Surrogate peak areas shall be determined by valley-to-valley integration.

3.3 DIESEL CALIBRATION STANDARD (DCS)

The DCS is Commercial #2 diesel fuel or equivalent hydrocarbon mixture, in which greater than 95% of the hydrocarbon mass elutes within the diesel change and is diluted to appropriate concentrations in methylene chloride. The DCS serves as a calibration standard for DRO. The DCS standard will be injected without any other standards present to demonstrate the 95% elution criteria is met, based on the area of integration.

3.4 RESIDUALS CALIBRATION STANDARD (RCS)

RCS is an equal blend of 30 weight and 40 weight motor oils (1:1), diluted to appropriate concentrations in methylene chloride. The RCS serves as a calibration standard for RRO. The RCS standard will be injected without any other standards present to demonstrate the elution range of the RCS.

3.5 COMBINED CALIBRATION STANDARD

A stock standard mixture of DCS and RCS components is used for the initial and continuing calibration standards. Multiple concentrations of the combined calibration standards are used for the initial calibration. The standard concentrations vary from the PQL of 500 mg/L to 25,000 mg/L, which is the upper dynamic range of the calibrations. A 10,000 mg/L standard is used as the continuing calibration standard.

3.6 Continuing Calibration Standard (CCS)

The continuing calibration standard is a mid-range working standard diluted from the stock standard solution and is used to verify that the analytical system is responding in a manner comparable to the time of initial calibration. The continuing calibration standard is analyzed at the beginning of an analytical sequence, and after every 20 samples to ensure that reported sample concentrations are accurate, as determined by the calibration.

3.7 Calibration Verification Standard (CVS)

The CVS is a QC standard, but with diesel from a source other than that used to prepare the DCS, (i.e., a second source). It is used by the laboratory to verify the accuracy of calibration and source materials. Greater than 95 % of the hydrocarbon mass must elute within the diesel range, as described in Section 3.1.

3.8 Surrogate Mixtures

Ortho-terphenyl is used as the DRO surrogate and n-triacontane d^{62} is used as the RRO surrogate. The surrogate mixture contains equal concentrations of the surrogates, and it is spiked into all extracted samples before the extraction begins.

3.9 Retention Time Window (RTW) Standard

The RTW is a mixture of the normal (n-) alkanes, including n-decane, n-pentacosane, and n-hexatriacontane (C_{10}, C_{25} and C_{36}), which are analyzed once every 24-hour day or with each analytical batch of samples. This standard defines the integration windows for methods AK102 and AK103.

3.10 Standard Soil

Baked Ottawa sand is used in QC samples (method blank and laboratory-fortified blank) to represent the soil matrix. Quality control samples are extracted and analyzed using the same procedures as field samples.

3.11 METHOD BLANK

The method blank (also known as a procedural blank), demonstrates that the apparatus and reagents used to verify that the handling, extraction, and analysis of field samples is valid and that the reported concentrations in field samples were not biased due to contamination introduced in the extraction and analysis process.

3.12 INSTRUMENT BLANK

An instrument blank demonstrates that the instrument is free from contamination. The instrument blank is not extracted, and consists of methylene chloride solvent used in the extraction process.

3.13 SOLVENT BLANK

A solvent blank demonstrates that the solvent (in this case methylene chloride) used in the method is free from contamination. It may also serve as an instrument blank.

3.14 LABORATORY-FORTIFIED BLANK (LFB)

An LFB is a method blank sample spiked with diluted commercial #2 diesel fuel and motor oil which is the same as that used to make the Combined Calibration Standard (see Section 7.5 of this method). There are 2 laboratory-fortified blanks extracted with every extraction batch. The spike recoveries are used to evaluate method control for accuracy and precision (see Table 1 of this method in Section 11.2). The laboratory-fortified blank is synonymous with a laboratory control sample (LCS).

3.15 METHOD DETECTION LIMIT (MDL)

The MDL is the minimum concentration of a compound that can be measured and reported with 99% confidence that the value is greater than zero, determined from analysis of a sample in a given matrix containing the analyte(s). The MDL is determined prior to the analysis of any samples.

3.16 PRACTICAL QUANTITATION LIMIT (PQL)

The PQL is defined as the concentration in the sample extract that can be accurately determined and has a reproducible result. The PQL is generally between 2 and 5 times the MDL.

4.0 INTERFERENCES

4.1 Non-Target Analytes

Other organic compounds, including, but not limited to, animal and vegetable oil and grease, chlorinated hydrocarbons, phenols, phthalate esters, and biogenic compounds, are measurable under the conditions of this method.

4.2 Biogenic Interference

Some site conditions contain non-petroleum compounds from naturally occurring materials (NOMs), such as plants. Many of these compounds found in natural settings also occur at varying concentrations in crude oil and refined petroleum products. When NOM is present in a DRO or RRO sample, there is no practical method to distinguish NOMs from petrogenic sources. This interference is termed biogenic interference. Silica gel may be used to remove some of the polar compounds and reduce the magnitude of quantitative interference to varying degrees. Sample chromatograms of refined products usually have a distinct characteristic hump, or bell shape. Chromatograms from NOM samples do not exhibit the bell shape and typically have a ramped look that extends from the middle diesel range past the residual range. The analysts experience will be used for the interpretation of chromatograms when the presence of NOM is suspected. Silica gel may be employed to lessen the magnitude of interference.

4.3 Glassware Cleaning

Method interferences are reduced by washing all glassware with hot soapy water, followed by a rinse with tap water and methylene chloride At least one blank must be analyzed with each extraction batch to demonstrate that the laboratory samples are free from method interferences.

4.4 Reagent Quality

High purity reagents must be used to minimize interference problems. All reagents are screened for contamination before being introduced to field and QC samples.

4.5 SAMPLE CARRYOVER

Contamination by carryover can occur whenever high-level and low-level samples are sequentially analyzed. Whenever an unusually concentrated sample is encountered, the successive analysis will be evaluated for possible carryover.

4.6 WATER

Water may be unintentionally extracted along with the target analytes during the extraction process, particularly when samples are wet. Water interferes with the proper concentration of the extract, and also interferes with the analysis. The water must be removed using steps outlined in Section 9.2.1.5.

5.0 SAFETY ISSUES

5.1 CHEMICAL EXPOSURE

The toxicity or carcinogenicity of each reagent in this method has not been precisely defined. However, each chemical compound should be treated as a potential health hazard. Exposure to these chemicals must be reduced to the lowest possible level by whatever means available, including personal protective equipment (PPE) and using fume hoods. A reference file of Material Safety Data Sheets will be maintained on site, and made available to all personnel involved in chemical analysis.

5.2 HEARING PROTECTION

Hearing protection will be used when performing sonication.

5.3 SAMPLE DRYING

The ADEC requires that moisture determinations must accompany all soils data (reported in mg/dry kg) in order to determine the results in the original soil condition. Because of the potential for high petroleum compound concentrations in the soil, all drying should be done under a functioning hood or with proper ventilation of the oven exhaust.

(Intentionally blank)

6.0 APPARATUS AND MATERIALS

6.1 GLASSWARE

- 4-oz amber glass wide-mouth jars with Teflon®-lined screw caps
- 400 mL beakers
- Turbo-Vap tubes
- Two mL glass vials with Teflon-lined cap (autosampler vials)
- Disposable pipettes: Pasteur and volumetric
- Graduated cylinders: 250-mL
- Glass funnels
- Volumetric flasks: 10-mL, 25-mL, 50-mL, 250-mL, and 1000-mL
- Micro syringes 1-µL, 5-µL, 10-µL, 25-µL, 100-µL, and 500-µL.

6.2 ANALYTICAL BALANCE

An analytical balance capable of accurately weighing to 0.0001 grams will be used for preparing standards. A top-loading balance capable of weighing to the nearest 0.01 grams will be used for sample preparation and percent moisture determination.

6.3 SONICATION

6.3.1 Ultrasonic Cell Disrupter (Sonicator)

A dual horn-type sonicator equipped with a titanium tip (Misonix, Inc., Model 2020 (475 watt)) with pulsing capability and a No. 200, ½-inch tapped disrupter horn is used to perform extraction method 3550B.

6.3.2 Sonabox

The sonicator will be operated in a sonabox to decrease sound. Hearing protection will also be worn by lab personnel during sonication steps to prevent hearing loss.

6.4 SOLVENT CONCENTRATOR

A solvent evaporator (TurboVap®) with a nitrogen gas source will be used to concentrate sample extracts to their final volume.

6.5 Miscellaneous Apparatus

- Stainless steel spatula.
- Weigh boats
- Glass wool

6.6 Gas Chromatograph (GC)

A GC is an analytical system that measures concentrations of analytes introduced with an autosampler and syringes into an injection port. The components in the sample extract separate inside of a 30-meter analytical column before their response is measured on an FID. A data system capable of measuring peak areas using a forced baseline-baseline projection is required. The data system is capable of storing and processing chromatographic data.

6.6.1 Columns

Columns are Restek DB-5 30 M x 0.53 mm 1.0 micron film thickness or equivalent.

6.6.1.1 Optional Columns

Other columns may be used as long as they are capable of achieving the necessary resolution. The column must resolve C_{10} from the solvent front in a mid-range DCS or CVS.

7.0 REAGENTS AND STANDARDS

7.1 REAGENT WATER

Reagent water is free of organics, target analytes, and interfering substances.

7.2 METHYLENE CHLORIDE

Methylene chloride – reagent grade or equivalent. At a minimum, the solvent must be shown to be free of DRO, as demonstrated by the analysis of a solvent blank.

7.3 SODIUM SULFATE

Sodium sulfate – (ACS grade) granular, anhydrous. Sodium sulfate is used to remove water from samples in extraction method 3550B. Water interferes with the extraction and concentration of sample extracts. Sodium sulfate is purified by heating it in a shallow tray at 400 °C for 4 hours in a muffle furnace. Incomplete cleaning of sodium sulfate can result in DRO contamination of samples. Refer to Section 4.0 for other interferences

Note: Sodium sulfate should not be used with samples that will be extracted with the ASE.

7.4 DIATOMACEOUS EARTH

Diatomaceous Earth (DE) is used to dry samples for extraction method 3545. DE is purified by heating it in a shallow tray at 400 °C for 4 hours in a muffle furnace. Incomplete cleaning of DE can result in DRO contamination of samples.

7.5 STOCK STANDARD SOLUTIONS

Stock Standard Solutions for AK102 and AK103 analyses are prepared in methylene chloride. Standard preparation will follow the procedures as described in Section 9.1. All standards prepared by the laboratory must be stored at less than 6 °C, and protected from light. The meniscus is marked and observed to ensure stock standard integrity. Standards must be replaced within 6 months of preparation. Prepared standards purchased from commercial suppliers may be kept indefinitely, and under the conditions, specified by the manufacturer if different than described in this paragraph. Stock standards often come in flame-sealed glass ampoules, and with proper storage are good for one year from receipt.

7.5.1 Surrogates

A Surrogate Control Standard is a working standard of 1 µg/mL each of OTP and hexatriacontane-d^{62} in methylene chloride is used as a working standard solution. A calculated volume of concentrated stock solution may be combined with initial and continuing calibration standards to verify that surrogate recoveries and chromatographic separation are adequate for the determination of extraction recovery efficiencies.

7.5.2 Diesel and Residual Range Calibration Standards

Diesel #2 is used to prepare stock calibration standards in methylene chloride. No fewer than 5 concentrations of this DCS are used for instrument calibration. Other than one standard concentration near the PQL, the expected range of concentrations found in project samples should define the working range of the GC.

7.5.2.1 Continuing Calibration Standard

A mid-range dilution of the diesel range and residual range blends serve as the Continuing Calibration Standard. The concentration is 10,000 mg/L.

7.5.3 Retention Time Window Standard

A Retention Time Window (RTW) Standard is a stock solution containing at a minimum, n-alkanes C_{10}, C_{25} and C_{36}, at a concentration of at least 2 µg/mL. This blend of alkanes is used to establish the RTW, which is used to define the integration ranges for DRO and RRO.

7.5.4 Stock Calibration Verification Standard (CVS)

The CVS is prepared from a second source of commercial Diesel #2 other than that used to prepare the DCS, as described in Section 7.5.2 of this method. A working solution is made at a recommended concentration of 5000 µg/mL in methylene chloride, which is near the mid-point of the calibration range.

8.0 SAMPLE COLLECTION, PRESERVATION, CONTAINERS, AND HOLDING TIMES

8.1 SAMPLE COLLECTION

Soils for field analyses may be collected in labeled Ziploc® bags or 4-oz amber glass jars with Teflon-lined lid. A separate Sampling and Analysis Plan and Field Standard Operating Procedures fully address the procedures used to collect field samples. Samples must be collected using clean sampling equipment, and new clean nitrile gloves. Sample gloves should be changed prior to the beginning of any collection activities and between samples.

8.2 SAMPLE PRESERVATION

All samples will be immediately placed in a gel iced cooler after collection, and stored at 4 ± 2 °C until extraction.

8.3 HOLDING TIMES

Sample extraction must be performed within 14 days [1]. All analyses of extracts must take place within 40 days.

(Intentionally blank)

9.0 PROCEDURE

9.1 STANDARDS PREPARATION

9.1.1 Initial and Continuing Calibration Standards and Surrogates

DRO calibration standards are prepared from neat #2 Diesel. RRO standards are prepared from equal portions of 30-weight and 40-weight motor oil. Neat standards are weighed on a 4-place analytical balance. Approximately 2.5 grams of #2 Diesel and 2.5 grams of the mixed motor oils are added to a 100-mL volumetric flask. Methylene chloride is added to the volumetric flask to a final volume of 100 mL, generating a combined stock standard solution at a concentration of 25,000 mg/L. Other initial and continuing calibration standards are prepared from this stock standard solution.

Initial and continuing calibration standards are prepared by diluting the stock standard solution in volumetric flasks on a volume:volume basis. Initial calibration standards are prepared at concentrations of 500, 2500, 5000, and 10,000 mg/L. The stock standard solution is used for the 25,000 mg/L solution, which is the upper dynamic range of the calibrations.

The 10,000 mg/L solution is used at the continuing calibration standard.

Ortho-terphenyl and n-triacontane-d62 are added to the stock calibration standard at 10 mg/L from a vendor-prepared solution (Ultra Scientific). Subsequent dilutions of the stock standard will result in surrogate concentrations of 0.2, 1, 2, and 4 mg/L.

9.2 ACCELERATED SOLVENT EXTRACTION

Method 3545A (ASE) is used for soil samples and the extraction solvent is methylene chloride.

9.2.1 Soil Preparation – Accelerated Solvent Extraction

The following sections outline procedures used to prepare sample extracts for analysis.

9.2.1.1 Remove Excessive Water

Decant any water layer that may accompany the solid layer in the sample. Note the apparent condition of the sample (presence of foreign materials, variable particle size, presence of oil sheen, multiple phases, etc., on the bench sheet).

9.2.1.2 Sample Weighing

Weigh approximately20 grams of the original sample in a tared weighing dish or extraction beaker on a 2-place balance. Add an equal weight of DE, and stir the mixture well with a clean stainless steel or Teflon spatula. The sample should have a grainy texture after mixing. If the sample clumps, add more DE until a grainy texture is achieved, and note the addition. (Do this for all samples and standards.)

9.2.1.3 Sample Transfer and Spiking

Place the soil-DE mixtures into the ASE 33-mL extraction tubes, and add surrogate to both field and QC samples. Prepare the method blank and LFBs in a similar fashion to field samples. Add a known amount of spiking solution to the duplicate LFBs. These QC samples should contain 20 grams of Ottawa sand and an equal amount of DE.

9.3 SONICATION EXTRACTION

9.3.1.1 Remove Excessive Water

Decant any water layer that may accompany the solid layer in the sample. Note the apparent condition of the sample (presence of foreign materials, variable particle size, presence of oil sheen, multiple phases, etc) on the bench sheet.

9.3.1.2 Sample Weighing

Weigh approximately 20 grams of the original sample in a tared weighing dish, or extraction beaker on a 2-place balance. Add an equal weight of DE or sodium sulfate, and stir the mixture well with a clean stainless steel spatula or spoon. The sample should have a grainy texture after mixing. If the sample clumps, add more DE or sodium sulfate until a grainy texture is achieved and note the addition. (Do this for all samples and standards.)

9.3.1.3 Sample Transfer and Spiking

Place the dried soil mixture into a 250-mL beaker and add surrogate to both field and QC samples. Prepare the method blank and LFBs in a similar fashion to field samples. Add a known amount of spiking solution to the duplicate LFBs. These QC samples should contain 20 grams of Ottawa sand.

9.3.1.4 Sonication

Add approximately 50 mL of methylene chloride to the sample after surrogate has been added. Place the beaker under the sonicator and sonicate for 90 seconds. Transfer the solvent extract to a Turbo-Vap tube through a lined glass filter funnel filled with sodium sulfate. Repeat sonication twice more by adding 50 mL of solvent each time.

9.4 SAMPLE CONCENTRATION

Samples must be concentrated to a measurable final volume of 10 mL, using a TurboVap solvent concentrator. TurboVap tubes are placed in the TurboVap, and solvents are evaporated under a gentle nitrogen stream in a heated water bath. Samples must not go dry, or the extraction process will need to be repeated with fresh soil.

9.5 MOISTURE DETERMINATION FOR SOLIDS

9.5.1 Moisture Determination Procedure

To determine percentage of moisture, pre-weigh an aluminum drying pan and record the weight to the nearest 0.01 grams. Tare the balance to zero with the aluminum pan on the balance and add 9 to 11 grams of the sample to the drying pan. Record the weight to the nearest 0.01 gram. Exclude any large rocks while making sure the moisture determination sample is representative (similar) to the extraction portion of the sample. Dry the sample a minimum of 4 hours or overnight in an oven at 105 °C. Allow the sample and pan to cool to room temperature before weighing. Place the sample and weighing pan on the balance and record the weight to the nearest 0.01 gram.

9.5.2 Percent Moisture Calculation for Soils

Subtract the aluminum boat weight from the dry weight and divide the result by the wet weight. Multiply the result by 100% to determine the percent dry weight. The wet weight is equal to 1.0 minus the dry weight, expressed as a decimal. The macro formula is:
% Moisture = [(A-C)/(A-B)] x 100. The % Solid = 1-% moisture.

Where:

A	=	weight of boat + wet sample
B	=	weight of boat
C	=	weight of boat + dry sample

Note: Make sure drying oven is placed under a hood or has proper exhaust ventilation. Heavily contaminated soils will produce strong organic vapors.

9.5.3 Dry Weight Calculation for Extracted Soil

mg/dry kg soil = (100-% moisture)/100)) x wet weight of sample

Note: Excel spreadsheets with formulas will be used to determine the percent moisture, dry weight of samples, and soil sample concentrations.

9.6 SAMPLE EXTRACT DILUTION TECHNIQUE

Measure 1.0 mL of sample into a 10-mL volumetric flask. Dilute sample to 10-mL with methylene chloride. Transfer to a labeled vial with a Teflon-lined lid. Note the dilution on the vial. Mark meniscus and store at <4 °C.

9.7 GAS CHROMATOGRAPHY

9.7.1 Method Conditions

Set helium column pressure to 20 pounds per square inch (psi). Set oven temperature to 40 °C for 2 minutes, then ramp at a rate of 15 °C/minute to 320 °C, and hold for 12 minutes (run time = 30.6 minutes). Set FID to 320 °C and injector to 280 °C. Method conditions may be modified to achieve proper separation of analytes. The instrument must be calibrated after any method conditions have changed.

9.7.2 Method Performance Criteria

GC run conditions and columns must be chosen to meet the following criteria:

- Resolution of the methylene chloride solvent front from C_{10}.
- The column must be capable of separating typical diesel and residual components from the surrogates. There may be potential problems with separating the resolution of n-C_{19} from OTP and n-C_{21} at varying relative concentrations.

9.8 CALIBRATION

9.8.1 Initial Calibration

To calibrate the GC, set up as in Section 9.7 of this method. A minimum of five concentrations of DCS must be used for the calibration. The lowest initial calibration standard concentration will establish the PQL for the method, and the highest concentration standard defines the upper quantitation limit. Samples exceeding the upper calibration limit must be diluted and reanalyzed.

9.8.2 Initial Calibration Curve Verification

The calibration curve must be confirmed using the CVS. This standard independently verifies the accuracy of the calibration. The concentration of the CVS should be within the expected concentration range of the samples to be analyzed. A relative standard deviation (RSD) of less than 20% of true value is the acceptance criteria for the CVS.

9.8.3 Continuing Calibration Standards (CCS)

The working calibration curve must be verified on each working day (24 hours) by the injection of a continuing calibration standard (see Section 3.6 of this method) at a concentration near the mid-point of the calibration curve (10,000 mg/L). The continuing calibration standard is a diluted aliquot of the same standard used to initially calibrate the instrument. An initial calibration standard near the mid-point of the curve may be used for the continuing calibration standard, and it is recommended. If the response for the continuing calibration standard varies from the predicted response by more than 25%, check the instrument for leaking septa, dirty injection liners and gas leaks. Recheck the calibration, if it is not within limits, a new calibration curve must be prepared. The instrument should be checked and cleaned prior to establishing a new 5-point calibration.

9.8.4 Calibration Curve Linearity

Acceptable criteria for the initial calibration are dependent on the type of curve fit applied to the initial calibration. Acceptance criteria for the most used types of calibration curves are listed below.

- A linear regression curve fit must have an R^2 of 0.995 or better,
- A quadratic fit must have an R^2 of 0.995 or better,
- Average of response factors, the average percent relative standard deviation (%RSD) is less than 20% over the working range.
- Other curve fits may be employed as long as they meet acceptance criteria outlined in EPA method 8000B [2].

9.9 ESTABLISHING RTWS

9.9.1 RTW Definition

The RTW for individual peaks is defined as the average RT plus or minus three times the standard deviation of the absolute retention times for each component. The RTWs for this method are defined in Section 3.9. RTWs are crucial to the identification of target compounds. RTWs are established to compensate for minor shifts in absolute retention times as a result of sampling loadings and normal chromatographic variability.

9.9.2 Chromatographic Separation Definition

Chromatographic processes achieve separation by passing a mobile phase over a stationary phase. Constituents in a mixture are separated because they partition differently between the mobile and stationary phases, and thus have different retention times. Compounds that strongly interact with the stationary phase elute slowly (i.e., long RTs), while compounds that remain in the mobile phase with little interaction with the stationary phase elute quickly (short RTWs).

Before establishing RTWs, be certain that the GC system is within optimum operating conditions (Section 6.7). Make three injections of the RTW Standard (Section 7.5.3) and surrogates (Section 7.5.1) throughout the course of a 72-hour period. Serial injections over less than a 72-hour period result in RTWs that are too tight.

9.9.3 Calculation of RTWs

1. Record the retention times for decane, pentacosane, and hexatriacontane using an RTW standard (Section 7.5.3) and the surrogates (Section 7.5.5.) from at least 3 injections over a minimum 72-hour period.
2. Calculate the mean and standard deviation of the three absolute retention times for the RTW standards and surrogates.
3. In those cases where the standard deviation for a particular analyte is zero, the laboratory will use ±0.05 minute as the default standard.
4. The width of the RTW for each analyte, surrogate, and major constituent is multi-component analytes is defined as ± 3 times the standard deviation of the mean absolute RT established during the 72-hour period. If the default standard deviation in Step 3 is used, the width of the window will be 0.05 minutes.

9.9.4 Reestablishing RTWs

The laboratory must calculate RTWs for each standard on each GC column, and whenever a new GC column is installed or instrument conditions change. RTWs must be verified regularly and updated no less frequently than once a year.

9.10 GAS CHROMATOGRAPH ANALYSIS

9.10.1 Injection Volume

Samples are analyzed by GC/FID. Injection volumes are 2 µL, using the conditions established in Section 9.7 of this method.

9.10.2 Analytical Batch Window

If initial calibration (Section 9.8.1) has been successfully performed, verify the calibration by analysis of a mid-point continuing calibration standard prior to and immediately after any samples are analyzed. An analytical batch is defined as the analysis of standards, field samples, and QC samples analyzed sequentially until all samples are analyzed, or those samples analyzed within 24 hours.

9.10.3 Continuing Calibration Acceptance Criteria

Calculate the percent difference of the response from the known continuing calibration standard concentration and the established response factor in mg/L. If the reported continuing calibration standard has a reported concentration difference greater than 25% from the known concentration, corrective action must be taken.

9.10.4 Instrument Blank Criteria

The instrument blank is essential for determining if analytical conditions are suitable for the proper analysis of samples. An unextracted solvent blank (methylene chloride) is analyzed each day to determine the area generated from normal baseline noise under the conditions prevailing in the 24-hour period. This area is generated by projecting a horizontal baseline between the retention times observed for the peak start of C_{10} and the peak start of C_{25}. This blank is integrated over the DRO area in the same manner as for the field samples, and is reported as the solvent blank. Baseline subtractions of instrument blanks is not allowed.

9.10.5 Carryover Blanks

Blanks may be run after samples suspected of being highly concentrated to prevent carryover. If the blank analysis shows contamination above the PQL, maintenance must be performed to remove the source of the carryover before any samples can be analyzed. New injector liners may be installed, or the column may be trimmed or baked out to remove the chromatographic contamination. Subsequent blanks must be analyzed until the system is shown to retain contaminant at concentrations less than the one-half the PQL.

9.10.6 Calibration Exceedances

If the DRO concentration exceeds the linear range of the method (as defined by the range of the calibration curve) in the final extract, corrective action must be taken. The sample should be diluted and the response of the major peaks should be kept in the upper half of the linear range of the calibration curve.

9.11 CHROMATOGRAPHIC INTERPRETATION

The analyst may perform a qualitative interpretation of sample chromatograms in order to determine if the sample result is attributed to natural (anthropogenic) or petroleum (petrogenic) sources. Chromatograms from known types of petroleum products may be used to compare the fuel patterns to those found in samples. Field notes and sample examination may also be used to identify potential origins of analytes in the chromatograms.

9.12 CALCULATIONS

9.12.1 Soil Concentration Calculation

External Sample Calculation:

Soil samples:

$$Cs = \frac{Cex * (Vt) * D}{(Ws)}$$

Where:

*	=	times
Cs	=	Concentration of DRO or RRO in mg/kg in soil (dry weight)
Cex	=	Concentration in final extract
Vt	=	Volume of final extract in mL
D	=	Dilution factor, if dilution was performed on the sample prior to analysis. If no dilution was made, then D = 1, dimensionless
Ws	=	Dry weight of sample extracted in grams

9.12.2 Data Reduction Software

A software program from Agilent (Chemstation-Enviroquant) will be used to determine the concentration of the sample extract relative to Sections 9.12 of this method, based on the instrument calibration.

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10.0 QUALITY CONTROL

10.1 CURVE VERIFICATION STANDARD (CVS)

- The CVS is not extracted.
- The CVS is analyzed once after the initial calibration standards to verify calibration curve.
- The CVS recovery limit is 75-125% of true value.

10.2 CONTINUING CALIBRATION SAMPLES

- The continuing calibration standard is not extracted.
- The continuing calibration standard is analyzed at the start and end of an analytical batch, and for every 20 samples in that batch.
- The continuing calibration standard recovery requirement is 75-125% of true value.

10.3 BLANKS

- The instrument blank is analyzed prior to any samples and after calibration standards to demonstrate that the system is free from contamination.
- The method blank must be extracted and analyzed with each extraction batch.
- If additional cleanup steps are performed on field samples, the same steps must be applied to the method blank.
- **Acceptance Criteria**: Results for the method blank must be less than or equal to the reporting limit concentration.
- BLANK SUBTRACTION IS NOT ALLOWED. Blanks are reported by value.
- Other blanks may be analyzed as necessary following the recommendations of Chapter 2, Section 9 of the *UST Procedures Manual*.

10.4 LABORATORY FORTIFIED BLANKS (LFB)

- LFB is extracted using the same method procedure as the associated samples.
- Two LFBs are analyzed with each extraction batch.
- Acceptance Criteria: The LFB recovery requirement for AK102-DRO is 75-125% of true value. The LFB recovery requirement for AK103-RRO is 60-120%. The acceptance criterion is 20% RPD for both methods.
- If additional cleanup steps are performed on field samples, the same steps must be applied to the LFB samples.
- If any LFB recovery fails to meet method criteria, appropriate corrective action must be taken. See Section 10.6 Corrective Actions.

10.5 SURROGATES

10.5.1 Surrogate Concentration

The surrogate should be spiked at a level to produce a recommended extract concentration of 1.66 µg/mL.

10.5.2 Surrogate Acceptance Criteria

Surrogate recoveries must be 60-120% for LCS (continuing calibration standard, CVS, method blank, LFB), and 50-150 % for field samples (all other samples).

10.5.3 Surrogate Recovery Failure-Corrective Action

If any surrogate recovery fails to meet method criteria, corrective action must be taken if there is no reasonable explanation for the failed recovery. Some soil types such at peat and tundra often bias recoveries low. See Section 10.6 Corrective Actions.

10.5.4 Sample Qualifiers (Flags)

If field samples show poor surrogate recovery that is not attributable to laboratory error, DRO results must be flagged.

10.6 CORRECTIVE ACTIONS

The actions listed below are recommended and may not apply to a particular failure.

- If the CVS fails to meet acceptance criteria, recheck all calculations used to prepare the standards. If the CVS fails again, prepare new ICAL and CVS standards from neat standards.
- If the instrument fails to meet continuing calibration criteria, all samples analyzed since the last acceptable continuing calibration standard must be reanalyzed.
- If method blank acceptance criteria are not met, identify and correct the source of contamination and re-prepare and reanalyze the associated samples.
- If the LFB(s) acceptance limits are not met, reanalyze the LFB to confirm the original result is reliable. If the results are still outside control limits, the associated samples must be re-extracted and reanalyzed. If the LFB is above the upper control limit, and the associated samples are all below the PQL, the deviation should be described in a non-conformance memo.

- If surrogate recoveries are outside the established limits, verify calculations, dilutions, and standard solutions. Also, verify that instrument performance is acceptable. High recoveries may be due to co-eluting matrix interference, and the chromatogram should be examined for evidence of this. Low recoveries may be due to adsorption by the sample matrix (clay, peat, or organic material in the sample). Recalculate the results and/or reanalyze the extract if the checks reveal a problem. If the surrogate recovery is outside of established limits due to well-documented matrix effects, the results must be flagged.

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11.0 METHOD PERFORMANCE

11.1 METHOD DETECTION LIMIT

The MDL for soil is calculated according to Title 40 Code of Federal Regulations, Part 136 (40 CFR136), Appendix B (1994). The MDL is estimated to be 60 mg/kg (external standard calibration, Ottawa sand) for DRO and 89 mg/kg for RRO. MDL studies will be performed and MDLs will be updated prior to any sample analyses.

11.2 METHOD ACCEPTANCE CRITERIA FOR AK102

The method acceptance criteria for laboratory control and field samples analyzed by Method AK102 are presented in Table 1.

Table 1 Method AK102 Acceptance Criteria for Quality Control

	Control Limits	
Soils (mg/kg)	**% Recovery**	**Relative % Difference**
Laboratory-Fortified Blanks	75-125	20
Continuing Calibration	75-125	
Calibration Verification	75-125	
Surrogate Recovery:		
Laboratory Fortified Blanks**	60-120	
Field Sample	50-150	

Notes:

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% = percent

mg/kg = milligrams per kilogram

11.3 METHOD ACCEPTANCE CRITERIA FOR AK103

The method acceptance criteria for laboratory control and field samples analyzed by Method AK103 are presented in Table 2.

Table 2 Method AK103 Acceptance Criteria for Quality Control

	Control Limits	
Soils (mg/kg)	**% Recovery**	**Relative % Difference**
Laboratory Fortified Blanks	60-120	20
Continuing Calibration	75-125	
Calibration Verification	75-125	
Surrogate Recovery:		
Laboratory Fortified Blanks**	60-120	
Field Sample	50-150	

**Laboratory Fortified Blank is any laboratory prepared sample used for quality control, except for calibration standards. Field criteria from voluntary contribution of method performance information from approved laboratories, and method performance at SCL.

% = percent

mg/kg = milligrams per kilogram

12.0 REFERENCES

Alaska Department of Environmental Conservation (2002), *Underground Storage Tank Procedures Manual*. 18 AAC 75 (Appendix D).

U.S. Environmental Protection Agency. *SW 846-Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Solid Waste Method 8000B, Determinative Chromatographic Separations*. Revision 2, 1996. Washington, D.C.

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TABLES

ACRONYMS AND ABBREVIATIONS

µg/L	micrograms per liter
ANSI	American National Standards Institute
ECD	electron capture detectors
EPA	U.S. Environmental Protection Agency
GC	gas chromatograph (or gas chromatogram)
LCS	laboratory control sample
LFB	laboratory-fortified blank
MDL	method detection limit
mg/kg	milligrams per kilogram
mL	milliliter
MSDS	Material Safety Data Sheet
NOM	natural organic matter
PCBs	polychlorinated biphenyls
PE	performance evaluation
PIDs	photoionization detectors
PPE	personal protective equipment
ppm	parts per million
QC	quality control
RF	response factor
RSD	relative standard deviation
SOP	Standard Operating Procedure
TCMX	tetrachlorometaxylene
TSDF	treatment storage disposal facility
VOA	volatile organic analysis

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1.0 SCOPE AND APPLICATION

This Standard Operating Procedure (SOP) describes the procedures for determining the concentration of polychlorinated biphenyls (PCBs) as Aroclors® using the methodology developed by U.S. Environmental Protection Agency (EPA) Region 1 and described in the *Standard Operating Procedure PCB Field Testing for Soil and Sediment Samples* (EPA 2002).

1.1 PURPOSE OF METHOD

This method may be used to determine the concentrations of PCBs as Aroclors in extracts from soil and solids using open-tubular, capillary columns with electron capture detectors (ECD). The Aroclors listed below have been determined by this method, using a single-column analysis system. This method also may be applied to other matrices, such as oils and wipe samples, if appropriate sample extraction procedures are employed.

Table 1 Aroclor® Classes

Aroclor Class	CAS Registry No.[a]
Aroclor 1016	12674-11-2
Aroclor 1221	11104-28-2
Aroclor 1232	11141-16-5
Aroclor 1242	53469-21-9
Aroclor 1248	12672-29-6
Aroclor 1254	11097-69-1
Aroclor 1260	11096-82-5

Notes:
[a]Chemical Abstract Service Registry No.

1.2 AROCLOR QUANTITATION

The seven classes of Aroclors listed in Table 1 are those that are commonly specified in EPA regulations. The quantitation of PCBs as Aroclors is appropriate for meeting standard State and EPA cleanup criteria.

1.3 AROCLOR IDENTIFICATION

Compound identification based on single-column analysis is appropriate when Aroclor patterns of known standards (fingerprints) can be compared to a sample chromatogram. Certified standards of the differing Aroclors are used to produce chromatograms, which can be compared to sample chromatograms to identify the Aroclor mixture so it can be properly quantitated. Software which incorporates chromatogram overlay tools or other means may also be used to compare chromatograms of unknown mixtures against standards. The overlay tool is especially useful in determining if weathering of the Aroclor has occurred.

1.4 AROCLOR MIXTURES

Aroclors are multi-component mixtures. When samples contain more than one Aroclor, a higher level of analytical expertise is required to attain acceptable levels of qualitative and quantitative analysis. The same is true of Aroclors that have been subjected to environmental degradation ("weathering") or degradation by treatment technologies. Such weathered multi-component mixtures may have significant differences in peak patterns compared to those of Aroclor standards.

2.0 SUMMARY OF METHOD

2.1 EXTRACTION

Approximately 10 grams of soil (wet weight) is weighed in a tared sample boat on a 2-place, top-loading balance for extraction and analysis. The sample weight is recorded on a spreadsheet. Approximately 10 grams of the same sample is weighed in a tared aluminum drying pan for percent moisture determination. The extraction sample is allowed to air dry before being placed in a VOA vial. Once dried, the sample is transferred to a 40 milliliter (mL) volatile organic analysis (VOA) vial then 1 mL of 2 milligrams per liter (mg/L) of surrogate is added to the sample using a gas-tight syringe. Twenty mL of a 1:1 hexane acetone mixture is then added to the VOA vial and sealed with a Teflon® cap. The contents of the vial are agitated for 1 minute using a vortex mixer or vigorous shaking by hand. Four mL of deionized water is added to the vial to facilitate the separation of hexane from acetone in the vial. The vial contents are briefly vortexed or hand mixed and allowed to settle. Separation and settling may be assisted by placing the vial in a centrifuge and spinning the vial(s) for 30 seconds. The hexane and all analytes of interest are contained in the top-floating layer in the vial. If the sample extract shows signs of petroleum contamination, sulfuric acid cleanup may be performed to remove interferents. Approximately 3 mL of the hexane layer is transferred to two 2mL crimp top vials. The sample extract is now ready for analysis.

2.2 ALTERNATE EXTRACTION METHODS

Solid samples may be extracted with hexane-acetone (1:1) using Method 3545A (2007a) (pressurized fluid extraction) or Method 3550C (2007b) (ultrasonic extraction), or other appropriate technique or solvents. Extraction methods are presented in Section 10.1.

2.3 EXTRACT CLEANUP

Extracts for PCB analysis may be subjected to a sulfuric acid cleanup (Method 3665) designed specifically for these analytes. This cleanup technique will remove (destroy) many single component organochlorine or organophosphorus pesticides, as well as petroleum. Therefore, this method is not applicable to the analysis of organochlorinated compounds, such as pesticides.

2.4 SAMPLE INJECTION

After cleanup, the extract is analyzed by injecting a 2-microliter (µL) aliquot into a gas chromatograph (GC), equipped with a wide-bore fused-silica capillary column and an electron capture detector (ECD).

2.5 SAMPLE QUANTITATION

Sample quantitation involves two distinct steps. First the Aroclor chromatographic pattern has to be qualitatively identified against a known standard (fingerprinting). Second, the five major quantitative peaks must be integrated using consistent integration technique in order to properly quantitate the concentration of Aroclor in the extract. Each peak is quantified separately, and the determined concentrations of each of the 5 peaks are added to determine to total PCB concentration in the extract. The soil concentration is calculated using the soil dry weight, final volume of the extract (hexane layer), and any dilutions performed on the final extract. Sample results are reported in milligrams per kilogram (mg/kg) on a dry weight basis.

3.0 DEFINITIONS

The following sections provide definitions that may be relevant to this procedure, but may not include all terms used in this method.

3.1 POLYCHLORINATED BIPHENYLS (PCBS)

PCBs are a class of chlorinated organic compounds with 1 to 10 chlorine atoms attached to the biphenyl rings. There are 209 possible compounds (congeners) of PCBs. Each congener contains varying levels of chlorine ions attached to the carbon atoms of 2 conjoined phenyl rings. The manufacturing of the PCBs produced 7 main classes of PCBs, known as Aroclors. The 7 main classes of Aroclors are listed in Table 1 in Section 1.1.

3.2 INTEGRATION

Integration is the determination of the area of a peak or peaks in a chromatogram. Integration determines the base or bottom of the peak, and it separates the integrated peak from other peaks. Software generally performs the integration automatically; however, the analyst may be required to manually integrate the peak. The peak integration must be consistent with the integration performed on the initial and continuing calibration standards. Proper integration is required for accurate quantitation.

3.2.1 Quantitation

Quantitation is the determination of standard and sample concentrations based on the instrument response to known standard concentrations. Quantitation is based on the ratio of response (area) to concentration, and the ratio is known as the calibration or response factor.

3.2.2 Extraction

Extraction is the transfer of analytes from the matrix (soil) into solvent (extract) for the determination of analyte concentrations in the matrix.

3.2.3 Elution

Elution is the transmittal of separated analytes from the GC column to the detector.

3.2.4 Combined Calibration Standard

A stock standard mixture of Aroclor 1016 and Aroclor 1260 is diluted in hexane to produce the initial and continuing calibration standards. Multiple concentration standards are used for the initial calibration and the standard concentrations vary from the practical quantitation limit (PQL) of 0.1 to 10 mg/L, which is the upper dynamic range of the initial calibration. A 1.0 mg/L standard is used as the continuing calibration standard.

3.2.5 Continuing Calibration Standard (CCS)

A mid-range working standard diluted from the Stock Standard Solution, used to verify that the analytical system is responding in a manner comparable to that at the time of initial calibration. The continuing calibration standard is analyzed at the beginning of an analytical sequence, and at minimum, after every 20 samples to ensure that reported sample concentrations are accurate as determined by the initial calibration.

3.2.6 Calibration Verification Standard (CVS)

The CVS is a quality control (QC) standard, prepared as outlined in Section 8.6 of this method, but with an Aroclor mixture from a source other than that used to prepare the Initial Calibration, i.e., a second source from a different vendor. It is used by the laboratory to verify the accuracy of calibration and standards. Acceptance criteria are +/- 20% of the initial calibration response factor.

3.2.7 Surrogate Mixture

Tetrachlorometaxylene (TCMX) and decachlorobiphenyl are used as the surrogates for this method. The surrogate mixture contains equal concentrations of the surrogates, and it is spiked into all extracted samples before the extraction begins. The surrogate mixture is also included in the initial calibration standard as varying concentrations. Decachlorobiphenyl is the primary surrogate used to evaluate the extraction efficiency. Tetrachlorometaxylene is the secondary surrogate standard and may be used to evaluate the extraction efficiency when decachlorobiphenyl is subject to interference, as described in Section 4.2.

3.2.8 Standard Soil

Baked Ottawa sand is used in QC samples (method blank and laboratory-fortified blanks) to represent the soil matrix. Quality control samples are extracted and analyzed using the same procedures as field samples.

3.2.9 Method Blank

Method blank, also known as a preparation blank, demonstrates that the apparatus and reagents used to verify that the handling, extraction, and analysis of field samples are valid, and that the reported concentrations in field samples were not biased due to contamination introduced in the extraction and analysis process.

3.2.10 Instrument Blank

Instrument blank demonstrates that the instrument is free from contamination. The instrument blank is not extracted and consists of hexane.

3.2.11 Solvent Blank

A solvent blank demonstrates that the solvent (in this case hexane) used in the method is free from contamination. It may also serve as an instrument blank.

3.2.12 Laboratory-Fortified Blank (LFB)

A method blank sample consisting of Ottawa sand is spiked with a known quantity of prepared standard that is the same as that used to make the Initial and Continuing Calibration Standards (see Section 3.2.4 and 3.2.5 of this method). Two LFBs are extracted with every extraction batch. The spike recoveries are used to evaluate method control for accuracy and precision (see Table 1 in Section 1.1 of this method). The LFB is synonymous with a laboratory control sample (LCS).

3.2.13 Method Detection Limit (MDL)

The MDL is the minimal concentration of a compound that can be measured and reported with 99% confidence that the value is greater than zero, determined from analysis of a sample in a given matrix containing the analyte(s). (See, Appendix B, for the method of determining MDL). The method detection limit is determined prior to the analysis of any field samples.

3.2.14 Practical Quantitation Limit (PQL)

The PQL is defined as the concentration in the sample extract that can be accurately determined, and has a reproducible result. The PQL is generally between 2 and 5 times the MDL.

3.2.15 Extraction Batch

An extraction batch is a set of field and QC samples extracted using the same consistent procedure throughout the batch. A sample batch consists of an extraction blank, two LFBs, and up to 20 field samples extracted in less than a 24 hour period.

4.0 INTERFERENCES

4.1 SOLVENTS, REAGENTS, GLASSWARE

Solvents, reagents, glassware, and other sample-processing hardware may yield artifacts and/or interferences to sample analysis. All of these materials must be demonstrated to be free from interferences under the conditions of the analysis by analyzing method blanks. Specific selection of reagents and solvents may be necessary. Refer to each method to be used for specific guidance on QC procedures, and to Section 6.4.1 for general guidance on the cleaning of glassware.

4.2 DECACHLOROBIPHENYL

Decachlorobiphenyl is used as a surrogate, but it may also be present as an analyte of interest when the PCB analyte is Aroclor 1268. Aroclor 1268 is not a major class of PCBs, and it was rarely used in practice. In this instance, dechlorobiphenyl is a target analyte, but the chromatographic result should not be used to determine surrogate recovery nor for quantitation of the Aroclor. Instead, TCMX should be used to measure recovery efficiency as a surrogate, and another major chromatographic peak should be used to quantitate the Aroclor against known calibration standards.

4.3 INTERFERENCES FROM PHTHALATES

Interferences by phthalate esters introduced during sample preparation can pose a major problem in PCB determinations. Interferences from phthalate esters can best be minimized by avoiding contact with any plastic materials and checking all solvents and reagents for phthalate contamination.

Common flexible plastics contain varying amounts of phthalate esters, which are easily extracted or leached from such materials during laboratory operations.

Exhaustive cleanup of solvents, reagents, and glassware may be required to eliminate background phthalate ester contamination.

These materials can be removed prior to analysis using EPA Method 3665 (sulfuric acid cleanup).

Cross-contamination of clean glassware can routinely occur when plastics are handled during extraction steps, especially when solvent-wetted surfaces are handled. Glassware must be scrupulously cleaned.

4.4 SULFUR (S_8)

Sulfur (S_8) is readily extracted from soil samples and may cause chromatographic interferences in the determination of PCBs. Sulfur contamination should be expected with sediment samples. Sulfur can be removed through the use of EPA Method 3665.

4.5 PETROLEUM

Petroleum may be extracted from samples as a non-target analyte. Petroleum interferes with the quantitation of PCBs when it co-elutes with the PCBs. Petroleum can be removed from samples following a sulfuric acid cleanup (EPA Method 3665) of the extract.

4.6 OTHER INTERFERENCES

Interferences extracted from the samples will vary considerably from matrix to matrix and sample to sample. While general cleanup techniques are referenced or provided as part of this method, unique samples may require additional cleanup approaches to achieve desired degrees of discrimination and quantitation. Sources of interference in this method can be grouped into three broad categories, as follows:

- Contaminated solvents, reagents, or sample processing hardware.
- Contaminated GC carrier gas, parts, column surfaces, or detector surfaces.
- Compounds extracted from the sample matrix to which the detector will respond, such as single-component chlorinated pesticides, including the DDT analogs (DDT, DDE, and DDD) may cause interference of some of the Aroclor peaks.

5.0 SAFETY

This method does not address all safety issues associated with its use. The laboratory is responsible for maintaining a safe work environment, and a current awareness file of OSHA regulations regarding the safe handling of the chemicals listed in this method. A reference file of Material Safety Data Sheets (MSDSs) will be maintained and will be available to all personnel involved in these analyses.

5.1 SAFETY REQUIREMENTS

5.1.1 Personal Protective Equipment (PPE)

Eye protection that satisfies ANSI Z87.1 specifications (splash-proof and shatter-proof eye protection), laboratory coat, and nitrile gloves must be worn while handling samples, standards, solvents, and reagents. Disposable gloves that have been removed are discarded as nonhazardous waste. Non-disposable gloves must be cleaned immediately.

5.1.2 High Temperature Surfaces

The GC contains zones that have elevated temperatures. The analyst needs to be aware of the locations in those zones, and must cool them to room temperature prior to working on them. Solid reagents, such as silica gel, Ottawa Sand, and diatomaceous earth, are baked in a muffle furnace at high temperatures (450°C). Care must be taken when placing solid reagents in the muffle furnace and removing them after heating. It is required that commercial-grade oven mitts and tongs are used for the muffle furnace. The soil-drying oven is used to remove water from soil samples in order to determine the percent moisture in samples. Oven mitts must be used when placing or removing samples from the oven.

5.1.3 Electrical Hazards

There are areas of high voltage in the GC. Depending on the work to be performed, either turn off the power to the instrument, or unplug the GC from the power source. It should be noted that the back of the GC has capacitors that store energy even if the GC is unplugged. Avoid contacting the capacitor. If working in the capacitor area, it is required that the analyst wears a grounding strap.

5.1.4 Radiation

The ECD contains radioactive nickel (^{63}Ni) that requires leak testing every six months. The detector can be maintained without risk to the operator as long as the source is left in its sealed vessel. Do not open up the source, it is in violation of licensing agreements with Agilent Technologies and the Nuclear Regulatory Commission. If a source leak is suspected, do not use the detector. Perform a wipe test to evaluate the potential leak and contact Agilent immediately for further instructions. A leaking source cannot be transported by air, unless it is in a container made specifically for shipping radioactive items. Proper documentation and manifesting is required. A non-leaking detector can be flown on aircraft as hazardous material in excepted quantities. The contained radiation of a single detector is 15 millicuries.

5.1.5 Solvent Handling

Solvents used for sample extraction may be flammable and/or hazardous. Personnel must minimize their exposure to solvent fumes and avoid contact with skin or clothing. Refer to each MSDS to properly identify hazards associated with each type of solvent. Eye protection is required when handling solvents. Solvents must be handled under a fume hood whenever they are transferred. Residual solvent may remain in soil after extraction, and the soil must be stored under a fume hood or in a proper container after extraction. Signs of solvent exposure include dizziness, coughing, lightheadedness, and headaches. Over exposure to hexane may cause irritation to the skin and eyes. Hexane and acetone are flammable and must be handled with care under a fume hood. Sulfuric acid is a corrosive material, and will produce chemical burns when exposed to the skin. Sulfuric acid must be handled under a fume hood. Sulfuric acid vapors are an irritant and may cause problems with the respiratory tract and mucous membranes. Organic vapor monitors (PIDs) and/or chemical badges may be worn to ensure exposure levels are minimized.

5.1.6 Target Analytes

Some target analytes have been tentatively classified as known or suspected human or mammalian carcinogens. Standard materials and stock standard solutions of these compounds and field samples should be handled with suitable protection to the skin, eyes, etc.

6.0 EQUIPMENT AND SUPPLIES

Glassware, reagents, supplies, equipment, and settings other than those listed in this procedure may be employed provided that method performance is appropriate and not impacted by the use of items not listed in this method.

6.1 GAS CHROMATOGRAPH

An analytical system complete with GC suitable for split-splitless injection and all necessary accessories, including auto-injectors, syringes, analytical columns, gases, ECDs, and a data system.

6.2 GC COLUMNS

The single-column approach will be utilized and involves a single analysis to determine if PCBs are present. The chromatographic pattern will confirm the identity of the compound. The single-column approach may employ narrow-bore (0.25 or 0.32-mm ID) or wide-bore (0.53-mm ID) columns. The GC may employ dual columns mounted in a single GC, but with each column connected to a separate injector and a separate detector.

The columns listed in this section may be used at the discretion of the analyst performing the method. The listing of these columns in this method is not intended to exclude the use of other columns that are available.

- 30-m DB-5 30-m x 0.53-mm ID fused-silica capillary column chemically bonded with SE-54 (DB-5, SPB-5, RTx-5, or equivalent), 1.0-µm film thickness.
- 30-m DB-608 30-m x 0.53-mm ID fused-silica capillary column chemically bonded with 35 percent phenyl methylpolysiloxane (DB-608, SPB-608, RTx-35, or equivalent), 0.5-µm or 0.83-µm film thickness.
- 30-m DB-1701 30-m x 0.53-mm ID fused-silica capillary column chemically bonded with 14% cyanopropylmethylpolysiloxane (DB-1701, or equivalent), 1.0-µm film thickness.

6.3 ANALYTICAL BALANCES

- An analytical balance capable of weighing to 0.0001 gram balance is used for the preparation of standards.
- A 2-place, top-loading balance capable of weighing to 0.01 gram is used for the determination of sample weights for extraction and percent moisture determinations.

- Calibration weights will accompany the balances, and the balance calibration and accuracy are checked daily prior to sample or standard weighing.

6.4 GLASSWARE

- 4-oz amber glass wide-mouth jars with Teflon-lined screw caps
- 40-mL VOA vials with Teflon-lined screw caps are used as extraction vessels
- Two mL glass vials with Teflon-lined crimp caps (autosampler vials)
- Transfer pipettes
- Graded pipettes are pipettes with volumes etched on the glass of such quality to accurately measure the volume contained in the pipette
- Glass Beakers: 250-mL
- Glass funnels
- 10-mL, 25-mL, and 50-mL volumetric glass used for the preparation of standards.

6.4.1 Glassware Cleaning

Clean all glassware as soon as possible after use by rinsing with the last solvent used. This should be followed by detergent washing (Alconox®) with hot water, and rinsed with tap water and/or organic-free reagent water. Glassware should be covered with aluminum foil and stored in a clean environment between uses.

6.5 EXTRACTION EQUIPMENT

- Vortex Shaker
- Heat Systems Model W400 Ultrasonic Extractor with ½” horn or Misonix XL 2020 with dual horn.
- Thermo CL2 centrifuge or a Whirlybird® hand-crank centrifuge.

6.6 OTHER EQUIPMENT

- GOW-MAC® Model 21-250 helium leak detector. The leak detector is used to verify system integrity by checking all fittings and orifices for leaks that could affect system performance.
- Glass wool

7.0 REAGENTS AND STANDARDS

Reagent-grade or pesticide-grade chemicals are used in all preparations and extractions. Other grades may be used, provided the reagent is of sufficiently high purity to permit its use without lessening the accuracy of the determination. Reagents should be stored in glass to prevent the leaching of contaminants from plastic containers.

NIST-certified standards will be used for the identification and quantitation of target analytes.

7.1 SOLVENTS

Solvents used in the extraction and cleanup procedures include *n*-hexane, acetone, sulfuric acid, and water. All solvents must be exchanged to *n*-hexane prior to analysis. All solvents are pesticide grade in quality or equivalent, and each lot of solvent must be determined to be free of phthalates. A manufacturer's certificate of analysis is sufficient determination, unless factors or interferences indicate otherwise.

Hexane is used for the preparation of all standards, surrogates and spiking solutions. All solvent lots must be reagent- or pesticide-grade in quality, or equivalent, and should be determined to be free of phthalates.

7.2 ORGANIC-FREE REAGENT WATER

All references to water in this method refer to organic-free reagent water

7.3 STANDARD SOLUTIONS

The following sections describe the preparation of stock, intermediate, and working standards for the compounds of interest. This discussion is provided as an example, and other approaches and concentrations of the target compounds may be used, as appropriate for the intended application. See EPA Method SW8000B for additional information on the preparation of calibration standards.

7.4 STOCK STANDARD SOLUTIONS

Stock standard solutions (1,000 µg/mL) of certified PCB standards in acetone are purchased from vendors such as Restek or AccuStandard. Certificates of analysis are maintained and stored on site in order to ensure the accuracy of prepared standards. Lot numbers and each standard preparation are recorded in the Standards Log Book.

NOTE: Standard solutions (stock, composite, calibration, and surrogate) are stored at less than 6°C in Teflon-sealed glass containers in the dark once they are removed from flame-sealed vials. When a lot of standards are prepared, aliquots of that lot are stored in individual small vials. All stock and working standard solutions must be replaced after six months, or sooner if routine QC checks indicate a problem.

7.5 CALIBRATION STANDARDS FOR AROCLORS

7.5.1 Initial Calibration Standard Mixtures

A standard containing a mixture of Aroclor 1016 and Aroclor 1260 will include many of the peaks represented in the other five Aroclor mixtures. As a result, a multi-point initial calibration employing a mixture of Aroclors 1016 and 1260 are used to demonstrate the linearity of the detector response without the necessity of performing multi-point initial calibrations for each of the seven Aroclors. In addition, such a mixture can be used as a standard to demonstrate that a sample does not contain peaks that represent any one of the Aroclors. This standard can also be used to determine the concentrations of either Aroclor 1016 or Aroclor 1260, should they be present in a sample. If other Aroclors are identified, a five-point calibration with passing ICV is required.

A minimum of five calibration standards containing equal concentrations of both Aroclor 1016 and Aroclor 1260 are prepared by diluting a stock standard with hexane. The concentrations should correspond to the expected range of concentrations found in real samples, and must be within the linear range of the detector. Initial calibration standards are prepared in volumetric glassware at concentrations of 0.1, 0.5, 1.0, 10 and 20 mg/L from a 1000 mg/L stock standard solution. Other concentrations may be used as long as they demonstrate response and linearity consistent with other standards, and are within the linear dynamic range of the detector.

7.5.2 Single PCB Standards

Single standards of each of the other five Aroclors listed in Table 1 are required to aid the analyst in pattern recognition. Assuming that the Aroclor 1016/1260 standards described in Section 7.5.1 have been used to demonstrate the linearity of the detector, these single standards of the remaining five Aroclors listed in Table 1 also may be used to determine the calibration factor for each Aroclor when a linear calibration model is chosen. A standard for each of the other Aroclors is prepared at a concentration of 1.0 mg/L. The concentrations should generally correspond to the mid-point of the linear range of the detector, but lower concentrations may be employed at the discretion of the analyst based on project requirements.

7.5.3 Surrogate Standards

The extraction efficiency of the method is monitored using surrogates. Surrogate standards (TCMX and decachlorobiphenyl) are added to all samples, method blanks, laboratory-fortified blanks, and calibration standards.

7.5.4 Other Standards

Other standards (e.g., other Aroclors) and other calibration approaches (e.g., non-linear calibration for individual Aroclors) may be employed to meet project needs. When the nature of the PCB contamination is already known, standards of those particular Aroclors will be used to prepare initial and continuing calibration standards.

(Intentionally blank)

8.0 QUALITY CONTROL

The QC acceptance criteria for various aspects of this method are described in this section. Quality control limits are outlined in Table 2 and described in detail in the following sections.

Table 2 Quality Control Criteria

QC Item	Frequency	Acceptance Criteria	Corrective Action(s)
Initial Calibration	Before analysis of samples	<20% RPD or a linear regression correlation coefficient (r^2) value greater than 0.995	Check standard integrity and perform additional initial calibrations as necessary.
Continuing Calibration	Before introduction of samples, after every 20 samples, and at the end of an analytical batch	<20% RPD of the known standard concentration	Inject another standard, clean the injector port. Perform initial calibration.
Instrument Blank	Before introduction of samples, after every 20 samples, and at the end of an analytical batch	Reported concentrations less than ½ the practical quantitation limit	Repeat blank injection, clean injection port, and replace septa and liner.
Extraction Blank	One extraction blank is extracted and analyzed with each extraction batch.	Reported concentrations less than ½ the practical quantitation limit	Repeat blank injection, clean injection port, and replace septa and liner. If the blank concentration is less than 10 times the lowest concentration of any field samples, data must be qualified (flagged) or the entire sample batch must be re-extracted.
Laboratory-Fortified Blank (LFB)	Two LFBs are extracted and analyzed with each extraction batch.	Control limits are 60 to 130% of known spiked concentrations. The RPD between 2 LFBs from the same extraction batch must not exceed20%.	Repeat injection, if re-injection fails to meet acceptance criteria, all samples in the extraction batch must be re-extracted.

Table 2 Quality Control Criteria (continued)

QC Item	Frequency	Acceptance Criteria	Corrective Action(s)
Surrogates	Surrogates are included in all continuing calibration standards, method blanks, LFBs and field samples.	continuing calibration standard acceptance criteria are +/- 20% RPD of the known concentration. Method blanks and LFB acceptance criteria are 40-140% for TCMX and 60-130% for DCB.	Determine the cause of the failure. Failure to meet recovery criteria in method blanks and LFBs indicate that extraction or analysis problems exist. Failure of surrogate recoveries in field samples may indicate matrix interference if recoveries are acceptable in extraction blanks and LFBs.

Notes:
CCS = continuing calibration standard
QC = quality control
RPD = relative percent difference
RSD = relative standard deviation

8.1 Sample Collection

The collection of analytical field samples is described in the Sample Analysis Plan, which is a separate document. The Sample Analysis Plan translates project objectives and specifications into procedures used in the collection of samples. Samples must be collected using clean sampling equipment, and new clean nitrile gloves must be worn. Sample gloves should be changed prior to the beginning of any collection activities and between samples.

8.2 Initial Calibration

The initial calibration is performed by analyzing standards at known variable concentrations over the expected concentration range of samples, or within the linear dynamic range of the detector. The area (response) of quantitative peaks is determined, and then the area is divided by the known concentration to develop individual response factors. The response factors may be incorporated into a calibration function, such as an average response factor or a linear regression. An average response factor incorporates the individual response factors into an average of the response factors. The average response must have a relative standard deviation (RSD) of less than 20% to be acceptable. A linear regression calibration curve uses the least squares method to produce a straight line that does not pass through the origin, when the regression calibration technique is used. The linear regression must have a correlation coefficient (r^2) greater than 0.995 to be acceptable. The software (Agilent ChemStation and

Enviroquant) performs the calculations necessary to determine the average RSD and correlation coefficient (r^2).

8.3 CONTINUING CALIBRATION

A continuing calibration standard is analyzed as a calibration check, after each group of 20 samples in the analysis sequence. Thus, injections of method blank and LFB extracts and other non-standards are counted in the total. Solvent blanks, injected as a check on cross-contamination, are also not counted in the total. The response factors for the continuing calibration must be within ±20 percent of the initial calibration to meet acceptance criteria. When the continuing calibration is outside of acceptance criteria, the laboratory will stop analyses and take corrective action.

8.4 LABORATORY FORTIFIED BLANK (LFB)

The LFB concentration of PCBs as Aroclor 1260 is spiked at sufficient volume to have the concentration at 1.0 mg/L in the blank sample. Other concentrations may be used, as appropriate for the intended application. The LFB is also known as the LCS. Two LFBs are extracted with each extraction batch.

8.5 METHOD BLANK

Initially, before processing any samples, the analyst should demonstrate that all parts of the equipment in contact with the sample and reagents are interference-free. This is accomplished through the analysis of a method blank. As a continuing check, each time samples are extracted, cleaned up, and analyzed, and when there is a change in reagents, a method blank is prepared and analyzed for the compounds of interest as a safeguard against chronic laboratory contamination. If a peak is observed within the RTW of any analyte that would prevent the determination of that analyte, identify the source and eliminate it, before processing the samples, if possible. The blanks should be carried through all stages of sample preparation and analysis. When new reagents or chemicals are received, the laboratory must monitor the preparation and/or analysis blanks associated with samples for any signs of contamination. A single method blank is extracted with each extraction batch.

8.6 SAMPLE QUALITY CONTROL FOR PREPARATION AND ANALYSIS

The laboratory must also have procedures for documenting the effect of the matrix on method performance (precision, accuracy, method sensitivity). This includes the analysis of QC samples, including a method blank and LFBs in each analytical batch and the addition of surrogates to each field sample QC sample when surrogates are used. Any method blanks, matrix spike samples, or replicate samples, should be subjected to the same analytical procedures (Section 11.0) as those used on actual samples.

8.7 SURROGATE RECOVERIES

The laboratory will evaluate surrogate recovery data from individual samples versus the surrogate control limits listed in Table 2.

8.8 INITIAL DEMONSTRATION OF PROFICIENCY (PERFORMANCE EVALUATION [PE] SAMPLE)

Each analyst must demonstrate initial proficiency with each sample preparation and determinative method combination it utilizes, by generating data of acceptable accuracy and precision for target analytes in a clean matrix. The laboratory must also repeat the demonstration of proficiency whenever new staff members are trained, or significant changes in instrumentation are made. PE samples are provided by manufacturers at concentrations unknown to the laboratory or analyst. Once the PE sample concentration is determined, the results are sent back to the manufacturer for confirmation. If the confirmation is within the manufacturer's criteria, a certificate of performance is issued by the manufacturer. If the confirmation result is outside of acceptance criteria, the cause(s) must be corrected before a new PE sample is requested. The analysis and determination of each PE sample, whether in or out of acceptance criteria, must be documented and maintained by the laboratory.

9.0 METHOD PROCEDURES

The following procedures have been demonstrated to be applicable for soil screening by the Office of Environmental Measurement and Evaluation (EPA Region 1). The method is also described in *Standard Operating Procedures for PCB Field Testing For Soil and Sediment Samples* (EPA, 2002).

9.1 SAMPLE EXTRACTION

Soil Samples are extracted by weighing approximately 10 grams (wet weight) of sample in a weigh boat. The sample is allowed to air dry for up to 12 hours to evaporate excess soil moisture.. The weighed sample is transferred to a 40-mL VOA vial, then surrogates are introduced to the sample. Twenty (20) mL of 1:1 hexane-acetone solvent is added to the sample and agitated with a vortex mixer for 90 seconds. 4 mL of organic-free water is added to separate the hexane from the acetone and the sample is again agitated on the vortex shaker for 30 seconds. The extraction vial is then centrifuged for 30 seconds or more to facilitate the separation of the hexane from the soil and acetone-water layer. The hexane layer is the top layer, and it is removed and transferred with a disposable Pasteur pipette to two 2 mL autosampler vials for analysis.

EPA Method 3550B, ultrasonic extraction, may be used to handle large sample loads, difficult matrices, or, in the event of mechanical breakdown, poor recoveries. A sample batch will only be extracted using one method.

The use of hexane-acetone solvents generally reduces the amount of interferences, and improves signal-to-noise ratio.

9.1.1 Extract Cleanup

Cleanup procedures may not be necessary for a relatively clean sample matrix, but most extracts from environmental and waste samples may require additional preparation to remove interferences before analysis. A modified Method 3665A will be used for PCB sample cleanup when sample extracts exhibit likely non-target interference due to the presence of POL or natural organic matter (NOM). The hexane layer is removed from the top of the sample extract after water has been added to facilitate the separation of the hexane and acetone. Target analytes preferentially partition into the hexane layer. The hexane layer is removed and transferred to a clean 40-mL VOA vial using transfer pipettes. Five mL of 1:1 sulfuric-acid-water is then applied to sample extract, mixed on a vortex shaker, and allowed to settle before injection on the GC.

9.1.2 Method Applicability to Other Matrices

The extraction techniques for solids may be applicable to wipe samples and other sample matrices not addressed in Section 10.1. The analysis of oil samples may need special sample preparation procedures that are not described here.

9.1.3 Demonstration of Extraction Method Proficiency and Detection Limits

Reference materials, field-contaminated samples, and spiked samples will be used to verify the applicability of the selected extraction techniques. Samples will be spiked with the compounds of interest and surrogates in order to determine the percent recovery and the limit of detection for each extraction method.

A combination of Aroclor 1016 and Aroclor 1260 will be spiked at concentrations at or below the PQL to determine the detection limit. The PQL has been empirically determined to be 0.1 mg/kg in soil samples.

9.2 GC Conditions

9.2.1 Single-Column Analysis

This capillary GC/ECD method allows the analyst the option of using 0.25-mm or 0.32-mm ID capillary columns (narrow-bore), or 0.53-mm ID capillary columns (wide-bore). Due to the likely presence of non-target interference, 0.53-mm ID columns will be used for this analysis. The GC is configured with dual injectors, dual columns, and dual detectors for simultaneous analysis of two independent samples.

9.2.2 GC Temperature Programs and Flow Rates

Table 3 lists the GC operating conditions for the analysis of PCBs as Aroclors for single-column analysis, using wide-bore capillary columns. The GC conditions in these tables are the GC temperature program and flow rates necessary to separate the analytes of interest.

Once established, the same operating conditions must be used for the analysis of samples and standards. Retention times and calibrations will be verified on a daily basis at the beginning of each analytical sequence and retention times will be verified by monitoring subsequent continuing calibration standards.

Note: Once established, the same operating conditions must be used for both calibrations and sample analyses**.**

Table 3 Instrument Conditions

Parameter	Settings
Injector Port Temperature	240°C
Detector Temperature	325°C
Temperature Program	100°C for 1 minute 10°C/min to 280°C 20°C /min to 300°C
Columns 1 and 2	30 m x 0.53 mm ID, 0.5 µm coating
Injection Volume	2 µL
Carrier Gas	Helium at 10 mL per minute.
Make-up Gas	5% Methane in Argon (P5) at 2.5 mL per minute

Notes:

°C	=	degrees Celsius	ID	=	identification
µL	=	micrograms per liter	mL	=	milliliter
µm	=	micrometers	mm	=	millimeter

9.3 INSTRUMENT CALIBRATION

9.3.1 Initial Calibration

Prepare calibration standards using the procedures in Section 7.5. PCBs will be determined and quantitated as Aroclors using an external standard calibration.

Note: Because of the sensitivity of the electron capture detector, always clean the injection port and column prior to performing the initial calibration.

To establish the calibration factor, estimate the linear range starting at the PQL, which is the lowest concentration that can be accurately quantitated using the established GC analysis conditions. The upper dynamic range of the calibration is dependent on the detector and operating conditions. Upper calibration standards should demonstrate adequate sensitivity as evaluated using the response factor (RF) for each individual standard. The RF is equal to: RF=Peak Area in the Standard/Total Mass of the Standard Injected (in nanograms).

The initial calibration consists of two parts, described below.

9.3.1.1 Establishment of Linear Dynamic Range

As noted in Section 7.5, a standard containing a mixture of Aroclor 1016 and Aroclor 1260 will include many of the peaks represented in the other five Aroclor mixtures. Thus, such a standard may be used to demonstrate the linearity of the detector and to demonstrate that a sample does not contain peaks that represent any one of the Aroclors. This standard can also be used to determine the concentrations of either Aroclor 1016 or Aroclor 1260, should they be present in a sample. Therefore, an initial multi-point calibration is performed using the mixture of Aroclors 1016 and 1260.

9.3.2 Selection of Quantitative Peaks

Sample and standard concentrations will be determined using 5 quantitation peaks for each Aroclor. The peaks must be characteristic of the Aroclor in question. Selected quantitation peaks should be at least 25% of the height of the largest Aroclor peak. The 5 quantitative peaks are selected at the discretion of the analyst, and should demonstrate adequate separation from non-quantitative peaks. When practical, the quantitative peaks should have slopes returning to baseline and not co-elute or shoulder with other peaks. For each Aroclor, the set of quantitation 5 peaks should include at least one peak that is unique to that Aroclor. If the analyst is using the Aroclor 1016/1260 mixture, none of the individual congeners should be found in both of these Aroclors.

Inject 2 µL of each calibration standard and record the peak area and retention time of each characteristic Aroclor peak to be used for quantitation. Whether using automated or manual integration technique, the peak baseline must be integrated in the same manner as the initial and continuing calibration standards, in order to accurately determine analyte quantities in the sample extract. When five peaks are used for determining sample concentrations, each peak will be assigned a concentration at $1/5^{th}$ the total concentration in the standard. The concentration in the sample extract is determined by totaling the concentrations of the five peaks. When field sample peaks do not demonstrate the same characteristics as the standards due to interferences, a peak may be excluded from the quantitation at the discretion of the analyst. The concentration is determined by totaling the concentration of the other four peaks and multiplying the sum by 1.25 in order to normalize the sample concentration. Exclusion of quantitated peaks should only be performed by an experienced analyst after confirmation that the Aroclor has been properly identified, and that no other classes of Aroclors are present in the sample. (See Section 4.0 for description of interferences).

9.3.2.1 Calibration Factors

For a five-point calibration, ten sets of calibration factors will be generated for each standard of the Aroclor 1016/1260 mixture, with each set consisting of the calibration factors for each of the five (or more) peaks chosen for this mixture. For example, there will be at least 50 separate calibration factors in the multi-point calibration.

9.3.2.2 Establishing the Calibration Function

If a linear calibration model is used, the response factors or calibration factors from the initial calibration are used to evaluate the linearity of the initial calibration. This involves the calculation of the mean response or calibration factor, the standard deviation, and the RSD for each Aroclor peak. When the Aroclor 1016/1260 mixture is used to demonstrate the detector response, the linear calibration models must be applied to the other five Aroclors for which only single standards are analyzed. If multi-point calibration is performed for other Aroclors (such as Aroclor 1254), use the same criteria to evaluate calibration factors from those standards to evaluate linearity. An RSD of less than or equal to 20% is considered an acceptable demonstration of linearity.

Refer to EPA Method 8000B for the specifics of the evaluation of the linearity of the calibration and guidance on performing non-linear calibrations. In general, non-linear calibrations will also consider each characteristic Aroclor peak separately.

9.3.2.3 Qualitative Identification of Other Aroclors

Standards of the other five Aroclors are necessary for pattern recognition. When employing the traditional model of a linear calibration, these standards are also used to determine a single-point calibration factor for each Aroclor, assuming that the Aroclor 1016/1260 mixture in Section 7.5.1 has been used to describe the detector response. The standards for these five Aroclors should be analyzed before the analysis of any samples, and may be analyzed before or after the analysis of the five 1016/1260 standards in Section 7.5.2. These Aroclors must be reinjected if the GC operating conditions are modified, or new columns are installed. If new columns are installed with the same characteristics as the one that is replaced, and no other operating conditions have changed, the analyst may use discretion in determining if the 5 Aroclor standards need to be reinjected. Criteria for the determination include similar retention times and chromatographic patterns nearly identical to those previously established for the qualitative determination of the classes of Aroclor standards.

9.3.2.4 Initial Calibration of Other Aroclor Classes

In situations where other Aroclors of interest are present at a site, the analyst may employ a multi-point initial calibration of the Aroclors of interest (e.g., five standards of Aroclor 1254 if this Aroclor is of concern and linear calibration is employed) and not use the 1016/1260 calibration mixture.

9.4 RETENTION TIME WINDOWS

Absolute retention times are generally used for compound identification. When absolute retention times are used, RTWs are crucial to the identification of target compounds, and should be established by one of the approaches described in EPA Method 8000B.

Retention time windows are established to compensate for minor shifts in absolute retention times as a result of sample loadings and normal chromatographic variability. The width of the RTW should be carefully established to minimize the occurrence of both false positive and false negative results. Tight RTWs may result in false negatives and/or may cause unnecessary reanalysis of samples when surrogates or spiked compounds are erroneously not identified. Overly wide RTWs may result in false positive results that cannot be confirmed upon further analysis. Analysts should reference EPA Method 8000B for the details of establishing RTWs. Other approaches to compound identification may be employed, provided that the analyst can demonstrate and document that the approaches are appropriate for the intended application. A sum of the area of all peaks (congeners) in any class of Aroclors in not recommended due to the relative inaccuracy of the integration.

When conducting Aroclor analysis, it is important to determine that common single-component pesticides, such as DDT, DDD, and DDE, do not elute at the same retention times as the target congeners. There may be substantial DDT interference with the last major Aroclor 1254 peak in some soil and sediment samples.

9.5 GAS CHROMATOGRAPHIC ANALYSIS OF SAMPLE EXTRACTS

9.5.1 Operating Conditions for Field Samples

The same GC operating conditions used for the initial calibration must be employed for the analysis of all samples and continuing calibration standards.

9.5.2 Continuing Calibration Verification

Verify calibration at least once each 12-hour shift or every 20 samples, by injecting calibration verification standards prior to conducting any sample analyses. A calibration standard must also be injected at intervals of not less than once every 20 samples and at the end of the analysis sequence. For Aroclor analyses, the calibration verification standard will be a mixture of Aroclor 1016 and Aroclor 1260. The calibration verification process does not *require* analysis of the other Aroclor standards used for pattern recognition unless that Aroclor is present in a field sample.

9.5.2.1 Continuing Calibration Verification Criteria

The calibration factor for each analyte calculated from the CVS should not exceed a difference of more than ±20 percent when compared to the mean calibration factor from the initial calibration curve. If a calibration approach other than the RSD method has been employed for the initial calibration (e.g., a linear model not through the origin, a non-linear calibration model, etc.), consult Method 8000B for the specifics of calibration verification. % Difference = ((known concentration of standard-standard analytical result/ known concentration) * 100. RF × 100

9.5.2.2 Continuing Calibration Verification Failure

If the calibration does not meet the ±20% limit on the basis of each compound, check the instrument operating conditions, and if necessary, restore them to the original settings, and inject another aliquot of the calibration verification standard. If the response for the analyte is still not within ±20%, then a new initial calibration must be prepared. See Section 8.0 for a discussion on the effects of a failing calibration verification standard on sample results.

9.5.3 Qualitative Identification of Aroclors

Qualitative identifications of target analytes are made by examination of the sample chromatograms and comparison of target analytes to known standards injected on the GC under the same analytical conditions.

9.5.4 Quantitative Determination of Aroclor Concentrations

Quantitative results are determined for each identified analyte using the procedures described in Section 9.3 for the external calibration procedure (Method 8000B). If the responses in the sample chromatogram exceed the calibration range of the system, dilute the extract and reanalyze.

9.5.5 Sample Bracketing with Continuing Calibration Standards

Each sample analysis employing external standard calibration must be bracketed with an acceptable initial calibration, calibration verification standard(s) after every 20 field samples, or calibration standards interspersed within the samples. The results from these bracketing standards must meet the calibration verification criteria in Section 9.3. Multi-level standards are used in the initial calibration to ensure that detector response remains stable for all analytes over the calibration range.

When a calibration verification standard fails to meet the QC criteria, all samples that were injected after the last standard that met the QC criteria must be evaluated to prevent misquantitation and possible false negative results, and reinjection of the sample extracts is required. More frequent analyses of standards will minimize the number of sample extracts that would have to be reinjected if the QC limits are violated for the standard analysis. However, if the standard analyzed after a group of samples exhibits a response for an analyte that is above the acceptance limit, i.e., >20% of true value, and the analyte was not detected in the specific samples analyzed during the analytical shift, then the extracts for those samples do not need to be reanalyzed, because the verification standard has demonstrated that the analyte would have been detected if it were present. In contrast, if an analyte above the QC limits was detected in a sample extract, then reinjection is necessary to ensure accurate quantitation. If an analyte was not detected in the sample and the standard response is more than 20% below the initial calibration response, then reinjection is necessary. The purpose of this reinjection is to ensure that the analyte could be detected, if present, despite the change in the detector response, e.g., to protect against a false negative result.

Sample injections may continue for as long as the CVS and other standards interspersed with the samples meet instrument QC requirements. It is *recommended* that standards be analyzed after every 10 samples (*required* after every 20 samples and at the end of a set per EPA Method 8082) to minimize the number of samples that must be re-injected when the standards fail the QC limits. The sequence ends when the set of samples has been injected, after 24 hours of continuous injections, or when qualitative or quantitative QC criteria are exceeded.

9.5.6 Retention Time Stability

Use the calibration standards analyzed during the sequence to evaluate retention time stability. If any of the standards fall outside their daily RTWs, the system is out of control. Determine the cause of the problem and correct it. Likely causes of retention time shifts are loss of system integrity due to a leaking gas system. Check regulator pressures at the cylinders and flow controls on the GC. If they are the same as the conditions used to initially determine the RTWs, replace the injector septa and/or check for leaks in the system with a helium leak detector.

9.5.7 Analytical Interferences

If compound identification or quantitation is precluded due to interferences (e.g., broad, rounded peaks or ill-defined baselines are present), corrective action is warranted. Cleanup of the extract, column trimming, or replacement of the capillary column or detector may be necessary. The analyst may begin by rerunning the sample on another column to determine if the problem results from analytical hardware or the sample matrix. Refer to Section 9.1.1 for sample cleanup procedures.

9.6 QUALITATIVE IDENTIFICATION

The identification of PCBs as Aroclors using this method with an electron capture detector is based on agreement between the retention times of peaks in the sample chromatogram with the RTWs established through the analysis of standards of the target analytes. See Section 9.4 for information on the establishment of retention time windows. Tentative identification of an Aroclor occurs when peaks from a sample extract fall within the established RTWs for a particular Aroclor.

The results of a single column/single injection analysis may be confirmed, if necessary, on a second, dissimilar, GC column. In order to be used for confirmation, RTWs must have been established for the second GC column. In addition, the analyst must demonstrate the sensitivity of the second-column analysis. This demonstration must include the analysis of a standard of the target analyte at a concentration at least as low as the concentration estimated from the primary analysis. That standard may be the individual Aroclor or the Aroclor 1016/1260 mixture.

When samples are analyzed from a source known to contain specific Aroclors, the results from a single-column analysis may be confirmed on the basis of a clearly recognizable Aroclor pattern. This approach should not be attempted for samples that appear to contain mixtures of Aroclors. In order to employ this approach, the analyst must document:

- The peaks that were evaluated when comparing the sample chromatogram and the Aroclor standard.
- The absence of major peaks representing any other Aroclor.
- The source-specific information indicating that Aroclors are anticipated in the sample (e.g., historical data, generator knowledge, etc.).

Note: This information should either be provided to the data user or maintained by the laboratory.

9.6.1 Confirmation

Tentative identification of an analyte occurs when a peak from a sample extract falls within the daily RTW established by injection of a known standard. An experienced analyst must perform the confirmation.

9.7 QUANTITATION OF PCBS AS AROCLORS

The quantitation of PCB residues as Aroclors is accomplished by comparison of the sample chromatogram to that of the most similar Aroclor standard. A choice must be made as to which Aroclor is most similar to that of the residue and whether that standard is truly representative of the PCBs in the sample.

Use the individual Aroclor standards (not the 1016/1260 mixtures) to determine the pattern of peaks on Aroclors 1221, 1232, 1242, 1248, and 1254. The patterns for Aroclors 1016 and 1260 will be evident in the mixed calibration standards.

Once the Aroclor pattern has been identified, compare the response's 5 major peaks in the single-point calibration standard for that Aroclor with the peaks observed in the sample extract. The amount of Aroclor is calculated using the individual calibration factor for each of the 5 characteristic peaks chosen in Section 9.3 and the calibration model (linear or non-linear) established from the multi-point calibration of the 1016/1260 mixture. Non-linear calibration may result in different models for each selected peak, i.e. more than one type of calibration may be used for fitting the differing peaks but only one type of calibration per peak. A concentration is determined using each of the characteristic peaks and the individual calibration factor calculated for that peak in Section 9.2. Then, these 5 concentrations are totaled to determine the concentration of that Aroclor.

Weathering of PCBs in the environment and changes resulting from chemical or natural weathering processes, may alter the PCBs to the point that the pattern of a specific Aroclor is no longer recognizable.

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10.0 GC MAINTENANCE

The analytical system must be inspected and maintained on a daily basis to ensure accurate and determinative identification and quantitation of analytical samples.

10.1 METAL INJECTOR BODY

Turn off the oven, cool the detectors and injectors to room temperature, and remove the analytical columns once the oven has cooled. Remove the glass injection port insert. Inspect the injection port and remove any noticeable foreign material.

Place a beaker beneath the injector port inside the oven. Using a wash bottle, rinse the entire inside of the injector port with acetone and then hexane while catching the rinseate in the beaker.

Deactivated glass injection port liners should be replaced after every 3 days, or as indicated by instrument conditions. Replace the injector liner, reassemble the injector, replace the injector septa, and re-install the columns. Test all fittings with a leak detector to ensure a gas-tight system.

10.2 COLUMN RINSING

Rinse the column with several column volumes of an appropriate solvent. Both polar and nonpolar solvents are recommended. Depending on the nature of the sample residues expected, the first rinse might be water, followed by methanol and acetone. Fill the column with the appropriate solvent and allow it to stand flooded overnight to allow materials within the stationary phase to migrate into the solvent. Afterwards, flush the column with fresh hexane, drain the column, and dry it at room temperature with a stream of ultrapure nitrogen or helium.

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11.0 DATA ANALYSIS AND CALCULATIONS

The determination of sample concentrations is essential to project goals and quality assurance objectives. Whenever possible, spreadsheets with inserted formulas will be utilized to perform routine calculations, including determination of percent solids, sample extract concentrations, and sample concentrations. Sample extract concentrations are determined with Agilent Chemstation/Enviroquant software.

11.1 DETERMINATION OF PERCENT SOLIDS

The determination of the percent solids is performed using a spreadsheet with the following procedures and calculations:

1. Zero the 2 place balance.
2. Weigh the empty aluminum pan and record the weight.
3. Tare the balance with the aluminum pan on the balance.
4. Add approximately 10 grams of sample that is representative of the sample. Be sure to remove any rocks or twigs that may be present. Record the weight.
5. Place the panned sample in the drying oven, which is set at 104°C, for a minimum of 4 hours or until the sample is dry.
6. Remove the dry weight sample and allow to cool to room temperature.
7. Record the weight of the dried sample and pan.
8. Calculate the percent (%) solids.

Note: % Solids= (dry weight + pan weight)-pan weight)/ wet weight)*100

11.2 DETERMINATION OF SAMPLE CONCENTRATIONS

The concentration in the sample extract is calculated with the data system in Enviroquant and is based on the current calibration. The analyst must ensure that the data system is using the current calibration factors to calculate the concentration of analytes in the extract. The calculation for determining the soil sample concentration is performed on an Excel spreadsheet using the following formula.

Soil concentration= (Concentration of the sample extract (µg/L)/1000 µg/g) X (Volume of the sample extract (10mL of hexane)/dry weight of sample (g)) X dilution factor (1 or more). The result will be in µg/g, which equates to mg/kg (ppm).

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12.0 METHOD PERFORMANCE

Performance data and related information are provided in EPA SW-846 Solid Waste Methods only as examples and guidance. The data do not represent required performance goals for users of the methods. Instead, performance criteria should be developed on a project-specific basis, and the laboratory should establish in-house QC performance criteria for the application of this method. These performance data are not intended to be and must not be used as absolute QC acceptance criteria for purposes of laboratory accreditation.

The accuracy and precision obtainable with this method depend on the sample matrix, sample preparation technique, optional cleanup techniques, and calibration procedures used.

12.1 METHOD DETECTION LIMIT STUDY (MDL)

An MDL study is performed for with the same Aroclor mixture using in the ICAL and spiking solutions, but at a lower concentration. At minimum, the MDL spike should be at or below the PQL. The MDL samples go through the same extraction procedure as field and QC samples. Ten samples are extracted in the same batch along with a method blank. Sample concentrations are quantified and the standard deviation is calculated for all of the MDL samples. The standard deviation is then multiplied by the student T value to determine the MDL.

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13.0 POLLUTION PREVENTION

Pollution prevention encompasses any technique that reduces or eliminates the quantity and/or toxicity of waste at the point of generation. Numerous opportunities for pollution prevention exist in laboratory operations. The EPA has established a preferred hierarchy of environmental management techniques that places pollution prevention as the management option of first choice. Whenever feasible, laboratory personnel should use pollution prevention techniques to address their waste generation. When wastes cannot be feasibly reduced at the source, the Agency recommends recycling as the next best option.

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14.0 WASTE MANAGEMENT

Laboratory waste management practices will be conducted consistently with all applicable federal, state and local rules and regulations. The laboratory will use best practices to protect the air, water, and land, by minimizing and controlling all releases from hoods and bench operations, complying with all permits and regulations, and by complying with all solid and hazardous waste regulations, particularly the hazardous waste identification rules and land disposal restrictions. For further information on waste management, consult the *Waste Management Plan,* located inside the Bristol Work Plan, which is a separate document. Waste streams will be segregated and stored in categories, such as chlorinated and non-chlorinated solvents, acids and solid waste. Used solvents and acids will be stored in labeled bung top drums. Extracted and unextracted soil and solid reagents, such as sodium sulfate or diatomaceous earth, will be incorporated into the contaminated soil waste stream, which will be disposed of at the appropriate permitted treatment storage disposal facility (TSDF).

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15.0 REFERENCES

U.S. Environmental Protection Agency (EPA), 2007a. EPA Method 3545A Pressurized Fluid Extraction, Revision 1 and all promulgated updates. EPA Office of Solid Waste. February 2007.

EPA, 2007b. EPA Method 3550C Ultrasonic Extraction, Revision C and all promulgated updates. EPA Office of Solid Waste. February 2007.

EPA, 1996 (December). EPA Method 8000B and all promulgated updates. Determinative Chromatographic Separations. EPA Office of Solid Waste. December 1996.

EPA, 2005 (January). EPA SW846 Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods, Fourth addition and all promulgated updates. EPA Office of Solid Waste. January 2005.

EPA, 2002. Standard Operating Procedure for Polychlorinated Biphenyls (PCBs) Field Testing for Soil and Sediment Samples. The Office of Environmental Measurement and Evaluation. EPA Region New England. 2002.

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BRISTOL ENVIRONMENTAL REMEDIATION SERVICES, LLC

MULTI-INCREMENT® SAMPLING

STANDARD OPERATING PROCEDURE BERS-14

Record of Changes

Revision No.	Date	Prepared by	Approved by
0	02/23/10	L. Maserjian	P. Curl

MULTI INCREMENT® SAMPLING

STANDARD OPERATING PROCEDURE

Method Summary: *MULTI INCREMENT®*[1] sampling involves the extraction of a representative portion of material from within a single decision unit. In *MULTI INCREMENT* sampling, several increments from the same decision unit are combined to form one sample that is submitted for laboratory analysis. The procedures for *MULTI INCREMENT* sampling are specifically designed to minimize sampling errors caused by spatial and compositional heterogeneity.

Current sampling protocols involve the selection of multiple individual samples, where the separate results are then evaluated to answer questions regarding the distribution of contamination. The error associated with any measured pollutant concentration has contributions from the analysis, as well as where and how the sample was taken. The error associated with sampling is believed to contribute 70% or more of the overall measurement uncertainty, yet quality assurance protocols and certification programs focus almost exclusively upon the errors due to instrumental analysis.

The goal of *MULTI INCREMENT* sample collection is to obtain a mean concentration for a specified area by reducing sampling errors. Potential advantages of *MULTI INCREMENT* sampling include:

- Reduction of overall sampling error: final results are more closely representative of the arithmetic mean concentration of the analyte(s) of interest within the decision unit.
- Fewer samples are sent to the analytical laboratory for analysis, resulting in a potential reduction in analytical costs.
- The method can be useful as an initial screening procedure for sites with little or no historic information.
- *MULTI INCREMENT* sampling can be very effective for the determination of the arithmetic mean of constituents that exhibit a high degree of spatial/distributional heterogeneity.
- Various studies have shown that concentrations of contaminants that were measured using *MULTI INCREMENT* sampling were statistically more representative than traditional sampling and analytical protocols.
- The EPA may accept *MULTI INCREMENT* sampling for use in risk assessments in the future.

[1] *MULTI INCREMENT®* is a registered trademark of EnviroStat, Inc.

Different states may have their own guidance for performing *MULTI INCREMENT* sampling, which should be followed and incorporated into site-specific work plans. This SOP summarizes typical *MULTI INCREMENT* procedures.

***MULTI INCREMENT* Soil Sampling Procedures**

I. Decision Unit Identification

A decision unit is defined as the area or volume in question. To be valid, *MULTI INCREMENT* sampling must be used in conjunction with an appropriate decision unit. The decision units must be clearly stated in the work plan and approved, prior to conducting work.

Decision units are restricted to actual source zones, and must not incorporate large uncontaminated areas. *MULTI INCREMENT* is not to be used to "dilute" contamination. Two examples of well-defined decision units are a stockpile and an open excavation. In the case of an open excavation, *MULTI INCREMENT* sampling would be used for collecting a soil sample to confirm that the contaminated material has been removed.

In the case of underground storage tank (UST) excavations, the piping and dispenser areas may need to be separate decision units from the main UST footprint.

II. Sampling Locations

For *MULTI INCREMENT* sampling, one analytical sample is composed of many increments within a decision unit. The increments are selected randomly. There are several types of random sampling techniques, including simple random (each location has an equal chance of being selected), stratified random (subgroups are identified and sampled), and systematic random (on a grid).

In addition to the increment locations, the sample increment depths must also be considered. In areas of subsurface contamination, more than one decision unit can be used for different depths, e.g., one decision unit at two feet below ground surface (bgs) and another at four feet bgs.

III. Sampling Methods

The *MULTI INCREMENT* Soil Sampling Process will involve:

1. Collecting a small amount of soil increments from randomly-located increments (at least 30 increments, 30 to 50 increments is standard).
2. Combining these soil increments into one "bulk" *MULTI INCREMENT* sample.
3. Sieving the "bulk" *MULTI INCREMENT* sample (some laboratories will perform sieving).

4. Sub-sampling the "bulk" *MULTI INCREMENT* sample (some laboratories will perform sub-sampling) into the required sample mass for that analyses.
5. Submitting the one *MULTI INCREMENT* sample for analysis.

Equipment Required

- Large stainless steel spoon or scoop
- Large clean container (a large stainless steel bowl, Ziploc® bags, or 5-gallon bucket)
- #10 (2 millmeter) sieve
- Steel cookie sheet or other tray
- Small spatula or spoon
- Sample containers
- Scale
- For volatile samples: volatile sample container (pre-tared, narrow mouth, approximately 250 to 500 milliliters) or disposable plastic coring device (such as En Core® samplers)

<u>Non-Volatile Analyses *MULTI INCREMENT* Sampling Procedures</u>

Prior to planning the field strategy, the laboratory must be contacted to determine the sample mass required for each analysis. In general, a minimum of 30 grams of soil is required in order to have a large enough sample mass.

For surface samples, remove the soil to a depth of at least six inches (depending on site conditions and analyses required) prior to collecting the sample. When sampling from an excavator bucket, sample from the center and remove at least six inches of soil. For subsurface sampling, collect the soil directly from the hand auger, split spoon, or Macro-Core®.

For each sample increment: Using a large spoon or scoop, collect the sample increment from the appropriate sample location and depth according to the work plan. Scoop approximately 30 to 60 grams (1 to 2 ounces) into the large, clean container, then move to the next sample increment location and repeat. Be careful of oversize material which will mean more mass may be needed from each increment to end up with the 30 to 50 gram sub-sample after sieving.

After the 30 to 50 sample increments have been collected into the bucket, use the #10 sieve to sieve the soil into another clean container (can also be sieved into the bucket at the time of collection).

Once the <u>entire</u> "bulk" *MULTI INCREMENT* sample has been sieved, approximately 500 to 1,000 grams of material should be available. Spread this sieved *MULTI INCREMENT* sample on the steel tray and spread evenly to an approximate ½ inch thickness. Roughly divide the tray into 30 to 50 sections using the small spatula. Then, collect approximately 1.0 gram (approximately ½ tablespoon) from each of the sections. Make sure to scrape any fines from the spatula along the bottom of the tray in case fines have settled there. Place each sub-section sample into one sample jar (provided by laboratory). The final sample mass per jar submitted to the laboratory must meet the minimum amount of material required by the laboratory.

Repeat the process on the <u>same</u> tray of soil to be submitted to the laboratory for percent moisture, or as backup if re-analysis is required.

Soil drying may be necessary to facilitate sieving of the <2 mm fraction. Drying is only performed if necessary. Drying is performed at ambient room temperature, not at an elevated "baking" temperature.

<u>Volatile Analysis *MULTI INCREMENT* Sampling Procedures</u>

Volatile organics analyses require that samples be field preserved with a minimum 1:1 ratio of sample preservative to sample material (1.0 gram soil to 1.0 milliliter methanol). This is a minimum required ration, and additional soil mass is preferred as long as it is completely submerged by the methanol. The quantity that will be collected from each increment should be determined prior to contacting the laboratory. If the core-type sampler will collect 2 to 5 grams of material, and there are 30 increment locations, a pre-tared sample container containing 150 milliliters of methanol should be provided by the laboratory. It is recommended to use a narrow-mouth amber glass container. The container should be sized so that methanol is not lost due to splashing during the sampling event.

If sampling both volatile and non-volatile samples, the sampler should go to each of the sample increment locations and collect the volatile increments first, as follows:

Remove at least 6 inches of soil (depending on site conditions and analyses required) from the sample location. Collect a "plug" of soil, using the core-type sampler, from each random increment location. Each "plug" will be immediately placed into a pre-tared, narrow-mouth, laboratory bottle containing the methanol preservative. Place the lid back on the container between increments. Use a separate disposable core-type sampler for each increment.

No sieving or sub-sampling will be performed for the volatile samples. A non-preserved sample must also be collected for moisture determination (collect a 2 to 5 gram plug of material into a 4-ounce sample jar). This can be collected at the same time as the volatile sample collection.

Soil types that cannot be sampled using a core-type sampler (hard gravelly material) will require use of a "spoon" type sampling device to place sample material into a wide-mouth sample jar.

In order to guarantee that the 1:1 methanol to soil ratio is met, the sampling tools should be "field-calibrated" by weighing the soil to be sampled on a small balance to determine the approximate mass required from each random increment location. If the final sample mass does not meet the minimum requirements, additional soil increments from randomly-selected locations may be added. If additional methanol is added, it must be documented on the chain-of-custody form.

Quality Assurance/Quality Control

Triplicate Sampling: Triplicate (two additional samples along with the project sample) samples must be collected for *MULTI INCREMENT* sampling to verify that the *MULTI INCREMENT* sample truly represents the decision unit. Triplicate samples are different from duplicate samples, because they are not located at the same point as the project sample, but within the same increment. A minimum of one triplicate set is required for *MULTI INCREMENT* sampling projects. For sites with only one decision unit, triplicate sampling and analysis is required. For sites with multiple decision units, a minimum of one triplicate sample set should be collected for every 10 decision units (a rate of 10%).

Triplicate samples must be collected from decision units with known or suspected reportable levels of contamination because non-detect results may prohibit the relative standard deviation (RSD) and 95% upper control limit (UCL) calculations for evaluating the *MULTI INCREMENT* sampling representativeness.

Triplicates should be collected in the same increment as the project sample, but not at the same location. A practical way to achieve this is to move to the right or left (forward or backward) a pre-determined distance from the project sample, and collect another increment for the second sample. The same procedure would be followed for the third sample (move in another direction). The method of obtaining triplicates and number of triplicate samples must be described in the work plan.

RSD and 95% UCL Calculations: An RSD of 30% or less is required for *MULTI INCREMENT* sampling. At RSDs greater than 35%, the data distribution starts to become non-normal and confidence in the representativeness of the *MULTI INCREMENT* sample results diminish. RSD is calculated as presented below:

$$RSD(\%) = 100s/x_m$$

Where:

s = standard deviation

x_m = mean

The 95% UCL are calculated using the standard deviation and mean. The 95% UCL is especially relevant for concentrations at or near the action level. The 95% UCL is calculated as presented below:

$$95\%UCL = x_m + [ts/n_{sqrt}]$$

Where:

n = number of samples

x_m = mean

t = 95% one-side student t factor (e.g., for n=3, t=2.92)

n_{sqrt} = square root of “n” (e.g, the square root of 3 = 1.73205…)

s = standard deviation

For *MULTI INCREMENT* triplicate data sets that include one or two non-detect results, the lowest value reported by the laboratory, either the method detection limit (MDL) or practical quantitation limit (PQL), should be substituted for the sample result to perform both calculations. If all three *MULTI INCREMENT* results are non-detect, the calculations are not required.

The standard deviation, mean, RSD, and 95% UCL will be calculated for each decision unit. The mean and standard deviation calculated from the triplicate sample are used for calculating the 95% UCL for the other decision units. In these situations, the ts/n_{sqrt} calculated from the triplicate *MULTI INCREMENT* sample are added to the *MULTI INCREMENT* result(s) for the remaining decision units. For example, if the *MULTI INCREMENT* result for a second decision unit at the site was 232 mg/kg, the 95% UCL for this decision unit would be 232 mg/kg + ts/n_{sqrt}.

Interferences and Potential Problems:

Highly organic samples (peat): Soil material, such as peat, are not conducive to sieving; therefore, *MULTI INCREMENT* sampling is not appropriate without alternate sample collection and preparation procedures.

Wet samples: Sieving wet samples can be difficult and might leave material behind. Drying samples for semivolatile and non-volatile analyses has not shown a significant decrease in contaminant concentrations, but may require a lot of time and space.

Sample Grinding: Grinding may be required for samples to be analyzed for metals or any other analytes where the analytical sample size is small. Some laboratories offer grinding and *MULTI INCREMENT* preparation.

Volatile samples: Field studies have found that using a spoon or spatula with a wide-mouth jar results in loss of volatiles. A core-type sampler, or a narrow-mouth jar are recommended for use in collecting volatile soil samples.

MULTI INCREMENT Sampling is NOT designed for: *MULTI INCREMENT* sampling is not designed for identifying hot spots, delineating the extent of contamination, or determining the maximum concentration of contamination in soil from an area.

APPENDIX F

Analytical Results Tables

			Sample ID	12NCDRUM01	12NCDRUMO2	12NCDRUMO3	12NCDRUMO4	12NCDRUMO5	12NCDRUMO6	12NCDRUMO7	12NCDRUMO8	12NCDRUMO9	12NCDRUMO10	12NCDRUMO11	12NCDRUMO12	12NCDRUMO13	12NCDRUMO14
			Laboratory ID	580-34380-1	580-34825-1	580-34825-2	580-34825-3	580-34825-4	580-34825-5	580-34825-6	580-34825-7	580-34825-8	580-34825-9	580-34825-10	580-34825-11	580-34825-12	580-34825-13
			Location ID	12NCDRUM01	DRUM02	DRUM03	DRUM04	DRUM05	DRUM06	DRUM07	DRUM08	DRUM09	DRUM10	DRUM11	DRUM12	DRUM13	DRUM14
			Collection Date	8/7/2012	8/21/2012	8/21/2012	8/21/2012	8/21/2012	8/21/2012	8/21/2012	9/2/2012	8/21/2012	9/2/2012	9/2/2012	9/2/2012	9/2/2012	8/21/2012
Analysis Method	Analyte	Unit	Regulatory Limit-Hazard Classification														
1020A	Flashpoint	Degrees F		>212	>212	>212	>212	>212	>212	>212	>212	>212	>212	less than 70	>212	130	120
6010B	Arsenic	mg/L	5.0[1]	ND (0.37)	0.58 J	0.98	6.9	2.5	ND (0.050)	ND (0.050)	14	0.0086 J	0.088 J	1.2	ND (0.50)	ND (0.25)	0.10 J
6010B	Barium	mg/L	100[1]	NR	ND (0.030)	0.027	0.0086 J B	0.021 B	ND (0.030)	2.1	0.062	0.072	4.9	0.025 J	5.7	22	0.29
6010B	Cadmium	mg/L	0.5[1]	0.20 J	ND (0.020)	ND (0.0020)	ND (0.0020)	ND (0.0020)	ND (0.020)	ND (0.020)	ND (0.0020)	ND (0.0020)	0.61	ND (0.020)	ND (0.20)	ND (0.10)	0.021 J
6010B	Chromium	mg/L	5.0[1]	ND (0.37)	ND (0.040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.040)	ND (0.040)	ND (0.0040)	0.013 J	0.19 J	ND (0.040)	ND (0.40)	63	ND (0.040)
6010B	Lead	mg/L	5.0[1]	0.59 J	0.030 J	0.065	0.013 J	0.045	ND (0.030)	ND (0.030)	0.051	0.022 J	23	0.049 J	9.0	6.9	0.67
6010B	Nickel	mg/L	NS	NR	0.066 J B	ND (0.0020)	ND (0.0020)	ND (0.0020)	ND (0.020)	ND (0.020)	ND (0.0020)	0.0061 J B	0.73	ND (0.020)	0.10 J	110	0.11 J
6010B	Selenium	mg/L	1.0[1]	NR	0.32 J	0.23	0.11	0.25	0.046 J	ND (0.050)	0.30	ND (0.0050)	ND (0.050)	0.65 J	ND (0.50)	ND (0.25)	0.064 J
6010B	Silver	mg/L	5.0[1]	NR	ND (0.10)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.10)	ND (0.10)	ND (0.010)	ND (0.010)	ND (0.10)	ND (0.10)	ND (1.0)	ND (0.50)	ND (0.10)
6010B	Vanadium	mg/L	NS	NR	ND (0.050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.050)	ND (0.050)	0.0089 J	0.024	3.8	ND (0.050)	ND (0.50)	5.1	0.21
6010B	Zinc	mg/L	NS	NR	2.7	10	1.9	0.63	ND (0.10)	0.42	4.5	0.13	860	0.81	580	16	21
7470A	Mercury	mg/L	0.2[1]	NR	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.0010)	ND (0.00010) ML	ND (0.0050)	ND (0.0010)	ND (0.0010)	ND (0.0050)	ND (0.0010)	0.00070 J	ND (0.0050)	ND (0.0010)
8015B	Ethylene glycol	mg/kg	NS	NR	540000 QL	920000 QL	860000 QL		ND (6.7) QL					17 J B			
8015B	Propylene glycol	mg/kg	NS	NR	240 QL	78 QL	69 QL		ND (5.1) QL					ND (4.6)			
8082	PCB-1016	mg/kg	50.0[1]	ND (0.23)	ND (0.24)	ND (0.25)	ND (0.23)	ND (0.24)	ND (0.25)	ND (0.23)	ND (0.25)	ND (0.23)	ND (0.24)	ND (0.25)	ND (0.24)	ND (0.24)	ND (0.23)
8082	PCB-1221	mg/kg	50.0[1]	ND (0.47)	ND (0.47)	ND (0.49)	ND (0.47)	ND (0.47)	ND (0.49)	ND (0.47)	ND (0.49)	ND (0.45)	ND (0.48)	ND (0.50)	ND (0.49)	ND (0.47)	ND (0.46)
8082	PCB-1232	mg/kg	50.0[1]	ND (0.47)	ND (0.47)	ND (0.49)	ND (0.47)	ND (0.47)	ND (0.49)	ND (0.47)	ND (0.49)	ND (0.45)	ND (0.48)	ND (0.50)	ND (0.49)	ND (0.47)	ND (0.46)
8082	PCB-1242	mg/kg	50.0[1]	ND (0.23)	ND (0.24)	ND (0.25)	ND (0.23)	ND (0.24)	ND (0.25)	ND (0.23)	ND (0.25)	ND (0.23)	ND (0.24)	ND (0.25)	ND (0.24)	ND (0.24)	ND (0.23)
8082	PCB-1248	mg/kg	50.0[1]	ND (0.23)	ND (0.24)	ND (0.25)	ND (0.23)	ND (0.24)	ND (0.25)	ND (0.23)	ND (0.25)	ND (0.23)	ND (0.24)	ND (0.25)	ND (0.24)	ND (0.24)	ND (0.23)
8082	PCB-1254	mg/kg	50.0[1]	ND (0.23)	ND (0.24)	ND (0.25)	ND (0.23)	ND (0.24)	ND (0.25)	ND (0.23)	ND (0.25)	ND (0.23)	ND (0.24)	ND (0.25)	ND (0.24)	ND (0.24)	ND (0.23)
8082	PCB-1260	mg/kg	50.0[1]	ND (0.23)	ND (0.24)	ND (0.25)	ND (0.23)	ND (0.24)	ND (0.25)	ND (0.23)	ND (0.25)	ND (0.23)	ND (0.24)	ND (0.25)	ND (0.24)	ND (0.24)	ND (0.23)
8260B	1,1,1,2-Tetrachloroethane	µg/kg	NS	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	1,1,1,2-Tetrachloroethane	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	1,1,1-Trichloroethane	µg/kg	NS	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	1,1,1-Trichloroethane	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	880 J			
8260B	1,1,2,2-Tetrachloroethane	µg/kg	NS	NR						ND (600) QL					ND (690)	ND (76000)	ND (1100) QL
8260B	1,1,2,2-Tetrachloroethane	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	1,1,2-Trichloroethane	µg/kg	NS	NR						ND (600) QL					ND (690)	ND (76000)	ND (1100) QL
8260B	1,1,2-Trichloroethane	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	1,1-Dichloroethane	µg/kg	NS	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	1,1-Dichloroethane	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	1,1-Dichloroethene	µg/kg	14000[2]	NR						ND (1000) QL					ND (1200)	ND (130000)	ND (1900) QL
8260B	1,1-Dichloroethene	µg/L	700[1]	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	1,1-Dichloropropene	µg/kg	NS	NR						ND (1000) QL					ND (1200)	ND (130000)	ND (1900) QL
8260B	1,1-Dichloropropene	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	1,2,3-Trichlorobenzene	µg/kg	NS	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	1,2,3-Trichlorobenzene	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	1,2,3-Trichloropropane	µg/kg	NS	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	1,2,3-Trichloropropane	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	1,2,4-Trichlorobenzene	µg/kg	NS	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	1,2,4-Trichlorobenzene	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	1,2,4-Trimethylbenzene	µg/kg	NS	NR						ND (2100) QL					9800	11000000	ND (3800) QL
8260B	1,2,4-Trimethylbenzene	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	230 QL, J		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	1,2-Dibromo-3-Chloropropane	µg/kg	NS	NR						ND (10000) QL					ND (12000)	ND (1300000)	ND (19000) QL
8260B	1,2-Dibromo-3-Chloropropane	µg/L	NS	NR	ND (1500) QL	ND (1500) QL	ND (1500) QL	ND (1500) QL	ND (1500) QL		ND (1500)	ND (1500) QL	ND (1500)	ND (1500)			
8260B	1,2-Dichlorobenzene	µg/kg	NS	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	1,2-Dichlorobenzene	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	1,2-Dichloroethane	µg/kg	10000[2]	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	1,2-Dichloroethane	µg/L	500[1]	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	1,2-Dichloropropane	µg/kg	NS	NR						ND (680) QL					ND (780)	ND (86000)	ND (1300) QL
8260B	1,2-Dichloropropane	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	1,3,5-Trimethylbenzene	µg/kg	NS	NR						ND (2100) QL					3400	2900000	ND (3800) QL
8260B	1,3,5-Trimethylbenzene	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	1,3-Dichlorobenzene	µg/kg	NS	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	1,3-Dichlorobenzene	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	1,3-Dichloropropane	µg/kg	NS	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	1,3-Dichloropropane	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	1,4-Dichlorobenzene	µg/kg	150000[2]	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	1,4-Dichlorobenzene	µg/L	7500[1]	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	2,2-Dichloropropane	µg/kg	NS	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	2,2-Dichloropropane	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	2-Butanone (MEK)	µg/kg	4,000,000[2]	NR						ND (21000) QL					ND (24000)	ND (2600000)	ND (38000) QL
8260B	2-Butanone (MEK)	µg/L	200,000[1]	NR	ND (4500) QL	ND (4500) QL	ND (4500) QL	ND (4500) QL	ND (4500) QL		ND (4500)	ND (4500) QL	ND (4500)	48000			
8260B	2-Chlorotoluene	µg/kg	NS	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	2-Chlorotoluene	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	2-Hexanone	µg/kg	NS	NR						ND (10000) QL					ND (12000)	ND (1300000)	ND (19000) QL
8260B	2-Hexanone	µg/L	NS	NR	ND (2300) QL	ND (2300) QL	ND (2300) QL	ND (2300) QL	ND (2300) QL		ND (2300)	ND (2300) QL	ND (2300)	ND (2300)			
8260B	4-Chlorotoluene	µg/kg	NS	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL

			Sample ID	12NCDRUM01	12NCDRUMO2	12NCDRUMO3	12NCDRUMO4	12NCDRUMO5	12NCDRUMO6	12NCDRUMO7	12NCDRUMO8	12NCDRUMO9	12NCDRUMO10	12NCDRUMO11	12NCDRUMO12	12NCDRUMO13	12NCDRUMO14
			Laboratory ID	580-34380-1	580-34825-1	580-34825-2	580-34825-3	580-34825-4	580-34825-5	580-34825-6	580-34825-7	580-34825-8	580-34825-9	580-34825-10	580-34825-11	580-34825-12	580-34825-13
			Location ID	12NCDRUM01	DRUM02	DRUM03	DRUM04	DRUM05	DRUM06	DRUM07	DRUM08	DRUM09	DRUM10	DRUM11	DRUM12	DRUM13	DRUM14
			Collection Date	8/7/2012	8/21/2012	8/21/2012	8/21/2012	8/21/2012	8/21/2012	8/21/2012	9/2/2012	8/21/2012	9/2/2012	9/2/2012	9/2/2012	9/2/2012	8/21/2012
Analysis Method	Analyte	Unit	Regulatory Limit-Hazard Classification														
8260B	4-Chlorotoluene	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	4-Isopropyltoluene	µg/kg	NS	NR						ND (2100) QL					1500 J	1000000	ND (3800) QL
8260B	4-Isopropyltoluene	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	4-Methyl-2-pentanone	µg/kg	NS	NR						ND (10000) QL					ND (12000)	ND (1300000)	ND (19000) QL
8260B	4-Methyl-2-pentanone	µg/L	NS	NR	ND (2300) QL	ND (2300) QL	ND (2300) QL	ND (2300) QL	ND (2300) QL		ND (2300)	ND (2300) QL	ND (2300)	40000			
8260B	Acetone	µg/kg	NS	NR						ND (21000) QL					ND (24000)	ND (2600000)	ND (38000) QL
8260B	Acetone	µg/L	NS	NR	ND (4500) QL	ND (4500) QL	ND (4500) QL	ND (4500) QL	ND (4500) QL		ND (4500)	ND (4500) QL	200000	370000			
8260B	Benzene	µg/kg	2,000,000[2]	NR						300 QL, J					2000	ND (86000)	ND (1300) QL
8260B	Benzene	µg/L	100,000[1]	NR	1700 QL	ND (450) QL	ND (450) QL	1900 QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	Bromobenzene	µg/kg	NS	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	Bromobenzene	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	Bromoform	µg/kg	NS	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	Bromoform	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	Bromomethane	µg/kg	NS	NR						ND (6800) QL					ND (7800)	ND (860000)	ND (13000) QL
8260B	Bromomethane	µg/L	NS	NR	ND (2300) QL	ND (2300) QL	ND (2300) QL	ND (2300) QL	ND (2300) QL		ND (2300)	ND (2300) QL	ND (2300)	ND (2300)			
8260B	Carbon disulfide	µg/kg	NS	NR						ND (2100) QL					ND (2400)	160000 J	ND (3800) QL
8260B	Carbon disulfide	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	Carbon tetrachloride	µg/kg	10,000[2]	NR						ND (1000) QL					ND (1200)	ND (130000)	ND (1900) QL
8260B	Carbon tetrachloride	µg/L	500[1]	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	Chlorobenzene	µg/kg	2,000,000[2]	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	Chlorobenzene	µg/L	100,000[1]	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	Chlorobromomethane	µg/kg	NS	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	Chlorobromomethane	µg/L	NS	NR	ND (700) QL	ND (700) QL	ND (700) QL	ND (700) QL	ND (700) QL		ND (700)	ND (700) QL	ND (700)	ND (700)			
8260B	Chlorodibromomethane	µg/kg	NS	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	Chlorodibromomethane	µg/L	NS	NR	ND (900) QL	ND (900) QL	ND (900) QL	ND (900) QL	ND (900) QL		ND (900)	ND (900) QL	ND (900)	ND (900)			
8260B	Chloroethane	µg/kg	NS	NR						ND (21000) QL					ND (24000)	ND (2600000)	ND (38000) QL
8260B	Chloroethane	µg/L	NS	NR	ND (2300) QL	ND (2300) QL	ND (2300) QL	ND (2300) QL	ND (2300) QL		ND (2300)	ND (2300) QL	ND (2300)	ND (2300)			
8260B	Chloroform	µg/kg	120,000[2]	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	Chloroform	µg/L	6,000[1]	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	Chloromethane	µg/kg	NS	NR						ND (21000) QL					ND (24000)	ND (2600000)	ND (38000) QL
8260B	Chloromethane	µg/L	NS	NR	ND (2300) QL	ND (2300) QL	ND (2300) QL	ND (2300) QL	ND (2300) QL		ND (2300)	ND (2300) QL	ND (2300)	ND (2300)			
8260B	cis-1,2-Dichloroethene	µg/kg	NS	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	cis-1,2-Dichloroethene	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	cis-1,3-Dichloropropene	µg/kg	NS	NR						ND (680) QL					ND (780)	ND (86000)	ND (1300) QL
8260B	cis-1,3-Dichloropropene	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	Dibromomethane	µg/kg	NS	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	Dibromomethane	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	Dichlorobromomethane	µg/kg	NS	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	Dichlorobromomethane	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	Dichlorodifluoromethane	µg/kg	NS	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	Dichlorodifluoromethane	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	Ethylbenzene	µg/kg	NS	NR						ND (2100) QL					1100 J	780000	ND (3800) QL
8260B	Ethylbenzene	µg/L	NS	NR	1700 QL	250 H, J	ND (450) QL	ND (450) QL	200 QL, J		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	Ethylene Dibromide	µg/kg	NS	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	Ethylene Dibromide	µg/L	NS	NR	ND (900) QL	ND (900) QL	ND (900) QL	ND (900) QL	ND (900) QL		ND (900)	ND (900) QL	ND (900)	ND (900)			
8260B	Hexachlorobutadiene	µg/kg	10,000[2]	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	Hexachlorobutadiene	µg/L	500[1]	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	Isopropylbenzene	µg/kg	NS	NR						ND (2100) QL					ND (2400)	560000	ND (3800) QL
8260B	Isopropylbenzene	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	Methyl tert-butyl ether	µg/kg	NS	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	Methyl tert-butyl ether	µg/L	NS	NR	1500 QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	Methylene Chloride	µg/kg	NS	NR						ND (2100) QL					ND (2400)	190000 J	ND (3800) QL
8260B	Methylene Chloride	µg/L	NS	NR	150 H, J	180 H, J	2200 QL, J	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	m-Xylene & p-Xylene	µg/kg	NS	NR						1000 QL, J					5200	2300000	1500 QL, J
8260B	m-Xylene & p-Xylene	µg/L	NS	NR	3400 QL	860 H, J B	570 H, J B	490 QL, J B	890 QL, J B		400 J B	420 QL, J B	330 J B	590 J B			
8260B	Naphthalene	µg/kg	NS	NR						ND (2100) QL					2800 J	190000 J	ND (3800) QL
8260B	Naphthalene	µg/L	NS	NR	1600 QL	ND (450) QL	ND (450) QL	ND (450) QL	460 QL, J		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	n-Butylbenzene	µg/kg	NS	NR						ND (2100) QL					ND (2400)	5100000	ND (3800) QL
8260B	n-Butylbenzene	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			

			Sample ID	12NCDRUM01	12NCDRUMO2	12NCDRUMO3	12NCDRUMO4	12NCDRUMO5	12NCDRUMO6	12NCDRUMO7	12NCDRUMO8	12NCDRUMO9	12NCDRUMO10	12NCDRUMO11	12NCDRUMO12	12NCDRUMO13	12NCDRUMO14
			Laboratory ID	580-34380-1	580-34825-1	580-34825-2	580-34825-3	580-34825-4	580-34825-5	580-34825-6	580-34825-7	580-34825-8	580-34825-9	580-34825-10	580-34825-11	580-34825-12	580-34825-13
			Location ID	12NCDRUM01	DRUM02	DRUM03	DRUM04	DRUM05	DRUM06	DRUM07	DRUM08	DRUM09	DRUM10	DRUM11	DRUM12	DRUM13	DRUM14
			Collection Date	8/7/2012	8/21/2012	8/21/2012	8/21/2012	8/21/2012	8/21/2012	8/21/2012	9/2/2012	8/21/2012	9/2/2012	9/2/2012	9/2/2012	9/2/2012	8/21/2012
Analysis Method	Analyte	Unit	Regulatory Limit-Hazard Classification														
8260B	N-Propylbenzene	µg/kg	NS	NR						ND (2100) QL					ND (2400)	1500000	ND (3800) QL
8260B	N-Propylbenzene	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	o-Xylene	µg/kg	NS	NR						ND (2100) QL					2000 J	1700000	ND (3800) QL
8260B	o-Xylene	µg/L	NS	NR	1600 QL	ND (450) QL	ND (450) QL	ND (450) QL	340 QL, J		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	sec-Butylbenzene	µg/kg	NS	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	sec-Butylbenzene	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	Styrene	µg/kg	NS	NR						ND (2100) QL					ND (2400)	140000 J	ND (3800) QL
8260B	Styrene	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	tert-Butylbenzene	µg/kg	NS	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	tert-Butylbenzene	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	Tetrachloroethene	µg/kg	14,000[2]	NR						ND (1000) QL					ND (1200)	120000 J	ND (1900) QL
8260B	Tetrachloroethene	µg/L	700[1]	NR	230 QL, J	**710 J QL**	ND (450) QL	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	Toluene	µg/kg	NS	NR						ND (2100) QL					2900 J	230000 J	ND (3800) QL
8260B	Toluene	µg/L	NS	NR	1700 QL	ND (450) QL	ND (450)	1500 QL	470 QL, J		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	trans-1,2-Dichloroethene	µg/kg	NS	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	trans-1,2-Dichloroethene	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450)	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	trans-1,3-Dichloropropene	µg/kg	NS	NR						ND (680) QL					ND (780)	ND (86000)	ND (1300) QL
8260B	trans-1,3-Dichloropropene	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450)	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	Trichloroethene	µg/kg	10,000[2]	NR						ND (680) QL					ND (780)	ND (86000)	ND (1300) QL
8260B	Trichloroethene	µg/L	500[1]	NR	ND (450) QL	ND (450) QL	ND (450)	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	Trichlorofluoromethane	µg/kg	NS	NR						ND (2100) QL					ND (2400)	ND (260000)	ND (3800) QL
8260B	Trichlorofluoromethane	µg/L	NS	NR	ND (450) QL	ND (450) QL	ND (450)	ND (450) QL	ND (450) QL		ND (450)	ND (450) QL	ND (450)	ND (450)			
8260B	Vinyl chloride	µg/kg	4,000[2]	NR						ND (340) QL					ND (390)	ND (43000)	ND (630) QL
8260B	Vinyl chloride	µg/L	200[1]	NR	ND (450) QL	ND (450) QL	ND (450)	ND (450)	ND (450)		ND (450)	ND (450) QL	ND (450)	ND (450)			
8270C	1,4-Dichlorobenzene	µg/kg	15,000[2]	NR	ND (1800) QL	ND (1700) QL	ND (1800) QL	ND (1900) QL	ND (2000) QL	ND (2000) QL	ND (2000)	ND (1700) QL	ND (2000)	ND (2000)	ND (1700)	ND (18000)	ND (19000) QL
8270C	2,4,5-Trichlorophenol	µg/kg	8,000[2]	NR	ND (1800) QL	ND (1700) QL	ND (1800) QL	ND (1900) QL	ND (2000) QL	ND (2000) QL	ND (2000)	ND (1700) QL	ND (2000)	ND (2000)	ND (1700)	ND (18000)	ND (19000) QL
8270C	2,4,6-Trichlorophenol	µg/kg	40,000[2]	NR	ND (1800) QL	ND (1700) QL	ND (1800) QL	ND (1900) QL	ND (2000) QL	ND (2000) QL	ND (2000)	ND (1700) QL	ND (2000)	ND (2000)	ND (1700)	ND (18000)	ND (19000) QL
8270C	2,4-Dinitrotoluene	µg/kg	2,600[2]	NR	ND (4600) QL	ND (4200) QL	ND (4600) QL	ND (4800) QL	ND (5000) QL	ND (4900) QL	ND (5000)	ND (4300) QL	ND (5000)	ND (4900)	ND (4300)	ND (45000)	ND (48000) QL
8270C	2-Methylphenol	µg/kg	40,000[3]	NR	ND (1800) QL	ND (1700) QL	ND (1800) QL	ND (1900) QL	ND (2000) QL	ND (2000) QL	ND (2000)	ND (1700) QL	ND (2000)	ND (2000)	ND (1700)	ND (18000)	ND (19000) QL
8270C	3 & 4 Methylphenol	µg/kg	40,000[3]	NR	ND (1800) QL	ND (1700) QL	ND (1800) QL	ND (1900) QL	ND (2000) QL	ND (2000) QL	ND (2000)	ND (1700) QL	ND (2000)	ND (2000)	5000 J	ND (18000)	ND (19000) QL
	Methyl Phenol (Total)	µg/kg	40,000[3]														
8270C	Hexachlorobenzene	µg/kg	2,600[2]	NR	ND (910) QL	ND (850) QL	ND (920) QL	ND (960) QL	ND (990) QL	ND (980) QL	ND (990)	ND (870) QL	ND (990)	ND (980)	ND (850)	ND (9000)	ND (9500) QL
8270C	Hexachlorobutadiene	µg/kg	10,000[2]	NR	ND (1800) QL	ND (1700) QL	ND (1800) QL	ND (1900) QL	ND (2000) QL	ND (2000) QL	ND (2000)	ND (1700) QL	ND (2000)	ND (2000)	ND (1700)	ND (18000)	ND (19000) QL
8270C	Hexachloroethane	µg/kg	60,000[2]	NR	ND (4600) QL	ND (4200) QL	ND (4600) QL	ND (4800) QL	ND (5000) QL	ND (4900) QL	ND (5000)	ND (4300) QL	ND (5000)	ND (4900)	ND (4300)	ND (45000)	ND (48000) QL
8270C	Nitrobenzene	µg/kg	40,000[2]	NR	ND (4600) QL	ND (4200) QL	ND (4600) QL	ND (4800) QL	ND (5000) QL	ND (4900) QL	ND (5000)	ND (4300) QL	ND (5000)	ND (4900)	ND (4300)	ND (45000)	ND (48000) QL
8270C	Pentachlorophenol	µg/kg	2,000,000[2]	NR	ND (4600) QL	ND (4200) QL	ND (4600) QL	ND (4800) QL	ND (5000) QL	ND (4900) QL	ND (5000)	ND (4300) QL	ND (5000)	ND (4900)	ND (4300)	ND (45000)	ND (48000) QL
8270C	Pyridine	µg/kg	2,000,000[2]	NR	ND (46000) QL	ND (42000) QL	ND (46000) QL	ND (48000) QL	ND (50000) QL	ND (49000) QL	ND (50000)	ND (43000) QL	ND (50000)	ND (49000)	ND (43000)	ND (450000)	ND (480000) QL
9045C	pH	SU	<12 or >2	NR	7.32	6.63	6.39	7.80	6.26	5.18	6.26	7.24	7.39	4.74	8.16	7.60	8.02
9056A	Total Halogens	mg/kg	1,000	ND (200)	ND (190)	ND (200)	ND (190)	ND (200)	ND (200)	ND (190)	ND (190)	ND (200)	**2800**	ND (200)	ND (200)	270	620
AK102 & 103	DRO (nC10-<nC25)	mg/kg	NS	NR	3800 QL, B	7800 QL	15000 QL	11000 QL	920000 QL	530 J QL B	20000	1600 J QL B	2200 B	1600 J B	290000	170000	320000 QL
AK102 & 103	RRO (nC25-nC36)	mg/kg	NS	NR	3100 QL, J	4300 QL	5100 QL	6700 QL	230000 QL	980 J QL	4100 J	ND (2400) QL	1700 J	5100	75000	10000	24000 QL

Table Notes:
< = less than
> = greater than
[1]Regulatory limit for hazard classification from Table 1 40CFR section 261.24
[2]Rule of 20 applied for non-TCLP analysis. (mg/kg or ug/kg result divided by 20)
[3]Regulatory limit is total methylphenol.

µg/kg = micrograms per kilogram
B = Analyte detected in the method blank, results have potential high bias
DRO = diesel range organics
J = Result is an estimate
mg/kg = milligrams per kilogram
ND = Sample result is non-detect. The limit of detection (LOD) is in parentheses
NR = Analysis not requested
NS = Not stated
PCB = polychlorinated biphenyl
pH = potential hydrogen
QL = Quality control failure with potential low bias. Refer to CDQR for further details.
QL = Quality control fialure with potential low bias. Refer to CDQR for further details.
RRO = residual range organics
SU = Standard Units

Table F1 MOC Well MNA Parameters

2012 MNA Results

	Well ID (Sample ID)		MW10-1 (WA07)	26MW1 (WA02)	22MW2 (WA01)	20MW1 (WA03)	17MW1 (WA04)	MW88-5 (WA10)	MW88-4[D] (WA09)	MW88-4 (WA08)	MW 88-1 (WA06)	88-10 (WA05)
	Collection Date		7/10/12	7/8/12	7/8/12	7/9/12	7/9/12	7/10/12	7/10/12	7/10/12	7/9/12	7/9/12
Analyte	Units	Method Detection Limit										
Ferrous Iron	mg/L	0.03	<0.03	<0.03	<0.03	<0.03	<0.03	11.45	10.80	12.25	< 0.03	0.49
Manganese	mg/L	0.2	<0.2	0.20	0.1	0.3	<0.2	1.30	1.00	1.10	<0.2	1.00
Sulfate	mg/L	4.9	3.00	6.00	12.00	16.00	16.00	18.00	3.00	3.00	8.00	16.00
Nitrate	mg/L	0.01	<0.01	0.26	0.34	0.23	0.19	0.02	0.19	<0.01	0.20	0.56
Alkalinity	mg/L	0	40	40	40	40	40	80	80	80	40	40
Temperature	°C	NA	4.42	3.22	3.54	3.39	2.74	2.63	2.01	2.01	3.27	1.61
Spec Cond	uS/cm	NA	0	84	108	143	108	262	230	230	111	124
pH	NA	NA	5.37	5.79	5.79	5.76	5.45	6.18	6.41	6.41	5.52	5.74
ORP	mV	NA	251.60	197.20	204.60	231.50	205.50	-25.40	-51.70	-51.70	225.90	146.6
DO	mg/L	NA	2.93	12.40	12.45	9.04	9.22	0.49	0.35	0.35	1.58	0.66
Methane	µg/L	NA	0.85	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.29)	360	2000	2300	0.37J	32.0

2011 MNA Results

	Well ID (Sample ID)		MW10-1 (WA01)	26MW1 (WA02)	22MW2 (WA03)	20MW1 (WA04)	17MW1 (WA05)	MW88-5 (WA06)	MW88-5[D] (WA07)	MW88-4 (WA08)	MW 88-1 (WA09)	88-10 (WA10)
	Collection Date		7/15/11	7/16/11	7/16/11	7/17/11	7/17/11	7/17/11	7/17/11	7/17/11	7/18/11	7/18/11
Analyte	Units	Method Detection Limit										
Ferrous Iron	mg/L	0.01	0.09	0.05	<0.01	<0.01	0.06	3.30	3.30	3.30	0.04	0.02
Manganese	mg/L	0.2	0.10	0.20	<0.2	<0.2	0.10	0.30	0.70	0.40	0.30	0.40
Sulfate	mg/L	2	4.00	10.00	7.00	24.00	15.00	46.00	42.00	1.00	8.00	8.00
Nitrate	mg/L	0.4	0.40	1.30	1.00	1.30	0.70	0.90	0.50	0.20	1.50	0.90
Alkalinity	mg/L	0	40	40	40	80	40	180	180	180	40	40
Temperature	°C	NA	6.03	3.47	6.40	2.33	2.73	2.59	2.59	1.16	2.30	4.43
Spec Cond	µS/cm	NA	56	61	60	82	67	241	241	173	60	61
pH	NA	NA	5.45	5.74	5.63	5.89	5.78	6.64	6.64	6.80	5.75	5.78
ORP	mV	NA	85.50	202.80	53.70	125.80	237.10	-100.30	-100.30	-86.20	70.90	47.7
DO	mg/L	NA	4.74	12.63	10.99	10.78	4.47	0.58	0.58	0.27	2.09	1.55
Methane	µg/L	NA	0.29 J	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.29)	630	620	2100	0.44 J	1.8

Table F1 MOC Well MNA Parameters (continued)

2010 MNA Results

	Well ID (Sample ID)		MW10-1 (10WA01)	26MW1 (26WA01)	22M2 (22WA01)	20MW1 (20WA01)	17MW1 (17WA01)	MW 88-5 (27WA03)	88-4 (27WA01)	88-4 [D] (27WA02)	88-1 (19WA01)	88-10 (19WA02)
	Date		8/14/10	8/16/10	8/14/10	8/4/10	8/4/10	8/15/10	8/3/10	8/3/10	8/4/10	8/15/10
Analyte	Units	Method Detection Limit										
Ferrous Iron	mg/L	0.01	<0.01	<0.01	<0.01	NR	0.01	45.50	21.40	20.00	<0.01	<0.01
Manganese	mg/L	0.2	<0.2	<0.2	<0.2	NR	<0.2	<0.2	0.3	0.5	0.3	1.0
Sulfate	mg/L	2	3.0	6.0	12.0	NR	16	6	4	1	7	6.0
Nitrate	mg/L	0.4	0.3	0.3	0.6	NR	0.2	0.3	2.0	<0.4	0.3	0.1
Alkalinity	mg/L	0	0.0	0.0	0.0	NR	0	80	120	120	40	40.0
Temperature	°C	NA	6.6	3.0	3.9	3.6	3.09	2.21	3.28	3.28	2.85	2.9
Spec Cond	µS/cm	NA	63.0	47.0	65.0	63.0	68	221	190	190	68	65.0
pH	NA	NA	5.6	6.8	6.1	6.3	5.76	8.25	6.93	6.93	5.59	7.6
ORP	mV	NA	202.5	202.1	234.2	101.4	160.8	-69.3	-72.1	-72.1	190.1	146.0
DO	mg/L	NA	5.6	11.5	10.1	4.0	7.32	0.81	0.68	0.68	1.26	0.8
Methane	µg/L	NA	0.5	0.4	0.8	ND (0.19)	ND (0.19)	99	1900	2100	0.34	0.4

Notes:

< = less than
°C = degrees Celsius
µg/L = micrograms per liter
µS/cm = microsiemens per centimeter
[D] = sample is a duplicate of the previous sample
DO = dissolved oxygen
J = result is an estimate
mg/L = milligrams per liter
MNA = monitored natural attenuation
MOC = Main Operations Complex
mV = millivolts
NA = not applicable
ND = non-detect; limit of detection in parentheses
NR = not reported
ORP = oxidation-reduction potential
pH = potential hydrogen
Spec Cond = specific conductance

Table F2 MOC Groundwater

			Sample ID	12NCMOCWA001	12NCMOCWA002	12NCMOCWA003	12NCMOCWA004	12NCMOCWA005	12NCMOCWA006	12NCMOCWA007	12NCMOCWA008	12NCMOCWA009 [D]	12NCMOCWA010
			Lab ID	580-33899-1	580-33899-2	580-33899-3	580-33899-4	580-33899-5	580-33899-6	580-33899-7	580-33899-8	580-33899-9	580-33899-10
			Location ID	22MW2	26MW1	20MW1	17MW1	MW88-10	MW88-1	MW10-1	MW88-4	MW88-4	MW88-5
			Collection Date	7/8/2012	7/8/2012	7/9/2012	7/9/2012	7/10/2012	7/9/2012	7/10/2012	7/10/2012	7/10/2012	7/10/2012
Analysis Method	**Analyte**	**Units**	**Cleanup Level**										
6020	Arsenic (Total)	mg/L	0.01[1]	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	**0.011**	**0.011**	0.0070
6020	Arsenic (Dissolved)	mg/L	0.01[1]	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	0.0038 J	**0.011**	0.0055
6020	Barium (Total)	mg/L	2[2]	0.0074	0.0051 J	0.021	0.017	0.025	0.013	0.028	0.027	0.028	0.048
6020	Barium (Dissolved)	mg/L	2[2]	0.0081	0.0049 J	0.020	0.016	0.018	0.013	0.028	0.023	0.028	0.040
6020	Cadmium (Total)	mg/L	2[2]	0.00020 J	ND (0.00025)	0.00021 J	0.00014 J	0.00064 J	0.00023 J	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)
6020	Cadmium (Dissolved)	mg/L	2[2]	0.00015 J	ND (0.00025)	0.00021 J	0.00014 J	0.00058 J	0.00020 J	0.00014 J	ND (0.00025)	ND (0.00025)	ND (0.00025)
6020	Chromium (Total)	mg/L	0.1[2]	ND (0.0015)	0.0014 J	ND (0.0015)	ND (0.0015)	0.0017 J	0.0055	ND (0.0015)	0.0015 J	0.0014 J	0.0025
6020	Chromium (Dissolved)	mg/L	0.1[2]	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	ND (0.0015)	0.0014 J	0.0015 J
6020	Lead (Total)	mg/L	0.015[1]	ND (0.00025)	0.00019 J	ND (0.00025)	0.00028 J	0.00076 J	0.00041 J	ND (0.00025)	0.0019 J	ND (0.00025)	0.0021
6020	Lead (Dissolved)	mg/L	0.015[1]	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	0.00022 J	ND (0.00025)	ND (0.00025)	ND (0.00025)	0.0019 J	0.00023 J
6020	Nickel (Total)	mg/L	0.1[2]	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)	0.0051 J	0.0052 J	0.0026 J	ND (0.0025)	ND (0.0025)	0.0094 J
6020	Nickel (Dissolved)	mg/L	0.1[2]	ND (0.0025)	ND (0.0025)	ND (0.0025)	ND (0.0025)	0.0040 J	ND (0.0025)	0.0028 J	ND (0.0025)	ND (0.0025)	0.0066 J
6020	Selenium (Total)	mg/L	0.05[2]	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)
6020	Selenium (Dissolved)	mg/L	0.05[2]	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)	ND (0.0040)
6020	Silver (Total)	mg/L	0.1[2]	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)
6020	Silver (Dissolved)	mg/L	0.1[2]	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)	ND (0.00025)
6020	Vanadium (Total)	mg/L	0.26[2]	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	0.0070 J
6020	Vanadium (Dissolved)	mg/L	0.26[2]	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	ND (0.0050)	0.0050 J	0.0051 J
6020	Zinc (Total)	mg/L	5[2]	0.0077	0.017	0.016	0.027	0.046	0.066	0.027	0.0098 QN	ND (0.0050) QN	0.0055 J
6020	Zinc (Dissolved)	mg/L	5[2]	0.0086	0.016	0.016	0.047	0.038	0.065	0.026	ND (0.0050) QN	0.0095 QN	0.0054 J
7470A	Mercury (Total)	mg/L	0.002[2]	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	0.000074 J	ND (0.00010)	ND (0.00010)
7470A	Mercury (Diss)	mg/L	0.002[2]	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	ND (0.00010)	0.000052 J	0.000047 J	ND (0.00010)
8082	PCB-1016	µg/L	0.5[2]	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
8082	PCB-1221	µg/L	0.5[2]	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)
8082	PCB-1232	µg/L	0.5[2]	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
8082	PCB-1242	µg/L	0.5[2]	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
8082	PCB-1248	µg/L	0.5[2]	ND (0.080)	ND (0.080)	ND (0.080)	ND (0.080)	ND (0.080)	ND (0.080)	ND (0.080)	ND (0.080)	ND (0.080)	ND (0.080)
8082	PCB-1254	µg/L	0.5[2]	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)	ND (0.13)
8082	PCB-1260	µg/L	0.5[2]	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
8260B	Benzene	µg/L	5[2]	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	4.8	4.2	**6.4**
8260B	Toluene	µg/L	1,000[2]	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	0.86 J B	0.63 J B	0.35 J B
8260B	Ethylbenzene	µg/L	700[2]	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	27	26	3.7
8260B	m-Xylene & p-Xylene	µg/L	NS	ND (0.90)	ND (0.90)	ND (0.90)	ND (0.90)	ND (0.90)	ND (0.90)	ND (0.90)	26	24	5.7
8260B	o-Xylene	µg/L	NS	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	ND (0.45)	4.0	3.1	1.5
	Xylenes-Total	µg/L	10,000[2]	ND (1.35)	ND (1.35)	ND (1.35)	ND (1.35)	ND (1.35)	ND (1.35)	ND (1.35)	30	27.1	7.2

Table F2 MOC Groundwater (continued)

			Sample ID	12NCMOCWA001	12NCMOCWA002	12NCMOCWA003	12NCMOCWA004	12NCMOCWA005	12NCMOCWA006	12NCMOCWA007	12NCMOCWA008	12NCMOCWA009 [D]	12NCMOCWA010
			Lab ID	580-33899-1	580-33899-2	580-33899-3	580-33899-4	580-33899-5	580-33899-6	580-33899-7	580-33899-8	580-33899-9	580-33899-10
			Location ID	22MW2	26MW1	20MW1	17MW1	MW88-10	MW88-1	MW10-1	MW88-4	MW88-4	MW88-5
			Collection Date	7/8/2012	7/8/2012	7/9/2012	7/9/2012	7/10/2012	7/9/2012	7/10/2012	7/10/2012	7/10/2012	7/10/2012
Analysis Method	**Analyte**	**Units**	**Cleanup Level**										
8270C SIM	1-Methylnaphthalene	µg/L	150[2]	ND (0.072)	ND (0.071)	ND (0.072)	ND (0.072)	0.1	0.054 J	ND (0.071)	31	29	23
8270C SIM	2-Methylnaphthalene	µg/L	150[2]	ND (0.072)	ND (0.071)	ND (0.072)	ND (0.072)	ND (0.072)	0.043 J	ND (0.071)	30	29	18
8270C SIM	Acenaphthene	µg/L	2,200[2]	ND (0.072)	ND (0.071)	ND (0.072)	ND (0.072)	0.051 J	ND (0.071)	ND (0.071)	0.48	0.49	0.37
8270C SIM	Acenaphthylene	µg/L	2,200[2]	ND (0.072)	ND (0.071)	ND (0.072)	ND (0.072)	ND (0.072)	ND (0.071)	ND (0.071)	0.12	0.15	0.083 J
8270C SIM	Anthracene	µg/L	11,000[2]	ND (0.072)	ND (0.071)	ND (0.072)	ND (0.072)	ND (0.072)	ND (0.071)	ND (0.071)	ND (0.071)	ND (0.072)	ND (0.071)
8270C SIM	Benzo[a]anthracene	µg/L	1.2[2]	ND (0.072)	ND (0.071)	ND (0.072)	ND (0.072)	ND (0.072)	ND (0.071)	ND (0.071)	ND (0.071)	ND (0.072)	ND (0.071)
8270C SIM	Benzo[a]pyrene	µg/L	0.2[2]	ND (0.072)	ND (0.071)	ND (0.072)	ND (0.072)	ND (0.072)	ND (0.071)	ND (0.071)	ND (0.071)	ND (0.072)	ND (0.071)
8270C SIM	Benzo[b]fluoranthene	µg/L	1.2[2]	ND (0.072)	ND (0.071)	ND (0.072)	ND (0.072)	ND (0.072)	ND (0.071)	ND (0.071)	ND (0.071)	ND (0.072)	ND (0.071)
8270C SIM	Benzo[g,h,i]perylene	µg/L	1,100[2]	ND (0.072)	ND (0.071)	ND (0.072)	ND (0.072)	ND (0.072)	ND (0.071)	ND (0.071)	ND (0.071)	ND (0.072)	ND (0.071)
8270C SIM	Benzo[k]fluoranthene	µg/L	12[2]	ND (0.072)	ND (0.071)	ND (0.072)	ND (0.072)	ND (0.072)	ND (0.071)	ND (0.071)	ND (0.071)	ND (0.072)	ND (0.071)
8270C SIM	Chrysene	µg/L	120[2]	ND (0.072)	ND (0.071)	ND (0.072)	ND (0.072)	ND (0.072)	ND (0.071)	ND (0.071)	ND (0.071)	ND (0.072)	ND (0.071)
8270C SIM	Dibenz(a,h)anthracene	µg/L	0.12[2]	ND (0.072)	ND (0.071)	ND (0.072)	ND (0.072)	ND (0.072)	ND (0.071)	ND (0.071)	ND (0.071)	ND (0.072)	ND (0.071)
8270C SIM	Fluoranthene	µg/L	1,500[2]	ND (0.072)	ND (0.071)	ND (0.072)	ND (0.072)	ND (0.072)	ND (0.071)	ND (0.071)	ND (0.071)	ND (0.072)	ND (0.071)
8270C SIM	Fluorene	µg/L	1,500[2]	ND (0.072)	ND (0.071)	ND (0.072)	ND (0.072)	0.063 J	ND (0.071)	ND (0.071)	0.7	0.72	0.53
8270C SIM	Indeno[1,2,3-cd]pyrene	µg/L	1.2[2]	ND (0.072)	ND (0.071)	ND (0.072)	ND (0.072)	ND (0.072)	ND (0.071)	ND (0.071)	ND (0.071)	ND (0.072)	ND (0.071)
8270C SIM	Naphthalene	µg/L	730[2]	ND (0.072)	ND (0.071)	ND (0.072)	ND (0.072)	0.33	ND (0.071)	ND (0.071)	89 D	85 D	29
8270C SIM	Phenanthrene	µg/L	11,000[2]	ND (0.072)	ND (0.071)	ND (0.072)	ND (0.072)	ND (0.072)	ND (0.071)	ND (0.071)	0.24	0.24	0.086 J
8270C SIM	Pyrene	µg/L	1,100[2]	ND (0.072)	ND (0.071)	ND (0.072)	ND (0.072)	ND (0.072)	ND (0.071)	ND (0.071)	ND (0.071)	ND (0.072)	ND (0.071)
AK101	GRO	mg/L	1.3[1]	ND (0.044)	ND (0.044)	ND (0.044)	ND (0.044)	ND (0.044)	ND (0.044)	ND (0.044)	0.31	0.30	0.16
AK102	DRO	mg/L	1.5[1]	0.047 J	0.029 J	0.040 J	0.036 J	0.50	**1.9**	0.64	**2.0**	**1.8**	**4.6**
AK103	RRO	mg/L	1.1[1]	0.042 J	0.030 J	0.046 J	0.039 J	0.064 J	0.15	0.28	0.24	0.21	0.58
RSK-175	Methane	µg/L	NS	ND (0.29)	ND (0.29)	ND (0.29)	ND (0.29)	32	0.37 J	0.85	2,300	2,000	360

Notes:

[1]2009 NE Cape Decision Document

[2]18AAC75.345 Table C

[D]Sample is a field duplicate of the previous sample.

Bold = Sample concentration exceeds cleanup level.

B = Analyte was also detected in the trip blank and may have a high bias.

D= Sample was analyzed at a dilution.

µg/L= micrograms per Liter

DRO = Diesel Range Organics

GRO = Gasoline Range Organics

J = Result is an estimate

mg/L = milligram per liter

ND = non-detect; the limit of detection (LOD) is in parentheses

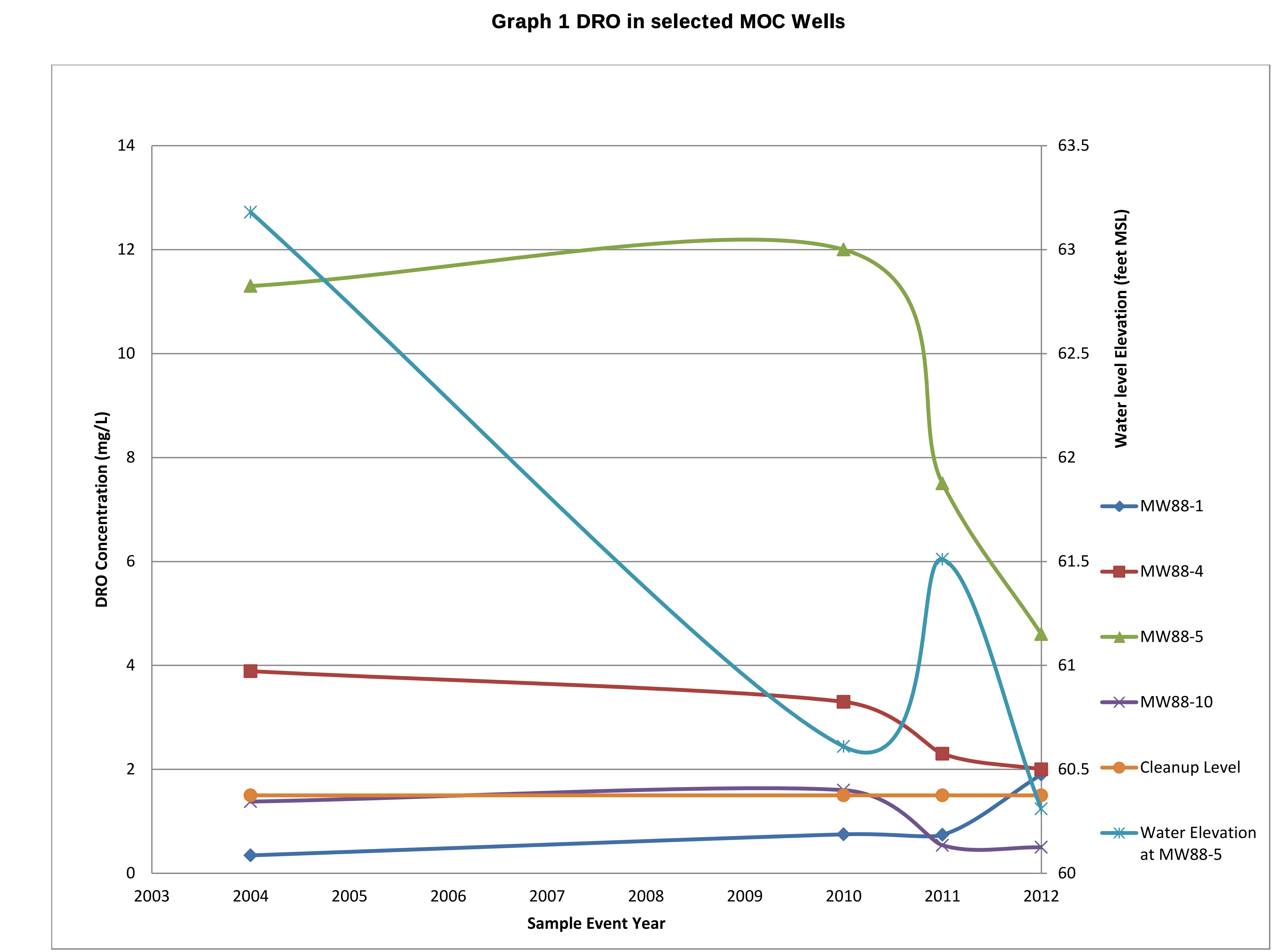
NS = not specified

PCB = Polychlorinated Biphenyl

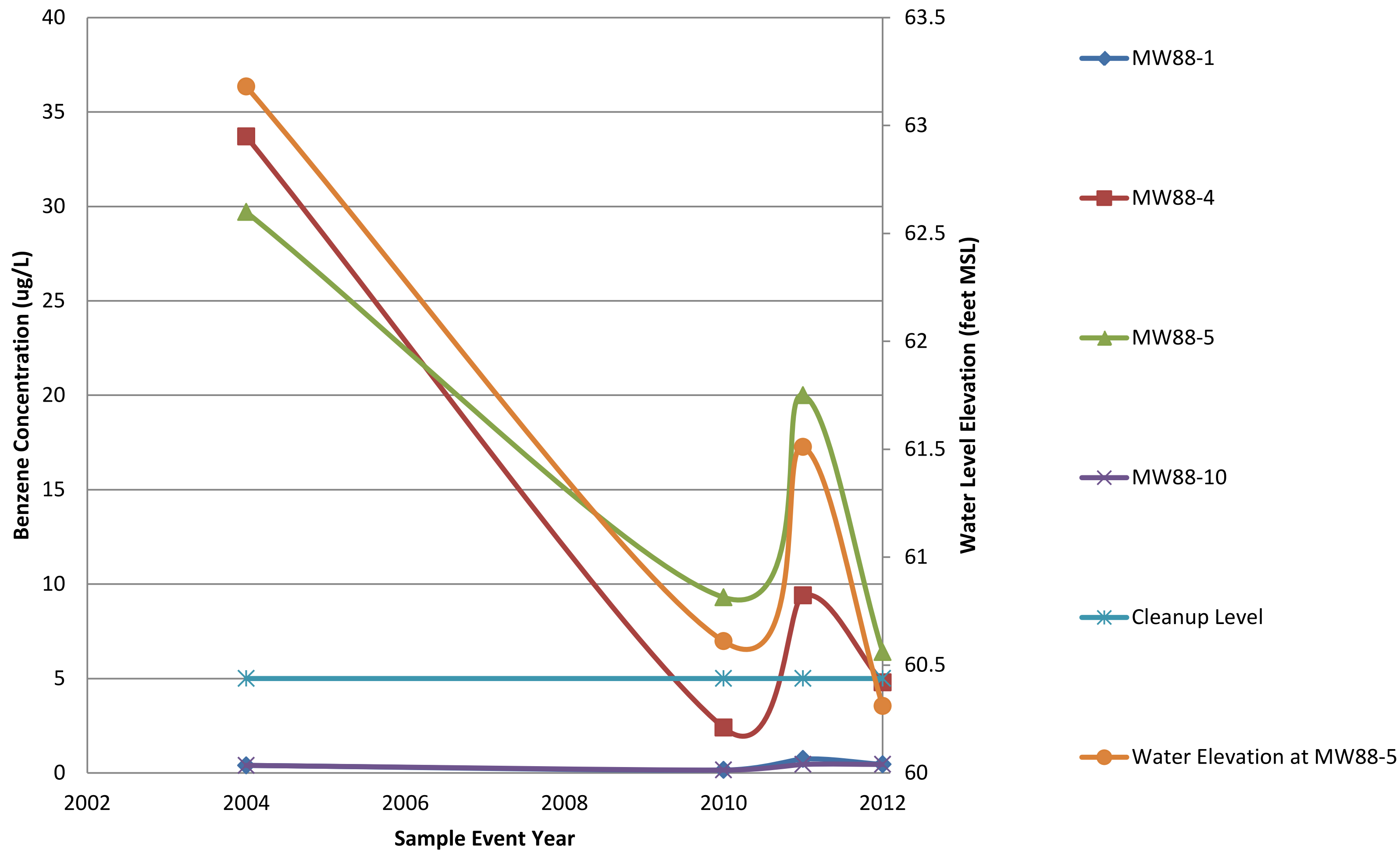
QN = Quality control failure with no directional bias.

RRO = Residual Range Organics

SIM = Selective Ion Monitoring/U.S. Department of Defense


Graph 1 DRO in selected MOC Wells
DRO Concentration (mg/L)
Water level Elevation (feet MSL)
Sample Event Year
14
12
10
8
6
4
2
0
63.5
63
62.5
62
61.5
61
60.5
60
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
MW88-1
MW88-4
MW88-5
MW88-10
Cleanup Level
Water Elevation at MW88-5

Graph 2 Benzene Concentrations in Selected MOC Wells



Graph 3 Analyte Concentrations in MOC Well 88-4

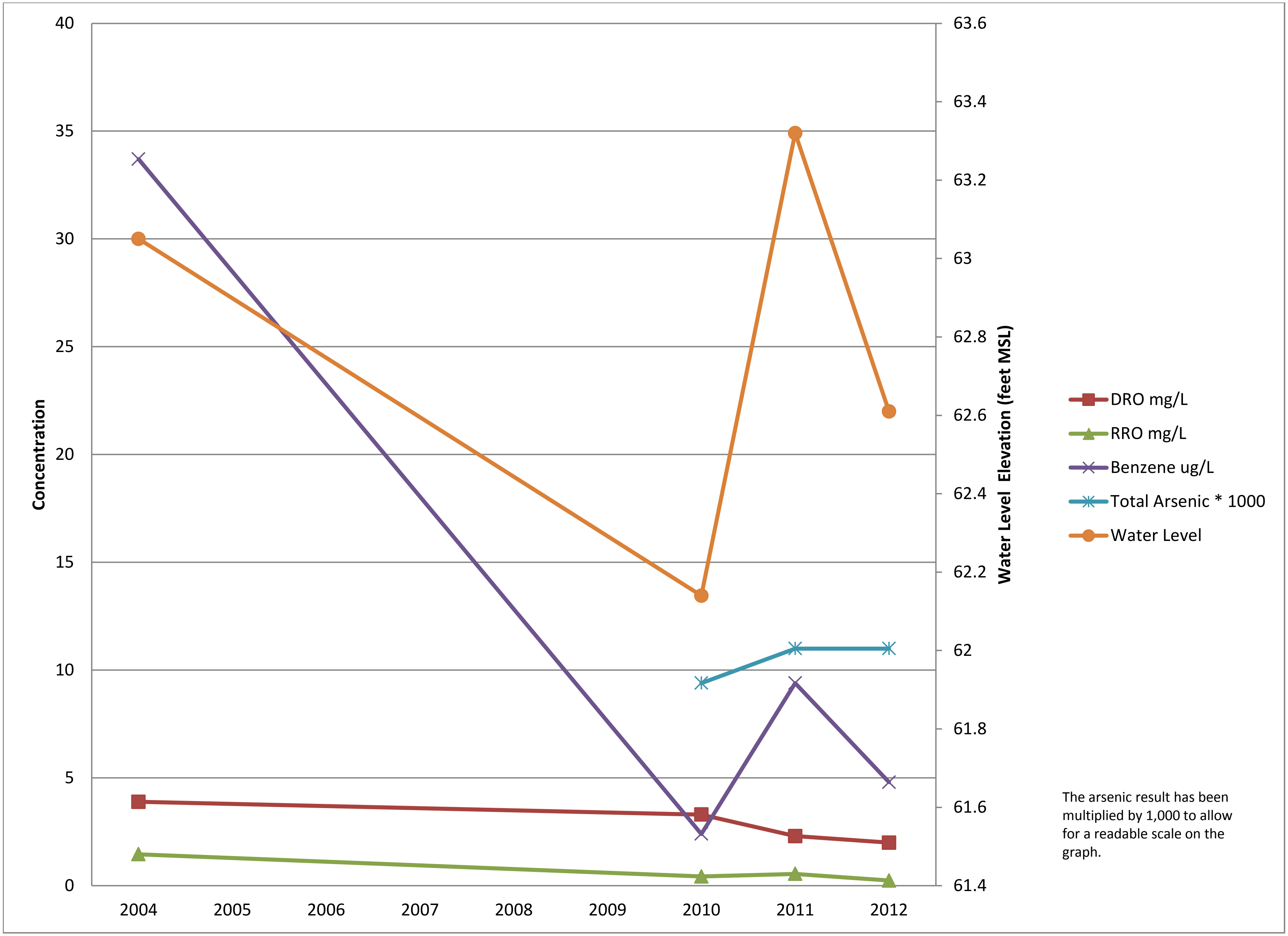


Table F3 Site 8 Sediment Results

Analysis Method	Analyte		Field Sample ID	10NC08SB01	10NC08SB02	10NC08SB03[D]	10NC08SB04	11NC08SS001	11NC08SS002	11NC08SS003	11NC08SS004[D]
			Lab Sample ID	20762-28	20762-29	20762-30	20762-31	580-27899-54	580-27899-55	580-27899-56	580-27899-57
			Location ID	08-LDU	08-MDU	08-MDU	08-UDU	UDU-1	MDU-1	LDU-1	LDU-1
			Date Collected	7/25/2010	7/26/2010	7/26/2010	7/27/2010	8/5/2011	8/5/2011	8/5/2011	8/5/2011
		Cleanup Level	Unit	Collected in 2010				Collected in 2011			
8270C SIM	1-Methylnaphthalene	NS	µg/kg	1,200	5,000	,5100	4 J	2.3 J	300	300 QN	130 QN
8270C SIM	2-Methylnaphthalene	600[a]	µg/kg	**1,200**	**7,500**	**7,600**	6.8 J	3.5 J	150	210 QN	92 QN
8270C SIM	Acenaphthene	500[a]	µg/kg	72	220	240	ND (1.7)	ND (3.4)	ND (4.2)	20	ND (4.2)
8270C SIM	Acenaphthylene	128[b]	µg/kg	56 J QN	ND (1.9) J QN	100 J	3.4 J	ND (3.4)	ND (4.2)	8.9 J	ND (4.2)
8270C SIM	Anthracene	245[b]	µg/kg	ND (1.7) J	180 J	ND (0.82) J	ND (0.68) J	ND (3.4)	5.2 J	ND (4.7)	6.0 J
8270C SIM	Benzo(a)anthracene	385[b]	µg/kg	ND (4.3)	5.5 J	7.1 J	2.4 J	ND (3.4)	ND (4.2)	ND (4.7)	ND (4.2)
8270C SIM	Benzo(a)pyrene	782[b]	µg/kg	ND (1.7) J	6.6 J	ND (0.82) J	ND (0.68) J	ND (3.4)	ND (4.2)	ND (4.7)	ND (4.2)
8270C SIM	Benzo(b)fluoranthene	NS	µg/kg	ND (4.3)	9.3 J	13	ND (1.7)	ND (3.4)	ND (4.2)	ND (4.7)	ND (4.2)
8270C SIM	Benzo(g,h,i)perylene	1,700[a]	µg/kg	ND (4.3)	ND (1.9)	ND (2)	ND (1.7)	ND (3.4)	ND (4.2)	ND (4.7)	ND (4.2)
8270C SIM	Benzo[k]fluoranthene	NS	µg/kg	ND (4.3)	5.4 J	14	ND (1.7)	ND (3.4)	ND (4.2)	ND (4.7)	ND (4.2)
8270C SIM	Chrysene	862[b]	µg/kg	ND (4.3)	26	24	6.4 J	ND (3.4)	11	ND (4.7)	9.7
8270C SIM	Dibenz(a,h)anthracene	135[b]	µg/kg	ND (4.3)	ND (1.9)	ND (2)	ND (1.7)	ND (3.4)	ND (4.2)	ND (4.7)	ND (4.2)
8270C SIM	Fluoranthene	2,000[a]	µg/kg	11 J	37	37	3.2 J	ND (3.4)	12	ND (4.7)	9
8270C SIM	Fluorene	800[a]	µg/kg	200	630	820	13	6.1 J	48	53	47
8270C SIM	Indeno(1,2,3-cd)pyrene	3,200[a]	µg/kg	ND (4.3)	2.8 J	2.9 J	1.8 J	ND (3.4)	ND (4.2)	ND (4.7)	ND (4.2)
8270C SIM	Naphthalene	1,700[a]	µg/kg	340	1,600	1,600	ND (8.5)	ND (3.4)	46	240 QN	42 QN
8270C SIM	Phenanthrene	4,800[a]	µg/kg	120	520	460	ND (1.7)	3.5 J	45	42	39
8270C SIM	Pyrene	875[b]	µg/kg	19 J	26	42	3.9 J	3.2 J B	13 B	4.3 J B QN	11 B QN
Total Low Molecular Weight PAHs[e]		7,800	µg/kg	788	3150	3220	16.4	9.6	144.2	363.9	134.2
Total High Molecular Weight PAHs[f]		9,600	µg/kg	30	118.6	140	17.7	3.2	36	4.3	29.7
EPA 9060	Total Organic Carbon	NS	mg/kg	130,000	100,000	100,000	100,000	81,000 J	110,000	140,000	97,000
AK102	DRO (nC10-<nC25)	3,500[a]	mg/kg	2,800	**7,100**	**9,300**	660	58	1,800	550 QN	1,500 QN
AK103	RRO (nC25-nC36)	3,500[a]	mg/kg	1,600	3,300	**5,300 QH**	**6,300 QH**	380	1,100 MH	820	690
AK102-SG	DRO with Silica Gel	3,500[a]	mg/kg	3,100 QL	**6,700 QL**	**8,500 QL**	310 QL	36	1,800	550 QN	1,600 QN
AK103-SG	RRO with Silica Gel	3,500[a]	mg/kg	1,000 QL	1,300 QL	2,100 QL	3,000 QH QL	320 J MH	1,800 MH	1,300 MH	1,200 MH

Notes:

Bold = Sample concentration exceeds cleanup level.

[a]2009 NE Cape Decision Document

[b] Evaluation criteria based on NOAA Screening Quick Reference Tables (SQuiRTs), Freshwater Sediment, PEL (Probable Effects Level)

[D] Sample is a field duplicate of previous sample

[e]Low Molecular Weight PAHs are: Acenaphtene, Acenaphthylene, Anthracene, Fluorene, Naphthalene and Phenanthrene

[f] High Molecular Weight PAHs are: Benzo[a]anthracene, Benzo[a]pyrene, Benzo[b]fluoranthene, Benzo[g,h,i]perylene, Benzo[k]fluoranthene, Chrysene, Deibenz[a,h]anthracene, Fluoranthene, and Pyrene

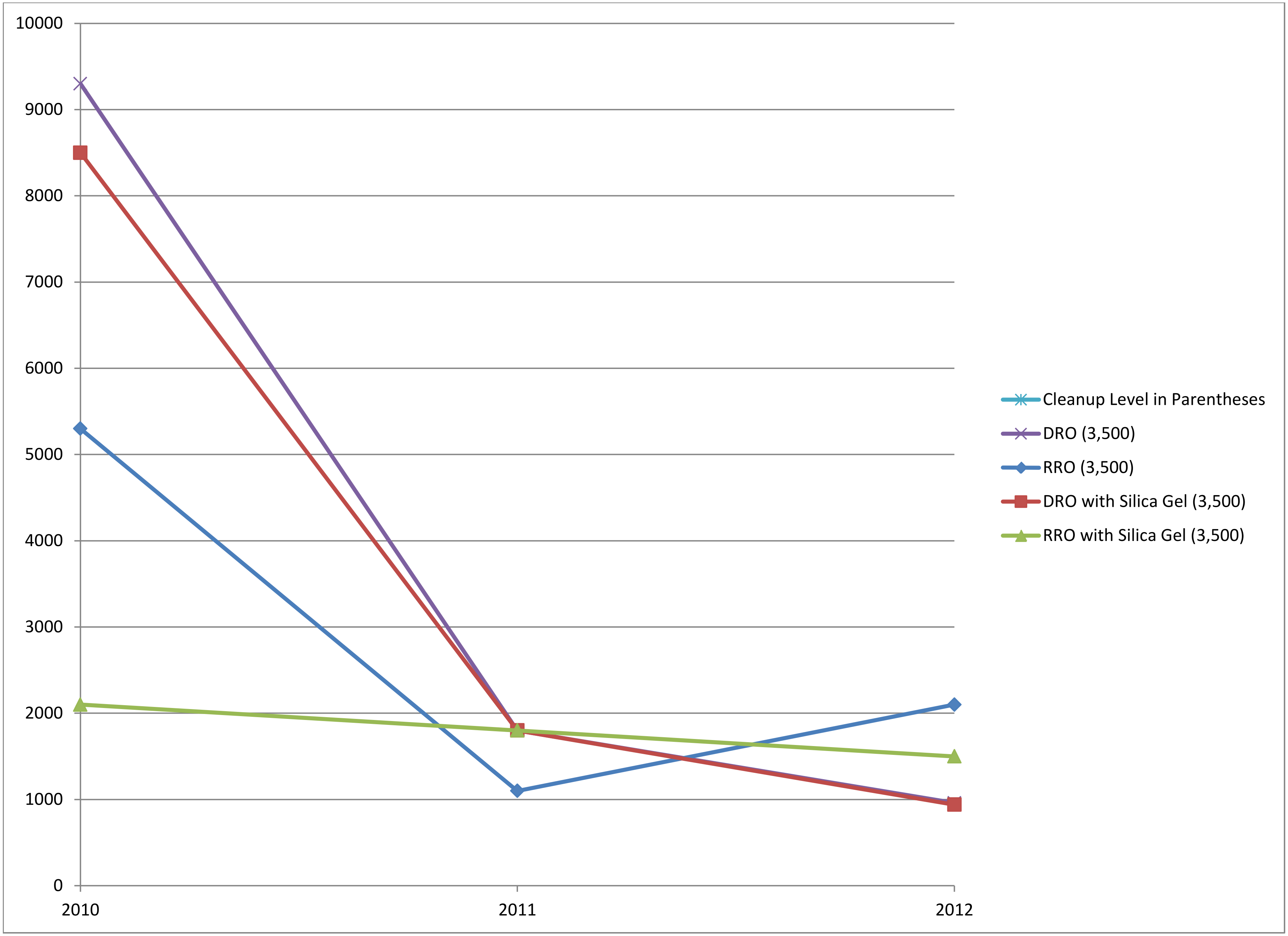
B = analyte also detected in method blank
DRO = diesel range organics
EPA = U.S. Environmental Protection Agency
J =the analyte was positively identified; the quantitation is an estimation
LDU = lower decision unit
MDU = middle decision unit
mg/kg = milligrams per kilogram
MH = result is an estimate with potential high bias due to matrix interference
ND = non-detect; limit of detection (LOD) in parentheses
NS = not specified
QH = One or more quality control parameters outside of control limits, result is estimated with potentially high bias
QN = One or more quality control parameters outside of control limits, result is estimated with no directional bias
QL = sample result is an estimate due to analytical holding time exceedance; the result may have a low bias
RRO = residual range organics
SG = extract was filtered through silica gel prior to analysis
SIM = Selective Ion Monitoring/U.S. Department of Defense
UDU = upper decision unit
µg/kg = micrograms per kilogram

Table F3 Site 8 Sediment Results (continued)

Analysis Method	Analyte	Cleanup Level	Unit	12NC08SS001	12NC08SS002[D]	12NC08SS003	12NC08SS004
		Lab Sample ID		580-34748-1	580-34748-2	580-34748-3	580-34748-4
		Location ID		LDU SS08-01	LDU SS08-02	MDU SS08-03	UDU SS08-04
		Date Collected		8/26/2012	8/26/2012	8/29/2012	8/29/2012
		Cleanup Level	Unit	Collected in 2012			
8270C SIM	1-Methylnaphthalene	NS	µg/kg	2,200	2,400	330	ND (3.9)
8270C SIM	2-Methylnaphthalene	600[a]	µg/kg	**1,700**	**1,900**	300	ND (3.9)
8270C SIM	Acenaphthene	500[a]	µg/kg	120	130	ND (4.2)	ND (3.9)
8270C SIM	Acenaphthylene	128[b]	µg/kg	ND (4.3)	ND (4.7)	ND (4.2)	ND (3.9)
8270C SIM	Anthracene	245[b]	µg/kg	27 QH, QN	ND (4.7) QN	ND (4.2)	ND (3.9)
8270C SIM	Benzo(a)anthracene	385[b]	µg/kg	3.5 J	8.3 J	ND (4.2)	ND (3.9)
8270C SIM	Benzo(a)pyrene	782[b]	µg/kg	ND (4.3)	6.6 J	ND (4.2)	ND (3.9)
8270C SIM	Benzo(b)fluoranthene	NS	µg/kg	8.2 J	7.1 J	ND (4.2)	ND (3.9)
8270C SIM	Benzo(g,h,i)perylene	1,700[a]	µg/kg	4.6 J	ND (4.7)	ND (4.2)	3.1 J
8270C SIM	Benzo[k]fluoranthene	NS	µg/kg	ND (4.3)	ND (4.7)	ND (4.2)	ND (3.9)
8270C SIM	Chrysene	862[b]	µg/kg	17	19	ND (4.2)	ND (3.9)
8270C SIM	Dibenz(a,h)anthracene	135[b]	µg/kg	ND (4.3)	ND (4.7)	ND (4.2)	ND (3.9)
8270C SIM	Fluoranthene	2,000[a]	µg/kg	11	11	ND (4.2)	ND (3.9)
8270C SIM	Fluorene	800[a]	µg/kg	230	220	ND (4.2)	5.4 J
8270C SIM	Indeno(1,2,3-cd)pyrene	3,200[a]	µg/kg	ND (4.3)	ND (4.7)	ND (4.2)	ND (3.9)
8270C SIM	Naphthalene	1,700[a]	µg/kg	630	710	140	ND (3.9)
8270C SIM	Phenanthrene	4,800[a]	µg/kg	180	180	ND (4.2)	3.8 J
8270C SIM	Pyrene	875[b]	µg/kg	18	16	ND (4.2)	ND (3.9)
Total Low Molecular Weight PAHs[e]		7,800	µg/kg	1187	1240	140	9.20
Total High Molecular Weight PAHs[f]		9,600	µg/kg	62.3	68	ND (4.2)	3.10
EPA 9060	Total Organic Carbon	NS	mg/kg	110,000	120,000	80,000	63,000
AK102	DRO (nC10-<nC25)	3,500[a]	mg/kg	2,900	2,500	960 MH	290
AK103	RRO (nC25-nC36)	3,500[a]	mg/kg	2,400	2,200	2,100 J MH	2,700 QH
AK102-SG	DRO with Silica Gel	3,500[a]	mg/kg	2,700	2,200	940 J MH	220
AK103-SG	RRO with Silica Gel	3,500[a]	mg/kg	680	570	1,500 J	1,900

Notes:
Bold = Sample concentration exceeds cleanup level.
[a]2009 NE Cape Decision Document
[b] Evaluation criteria based on NOAA Screening Quick Reference Tables (SQuiRTs), Freshw
[D] Sample is a field duplicate of previous sample
[e]Low Molecular Weight PAHs are: Acenaphtene, Acenaphthylene, Anthracene, Fluorene, N
[f] High Molecular Weight PAHs are: Benzo[a]anthracene, Benzo[a]pyrene, Benzo[b]fluoran
Benzo[k]fluoranthene, Chrysene, Deibenz[a,h]anthracene, Fluoranthene, and Pyrene
B = analyte also detected in method blank
DRO = diesel range organics
EPA = U.S. Environmental Protection Agency
J =the analyte was positively identified; the quantitation is an estimation
LDU = lower decision unit
MDU = middle decision unit
mg/kg = milligrams per kilogram
MH = result is an estimate with potential high bias due to matrix interference
ND = non-detect; limit of detection (LOD) in parentheses
NS = not specified
QH = One or more quality control parameters outside of control limits, result is estimated
QN = One or more quality control parameters outside of control limits, result is estimated
QL = sample result is an estimate due to analytical holding time exceedance; the result m
RRO = residual range organics
SG = extract was filtered through silica gel prior to analysis
SIM = Selective Ion Monitoring/U.S. Department of Defense
UDU = upper decision unit
µg/kg = micrograms per kilogram

Graph 4 Site 8 DRO and RRO Sediment Results for the Middle Decision Unit



Graph 5 Site 8 Selected PAH Sediment Results for the Middle Decision Unit

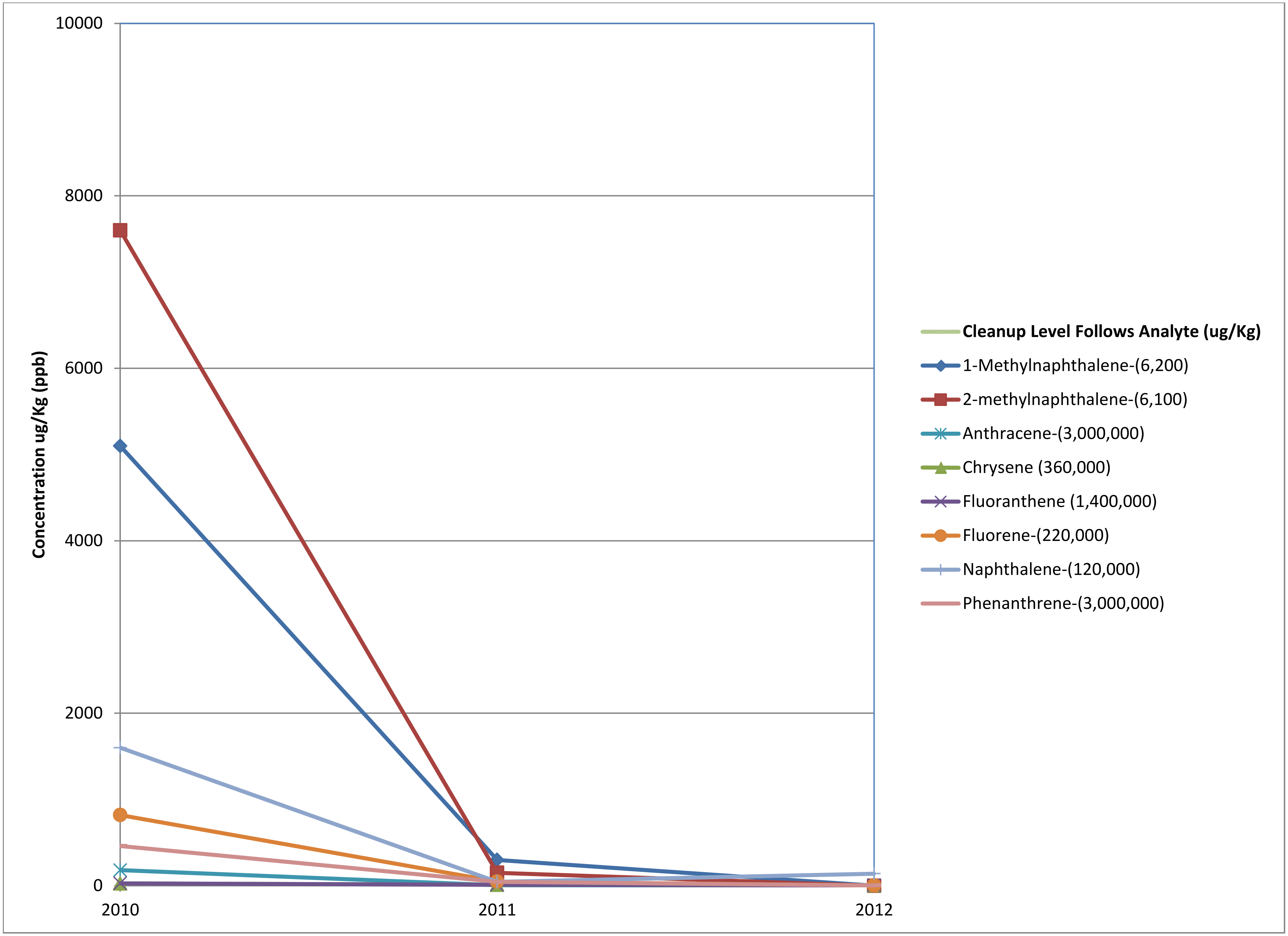


Table F4 Site 8 Monitored Natural Attenuation Parameters 2010

	Grid	B10	C09	A08	C07	A06	D05	D04	A08	C02	C02	D09
	DU	UDU	UDU	UDU	UDU	UDU	UDU	UDU	UDU	UDU	UDU	MDU
	Sample ID	11NC08WA019	11NC08WA020	11NC08WA021	11NC08WA022	11NC08WA023	11NC08WA024	11NC08WA025	11NC08WA026[D]	11NC08WA027	11NC08WA027[D]	11NC08WA010
	Collection Date	7/27/2010	7/27/2010	7/27/2010	7/27/2010	7/27/2010	7/27/2010	7/27/2010	7/27/2010	7/27/2010	7/27/2010	7/26/2010
Analyte	**Units**											
Methane	µg/L	ND (0.19)	ND (0.19)	5.9	ND (0.19)	0.48	2.9	3.8	1.6	0.52	ND (0.19)	0.25
Manganese	mg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ferrous Iron	mg/L	0.04	0.10	<0.01	0.04	0.02	<0.01	0.03	0.03	0.03	0.03	0.05
Sulfate	mg/L	5	2	<2	<2	<2	7	<2	<2	2	3	<2
Alkalinity	mg/L	0	0	0	0	0	0	0	0	0	0	0
Nitrate	mg/L	0.5	0.4	0.2	0.5	0.7	0.3	0.4	0.2	0.4	0.3	0.5
Temp	°C	7.91	8.37	7.23	7.68	6.39	8.3	8.37	7.23	8.01	8.01	11
pH	NA	5.35	5.78	5.76	5.58	5.23	5.71	5.8	5.76	5.48	5.48	5.7
Spec Cond	mS/cm	0.076	0.105	0.078	0.072	0.059	0.066	0.067	0.078	0.076	0.076	0.078*
Dissolved Oxygen	mg/L	5.9	4.46	6.1	7.82	8.9	5.97	5.43	6.1	8.28	8.28	4.323
ORP	mV	177	46.3	115.1	102	194.9	116.7	128.4	115.1	51.2	51.2	38.9

Notes:
*conductance in mS/cm
[D]sample is a field duplicate of the previous sample
< = less than
°C = Degrees celsius
DO = dissolved oxygen
LDU = Lower Decision Unit
MDU = Middle Decision Unit
mg/L = milligram per liter
ND = non-detect; limit of detection (LOD) in parentheses
mS/cm = millisiemens per centimeter
mV = millivolts
NA = not applicable
ORP = oxidation-reduction potential
pH = potential hydrogen
Spec Cond = specific conductance
Temp = temperature
UDU = Upper Decision Unit
µg/L = micrograms per liter

Table F4 Site 8 Monitored Natural Attenuation Parameters 2010 (continued)

	Grid	D08	D04	D04	A03	C02	C01	B08	D06	D06	A09	B05
	DU	MDU	MDU	MDU	MDU	MDU	MDU	MDU	MDU	MDU	LDU	B05
	Sample ID	11NC08WA011	11NC08WA012	11NC08WA013[D]	11NC08WA014	11NC08WA015	11NC08WA016	11NC08WA017	11NC08WA018	11NC08WA018[D]	11NC08WA02	11NC08WA06
	Collection Date	7/26/2010	7/26/2010	7/26/2010	7/26/2010	7/26/2010	7/26/2010	7/26/2010	7/26/2010	7/26/2010	7/28/2010	7/28/2010
Analyte	**Units**											
Methane	µg/L	ND (0.19)	1.9	2	0.24	ND (0.19)	ND (0.19)	96	ND (0.19)	ND (0.19)	0.55	ND (0.19)
Manganese	mg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ferrous Iron	mg/L	0.02	0.01	0.01	0.01	0.01	0.02	0.09	0.11	0.11	0.08	0.01
Sulfate	mg/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	80	<2
Alkalinity	mg/L	0	0	0	0	0	0	0	0	0	80	0
Nitrate	mg/L	0.5	0.9	0.9	0.3	1.1	0.2	0.3	0.3	0.4	0.0	0.3
Temp	°C	11.01	11.09	11.09	10.31	11	10.13	11.31	10.95	10.95	9.09	12.79
pH	NA	6.08	5.4	5.4	5.43	5.46	5.55	5.56	5.64	5.64	6.37	5.96
Spec Cond	mS/cm	0.084*	0.073*	0.073*	0.073*	0.077*	0.073*	0.0311*	0.092*	0.092*	0.185	0.074
Dissolved Oxygen	mg/L	4.477	2.86	2.86	3.3966	3.322	1.8645	2.7032	4.697	4.697	1	2.53
ORP	mV	-19.5	-31	-31	42	36	-8.6	42.8	5.8	5.8	-42.6	-48.8

Notes:
*conductance in mS/cm
[D]sample is a field duplicate of the previous sample
< = less than
°C = Degrees celsius
DO = dissolved oxygen
LDU = Lower Decision Unit
MDU = Middle Decision Unit
mg/L = milligram per liter
ND = non-detect; limit of detection (LOD) in parentheses
mS/cm = millisiemens per centimeter
mV = millivolts
NA = not applicable
ORP = oxidation-reduction potential
pH = potential hydrogen
Spec Cond = specific conductance
Temp = temperature
UDU = Upper Decision Unit
µg/L = micrograms per liter

Table F4 Site 8 Monitored Natural Attenuation Parameters 2010 (continued)

	Grid	B06	C03	C03	C08	C10	C10Dup	D04	D07
	DU	B06	C03	C03	C08	C10	C10Dup	LDU D04	LDU D07
	Sample ID	11NC08WA05	11NC08WA08	11NC08WA09	11NC08WA03	11NC08WA01	11NC08WA01[D]	11NC08WA07	11NC08WA04
	Collection Date	7/28/2010	7/28/2010	7/28/2010	7/28/2010	7/28/2010	7/28/2010	7/28/2010	7/28/2010
Analyte	**Units**								
Methane	µg/L	ND (0.19)	ND (0.19)	ND (0.19)	1.1	ND (0.19)	ND (0.19)	ND (0.19)	ND (0.19)
Manganese	mg/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Ferrous Iron	mg/L	0.04	0.05	0.02	0.04	<0.01	0.02	0.02	0.07
Sulfate	mg/L	<2	1	<2	<2	6	16	<2	<2
Alkalinity	mg/L	0	0	0	0	180	180	0	0
Nitrate	mg/L	0.2	0.2	0.2	0.6	0.1	0.1	0.2	0.1
Temp	°C	12.48	10.04	10.04	9.5	11.04	11.04	11.14	11.42
pH	NA	5.8	6.28	6.28	5.8	8.86	8.86	5.99	5.3
Spec Cond	mS/cm	0.145	0.183	0.183	0.215	0.869	0.869	0.166	0.176
Dissolved Oxygen	mg/L	3.27	2.55	2.55	3.23	0.72	0.72	1.34	2.63
ORP	mV	39.8	-44.6	-44.6	-21.3	-203.5	-204	-28	38.9

Notes:
*conductance in mS/cm
[D]sample is a field duplicate of the previous sample
< = less than
°C = Degrees celsius
DO = dissolved oxygen
LDU = Lower Decision Unit
MDU = Middle Decision Unit
mg/L = milligram per liter
ND = non-detect; limit of detection (LOD) in parentheses
mS/cm = millisiemens per centimeter
mV = millivolts
NA = not applicable
ORP = oxidation-reduction potential
pH = potential hydrogen
Spec Cond = specific conductance
Temp = temperature
UDU = Upper Decision Unit
µg/L = micrograms per liter

Table F5 Site 8 Monitored Natural Attenuation Parameters 2011

	Grid	D9	C8	C7	C5	A3	B3	B3	C2	D1	A2
	DU	LDU	LDU	LDU	LDU	LDU	LDU	LDU	LDU	LDU	MDU
	Sample ID (methane)	11NC08WA001	11NC08WA002	11NC08WA003	11NC08WA004	11NC08WA005	11NC08WA006	11NC08WA009[D]	11NC08WA007	11NC08WA008	11NC08WA010
	Lab Sample ID (methane)	580-27899-27	580-27899-28	580-27899-29	580-27899-30	580-27899-31	580-27899-32	580-27899-35	580-27899-33	580-27899-34	580-27899-36
	Collection Date	8/4/2011	8/4/2011	8/4/2011	8/4/2011	8/4/2011	8/4/2011	8/4/2011	8/4/2011	8/4/2011	8/4/2011
Analyte	**Units**										
Methane	µg/L	350	130	25	25	91	14 QN	21 QN	6.9	13	7.7
Manganese	mg/L	0.2	0	0	0	0	0	0	0.2	0	0
Ferrous Iron	mg/L	0.07	0.07	0.02	0.03	0.05	0.06	0.05	0.02	0.03	0.07
Sulfate	mg/L	1	0	0	0	0	0	0	0	0	0
Alkalinity	mg/L	40	40	40	40	40	40	40	40	40	40
Nitrate	mg/L	0.6	0.6	0.4	0.5	0.6	0.3	0.5	0.9	0.8	0.4
Turbidity	NTU	15.6	8.56	6.44	3.13	18.9	8.8	NA	6.31	2.28	6.79
Temperature	°C	7.79	8.04	8.33	8.65	7.27	7.44	NA	7.13	7.49	6.8
pH	NA	6.04	5.7	5.64	5.73	5.04	5.38	NA	5.71	5.77	5.14
Spec Cond	µs/cm	135	51	49	48	158	103	NA	43	45	31
Dissolved Oxygen	mg/L	3.53	5.49	5.54	6.68	7.09	7.57	NA	7.36	7.18	7.27
ORP	mV	-41.1	-5.7	20.3	10.4	67.7	14	NA	-9.9	-23.8	13.7

Notes:
[D]Sample is a field duplicate of the previous sample
°C = degrees Celsius
DU = decision unit
J = result is an estimation
LDU = lower decision unit
MDU = middle decision unit
mg/L = milligrams per liter
mV= millivolts
NA = not applicable
NTU = nephelometric turbidity units
ORP = oxygen reduction potential
pH = potential hydrogen
QN = Result is an estimate due to high RPD between field duplicates
Spec Cond = specific conductance
UDU = upper decision unit
µg/L = micrograms per liter
µs/cm = microsiemens per centimeter

Table F5 Site 8 Monitored Natural Attenuation Parameters 2011 (continued)

	Grid	B3	A3	A4	C5	C5	B6	B7	D10	A1
	DU	MDU	MDU	MDU	MDU	MDU	MDU	MDU	MDU	UDU
	Sample ID (methane)	11NC08WA011	11NC08WA012	11NC08WA013	11NC08WA014	11NC08WA018[D]	11NC08WA015	11NC08WA016	11NC08WA017	11NC08WA019
	Lab Sample ID (methane)	580-27899-37	580-27899-38	580-27899-39	580-27899-40	580-27899-44	580-27899-41	580-27899-42	580-27899-43	580-27899-45
	Collection Date	8/4/2011	8/4/2011	8/4/2011	8/5/2011	8/5/2011	8/5/2011	8/5/2011	8/5/2011	8/5/2011
Analyte	**Units**									
Methane	µg/L	14	36	170	8.0	8.8	28	48	11	2.8 J
Manganese	mg/L	0	0	0	0	0	0	0	0	0
Ferrous Iron	mg/L	0.03	0.06	0.04	0.04	NA	0.01	0.02	0.01	0.03
Sulfate	mg/L	0	0	0	0	0	0	0	0	0
Alkalinity	mg/L	40	40	40	40	40	40	40	40	40
Nitrate	mg/L	0.6	0.9	0.3	0.3	NA	0.2	0.2	0.3	0.4
Turbidity	NTU	5.15	2.23	5.14	2.92	NA	2.43	9.59	2.75	2.49
Temperature	°C	7	6.74	7.05	7.35	NA	7.26	7.09	7.65	7.47
pH	NA	5.35	5.32	5.46	5.49	NA	5.59	5.52	5.88	5.32
Spec Cond	µs/cm	36	37	54	38	NA	35	50		43
Dissolved Oxygen	mg/L	2.76	5.64	5.07	6.34	NA	5.63	3.72	8.03	5.45
ORP	mV	-1.1	-2.4	-30	4.1	NA	-5.8	16.9	-13.5	-6

Notes:
[D]Sample is a field duplicate of the previous sample
°C = degrees Celsius
DU = decision unit
J = result is an estimation
LDU = lower decision unit
MDU = middle decision unit
mg/L = milligrams per liter
mV= millivolts
NA = not applicable
NTU = nephelometric turbidity units
ORP = oxygen reduction potential
pH = potential hydrogen
QN = Result is an estimate due to high RPD between field duplicates
Spec Cond = specific conductance
UDU = upper decision unit
µg/L = micrograms per liter
µs/cm = microsiemens per centimeter

Table F5 Site 8 Monitored Natural Attenuation Parameters 2011 (continued)

	Grid	D1	C2	A3	C3	D5	D8	B9	B9	Method Detection Limit
	DU	UDU	UDU	UDU	UDU	UDU	UDU	UDU	UDU	
	Sample ID (methane)	11NC08WA020	11NC08WA021	11NC08WA022	11NC08WA023	11NC08WA024	11NC08WA025	11NC08WA026	11NC08WA027[D]	
	Lab Sample ID (methane)	580-27899-46	580-27899-47	580-27899-48	580-27899-49	580-27899-50	580-27899-51	580-27899-52	580-27899-53	
	Collection Date	8/5/2011	8/5/2011	8/5/2011	8/5/2011	8/5/2011	8/5/2011	8/5/2011	8/5/2011	
Analyte	**Units**									
Methane	µg/L	170	10	1.1 J	0.73 J	43	15	20 QN	30 QN	0.22 (DL)
Manganese	mg/L	0.2	0	0	0	0	0	0	0	0.2
Ferrous Iron	mg/L	0.01	0.12	0.02	0	0.04	0.01	0.05	NA	0.01
Sulfate	mg/L	15	0	0	3	0	0	0	0	2
Alkalinity	mg/L	40	40	40	40	40	40	40	40	0
Nitrate	mg/L	0.6	0.3	0.3	0.3	0.4	0.3	0.3	NA	0.4
Turbidity	NTU	27.6	3.96	3.42	0.38	3.62	4.11	10.3	NA	NA
Temperature	°C	7.35	8.05	6.64	8.17	8.42	7.63	9.33	NA	
pH	NA	5.82	5.46	5.12	5.36	5.81	5.69	5.94	NA	
Spec Cond	µs/cm	97	37	35	43	40	50	47	NA	
Dissolved Oxygen	mg/L	3.11	7.34	7.64	9.16	6.59	4.74	7.65	NA	
ORP	mV	-45	-19.6	-3.9	-44.4	-77.6	-51.3	-45.1	NA	

Notes:
[D]Sample is a field duplicate of the previous sample
°C = degrees Celsius
DU = decision unit
J = result is an estimation
LDU = lower decision unit
MDU = middle decision unit
mg/L = milligrams per liter
mV= millivolts
NA = not applicable
NTU = nephelometric turbidity units
ORP = oxygen reduction potential
pH = potential hydrogen
QN = Result is an estimate due to high RPD between field duplicates
Spec Cond = specific conductance
UDU = upper decision unit
µg/L = micrograms per liter
µs/cm = microsiemens per centimeter

Table F6 Site 8 2012 MNA Results

	Grid	D10	C10	A8	B6	A5	D4	B2	C1	C1	D10
	DU	LDU	LDU	LDU	LDU	LDU	LDU	LDU	LDU	LDU	MDU
	Sample ID (methane)	12NC08WA001	12NC08WA002	12NC08WA003	12NC08WA004	12NC08WA005	12NC08WA006	12NC08WA007	12NC08WA008	12NC08WA009[D]	12NC08WA010
	Lab Sample ID (methane)	580-34747-1	580-34747-2	580-34747-3	580-34747-4	580-34747-5	580-34747-6	580-34747-7	580-34747-8	580-34747-9	580-34747-10
	Location ID	WA08-001	WA08-002	WA08-003	WA08-004	WA08-005	WA08-006	WA08-007	WA08-008	WA08-009	WA08-010
	Collection Date	8/28/2012	8/28/2012	8/28/2012	8/28/2012	8/28/2012	8/28/2012	8/28/2012	8/28/2012	8/28/2012	8/28/2012
	Time	1030	1040	1050	1100	1110	1120	1130	1140	1150	1300
Analyte	**Units**										
Methane	µg/L	270	620 QN	370	56	330	91	75	1.4	1.2	0.62
Manganese	mg/L	0	0.03	0	0	0	0	0	1.2	0	0
Ferrous Iron	mg/L	0.02	0	0	0.04	0.02	0.03	0.08	0.04	0.01	0.04
Sulfate	mg/L	4	22	0	0	0	0	0	0	0	0
Alkalinity	mg/L	40	240	40	40	40	40	40	40	40	40
Nitrate	mg/L	0	0.02	0	0	0	0.01	0	0.01	0.08	0.01
Turbidity	NTU	585^	0.82^	1266^	68.9^	32.2^	118^	22.9^	6.31^	6.31^	overrange**
Temperature	°C	7.85	0.59	8.02	8.57	8.05	8.17	8.62	8.16	8.16	9.19
pH	NA	6.03	7.12	5.89	6.2	5.58	5.77	5.65	5.49	5.49	5.27
Spec Cond	µs/cm	119	440	75	83	62	65	110	49	49	49
Dissolved Oxygen	mg/L	0.68	0.39	2.12	1.19	0.99	1.15	2.36	1.03	1.03	4.98
ORP	mV	-13.2	-126.8	36.3	-2.6	105.6	81.1		250.6	250.6	260.1

Notes:
** = turbidity measured 9/14/12
^ = turbidity measured 8/23/12
[D]Sample is a field duplicate of previous sample
°C = degrees Celsius
DU = decision unit
LDU = lower decision unit
MDU = middle decision unit
mg/L = milligrams per liter
mV=millivolts
NA = not applicable
NTU = nephelometric turbidity units
ORP = oxygen reduction potential
pH = potential hydrogen
QN = Quality control failure with no directional bias.
Spec Cond = specific conductance
UDU = upper decision unit
µg/L = micrograms per liter
µs/cm = microsiemens per centimeter

Table F6 Site 8 2012 MNA Results (continued)

	Grid	D8	C8	C7	D5	A5	A3	B1	B1	A10	A9
	DU	MDU	MDU	MDU	MDU	MDU	MDU	MDU	MDU	UDU	UDU
	Sample ID (methane)	12NC08WA011	12NC08WA012	12NC08WA013	12NC08WA014	12NC08WA015	12NC08WA016	12NC08WA017	12NC08WA018[D]	12NC08WA019	12NC08WA020
	Lab Sample ID (methane)	580-34747-11	580-34747-12	580-34747-13	580-34747-14	580-34747-15	580-34747-16	580-34747-17	580-34747-18	580-34747-19	580-34747-20
	Location ID	WA08-011	WA08-012	WA08-013	WA08-014	WA08-015	WA08-016	WA08-017	WA08-018	WA08-019	WA08-020
	Collection Date	8/28/2012	8/28/2012	8/28/2012	8/28/2012	8/28/2012	8/28/2012	8/28/2012	8/28/2012	8/28/2012	8/28/2012
	Time	1310	1320	1330	1340	1350	1400	1410	1420	1430	1610
Analyte	**Units**										
Methane	µg/L	8.2	45	110	13	1800	850	21	20	37	17
Manganese	mg/L	0	0	0	0	0	0	0	0	0	0
Ferrous Iron	mg/L	0.06	0.01	0.01	0	0.05	0.54	0.04	0.04	0.04	0.03
Sulfate	mg/L	0	0	0	0	0	0	0	0	0	0
Alkalinity	mg/L	40	40	40	40	40	40	40	40	40	40
Nitrate	mg/L	0.01	0.01	0.01	¤ 2 (" 0.55)	0.01	0.01	0	0	0.06	0.25
Turbidity	NTU	96.9**	38**	overrange**	712**	36.7**	10.9**	2.38**	2.38**	6.7**	3**
Temperature	°C	9.52	9.59	8.67	9.45	8.76	9.11	9.87	9.87	9.51	10.29
pH	NA	5.24	5.49	5.23	5.23	5.39	5.36	5.4	5.4	5.4	5.26
Spec Cond	µs/cm	47	59	55	51	68	68	48	48	49	52
Dissolved Oxygen	mg/L	2.56	2.57	0.44	4.8	0.67	1.47	3.89	3.89	3.89	2.13
ORP	mV	281.1	124.4	189.2	263	82.8	85.3	214.4	214.4	214.4	261.3

Notes:
" = Reading was out of range on nitrates, a 10x dilution was analyzed and 0.20 mg/L was the reading on the device
** = turbidity measured 9/14/12
¤ = x10 dilution
[D]Sample is a field duplicate of previous sample
°C = degrees Celsius
DU = decision unit
LDU = lower decision unit
MDU = middle decision unit
mg/L = milligrams per liter
mV=millivolts
NA = not applicable
NTU = nephelometric turbidity units
ORP = oxygen reduction potential
pH = potential hydrogen
QN = Quality control failure with no directional bias.
Spec Cond = specific conductance
UDU = upper decision unit
µg/L = micrograms per liter
µs/cm = microsiemens per centimeter

Table F6 Site 8 2012 MNA Results (continued)

	Grid	C9	D6	C6	C4	A3	A2	A2	Method Detection Limit
	DU	UDU	UDU	UDU	UDU	UDU	UDU	UDU	
	Sample ID (methane)	12NC08WA021	12NC08WA022	12NC08WA023	12NC08WA024[D]	12NC08WA025	12NC08WA026	12NC08WA027	
	Lab Sample ID (methane)	580-34747-21	580-34747-22	580-34747-23	580-34747-24	580-34747-25	580-34747-26	580-34747-27	
	Location ID	WA08-021	WA08-022	WA08-023	WA08-024	WA08-025	WA08-026	WA08-027	
	Collection Date	8/28/2012	8/28/2012	8/28/2012	8/28/2012	8/28/2012	8/28/2012	8/28/2012	
	Time	1627	1634	1647	1650	1656	1700	1713	
Analyte	**Units**								
Methane	µg/L	540	410	60	51	480	86	64	NA
Manganese	mg/L	0	0	0	0	0	0	0	0.2
Ferrous Iron	mg/L	0.02	0.04	0.32	0.16	0.06	0.08	0.08	0.03
Sulfate	mg/L	0	1	0	0	0	0	0	4.9
Alkalinity	mg/L	40	40	40	40	40	40	40	0
Nitrate	mg/L	0	0	0	0	0	0	0	0.01
Turbidity	NTU	6.96**	13.3**	1.51**	1.51**	4.74**	73**	3.61**	
Temperature	°C	9.37	9.3	11.3	11.3	9.21	7.56	8.24	
pH	NA	5.48	5.46	6.07	6.07	4.86	4.78	4.9	
Spec Cond	µs/cm	77	52	66	66	46	47	49	
Dissolved Oxygen	mg/L	1.46	1.22	2.23	2.23	3.22	3.51	3.14	
ORP	mV	95.3	139.1	27.8	27.8	243	177.4	280.9	NA

Notes:
** = turbidity measured 9/14/12
[D]Sample is a field duplicate of previous sample
°C = degrees Celsius
DU = decision unit
LDU = lower decision unit
MDU = middle decision unit
mg/L = milligrams per liter
mV=millivolts
NA = not applicable
NTU = nephelometric turbidity units
ORP = oxygen reduction potential
pH = potential hydrogen
QN = Quality control failure with no directional bias.
Spec Cond = specific conductance
UDU = upper decision unit
µg/L = micrograms per liter
µs/cm = microsiemens per centimeter

Table F7 Site 8 Surface Water Outfall Results

				Sample ID	12NC08SWA01	12NC08SWA02	12NC08SWA03 [D]
				Laboratory ID	580-34648-1	580-34648-2	580-34648-3
				Location ID	12NC08-01	12NC08-02	12NC08-03
				Collection Date	8/23/2012	8/23/2012	8/23/2012
Analysis Method	**Analyte**	**Units**	**Cleanup Levels[1]**	**Evaluation Criteria**			
8270C SIM	1-Methylnaphthalene	µg/L	NS	NS	ND (0.072)	1.7	1.3
8270C SIM	2-Methylnaphthalene	µg/L	NS	NS	ND (0.072)	1.0 QN	0.33 QN
8270C SIM	Acenaphthene	µg/L	NS	NS	ND (0.072)	0.072 J	0.074 J
8270C SIM	Acenaphthylene	µg/L	NS	NS	ND (0.072)	ND (0.072)	0.033 J
8270C SIM	Anthracene	µg/L	NS	NS	ND (0.072)	ND (0.072)	ND (0.072)
8270C SIM	Benzo[a]anthracene	µg/L	NS	NS	ND (0.072)	ND (0.072)	ND (0.072)
8270C SIM	Benzo[a]pyrene	µg/L	NS	0.2*	ND (0.072)	ND (0.072)	ND (0.072)
8270C SIM	Benzo[b]fluoranthene	µg/L	NS	NS	ND (0.072)	ND (0.072)	ND (0.072)
8270C SIM	Benzo[g,h,i]perylene	µg/L	NS	NS	ND (0.072)	ND (0.072)	ND (0.072)
8270C SIM	Benzo[k]fluoranthene	µg/L	NS	NS	ND (0.072)	ND (0.072)	ND (0.072)
8270C SIM	Chrysene	µg/L	NS	NS	ND (0.072)	ND (0.072)	ND (0.072)
8270C SIM	Dibenz(a,h)anthracene	µg/L	NS	NS	ND (0.072)	ND (0.072)	ND (0.072)
8270C SIM	Fluoranthene	µg/L	NS	NS	ND (0.072)	ND (0.072)	ND (0.072)
8270C SIM	Fluorene	µg/L	NS	NS	ND (0.072)	0.12 QN	0.19 QN
8270C SIM	Indeno[1,2,3-cd]pyrene	µg/L	NS	NS	ND (0.072)	ND (0.072)	ND (0.072)
8270C SIM	Naphthalene	µg/L	NS	NS	ND (0.072)	0.82 QN	0.17 QN
8270C SIM	Phenanthrene	µg/L	NS	NS	ND (0.072)	ND (0.072)	ND (0.072)
8270C SIM	Pyrene	µg/L	NS	NS	ND (0.072)	ND (0.072)	ND (0.072)
Sheen		none	no sheen may be present	no sheen or free floating oil*	no sheen	biogenic sheen	biogenic sheen
AK102 & 103	DRO (nC10-<nC25)	mg/L	no sheen may be present	1.5#	0.075 J B	0.34	0.37
AK102 & 103	RRO (nC25-nC36)	mg/L	no sheen may be present	1.1#	0.069 J	0.42	0.48

Table Notes:

Samples were not analyzed for BTEX

= based on groundwater criteria in 18AAC.75.341 Table C

* = based on surface water criteria in 18AAC.70.020

µg/L= micrograms per Liter

[1] = from the 2009 Decision Document

B = analyte detected in the method blank and may have a high bias

[D] Sample is a field duplicate of previous sample.

J = Result is an estimate

mg/L = milligram per liter

ND = non-detect; the limit of detection (LOD) is in parentheses

QN = Quality control failure with no directional bias.

SIM = Selective Ion Monitoring/U.S. Department of Defense

TAqH = Total Aqueous Hydrocarbons

Table F8 Cargo Beach Multi-Incremental Soil Sample Results

			Sample ID	12NCBGSS01	12NCBGSS02	12NCBGSS03[R]	12NCBGSS04[R]	12NCBGSS05	12NCBGSS06	12NCBGSS07	12NCBGSS08
			Laboratory ID	580-33899-16	580-33899-17	580-33899-18	580-33899-19	580-33899-20	580-33899-21	580-33899-22	580-33899-23
			Location ID	CB-1	CB-2	CB-2	CB-2	CB-3	CB-4	CB-5	CB-6
			Decision Unit	DU 1	DU 6	DU 6	DU 6	DU 5	DU 4	DU 3	DU 2
			Collection Date	7/6/2012	7/7/2012	7/7/2012	7/7/2012	7/7/2012	7/8/2012	7/9/2012	7/9/2012
Analysis Method	**Analyte**	**Unit**	**Site Specific Cleanup Level**								
8082	PCB-1016	mg/kg	1[1]	ND (0.0016)	ND (0.0017)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)
8082	PCB-1221	mg/kg	1[1]	ND (0.0032)	ND (0.0033)	ND (0.0032)	ND (0.0032)	ND (0.0032)	ND (0.0032)	ND (0.0032)	ND (0.0033)
8082	PCB-1232	mg/kg	1[1]	ND (0.0032)	ND (0.0033)	ND (0.0032)	ND (0.0032)	ND (0.0032)	ND (0.0032)	ND (0.0032)	ND (0.0033)
8082	PCB-1242	mg/kg	1[1]	ND (0.0016)	ND (0.0017)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)
8082	PCB-1248	mg/kg	1[1]	ND (0.0016)	ND (0.0017)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)
8082	PCB-1254	mg/kg	1[1]	ND (0.0016)	ND (0.0017)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)	ND (0.0016)
8082	PCB-1260	mg/kg	1[1]	0.066 J MH	0.0012 J	0.0020 J	0.0023 J	0.0053	0.013	0.0086	0.023
AK102	DRO	mg/kg	9,200[1]	6.8 J	0.81 J	0.93 J	0.89 J	1.9 J	8.9	5.7 J	4.0 J

Notes:
[1] 2009 NE Cape Decision Document
[R] Sample is a replicate of previous sample
DU = Decision Unit
J = Result is an estimate
MH = matrix interference suspected with a potential high bias.
ND = non-detect; the limit of detection (LOD) is in parentheses
DRO = Diesel Range Organics
PCB = Polychlorinated Biphenyl
mg/kg = Milligrams per kilogram
[†] *MULTI INCREMENT*® is a registered trademark of EnviroStat, Inc.

Table F9 Site 6 *MULTI INCREMENT*® Soil Sample Results

			Sample ID	12NCBGSS10	12NCBGSS11	12NCBGSS12	12NCBGSS13
			Laboratory ID	580-34086-1	580-34086-2	580-34086-3	580-34086-4
			Location ID	S6-1	S6-2	S6-3	S6-4
			Collection Date	7/15/2012	7/15/2012	7/16/2012	7/16/2012
Analysis Method	**Analyte**	**Unit**	**Site Specific Cleanup Level**				
8082	PCB-1016	mg/kg	1[1]	ND (0.0016)	ND (0.0016)	ND (0.0015)	ND (0.0016)
8082	PCB-1221	mg/kg	1[1]	ND (0.0032)	ND (0.0032)	ND (0.0031)	ND (0.0032)
8082	PCB-1232	mg/kg	1[1]	ND (0.0032)	ND (0.0032)	ND (0.0031)	ND (0.0032)
8082	PCB-1242	mg/kg	1[1]	ND (0.0016)	ND (0.0016)	ND (0.0015)	ND (0.0016)
8082	PCB-1248	mg/kg	1[1]	ND (0.0016)	ND (0.0016)	ND (0.0015)	ND (0.0016)
8082	PCB-1254	mg/kg	1[1]	ND (0.0016)	ND (0.0016)	ND (0.0015)	ND (0.0016)
8082	PCB-1260	mg/kg	1[1]	0.034	0.0084	0.0065	0.0025 J
AK102	DRO	mg/kg	9,200[1]	18	33	60	26

Notes:

[1] 2009 NE Cape Decision Document

DRO = Diesel Range Organics

J =Result is an estimate

mg/kg = Milligrams per kilogram

ND = non-detect; the limit of detection (LOD) is in parentheses

PCB = Polychlorinated Biphenyl

† *MULTI INCREMENT*® is a registered trademark of EnviroStat, Inc.

Table F10 MOC and Site 26 *MULTI INCREMENT*® Soil Sample Results

			Sample ID	12NCBGSS09	12NCBGSS14	12NCBGSS15[R]	12NCBGSS16[R]
			Laboratory ID	580-33899-24	580-34335-1	580-34335-2	580-34335-3
			Location ID	MOC BS-1	MOC BS-2	MOC BS-2	MOC BS-2
			Collection Date	7/9/2012	7/26/2012	7/26/2012	7/26/2012
Analysis Method	**Analyte**	**Unit**	**ADEC Cleanup Level**				
8082	PCB-1016	mg/kg	1[1]	ND (0.0017)	ND (0.0016)	ND (0.0016)	ND (0.0016)
8082	PCB-1221	mg/kg	1[1]	ND (0.0033)	ND (0.0033)	ND (0.0033)	ND (0.0033)
8082	PCB-1232	mg/kg	1[1]	ND (0.0033)	ND (0.0033)	ND (0.0033)	ND (0.0033)
8082	PCB-1242	mg/kg	1[1]	ND (0.0017)	ND (0.0016)	ND (0.0016)	ND (0.0016)
8082	PCB-1248	mg/kg	1[1]	ND (0.0017)	ND (0.0016)	ND (0.0016)	ND (0.0016)
8082	PCB-1254	mg/kg	1[1]	ND (0.0017)	ND (0.0016)	ND (0.0016)	ND (0.0016)
8082	PCB-1260	mg/kg	1[1]	0.087	0.016 MN	0.024	0.022
AK102	DRO	mg/kg	9,200[1]	100	120 QL QN	10 QL QN	190 QL QN

Notes:

[R] Sample is a replicate of previous sample

[1] 2009 NE Cape Decision Document

DRO = Diesel Range Organics

mg/kg = Milligrams per kilogram

MN = Matrix interference is suspected with no bias direction indicated.

ND = non-detect; the limit of detection (LOD) is in parentheses

PCB = Polychlorinated Biphenyl

QL = Analyte result is considered estimated with a low bias due to a quality control failure.

QN = One or more quality control criteria failed to meet control limits with unknown bias.

† *MULTI INCREMENT*® is a registered trademark of EnviroStat, Inc.

Table F11 MOC A Plume DRO/RRO Confirmation Soil Results

			Sample ID	12NCMOCSS001	12NCMOCSS004[D]	12NCMOCSS002	12NCMOCSS003	12NCMOCSS027	12NCMOCSS028
			Laboratory ID	580-34205-1	580-34205-4	580-34205-2	580-34205-3	580-34205-27	580-34205-28
			Location ID	MOCSS001	MOCSS001A	MOCSS002	MOCSS003	MOCSS027	MOCSS028
			Collection Date	7/25/2012	7/25/2012	7/25/2012	7/25/2012	7/28/2012	7/28/2012
Analysis Method	**Analyte**	**Unit**	**Site Specific Cleanup Level**						
AK102	DRO	mg/kg	9,200[1]	6,000	4,100	7,200 J	5,400	2,200	850
AK103	RRO	mg/kg	9,200[1]	62	42 J	41 J	73	19 J	13 J
				A plume- SW	**A plume- SW**	**A plume- SW**	**A plume- SW**	**A plume- FL**	**A plume- FL**

Notes:
[1] 2009 NE Cape Decision Document
[D] Sample is a field duplicate of the previous sample.
FL= floor
J = Result is an estimate
RRO = Residual Range Organics
DRO = Diesel Range Organics
mg/kg = milligram per kilogram
SW= sidewall

Table F12 MOC H Plume DRO/RRO Confirmation Soil Results

			Sample ID	12NCMOCSS005	12NCMOCSS006[D]	12NCMOCSS007	12NCMOCSS008	12NCMOCSS017	12NCMOCSS018	12NCMOCSS019	12NCMOCSS026[D]	12NCMOCSS045	12NCMOCSS062[D]
			Laboratory ID	580-34205-5	580-34205-6	580-34205-7	580-34205-8	580-34205-17	580-34205-18	580-34205-19	580-34205-26	580-34447-16	580-34447-33
			Location ID	MOCSS005	MOCSS006	MOCSS007	MOCSS008	MOCSS017	MOCSS018	MOCSS019	MOCSS026	MOCSS045	MOCSS062
			Collection Date	7/26/2012	7/26/2012	7/26/2012	7/26/2012	7/26/2012	7/28/2012	7/28/2012	7/28/2012	8/8/2012	8/8/2012
Analysis Method	Analyte	Unit	Site Specific Cleanup Level					Sidewall Sample	Sidewall Sample	Sidewall Sample	Sidewall Sample	Sidewall Sample	Sidewall Sample
AK102	DRO	mg/kg	9,200[1]	1,800	2,300	4,000	3,300	370	ND (8.3)	3,500 J	2,400	6,400	8,600
AK103	RRO	mg/kg	9,200[1]	58	71	120	96	50 J	ND (32)	56 J	52 J	49 J B	48 J
				H plume- FL	**H plume- FL**	**H plume- FL**	**H plume- FL**	**H plume- SW**	**H plume- SW**	**H plume- SW**	**H plume- SW**	**H plume- SW**	**H plume- SW**

			Sample ID	12NCMOCSS046	12NCMOCSS009	12NCMOCSS010	12NCMOCSS011	12NCMOCSS012	12NCMOCSS020	12NCMOCSS021	12NCMOCSS022	12NCMOCSS023
			Laboratory ID	580-34447-17	580-34205-9	580-34205-10	580-34205-11	580-34205-12	580-34205-20	580-34205-21	580-34205-22	580-34205-23
			Location ID	MOCSS046	MOCSS009	MOCSS010	MOCSS011	MOCSS012	MOCSS020	MOCSS021	MOCSS022	MOCSS023
			Collection Date	8/8/2012	7/26/2012	7/26/2012	7/26/2012	7/26/2012	7/26/2012	7/26/2012	7/26/2012	7/26/2012
Analysis Method	Analyte	Unit	Site Specific Cleanup Level	Sidewall Sample		Sidewall Sample			Sidewall Sample	Sidewall Sample		
AK102	DRO	mg/kg	9,200[1]	650	2,900	4,700	540	3,400	8.3 J	ND (7.8)	5,100	2,200
AK103	RRO	mg/kg	9,200[1]	970	34 J	66	18 J	78	70	ND (30)	160	32 J
				H plume- SW	**H plume- FL**	**H plume- SW**	**H plume- FL**	**H plume- FL**	**H plume- SW**	**H plume- SW**	**H plume- FL**	**H plume- FL**

			Sample ID	12NCMOCSS013	12NCMOCSS014	12NCMOCSS015	12NCMOCSS016	12NCMOCSS024	12NCMOCSS025[D]	12NCMOCSS044
			Laboratory ID	580-34205-13	580-34205-14	580-34205-15	580-34205-16	580-34205-24	580-34205-25	580-34447-15
			Location ID	MOCSS013	MOCSS014	MOCSS015	MOCSS016	MOCSS024	MOCSS024A	MOCSS044
			Collection Date	7/26/2012	7/26/2012	7/26/2012	7/26/2012	7/26/2012	7/26/2012	8/8/2012
Analysis Method	Analyte	Unit	Site Specific Cleanup Level		Sidewall Sample	Sidewall Sample	Sidewall Sample			Sidewall Sample
AK102	DRO	mg/kg	9,200[1]	7,100	2,300	550	8,700	1,400	1,500	23
AK103	RRO	mg/kg	9,200[1]	66	28 J	ND (27)	100	50 J	46 J	31 J B
				H plume- FL	**H plume- SW**	**H plume- SW**	**H plume- SW**	**H plume- FL**	**H plume- FL**	**H plume- SW**

Notes:
[1] Cleanup level from 2009 NE Cape Decision Document
[D] Sample is a field duplicate of the previous sample.
B = Analyte detected in method blank with potential high bias
FL= floor sample
J = Result is an estimate
DRO = Diesel Range Organics
mg/kg = milligram per kilogram
ND = non-detect; limit of detection (LOD) is in parentheses
RRO = Residual Range Organics
SW= side wall sample

Table F13 MOC G Plume DRO/RRO Confirmation Soil Results

			Sample ID	12NCMOCSS030	12NCMOCSS031	12NCMOCSS032	12NCMOCSS033
			Laboratory ID	580-34447-1	580-34447-2	580-34447-3	580-34447-4
			Location ID	MOCSS030	MOCSS031	MOCSS032	MOCSS033
			Collection Date	8/6/2012	8/6/2012	8/6/2012	8/6/2012
Analysis Method	**Analyte**	**Unit**	**Site Specific Cleanup Level**				
AK102	DRO	mg/kg	9,200[1]	4,200	6,400 J	4,800	**19,000**
AK103	RRO	mg/kg	9,200[1]	68 B	120	41 J B	540
				G plume-FL	**G plume- FL**	**G plume- FL**	**G plume- FL**

			Sample ID	12NCMOCSS034	12NCMOCSS035	12NCMOCSS036	12NCMOCSS037
			Laboratory ID	580-34447-5	580-34447-6	580-34447-7	580-34447-8
			Location ID	MOCSS034	MOCSS035	MOCSS036	MOCSS037
			Collection Date	8/6/2012	8/6/2012	8/6/2012	8/6/2012
Analysis Method	**Analyte**	**Unit**	**Site Specific Cleanup Level**				
AK102	DRO	mg/kg	9,200[1]	2,100	3,300	2,600	**40,000**
AK103	RRO	mg/kg	9,200[1]	89 B	70 B	1,100	820
				G plume- FL	**G plume- FL**	**G plume- FL**	**G plume- FL**

			Sample ID	12NCMOCSS038	12NCMOCSS039	12NCMOCSS040	12NCMOCSS041[D]
			Laboratory ID	580-34447-9	580-34447-10	580-34447-11	580-34447-12
			Location ID	MOCSS038	MOCSS039	MOCSS040	MOCSS041
			Collection Date	8/6/2012	8/6/2012	8/6/2012	8/6/2012
Analysis Method	**Analyte**	**Unit**	**Site Specific Cleanup Level**				
AK102	DRO	mg/kg	9,200[1]	1,900	**10,000**	6,400	6,500
AK103	RRO	mg/kg	9,200[1]	870	170	140	100 B
				G plume- FL	**G plume- FL**	**G plume- FL**	**G plume- FL**

Notes:

[1] 2009 NE Cape Decision Document

Bold - Sample conentration exceeds cleanup level.

[D] Sample is a field duplicate of the previous sample.

B = Analyte detected in the method blank, potential high bias.

DRO = Diesel Range Organics

FL= floor sample

J = Result is an estimate

mg/kg = milligram per kilogram

QN = One or more QC criteria not met with no directional bias.

RRO = Residual Range Organics

SW= sidewall sample

Table F13 MOC G Plume DRO/RRO Confirmation Soil Results (continued)

			Sample ID	12NCMOCSS042	12NCMOCSS043	12NCMOCSS047	12NCMOCSS048
			Laboratory ID	580-34447-13	580-34447-14	580-34447-18	580-34447-19
			Location ID	MOCSS042	MOCSS043	MOCSS047	MOCSS048
			Collection Date	8/6/2012	8/6/2012	8/8/2012	8/8/2012
Analysis Method	**Analyte**	**Unit**	**Site Specific Cleanup Level**				
AK102	DRO	mg/kg	9,200[1]	17 J B	5,200	4,200	**12,000***
AK103	RRO	mg/kg	9,200[1]	28 J	59 J	46 J B	47 J B
				G plume- FL	**G plume- FL**	**G plume- SW**	**G plume- SW**

			Sample ID	12NCMOCSS049	12NCMOCSS050	12NCMOCSS051	12NCMOCSS052
			Laboratory ID	580-34447-20	580-34447-21	580-34447-22	580-34447-23
			Location ID	MOCSS049	MOCSS050	MOCSS051	MOCSS052
			Collection Date	8/8/2012	8/8/2012	8/8/2012	8/8/2012
Analysis Method	**Analyte**	**Unit**	**Site Specific Cleanup Level**				
AK102	DRO	mg/kg	9,200[1]	1,700	**21,000***	9.9 J	24
AK103	RRO	mg/kg	9,200[1]	29 J B	72 B	65 B	43 J B
				G plume- SW	**G plume- SW**	**G plume- SW**	**G plume- SW**

			Sample ID	12NCMOCSS053	12NCMOCSS054	12NCMOCSS055	12NCMOCSS056
			Laboratory ID	580-34447-24	580-34447-25	580-34447-26	580-34447-27
			Location ID	MOCSS053	MOCSS054	MOCSS055	MOCSS056
			Collection Date	8/8/2012	8/8/2012	8/8/2012	8/8/2012
Analysis Method	**Analyte**	**Unit**	**Site Specific Cleanup Level**				
AK102	DRO	mg/kg	9,200[1]	3,000	16 J	7.3 J	4.7 J
AK103	RRO	mg/kg	9,200[1]	44 J B	22 J B	26 J B	23 J B
				G plume- SW	**G plume- SW**	**G plume- SW**	**G plume- SW**

Notes:

* indicates sample location exceeding site specific cleanup level which has been excavated

[1] 2009 NE Cape Decision Document

Bold - Sample conentration exceeds cleanup level.

[D] Sample is a field duplicate of the previous sample.

B = Analyte detected in the method blank, potential high bias.

DRO = Diesel Range Organics

FL= floor sample

J = Result is an estimate

mg/kg = milligram per kilogram

QN = One or more QC criteria not met with no directional bias.

RRO = Residual Range Organics

SW= sidewall sample

Table F13 MOC G Plume DRO/RRO Confirmation Soil Results (continued)

			Sample ID	12NCMOCSS057	12NCMOCSS058	12NCMOCSS059	12NCMOCSS072[D]
			Laboratory ID	580-34447-28	580-34447-29	580-34447-30	580-34447-43
			Location ID	MOCSS057	MOCSS058	MOCSS059	MOCSS072
			Collection Date	8/8/2012	8/8/2012	8/8/2012	8/8/2012
Analysis Method	Analyte	Unit	Site Specific Cleanup Level				
AK102	DRO	mg/kg	9,200[1]	42	13 J	130 QN	3,300 QN
AK103	RRO	mg/kg	9,200[1]	370	100 B	350 QN	750 QN
				G plume- SW	**G plume- SW**	**G plume- SW**	**G plume- SW**

			Sample ID	12NCMOCSS060	12NCMOCSS061	12NCMOCSS063	12NCMOCSS064
			Laboratory ID	580-34447-31	580-34447-32	580-34447-34	580-34447-35
			Location ID	MOCSS060	MOCSS061	MOCSS063	MOCSS064
			Collection Date	8/8/2012	8/8/2012	8/8/2012	8/8/2012
Analysis Method	Analyte	Unit	Site Specific Cleanup Level				
AK102	DRO	mg/kg	9,200[1]	35	150	930	3,600
AK103	RRO	mg/kg	9,200[1]	180	37 J B	68	5,500
				G plume- SW	**G plume- SW**	**G plume- SW**	**G plume- SW**

			Sample ID	12NCMOCSS065	12NCMOCSS068[D]	12NCMOCSS066	12NCMOCSS067
			Laboratory ID	580-34447-36	580-34447-39	580-34447-37	580-34447-38
			Location ID	MOCSS065	MOCSS068	MOCSS066	MOCSS067
			Collection Date	8/8/2012	8/8/2012	8/8/2012	8/8/2012
Analysis Method	Analyte	Unit	Site Specific Cleanup Level				
AK102	DRO	mg/kg	9,200[1]	1,000 QN	570 QN	540	14 J B
AK103	RRO	mg/kg	9,200[1]	46 J B	39 J B	1,200	59 J
				G plume- SW	**G plume- SW**	**G plume- SW**	**G plume- SW**

Notes:

[1] 2009 NE Cape Decision Document

Bold - Sample conentration exceeds cleanup level.

[D] Sample is a field duplicate of the previous sample.

B = Analyte detected in the method blank, potential high bias.

DRO = Diesel Range Organics

FL= floor sample

J = Result is an estimate

mg/kg = milligram per kilogram

QN = One or more QC criteria not met with no directional bias.

RRO = Residual Range Organics

SW= sidewall sample

Table F13 MOC G Plume DRO/RRO Confirmation Soil Results (continued)

			Sample ID	12NCMOCSS069	12NCMOCSS070	12NCMOCSS071	12NCMOCSS159
			Laboratory ID	580-34447-40	580-34447-41	580-34447-42	580-34820-1
			Location ID	MOCSS069	MOCSS070	MOCSS071	MOCSS159
			Collection Date	8/12/2012	8/12/2012	8/12/2012	9/2/2012
Analysis Method	**Analyte**	**Unit**	**Site Specific Cleanup Level**				
AK102	DRO	mg/kg	9,200[1]	**12,000**	**12,000**	6,100	11 J
AK103	RRO	mg/kg	9,200[1]	390	83 J	40 J	96
				G plume- SW	**G plume- SW**	**G plume- SW**	**G plume- SW**

			Sample ID	12NCMOCSS160	12NCMOCSS161	12NCMOCSS162	12NCMOCSS165
			Laboratory ID	580-34820-2	580-34820-3	580-34820-4	580-34820-7
			Location ID	MOCSS160	MOCSS161	MOCSS162	MOCSS165
			Collection Date	9/2/2012	9/2/2012	9/2/2012	9/2/2012
Analysis Method	**Analyte**	**Unit**	**Site Specific Cleanup Level**				
AK102	DRO	mg/kg	9,200[1]	**9,200**	13 J	2,000	110
AK103	RRO	mg/kg	9,200[1]	23 J	66	33 J	290
				G plume- SW	**G plume- SW**	**G plume- SW**	**G plume- SW**

			Sample ID	12NCMOCSS163	12NCMOCSS164[D]	12NCMOCSS166	12NCMOCSS167
			Laboratory ID	580-34820-5	580-34820-6	580-34820-8	580-34820-9
			Location ID	MOCSS163	MOCSS164	MOCSS166	MOCSS167
			Collection Date	9/2/2012	9/2/2012	9/2/2012	9/2/2012
Analysis Method	**Analyte**	**Unit**	**Site Specific Cleanup Level**				
AK102	DRO	mg/kg	9,200[1]	2,500	2,400	120	290
AK103	RRO	mg/kg	9,200[1]	34 J	38 J	630	200
				G plume- SW	**G plume- SW**	**G plume- SW**	**G plume- SW**

Notes:

[1] 2009 NE Cape Decision Document

Bold - Sample conentration exceeds cleanup level.

[D] Sample is a field duplicate of the previous sample.

B = Analyte detected in the method blank, potential high bias.

DRO = Diesel Range Organics

FL= floor sample

J = Result is an estimate

mg/kg = milligram per kilogram

QN = One or more QC criteria not met with no directional bias.

RRO = Residual Range Organics

SW= sidewall sample

Table F14 MOC E Plume DRO/RRO Confirmation Soil Results

			Sample ID	12NCMOCSS073	12NCMOCSS079[D]	12NCMOCSS074	12NCMOCSS075	12NCMOCSS090	12NCMOCSS094	12NCMOCSS098	12NCMOCSS099[D]	12NCMOCSS140	12NCMOCSS146	12NCMOCSS150
			Laboratory ID	580-34607-1	580-34607-6	580-34447-44	580-34607-2	580-34594-8	580-34594-12	580-34594-16	580-34594-17	580-34677-19	580-34677-25	580-34820-10
			Location ID	12NCMOCSS073	12NCMOCSS079	12NCMOCSS0	12NCMOCSS075	12MOCSS090	12MOCSS094	12MOCSS098	12MOCSS099	MOC-140	MOC-146	MOCSS150
			Collection Date	8/12/2012	8/12/2012	8/12/2012	8/12/2012	8/21/2012	8/21/2012	8/21/2012	8/21/2012	8/25/2012	8/25/2012	9/2/2012
Analysis Method	**Analyte**	**Unit**	**Site Specific Cleanup Level**											
AK102	DRO	mg/kg	9,200[1]	370 QN	660 QN	69	24 B	**15,000**	2,200	2,600 QN	5,600 QN	**41,000 J**	**13,000**	89
AK103	RRO	mg/kg	9,200[1]	610	780	590	230	1,200	74	80	120	2,400	3,100 QH	250
				E plume- FL	**E plume- FL**	**E plume- FL**	**E plume- FL**	**E plume- FL**	**E plume- FL**	**E plume- FL**	**E plume- FL**	**E plume- FL**	**E plume- FL**	**E plume- SW**

			Sample ID	12NCMOCSS151	12NCMOCSS076	12NCMOCSS077	12NCMOCSS078	12NCMOCSS104	12NCMOCSS108	12NCMOCSS117	12NCMOCSS152	12NCMOCSS153[D]	12NCMOCSS154	12NCMOCSS155
			Laboratory ID	580-34820-11	580-34607-3	580-34607-4	580-34607-5	580-34594-22	580-34594-26	580-34594-35	580-34820-12	580-34820-13	580-34820-14	580-34820-15
			Location ID	MOCSS151	12NCMOCSS076	12NCMOCSS077	12NCMOCSS078	12MOCSS104	12MOCSS108	12MOCSS117	MOCSS152	MOCSS153	MOCSS154	MOCSS155
			Collection Date	9/2/2012	8/12/2012	8/12/2012	8/12/2012	8/21/2012	8/21/2012	8/21/2012	9/2/2012	9/2/2012	9/2/2012	9/2/2012
Analysis Method	**Analyte**	**Unit**	**Site Specific Cleanup Level**											
AK102	DRO	mg/kg	9,200[1]	270	27 B	310	4,100	13 J B	34 B	**21,000**	290	200	77	35
AK103	RRO	mg/kg	9,200[1]	2,300	220	700	930	38 J	270	1,300	2,400	1,600	110	130
				E plume- SW	**E plume- FL**	**E plume- FL**	**E plume- FL**	**E plume- FL**	**E plume- FL**	**E plume- FL**	**E plume- SW**	**E plume- SW**	**E plume- SW**	**E plume- SW**

			Sample ID	12NCMOCSS080	12NCMOCSS081[D]	12NCMOCSS082	12NCMOCSS083	12NCMOCSS128	12NCMOCSS129[D]	12NCMOCSS133	12NCMOCSS136	12NCMOCSS156	12NCMOCSS157	12NCMOCSS158
			Laboratory ID	580-34607-7	580-34607-8	580-34607-9	580-34594-1	580-34677-7	580-34677-8	580-34677-12	580-34677-15	580-34820-16	580-34820-17	580-34820-18
			Location ID	12NCMOCSS080	12NCMOCSS081	12NCMOCSS082	12MOCSS083	MOC-128	MOC-129	MOC-133	MOC-136	MOCSS156	MOCSS157	MOCSS158
			Collection Date	8/20/2012	8/20/2012	8/20/2012	8/21/2012	8/25/2012	8/25/2012	8/25/2012	8/25/2012	9/2/2012	9/2/2012	9/2/2012
Analysis Method	**Analyte**	**Unit**	**Site Specific Cleanup Level**											
AK102	DRO	mg/kg	9,200[1]	2,600	1,900	4,900 J	140	**72,000**	**110,000**	3,600 J	5,200 J	62	25	30
AK103	RRO	mg/kg	9,200[1]	740	540	1000 MH	590	4,400	7,300	730	1,600 J MH	530	240	260
				E plume-FL	**E plume- FL**	**E plume- FL**	**E plume- FL**	**E plume- FL**	**E plume- FL**	**E plume- FL**	**E plume- FL**	**E plume- SW**	**E plume- SW**	**E plume- SW**

Notes:

[1] Cleanup level from 2009 NE Cape Decision Document

B = Analyte detected in the methold blank at less than 10X the sample concentration.

Bold = Sample conentration exceeds cleanup level.

[D] Samples are field duplicates of the previous sample

DRO = Diesel Range Organics

FL= floor sample

J = Result is an estimate

mg/kg = milligram per kilogram

MH = matrix interference suspected with potential high bias.

QH = One or more QC criteia not met with potential high bias.

QN = One or more QC criteria not met with no directional bias.

RRO = Residual Range Organics

SW= sidewall sample

Table F15 MOC Stockpile Impoundment Water

			Sample ID	12NCMOCSWA009	12NCMOCSWA010[D]
			Laboratory ID	580-34446-1	580-34446-2
			Location ID	MOCSW-04	MOCSW-04
			Collection Date	8/12/2012	8/12/2012
Analysis Method	**Analyte**	**Units**	**ADEC Discharge Criteria***		
8260B	Benzene	µg/L		ND (0.45)	ND (0.45)
8260B	Toluene	µg/L		ND (0.45)	ND (0.45)
8260B	Ethylbenzene	µg/L		ND (0.45)	ND (0.45)
8260B	m & P xylenes	µg/L		ND (0.9)	ND (0.9)
8260B	o-xylene	µg/L		ND (0.45)	ND (0.45)
TAH (including non-detects)			10 µg/L*	2.7	2.7
8270C SIM	1-Methylnaphthalene	µg/L		0.036 J	ND (0.072)
8270C SIM	2-Methylnaphthalene	µg/L		ND (0.072)	ND (0.072)
8270C SIM	Acenaphthene	µg/L		ND (0.072)	ND (0.072)
8270C SIM	Acenaphthylene	µg/L		ND (0.072)	ND (0.072)
8270C SIM	Anthracene	µg/L		ND (0.072)	ND (0.072)
8270C SIM	Benzo(a)anthracene	µg/L		ND (0.072)	ND (0.072)
8270C SIM	Benzo(a)pyrene	µg/L		ND (0.072)	ND (0.072)
8270C SIM	Benzo(b)fluoranthene	µg/L		ND (0.072)	ND (0.072)
8270C SIM	Benzo(g,h,i)perylene	µg/L		ND (0.072)	ND (0.072)
8270C SIM	Benzo(k)fluoranthene	µg/L		ND (0.072)	ND (0.072)
8270C SIM	Chrysene	µg/L		ND (0.072)	ND (0.072)
8270C SIM	Dibenz(a,h)anthracene	µg/L		ND (0.072)	ND (0.072)
8270C SIM	Fluoranthene	µg/L		ND (0.072)	ND (0.072)
8270C SIM	Fluorene	µg/L		ND (0.072)	ND (0.072)
8270C SIM	Indeno(1,2,3–cd)pyrene	µg/L		ND (0.072)	ND (0.072)
8270C SIM	Naphthalene	µg/L		ND (0.072)	0.036 J
8270C SIM	Phenanthrene	µg/L		ND (0.072)	ND (0.072)
8270C SIM	Pyrene	µg/L		ND (0.072)	ND (0.072)
TAqH (Including non-detects)			15 µg/L*	3.96	3.96

Notes:
* Per ADEC discharge permit 2009DB0004-0216
[D] Sample is a duplicate of previous sample
J = Result is an estimate
ND = non-detect; limit of detection (LOD) in parentheses
SIM = Selective Ion Monitoring/U.S. Department of Defense
TAH = Total Aromatic Hydrocarbons
TAqH = Total Aqueous Hydrocarbons
µg/L = micrograms per Liter

Table F16 MOC Surface Water Monitoring

			Sample ID	12NCMOCSWA001	12NCMOCSWA002	12NCMOCSWA003
			Lab ID	580-33899-13	580-33899-14	580-33899-15
			Location ID	MOCSW01	MOCSW02	MOCSW03
			Collection Date	7/6/2012	7/6/2012	7/6/2012
Analysis Method	Analyte	Units	ADEC Reference Levels[1]	Pre-Excavation Sample Event		
AK102	DRO	mg/L	1.5	6.7	1.0	2.2 J
AK103	RRO	mg/L	1.1	3.1	0.33	0.52

			Sample ID	12NCMOCSWA005	12NCMOCSWA008[D]	12NCMOCSWA006	12NCMOCSWA007
			Lab ID	580-34481-1	580-34481-4	580-34481-2	580-34481-3
			Location ID	MOCSW01	MOCSW01	MOCSW02	MOCSW03
			Collection Date	8/8/2012	8/8/2012	8/8/2012	8/8/2012
Analysis Method	Analyte	Units	ADEC Reference Levels[1]	Mid-Excavation Sampling Event			
AK102	DRO	mg/L	1.5	6.7	7.0	0.69	3.1
AK103	RRO	mg/L	1.1	3.6	4.0	0.23	0.68

			Sample ID	12NCMOCSWA009	12NCMOCSWA012[D]	12NCMOCSWA010	12NCMOCSWA011
			Lab ID	280-33360-12	280-33360-15	280-33360-13	280-33360-14
			Location ID	MOCSW01	MOCSW01	MOCSW02	MOCSW03
			Collection Date	9/13/2012	9/13/2012	9/13/2012	9/13/2012
Analysis Method	Analyte	Units	ADEC Reference Levels[1]	Post Excavation Sampling Event			
AK102	DRO	mg/L	1.5	4.9	5.6	0.60	2.4
AK103	RRO	mg/L	1.1	1.8	1.9	0.20 J	0.31 J

Notes:

[1] Reference levels refer to groundwater cleanup levels listed in 18 AAC 75.345

*-All future surface water monitoring will be in accordance with 18AAC70 surface water criteria

ADEC = Alaska Department of Environmental Conservation

[D] Sample is a field duplicate of previous sample

DRO = Diesel Range Organics

J = Result is an estimate

mg/L = milligrams per liter

NA = Not Applicable

RRO = Residual Range Organics

Table F17 Site 13 Excavation Soil Results
All results are in mg/kg

Sample ID	12NC13SS001	12NC13SS002[D]	12NC13SS003*	12NC13SS004	12NC13SS005	12NC13SS006
Lab ID	580-34101-1	580-34101-2	580-34330-1	580-34330-2	580-34330-3	580-34330-4
Location ID	013-1	013-1	013-2	013-3	013-4	013-5
Collection Date	7/23/2012	7/23/2012	8/4/2012	8/4/2012	8/4/2012	8/4/2012
Analyte						
All Other PCBs	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.018)	ND (0.01)	ND (0.012)
PCB-1260	0.0070 J	0.0056 J	**1.5**	0.40	0.19	0.10

Sample ID	12NC13SS007	12NC13SS008	12NC13SS009[D]	12NC13SS010	12NC13SS011	12NC13SS012
Lab ID	580-34330-5	580-34330-6	580-34330-7	580-34330-8	580-34330-9	580-34330-10
Location ID	013-6	013-7	013-7	013-8	013-9	013-10
Collection Date	8/4/2012	8/4/2012	8/4/2012	8/4/2012	8/4/2012	8/4/2012
Analyte						
All Other PCBs	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.010)	ND (0.011)	ND (0.011)
PCB-1260	0.060	0.74	0.76	0.042	0.24	0.050

Sample ID	12NC13SS013	12NC13SS014	12NC13SS015*	12NC13SS016	12NC13SS017	12NC13SS018
Lab ID	580-34330-11	580-34330-12	580-34330-13	580-34330-14	580-34330-15	580-34330-16
Location ID	013-11	013-12	013-13	013-14	013-15	013-16
Collection Date	8/4/2012	8/4/2012	8/4/2012	8/4/2012	8/4/2012	8/4/2012
Analyte						
All Other PCBs	ND (0.012)	ND (0.011)	ND (0.011)	ND (0.012)	ND (0.012)	ND (0.011)
PCB-1260	0.052	0.026	**1.5**	0.26	0.13	0.029
	Cleanup level is 1 mg/kg[1]					

Notes:
* sample location was excavated following receipt of sample result
[1] 2009 NE Cape Decision Document
Bold = Sample conentration exceeds cleanup level.
[D] Sample is a field duplicate of the previous sample
D = Sample was analyzed at a dilution
J = Result is an estimate
ML = Analyte result is considered an estimated value biased low due to matrix effects.
MN = Result is an estimate, matrix interference suspected with no directional bias.
ND = Sample is non-detect. The limit of detection (LOD) is in parentheses.
QN = One or more QC criteria not met with no bias direction.
mg/kg = milligrams per kilogram
PCB = Polychlorinated Biphenyl

Table F17 Site 13 Excavation Soil Results
All results are in mg/kg (continued)

Sample ID	12NC13SS019	12NC13SS026[D]	12NC13SS020*	12NC13SS021	12NC13SS022*	12NC13SS023*
Lab ID	580-34330-17	580-34330-24	580-34330-18	580-34330-19	580-34330-20	580-34330-21
Location ID	013-17	013-17	013-18	013-19	013-20	013-21
Collection Date	8/5/2012	8/5/2012	8/5/2012	8/5/2012	8/5/2012	8/5/2012
Analyte		Field Duplicate of 12NC13SS019				
All Other PCBs	ND (0.011)	ND (0.012)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.012)
PCB-1260	0.75 QN	0.33 QN	**1.2**	0.59	**2.4 D**	**1.4**

Sample ID	12NC13SS024	12NC13SS025	12NC13SS027	12NC13SS028	12NC13SS029
Lab ID	580-34330-22	580-34330-23	580-34330-25	580-34330-26	580-34330-27
Location ID	013-22	013-23	013-24	013-25	013-26
Collection Date	8/5/2012	8/5/2012	8/5/2012	8/5/2012	8/5/2012
Analyte					
All Other PCBs	ND (0.012)	ND (0.011)	ND (0.011)	ND (0.012)	ND (0.010)
PCB-1260	0.22	0.59	ND (0.0055)	0.080	0.012

Sample ID	12NC13SS030	12NC13SS044[D]	12NC13SS032	12NC13SS042[D]	12NC13SS033
Lab ID	580-34330-28	580-34330-42	580-34330-30	580-34330-40	580-34330-31
Location ID	013-27	013-27	013-29	013-29	013-30
Collection Date	8/5/2012	8/5/2012	8/5/2012	8/5/2012	8/5/2012
Analyte		Field Duplicate of 12NC13SS030		Field Duplicate of 12NC13SS032	
All Other PCBs	ND (0.013)	ND (0.012)	ND (0.013)	ND (0.013)	ND (0.012)
PCB-1260	0.017	0.019	0.35	0.48	0.071
	Cleanup level is 1 mg/kg[1]				

Notes:
* sample location was excavated following receipt of sample result
[1] 2009 NE Cape Decision Document
Bold = Sample conentration exceeds cleanup level.
[D] Sample is a field duplicate of the previous sample
D = Sample was analyzed at a dilution
J = Result is an estimate
ML = Analyte result is considered an estimated value biased low due to matrix effects.
MN = Result is an estimate, matrix interference suspected with no directional bias.
ND = Sample is non-detect. The limit of detection (LOD) is in parentheses.
QN = One or more QC criteria not met with no bias direction.
mg/kg = milligrams per kilogram
PCB = Polychlorinated Biphenyl

Table F17 Site 13 Excavation Soil Results
All results are in mg/kg (continued)

Sample ID	12NC13SS031	12NC13SS043[D]	12NC13SS034	12NC13SS035	12NC13SS036	12NC13SS045[D]
Lab ID	580-34330-29	580-34330-41	580-34330-32	580-34330-33	580-34330-34	580-34330-43
Location ID	013-28	013-28	013-31	013-32	013-33	013-33
Collection Date	8/5/2012	8/5/2012	8/5/2012	8/5/2012	8/5/2012	8/5/2012
Analyte		Field Duplicate of 12NC13SS031				
All Other PCBs	ND (0.013)	ND (0.014)	ND (0.0061)	ND (0.0084)	ND (0.0052)	ND (0.0052)
PCB-1260	0.39	0.38	0.27	0.30	0.12	0.13

Sample ID	12NC13SS037*	12NC13SS038	12NC13SS039*	12NC13SS040	12NC13SS041	12NC13SS046
Lab ID	580-34330-35	580-34330-36	580-34330-37	580-34330-38	580-34330-39	580-34330-44
Location ID	013-34	013-35	013-36	013-37	013-38	013-39
Collection Date	8/5/2012	8/5/2012	8/5/2012	8/5/2012	8/5/2012	8/5/2012
Analyte						
All Other PCBs	ND (0.012)	ND (0.011)	ND (0.013)	ND (0.012)	ND (0.013)	ND (0.011)
PCB-1260	**1.2**	0.64	**1.4**	0.45	0.081	0.093

Sample ID	12NC13SS047*	12NC13SS048*	12NC13SS049	12NC13SS050	12NC13SS051	12NC13SS052*
Lab ID	580-34330-45	580-34330-46	580-34330-47	580-34330-48	580-34330-49	580-34330-50
Location ID	013-40	013-41	013-42	013-43	013-44	013-45
Collection Date	8/5/2012	8/5/2012	8/5/2012	8/5/2012	8/5/2012	8/5/2012
Analyte						
All Other PCBs	ND (0.010)	ND (0.012)	ND (0.011)	ND (0.011)	ND (0.010)	ND (0.011)
PCB-1260	**3.6 D**	**1.2**	0.0040 J	0.93	0.011	**1.5**

Cleanup level is 1 mg/kg[1]

Notes:
* sample location was excavated following receipt of sample result
[1] 2009 NE Cape Decision Document
Bold = Sample conentration exceeds cleanup level.
[D] Sample is a field duplicate of the previous sample
D = Sample was analyzed at a dilution
J = Result is an estimate
ML = Analyte result is considered an estimated value biased low due to matrix effects.
MN = Result is an estimate, matrix interference suspected with no directional bias.
ND = Sample is non-detect. The limit of detection (LOD) is in parentheses.
QN = One or more QC criteria not met with no bias direction.
mg/kg = milligrams per kilogram
PCB = Polychlorinated Biphenyl

Table F17 Site 13 Excavation Soil Results
All results are in mg/kg (continued)

Sample ID	12NC13SS053	12NC13SS054*	12NC13SS055	12NC13SS056	12NC13SS057	12NC13SS058
Lab ID	580-34330-51	580-34330-52	580-34330-53	580-34330-54	580-34330-55	580-34330-56
Location ID	013-46	013-47	013-48	013-49	013-50	013-51
Collection Date	8/5/2012	8/5/2012	8/5/2012	8/5/2012	8/5/2012	8/5/2012
Analyte						
All Other PCBs	ND (0.011)	ND (0.011)	ND (0.0054)	ND (0.0052)	ND (0.0053)	ND (0.0054)
PCB-1260	0.15	**4.2 D**	0.82	0.21	0.47	0.020

Sample ID	12NC13SS059	12NC13SS060	12NC13SS061*	12NC13SS062	12NC13SS063	12NC13SS0064
Lab ID	580-34330-57	580-34330-58	580-34330-59	580-34330-60	580-34330-61	580-34374-1
Location ID	013-52	013-53	013-54	013-55	013-56	013-57
Collection Date	8/5/2012	8/5/2012	8/5/2012	8/5/2012	8/5/2012	8/7/2012
Analyte						
All Other PCBs	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.010)
PCB-1260	0.15	0.061	**1.1**	0.040	0.023	ND (0.0050)

Sample ID	12NC13SS0065	12NC13SS0066	12NC13SS0067	12NC13SS0068	12NC13SS0069	12NC13SS0070
Lab ID	580-34374-2	580-34374-3	580-34374-4	580-34374-5	580-34374-6	580-34374-7
Location ID	013-58	013-59	013-60	013-61	013-62	013-63
Collection Date	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012
Analyte						
All Other PCBs	ND (0.011)	ND (0.012)	ND (0.012)	ND (0.012)	ND (0.011)	ND (0.010)
PCB-1260	0.022	0.086	0.019	0.68	0.011	0.042
	Cleanup level is 1 mg/kg[1]					

Notes:
* sample location was excavated following receipt of sample result
[1] 2009 NE Cape Decision Document
Bold = Sample conentration exceeds cleanup level.
[D] Sample is a field duplicate of the previous sample
D = Sample was analyzed at a dilution
J = Result is an estimate
ML = Analyte result is considered an estimated value biased low due to matrix effects.
MN = Result is an estimate, matrix interference suspected with no directional bias.
ND = Sample is non-detect. The limit of detection (LOD) is in parentheses.
QN = One or more QC criteria not met with no bias direction.
mg/kg = milligrams per kilogram
PCB = Polychlorinated Biphenyl

Table F17 Site 13 Excavation Soil Results
All results are in mg/kg (continued)

Sample ID	12NC13SS0071	12NC13SS0072	12NC13SS0073	12NC13SS0074	12NC13SS0075	12NC13SS076
Lab ID	580-34374-8	580-34374-9	580-34374-10	580-34374-11	580-34374-12	580-34374-13
Location ID	013-64	013-65	013-66	013-67	013-68	013-69
Collection Date	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012
Analyte						
All Other PCBs	ND (0.012)	ND (0.010)	ND (0.0057)	ND (0.0051)	ND (0.0052)	ND (0.0052)
PCB-1260	ND (0.0058)	0.066	0.83	0.042	0.24	0.17

Sample ID	12NC13SS077	12NC13SS078	12NC13SS079	12NC13SS080	12NC13SS081[D]
Lab ID	580-34374-14	580-34374-15	580-34374-16	580-34374-17	580-34374-18
Location ID	013-70	013-71	013-72	013-73	013-73
Collection Date	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012
Analyte					
All Other PCBs	ND (0.011)	ND (0.010)	ND (0.017)	ND (0.012)	ND (0.012)
PCB-1260	0.055	0.019	ND (0.0083)	0.0040 J	ND (0.0060)

Sample ID	12NC13SS082	12NC13SS083[D]	12NC13SS084	12NC13SS085	12NC13SS086	12NC13SS087
Lab ID	580-34374-19	580-34374-20	580-34374-21	580-34374-22	580-34374-23	580-34374-24
Location ID	013-74	013-74	013-75	013-76	013-77	013-78
Collection Date	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012
Analyte						
All Other PCBs	ND (0.012)	ND (0.013)	ND (0.010)	ND (0.010)	ND (0.0098)	ND (0.010)
PCB-1260	0.11	0.093	0.015	0.13	0.031	0.012
	Cleanup level is 1 mg/kg[1]					

Notes:
* sample location was excavated following receipt of sample result
[1] 2009 NE Cape Decision Document
Bold = Sample conentration exceeds cleanup level.
[D] Sample is a field duplicate of the previous sample
D = Sample was analyzed at a dilution
J = Result is an estimate
ML = Analyte result is considered an estimated value biased low due to matrix effects.
MN = Result is an estimate, matrix interference suspected with no directional bias.
ND = Sample is non-detect. The limit of detection (LOD) is in parentheses.
QN = One or more QC criteria not met with no bias direction.
mg/kg = milligrams per kilogram
PCB = Polychlorinated Biphenyl

Table F17 Site 13 Excavation Soil Results
All results are in mg/kg (continued)

Sample ID	12NC13SS088	12NC13SS089	12NC13SS090	12NC13SS091	12NC13SS092	12NC13SS093
Lab ID	580-34374-25	580-34374-26	580-34374-27	580-34374-28	580-34374-29	580-34374-30
Location ID	013-79	013-80	013-81	013-82	013-83	013-84
Collection Date	8/5/2012	8/5/2012	8/5/2012	8/5/2012	8/5/2012	8/5/2012
Analyte						
All Other PCBs	ND (0.011)	ND (0.010)	ND (0.011)	ND (0.0053)	ND (0.0049)	ND (0.0056)
PCB-1260	0.56	0.040	ND (0.0054)	ND (0.0053)	ND (0.0049)	0.018 MN

Sample ID	12NC13SS094	12NC13SS095	12NC13SS096	12NC13SS097	12NC13SS098	12NC13SS099
Lab ID	580-34374-31	580-34374-32	580-34374-33	580-34374-34	580-34374-35	580-34374-36
Location ID	013-85	013-86	013-87	013-88	013-89	013-90
Collection Date	8/5/2012	8/5/2012	8/5/2012	8/5/2012	8/5/2012	8/7/2012
Analyte						
All Other PCBs	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.010)	ND (0.010)	ND (0.011)
PCB-1260	0.039	0.047	0.098	0.0051 J	0.0046 J	ND (0.0057)

Sample ID	12NC13SS100	12NC13SS101	12NC13SS102	12NC13SS103*	12NC13SS104*	12NC13SS105*
Lab ID	580-34374-37	580-34374-38	580-34374-39	580-34374-40	580-34374-41	580-34374-42
Location ID	013-91	013-92	013-93	013-94	013-95	013-96
Collection Date	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012
Analyte						
All Other PCBs	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.0055)	ND (0.0053)	ND (0.0054)
PCB-1260	ND (0.0057)	0.066	0.018	**1.3 D**	**3.7 D**	**3.8 D**
	Cleanup level is 1 mg/kg[1]					

Notes:
* sample location was excavated following receipt of sample result
[1] 2009 NE Cape Decision Document
Bold = Sample conentration exceeds cleanup level.
[D] Sample is a field duplicate of the previous sample
D = Sample was analyzed at a dilution
J = Result is an estimate
ML = Analyte result is considered an estimated value biased low due to matrix effects.
MN = Result is an estimate, matrix interference suspected with no directional bias.
ND = Sample is non-detect. The limit of detection (LOD) is in parentheses.
QN = One or more QC criteria not met with no bias direction.
mg/kg = milligrams per kilogram
PCB = Polychlorinated Biphenyl

Table F17 Site 13 Excavation Soil Results
All results are in mg/kg (continued)

Sample ID	12NC13SS106	12NC13SS107[D]	12NC13SS108	12NC13SS109	12NC13SS110	12NC13SS111
Lab ID	580-34374-43	580-34374-44	580-34374-45	580-34374-46	580-34374-47	580-34374-48
Location ID	013-97	013-97	013-98	013-99	013-100	013-101
Collection Date	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012
Analyte						
All Other PCBs	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.0052)	ND (0.0056)	ND (0.0055)
PCB-1260	0.011	0.013	0.0042 J	0.57	0.0084 J	0.047

Sample ID	12NC13SS112	12NC13SS113	12NC13SS114	12NC13SS115	12NC13SS116	12NC13SS117
Lab ID	580-34374-49	580-34374-50	580-34374-51	580-34374-52	580-34374-53	580-34374-54
Location ID	013-103	013-104	013-105	013-106	013-107	013-108
Collection Date	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012
Analyte						
All Other PCBs	ND (0.011)	ND (0.0099)	ND (0.011)	ND (0.0098)	ND (0.011)	ND (0.011)
PCB-1260	0.014	ND (0.0049)	ND (0.0057)	ND (0.0049)	0.011	0.058

Sample ID	12NC13SS118	12NC13SS119	12NC13SS120	12NC13SS121	12NC13SS122	12NC13SS123
Lab ID	580-34374-55	580-34374-56	580-34374-57	580-34374-58	580-34374-59	580-34374-60
Location ID	013-109	013-110	013-111	013-112	013-113	013-114
Collection Date	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012
Analyte						
All Other PCBs	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.0056)	ND (0.0052)	ND (0.0056)
PCB-1260	0.049	0.77	0.29	0.048	**2.3 D***	**3.8 D***
	Cleanup level is 1 mg/kg[1]					

Notes:
* sample location was excavated following receipt of sample result
[1] 2009 NE Cape Decision Document
Bold = Sample conentration exceeds cleanup level.
[D] Sample is a field duplicate of the previous sample
D = Sample was analyzed at a dilution
J = Result is an estimate
ML = Analyte result is considered an estimated value biased low due to matrix effects.
MN = Result is an estimate, matrix interference suspected with no directional bias.
ND = Sample is non-detect. The limit of detection (LOD) is in parentheses.
QN = One or more QC criteria not met with no bias direction.
mg/kg = milligrams per kilogram
PCB = Polychlorinated Biphenyl

Table F17 Site 13 Excavation Soil Results
All results are in mg/kg (continued)

Sample ID	12NC13SS124*	12NC13SS125	12NC13SS126	12NC13SS127	12NC13SS128	12NC13SS129[D]
Lab ID	580-34374-61	580-34374-62	580-34374-63	580-34374-64	580-34374-65	580-34374-66
Location ID	013-115	013-116	013-117	013-118	013-119	013-119
Collection Date	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012
Analyte						
All Other PCBs	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.0053)	ND (0.0055)	ND (0.0055)
PCB-1260	**1.8**	0.33	0.29	0.075	0.23 QN	0.49 QN

Sample ID	12NC13SS130	12NC13SS131[D]	12NC13SS132	12NC13SS133[D]	12NC13SS134
Lab ID	580-34374-67	580-34374-68	580-34374-69	580-34374-70	580-34374-71
Location ID	013-120	013-120	013-121	013-121	013-122
Collection Date	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012
Analyte					
All Other PCBs	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)
PCB-1260	0.20	0.20	0.21	0.25	0.47 J

Sample ID	12NC13SS135	12NC13SS136[D]	12NC13SS137	12NC13SS138	12NC13SS139	12NC13SS140
Lab ID	580-34374-72	580-34374-73	580-34374-74	580-34374-75	580-34374-76	580-34374-77
Location ID	013-123	013-123	013-124	013-125	013-126	013-127
Collection Date	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012
Analyte						
All Other PCBs	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.0058)	ND (0.0055)	ND (0.0053)
PCB-1260	0.23	0.25	0.39 J ML	0.22	0.47	0.17
	Cleanup level is 1 mg/kg[1]					

Notes:

* sample location was excavated following receipt of sample result

[1] 2009 NE Cape Decision Document

Bold = Sample conentration exceeds cleanup level.

[D] Sample is a field duplicate of the previous sample

D = Sample was analyzed at a dilution

J = Result is an estimate

ML = Analyte result is considered an estimated value biased low due to matrix effects.

MN = Result is an estimate, matrix interference suspected with no directional bias.

ND = Sample is non-detect. The limit of detection (LOD) is in parentheses.

QN = One or more QC criteria not met with no bias direction.

mg/kg = milligrams per kilogram

PCB = Polychlorinated Biphenyl

Table F17 Site 13 Excavation Soil Results
All results are in mg/kg (continued)

Sample ID	12NC13SS141	12NC13SS142	12NC13SS143	12NC13SS144[D]	12NC13SS145*	12NC13SS146
Lab ID	580-34374-78	580-34374-79	580-34680-1	580-34680-2	580-34680-3	580-34680-4
Location ID	013-128	013-129	013-143	013-144	013-145	013-146
Collection Date	8/7/2012	8/7/2012	8/25/2012	8/25/2012	8/25/2012	8/25/2012
Analyte						
All Other PCBs	ND (0.011)	ND (0.011)	ND (0.01)	ND (0.02)	ND (0.054)	ND (0.011)
PCB-1260	0.31	0.28	0.29 J	0.46 J	**1.3 D**	0.26

Sample ID	12NC13SS147	12NC13SS148	12NC13SS149	12NC13SS150	12NC13SS151	12NC13SS152
Lab ID	580-34680-5	580-34680-6	580-34680-7	580-34680-8	580-34680-9	580-34680-10
Location ID	013-147	013-148	013-149	013-150	013-151	013-152
Collection Date	8/25/2012	8/25/2012	8/25/2012	8/25/2012	8/25/2012	8/25/2012
Analyte						
All Other PCBs	ND (0.022)	ND (0.022)	ND (0.01)	ND (0.01)	ND (0.0096)	ND (0.021)
PCB-1260	0.11	0.085	0.058	0.027 J	ND (0.0096)	0.066

Sample ID	12NC13SS153*	12NC13SS154	12NC13SS155	12NC13SS156	12NC13SS157*	12NC13SS158*
Lab ID	580-34680-11	580-34680-12	580-34680-13	580-34680-14	580-34680-15	580-34680-16
Location ID	013-153	13-154	13-155	13-156	13-157	13-158
Collection Date	8/25/2012	8/25/2012	8/25/2012	8/25/2012	8/25/2012	8/25/2012
Analyte						
All Other PCBs	ND (0.11) D	ND (0.022)	ND (0.01)	ND (0.01)	ND (0.11)	ND (0.054)
PCB-1260	**1.4 D**	0.039 J	0.24	0.21	**2.6 D**	**1.3 D**
	Cleanup level is 1 mg/kg[1]					

Notes:
* sample location was excavated following receipt of sample result
[1] 2009 NE Cape Decision Document
Bold = Sample conentration exceeds cleanup level.
[D] Sample is a field duplicate of the previous sample
D = Sample was analyzed at a dilution
J = Result is an estimate
ML = Analyte result is considered an estimated value biased low due to matrix effects.
MN = Result is an estimate, matrix interference suspected with no directional bias.
ND = Sample is non-detect. The limit of detection (LOD) is in parentheses.
QN = One or more QC criteria not met with no bias direction.
mg/kg = milligrams per kilogram
PCB = Polychlorinated Biphenyl

Table F17 Site 13 Excavation Soil Results
All results are in mg/kg (continued)

Sample ID	12NC13SS159*	12NC13SS160	12NC13SS161[D]	12NC13SS162	12NC13SS163[D]	12NC13SS164
Lab ID	580-34680-17	580-34680-18	580-34680-19	580-34680-20	580-34680-21	580-34680-22
Location ID	13-159	13-160	13-161	13-162	13-163	13-164
Collection Date	8/25/2012	8/25/2012	8/25/2012	8/25/2012	8/25/2012	8/25/2012
Analyte						
All Other PCBs	ND (0.11)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)	ND (0.01)
PCB-1260	**1.2 D**	0.010 J	0.010 J	ND (0.010)	ND (0.010)	ND (0.010)

Sample ID	12NC13SS165	12NC13SS166	12NC13SS167	12NC13SS168*	12NC13SS169	12NC13SS170
Lab ID	580-34680-23	580-34680-24	580-34680-25	580-34680-26	580-34680-27	580-34680-28
Location ID	13-165	13-166	13-167	13-168	13-169	13-170
Collection Date	8/25/2012	8/25/2012	8/25/2012	8/25/2012	8/25/2012	8/26/2012
Analyte						
All Other PCBs	ND (0.022)	ND (0.022)	ND (0.022)	ND (0.17) D	ND (0.022)	ND (0.021)
PCB-1260	0.061	ND (0.011)	ND (0.011)	**1.6 D**	0.32 J	ND (0.01)

Sample ID	12NC13SS171	12NC13SS172	12NC13SS173*	12NC13SS174	12NC13SS175
Lab ID	580-34680-29	580-34680-30	580-34680-31	580-34680-32	580-34680-33
Location ID	13-171	13-172	13-173	13-174	13-175
Collection Date	8/26/2012	8/26/2012	8/26/2012	8/26/2012	8/26/2012
Analyte					
All Other PCBs	ND (0.021)	ND (0.01)	ND (0.11) D	ND (0.024)	ND (0.022)
PCB-1260	ND (0.01)	ND (0.01)	**2.3 D**	ND (0.012)	ND (0.011)
	Cleanup level is 1 mg/kg[1]				

Notes:
* sample location was excavated following receipt of sample result
[1] 2009 NE Cape Decision Document
Bold = Sample conentration exceeds cleanup level.
[D] Sample is a field duplicate of the previous sample
D = Sample was analyzed at a dilution
J = Result is an estimate
ML = Analyte result is considered an estimated value biased low due to matrix effects.
MN = Result is an estimate, matrix interference suspected with no directional bias.
ND = Sample is non-detect. The limit of detection (LOD) is in parentheses.
QN = One or more QC criteria not met with no bias direction.
mg/kg = milligrams per kilogram
PCB = Polychlorinated Biphenyl

Table F17 Site 13 Excavation Soil Results
All results are in mg/kg (continued)

Sample ID	12NC13SS176	12NC13SS177[D]	12NC13SS178	12NC13SS179	12NC13SS180	12NC13SS181	12NC13SS182
Lab ID	580-34680-34	580-34680-35	580-34680-36	580-34680-37	580-34680-38	580-34680-39	580-34680-40
Location ID	13-176	13-177	13-178	13-179	13-180	13-181	13-182
Collection Date	8/26/2012	8/26/2012	8/26/2012	8/26/2012	8/26/2012	8/26/2012	8/26/2012
Analyte							
All Other PCBs	ND (0.011)	ND (0.011)	ND (0.01)	ND (0.011)	ND (0.044)	ND (0.011)	ND (0.011)
PCB-1260	0.024 J	0.011 J	0.012 J	ND (0.011)	0.74 J D	0.042	0.021 J

Sample ID	12NC13SS183	12NC13SS184	12NC13SS185[D]	12NC13SS186	12NC13SS187	12NC13SS188	12NC13SS189*
Lab ID	580-34680-41	580-34680-42	580-34680-43	580-34680-44	580-34680-45	580-34680-46	580-34680-47
Location ID	13-183	13-184	13-185	13-186	13-187	13-188	13-189
Collection Date	8/26/2012	8/26/2012	8/26/2012	8/26/2012	8/26/2012	8/26/2012	8/26/2012
Analyte							
All Other PCBs	ND (0.020)	ND (0.021)	ND (0.021)	ND (0.026)	ND (0.025)	ND (0.011)	ND (0.055)
PCB-1260	0.018 J	0.004 J	0.0046 J	0.0062 J	ND (0.012)	0.23 ML	**1.4 D**

Sample ID	12NC13SS190*	12NC13SS191*	12NC13SS192	12NC13SS193	12NC13SS194	12NC13SS195	12NC13SS196
Lab ID	580-34680-48	580-34680-49	580-34680-50	580-34680-51	580-34680-52	580-34680-53	580-34680-54
Location ID	13-190	13-191	13-192	13-193	13-194	13-195	13-196
Collection Date	8/26/2012	8/26/2012	8/26/2012	8/26/2012	8/26/2012	8/26/2012	8/26/2012
Analyte							
All Other PCBs	ND (0.22)	ND (0.053)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.022)	ND (0.023)
PCB-1260	**6 D**	**1.7 D**	0.052	0.039	ND (0.011)	0.041	0.24
	Cleanup level is 1 mg/kg[1]						

Notes:
* sample location was excavated following receipt of sample result
[1] 2009 NE Cape Decision Document
Bold = Sample conentration exceeds cleanup level.
[D] Sample is a field duplicate of the previous sample
D = Sample was analyzed at a dilution
J = Result is an estimate
ML = Analyte result is considered an estimated value biased low due to matrix effects.
MN = Result is an estimate, matrix interference suspected with no directional bias.
ND = Sample is non-detect. The limit of detection (LOD) is in parentheses.
QN = One or more QC criteria not met with no bias direction.
mg/kg = milligrams per kilogram
PCB = Polychlorinated Biphenyl

Table F17 Site 13 Excavation Soil Results
All results are in mg/kg (continued)

Sample ID	12NC13SS197	12NC13SS198	12NC13SS199	12NC13SS200	12NC13SS201	12NC13SS202	12NC13SS203
Lab ID	580-34680-55	580-34680-56	580-34680-57	580-34680-58	580-34680-59	580-34680-60	580-34680-61
Location ID	13-197	13-198	13-199	13-200	13-201	13-202	13-203
Collection Date	8/26/2012	8/26/2012	8/26/2012	8/26/2012	8/26/2012	8/26/2012	8/26/2012
Analyte							
All Other PCBs	ND (0.011)	ND (0.011)	ND (0.023)	ND (0.045)	ND (0.011)	ND (0.011)	ND (0.011)
PCB-1260	0.13	0.19	0.41 D	0.75 D	ND (0.011)	0.088	ND (0.011)

Sample ID	12NC13SS204	12NC13SS205	12NC13SS206	12NC13SS207	12NC13SS208	12NC13SS209	12NC13SS210
Lab ID	580-34680-62	580-34746-1	580-34680-64	580-34680-65	580-34680-66	580-34680-67	580-34680-68
Location ID	13-204	13-205	13-206	13-207	13-208	13-209	13-210
Collection Date	8/26/2012	8/26/2012	8/26/2012	8/26/2012	8/26/2012	8/26/2012	8/26/2012
Analyte							
All Other PCBs	ND (0.022)	ND (0.0052)	ND (0.021)	ND (0.022)	ND (0.022)	ND (0.011)	ND (0.013)
PCB-1260	0.099	0.0065 J	0.023 J	0.0093 J	0.021 J	ND (0.011)	0.014 J

Sample ID	12NC13SS211	12NC13SS212	12NC13SS213	12NC13SS214	12NC13SS215	12NC13SS221[D]	12NC13SS216
Lab ID	580-34680-69	580-34746-2	580-34680-71	580-34746-3	580-34746-4	580-34746-10	580-34746-5
Location ID	13-211	13-212	13-213	13-214	13-215	13-221	13-216
Collection Date	8/26/2012	8/26/2012	8/26/2012	8/29/2012	8/29/2012	8/29/2012	8/29/2012
Analyte							
All Other PCBs	ND (0.011)	ND (0.0056)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.0052)	ND (0.011)
PCB-1260	ND (0.011)	0.23	0.22	0.11	0.011 QN	ND (0.0052) QN	0.026
	Cleanup level is 1 mg/kg[1]						

Notes:
* sample location was excavated following receipt of sample result
[1] 2009 NE Cape Decision Document
Bold = Sample conentration exceeds cleanup level.
[D] Sample is a field duplicate of the previous sample
D = Sample was analyzed at a dilution
J = Result is an estimate
ML = Analyte result is considered an estimated value biased low due to matrix effects.
MN = Result is an estimate, matrix interference suspected with no directional bias.
ND = Sample is non-detect. The limit of detection (LOD) is in parentheses.
QN = One or more QC criteria not met with no bias direction.
mg/kg = milligrams per kilogram
PCB = Polychlorinated Biphenyl

Table F17 Site 13 Excavation Soil Results
All results are in mg/kg (continued)

Sample ID	12NC13SS217	12NC13SS219	12NC13SS220	12NC13SS222	12NC13SS223	12NC13SS224	12NC13SS225
Lab ID	580-34746-6	580-34746-8	580-34746-9	280-33320-3	280-33320-4	280-33320-5	280-33320-6
Location ID	13-217	13-219	13-220	13-222	13-223	13-224	13-225
Collection Date	8/29/2012	8/29/2012	8/29/2012	9/14/2012	9/14/2012	9/14/2012	9/14/2012
Analyte							
All Other PCBs	ND (0.0053)	ND (0.0056)	ND (0.0055)	ND (0.054)	ND (0.050)	ND (0.050)	ND (0.053)
PCB-1260	ND (0.0053)	0.24	ND (0.0055)	0.910 D	0.510 D	0.540 D	0.670 D

Sample ID	12NC13SS226	12NC13SS227	12NC13SS234[D]	12NC13SS228	12NC13SS229	12NC13SS235[D]	12NC13SS230
Lab ID	280-33320-7	280-33320-8	280-33320-15	280-33320-9	280-33320-10	280-33320-16	280-33320-11
Location ID	13-226	13-227	013-234	013-228	013-229	013-235	013-230
Collection Date	9/14/2012	9/14/2012	9/14/2012	9/14/2012	9/14/2012	9/14/2012	9/14/2012
Analyte							
All Other PCBs	ND (0.011)	ND (0.010)	ND (0.010)	ND (0.011)	ND (0.010)	ND (0.010)	ND (0.011)
PCB-1260	0.27	ND (.010)	ND (.010)	0.021 J	ND (0.010)	ND (0.010)	0.017 J

Sample ID	12NC13SS231*	12NC13SS232	12NC13SS233
Lab ID	280-33320-12	280-33320-13	280-33320-14
Location ID	013-231	013-232	013-233
Collection Date	9/14/2012	9/14/2012	9/14/2012
Analyte			
All Other PCBs	ND (0.110) D	ND (0.11) D	ND (.011)
PCB-1260	**1.6 D**	0.620 D J	0.091

Sample ID	12NC13SS218	12NC13SS218
Lab ID	580-34746-7	580-34746-7
Location ID	13-218	13-218
Collection Date	8/29/2012	8/29/2012
Analyte		All other PCBs
PCB-1254	0.14 MN	ND (0.011)
PCB-1260	0.12 MN	

Cleanup level is 1 mg/kg[1]

Notes:

* sample location was excavated following receipt of sample result

[1] 2009 NE Cape Decision Document

Bold = Sample conentration exceeds cleanup level.

[D] Sample is a field duplicate of the previous sample

D = Sample was analyzed at a dilution

J = Result is an estimate

ML = Analyte result is considered an estimated value biased low due to matrix effects.

MN = Result is an estimate, matrix interference suspected with no directional bias.

ND = Sample is non-detect. The limit of detection (LOD) is in parentheses.

QN = One or more QC criteria not met with no bias direction.

mg/kg = milligrams per kilogram

PCB = Polychlorinated Biphenyl

Table F18 Site 31 PCB Soil Excavation Results
All results are in mg/kg

	Sample ID	12NC31SS001	12NC31SS002	12NC31SS003	12NC31SS004	12NC31SS005	12NC31SS006
	Laboratory ID	580-34373-1	580-34373-2	580-34373-3	580-34373-4	580-34373-5	580-34373-6
	Location ID	031-001	031-002	031-003	031-004	031-005	031-006
	Collection Date	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)
8082	PCB-1260	0.0086 J	0.0064 J	0.0081 J	0.035	0.0085 J	ND (0.0053)
		Cleanup Level is 1 mg/kg.					

	Sample ID	12NC31SS007	12NC31SS008	12NC31SS009*	12NC31SS010	12NC31SS011	12NC31SS012
	Laboratory ID	580-34373-7	580-34373-8	580-34373-9	580-34373-10	580-34373-11	580-34373-12
	Location ID	031-007	031-008	031-009	031-010	031-011	031-012
	Collection Date	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.011)	ND (0.011)	ND (0.11) D	ND (0.011)	ND (0.011)	ND (0.010)
8082	PCB-1260	0.017	0.44	**5.4 D**	0.071	0.012	0.63
		Cleanup Level is 1 mg/kg.					

	Sample ID	12NC31SS013	12NC31SS014	12NC31SS015	12NC31SS016	12NC31SS017	12NC31SS018
	Laboratory ID	580-34373-13	580-34373-14	580-34373-15	580-34373-16	580-34373-17	580-34373-18
	Location ID	031-013	031-014	031-015	031-016	031-017	031-018
	Collection Date	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.010)	ND (0.011)
8082	PCB-1260	0.15 J ML	0.041 J MH	0.038	0.068	0.031	0.35
Notes:		Cleanup Level is 1 mg/kg.					

* sample location was excavated following receipt of sample result
Bold = Sample conentration exceeds cleanup level.
[D] Sample is field duplicate of the previous sample.
D = Sample was analyzed at a dilution.
J = Result is an estimate
JH = Result is an estimate with high directional bias.
MH = Matrix inference suspected with high bias.
ML = Analyte result is considered an estimated value biased low due to matrix effects.
ND = Sample result is non-detect. The limit of detection (LOD) is in parentheses
QN = Matrix interference suspected with no directional bias.
QH = One or more quality control criteria failed with high bias.
PCB = Polychlorinated Biphenyl
mg/kg = milligram per kilogram

Table F18 Site 31 PCB Soil Excavation Results
All results are in mg/kg (continued)

	Sample ID	12NC31SS019*	12NC31SS020	12NC31SS021	12NC31SS022	12NC31SS023
	Laboratory ID	580-34373-19	580-34373-20	580-34373-21	580-34373-22	580-34373-23
	Location ID	031-019	031-020	031-021	031-022	031-023
	Collection Date	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012
Analytical Method	**Analyte**					
8082	All other PCBs	ND (0.012)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)
8082	PCB-1260	**5.7 D**	0.094	0.0063 J	0.0087 J	0.012
		Cleanup Level is 1 mg/kg.				

	Sample ID	12NC31SS024	12NC31SS027[D]	12NC31SS025	12NC31SS028[D]	12NC31SS026	12NC31SS029[D]
	Laboratory ID	580-34373-24	580-34373-27	580-34373-25	580-34373-28	580-34373-26	580-34373-29
	Location ID	031-024	031-024	031-025	031-025	031-026	031-026
	Collection Date	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012	8/7/2012
Analytical Method	**Analyte**		Field Duplicate of 12NC31SS024		Field Duplicate of 12NC31SS025		Field Duplicate of 12NC31SS026
8082	All other PCBs	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)
8082	PCB-1260	0.011	0.0055 J	0.56	0.85	0.68	0.59
		Cleanup Level is 1 mg/kg.					

	Sample ID	12NC31SS030	12NC31SS031	12NC31SS032	12NC31SS033	12NC31SS034	12NC31SS035*
	Laboratory ID	580-34683-1	580-34683-2	580-34683-3	580-34683-4	580-34683-5	580-34683-6
	Location ID	31-030	31-031	31-032	31-033	31-034	31-035
	Collection Date	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.011)	ND (0.011)	ND (0.010)	ND (0.010)	ND (0.011)	ND (0.011)
8082	PCB-1260	0.023	0.015	0.016	0.14	0.31	**1.0**
		Cleanup Level is 1 mg/kg.					

Notes:

* sample location was excavated following receipt of sample result
Bold = Sample conentration exceeds cleanup level.
[D] Sample is field duplicate of the previous sample.
D = Sample was analyzed at a dilution.
J = Result is an estimate
JH = Result is an estimate with high directional bias.
MH = Matrix inference suspected with high bias.
ML = Analyte result is considered an estimated value biased low due to matrix effects.
ND = Sample result is non-detect. The limit of detection (LOD) is in parentheses
QN = Matrix interference suspected with no directional bias.
QH = One or more quality control criteria failed with high bias.
PCB = Polychlorinated Biphenyl
mg/kg = milligram per kilogram

Table F18 Site 31 PCB Soil Excavation Results
All results are in mg/kg (continued)

Sample ID		12NC31SS036	12NC31SS037	12NC31SS038	12NC31SS039	12NC31SS040*	12NC31SS041
Laboratory ID		580-34683-7	580-34683-8	580-34683-9	580-34683-10	580-34683-11	580-34683-12
Location ID		31-036	31-037	31-038	31-039	31-040	31-041
Collection Date		8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.012)
8082	PCB-1260	0.25	ND (0.0054)	ND (0.0054)	0.014	**1.3**	ND (0.0060)
		Cleanup Level is 1 mg/kg.					

Sample ID		12NC31SS042	12NC31SS043	12NC31SS044	12NC31SS045	12NC31SS046	12NC31SS047
Laboratory ID		580-34683-13	580-34683-14	580-34683-15	580-34683-16	580-34683-17	580-34683-18
Location ID		31-042	31-043	31-044	31-045	31-046	31-047
Collection Date		8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.0098)	ND (0.011)	ND (0.011)	ND (0.012)	ND (0.011)	ND (0.010)
8082	PCB-1260	0.021	0.0054 J	ND (0.0054)	ND (0.0058)	0.96	0.59
		Cleanup Level is 1 mg/kg.					

Sample ID		12NC31SS048	12NC31SS049*	12NC31SS050	12NC31SS051*	12NC31SS052[D]*	12NC31SS053
Laboratory ID		580-34683-19	580-34683-20	580-34683-21	580-34683-22	580-34683-23	580-34683-24
Location ID		31-048	31-049	31-050	31-051	31-052	31-053
Collection Date		8/23/2012	8/23/2012	8/23/2012	8/23/2012 10:25	8/23/2012 10:27	8/23/2012 10:34
Analytical Method	**Analyte**					Field Duplicate of 12NC31SS051	
8082	All other PCBs	ND (0.010)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)
8082	PCB-1260	0.36	**3.9 D**	0.020	**4.9 D**	**4.7 D**	0.25
		Cleanup Level is 1 mg/kg.					

Notes:

* sample location was excavated following receipt of sample result
Bold = Sample conentration exceeds cleanup level.
[D] Sample is field duplicate of the previous sample.
D = Sample was analyzed at a dilution.
J = Result is an estimate
JH = Result is an estimate with high directional bias.
MH = Matrix inference suspected with high bias.
ML = Analyte result is considered an estimated value biased low due to matrix effects.
ND = Sample result is non-detect. The limit of detection (LOD) is in parentheses
QN = Matrix interference suspected with no directional bias.
QH = One or more quality control criteria failed with high bias.
PCB = Polychlorinated Biphenyl
mg/kg = milligram per kilogram

Table F18 Site 31 PCB Soil Excavation Results
All results are in mg/kg (continued)

	Sample ID	12NC31SS054	12NC31SS055	12NC31SS056	12NC31SS057	12NC31SS058	12NC31SS059
	Laboratory ID	580-34683-25	580-34683-26	580-34683-27	580-34683-28	580-34683-29	580-34683-30
	Location ID	31-054	31-055	31-056	31-057	31-058	31-059
	Collection Date	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)
8082	PCB-1260	0.14	0.32	0.26	0.010 J	0.10	ND (0.0053)
		Cleanup Level is 1 mg/kg.					

	Sample ID	12NC31SS060	12NC31SS061*	12NC31SS062*	12NC31SS063	12NC31SS064
	Laboratory ID	580-34683-31	580-34683-32	580-34683-33	580-34683-34	580-34683-35
	Location ID	31-060	31-061	31-062	31-063	31-064
	Collection Date	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012
Analytical Method	**Analyte**					
8082	All other PCBs	ND (0.011)	ND (0.011)	ND (0.010)	ND (0.011)	ND (0.011)
8082	PCB-1260	0.033	**18 D**	**4.4 D**	0.079 J MH	0.036
		Cleanup Level is 1 mg/kg.				

	Sample ID	12NC31SS065	12NC31SS066[D]*	12NC31SS067	12NC31SS068[D]	12NC31SS069	12NC31SS070
	Laboratory ID	580-34683-36	580-34683-37	580-34683-38	580-34683-39	580-34683-40	580-34683-41
	Location ID	31-065	31-066	31-067	31-068	31-069	31-070
	Collection Date	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012
Analytical Method	**Analyte**		Field Duplicate of 12NC31SS065		Field Duplicate of 12NC31SS067		
8082	All other PCBs	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)
8082	PCB-1260	0.83	**1.2**	0.12	0.089	ND (0.0054)	0.039
		Cleanup Level is 1 mg/kg.					

Notes:

* sample location was excavated following receipt of sample result
Bold = Sample conentration exceeds cleanup level.
[D] Sample is field duplicate of the previous sample.
D = Sample was analyzed at a dilution.
J = Result is an estimate
JH = Result is an estimate with high directional bias.
MH = Matrix inference suspected with high bias.
ML = Analyte result is considered an estimated value biased low due to matrix effects.
ND = Sample result is non-detect. The limit of detection (LOD) is in parentheses
QN = Matrix interference suspected with no directional bias.
QH = One or more quality control criteria failed with high bias.
PCB = Polychlorinated Biphenyl
mg/kg = milligram per kilogram

Table F18 Site 31 PCB Soil Excavation Results
All results are in mg/kg (continued)

	Sample ID	12NC31SS071	12NC31SS072	12NC31SS073	12NC31SS074	12NC31SS075	12NC31SS076
	Laboratory ID	580-34683-42	580-34683-43	580-34683-44	580-34683-45	580-34683-46	580-34683-47
	Location ID	31-071	31-072	31-073	31-074	31-075	31-076
	Collection Date	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.011)	ND (0.010)	ND (0.011)	ND (0.010)	ND (0.010)	ND (0.011)
8082	PCB-1260	ND (0.0054)	0.31	ND (0.0055)	0.093	0.033	0.48
		Cleanup Level is 1 mg/kg.					

	Sample ID	12NC31SS077	12NC31SS078	12NC31SS079	12NC31SS080	12NC31SS081	12NC31SS082
	Laboratory ID	580-34683-48	580-34683-49	580-34683-50	580-34683-51	580-34683-52	580-34683-53
	Location ID	31-077	31-078	31-079	31-080	31-081	31-082
	Collection Date	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.011)	ND (0.011)	ND (0.010)	ND (0.012)	ND (0.011)	ND (0.028)
8082	PCB-1260	0.25	0.024	ND (0.0051)	0.056	0.055	0.24
		Cleanup Level is 1 mg/kg.					

	Sample ID	12NC31SS083	12NC31SS084	12NC31SS085	12NC31SS086	12NC31SS087	12NC31SS088*
	Laboratory ID	580-34683-54	580-34683-55	580-34683-56	580-34683-57	580-34683-58	580-34683-59
	Location ID	31-083	31-084	31-085	31-086	31-087	31-088
	Collection Date	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.011)	ND (0.013)	ND (0.011)	ND (0.011)	ND (0.010)	ND (0.011)
8082	PCB-1260	ND (0.0053)	0.085	ND (0.0055)	0.0048 J	ND (0.0050)	**1.9**
		Cleanup Level is 1 mg/kg.					

Notes:

* sample location was excavated following receipt of sample result

Bold = Sample conentration exceeds cleanup level.

[D] Sample is field duplicate of the previous sample.

D = Sample was analyzed at a dilution.

J = Result is an estimate

JH = Result is an estimate with high directional bias.

MH = Matrix inference suspected with high bias.

ML = Analyte result is considered an estimated value biased low due to matrix effects.

ND = Sample result is non-detect. The limit of detection (LOD) is in parentheses

QN = Matrix interference suspected with no directional bias.

QH = One or more quality control criteria failed with high bias.

PCB = Polychlorinated Biphenyl

mg/kg = milligram per kilogram

Table F18 Site 31 PCB Soil Excavation Results
All results are in mg/kg (continued)

	Sample ID	12NC31SS089	12NC31SS090[D]	12NC31SS091	12NC31SS092*	12NC31SS093	12NC31SS094
	Laboratory ID	580-34683-60	580-34683-61	580-34683-62	580-34683-63	580-34683-64	580-34683-65
	Location ID	31-089	31-090	31-091	31-092	31-093	31-094
	Collection Date	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.011)	ND (0.010)	ND (0.010)	ND (0.012)	ND (0.011)	ND (0.011)
8082	PCB-1260	0.0079 J	0.0077 J	0.0089 J	**2.5 D**	0.17	0.85
		Cleanup Level is 1 mg/kg.					

	Sample ID	12NC31SS095	12NC31SS096	12NC31SS097	12NC31SS098	12NC31SS099	12NC31SS100
	Laboratory ID	580-34683-66	580-34683-67	580-34683-68	580-34683-69	580-34683-70	580-34683-71
	Location ID	31-095	31-096	31-097	31-098	31-099	31-100
	Collection Date	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.011)	ND (0.010)	ND (0.010)	ND (0.011)	ND (0.011)	ND (0.011)
8082	PCB-1260	0.47	0.73	0.0086 J	0.012	0.025	ND (0.0056)
		Cleanup Level is 1 mg/kg.					

	Sample ID	12NC31SS101	12NC31SS102	12NC31SS103	12NC31SS104	12NC31SS105*	12NC31SS106
	Laboratory ID	580-34683-72	580-34683-73	580-34683-74	580-34683-75	580-34683-76	580-34683-77
	Location ID	31-101	31-102	31-103	31-104	31-105	31-106
	Collection Date	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)
8082	PCB-1260	0.21	ND (0.0054)	ND (0.0057)	ND (0.0055)	**3.4 D**	0.0088 J
		Cleanup Level is 1 mg/kg.					

Notes:

* sample location was excavated following receipt of sample result

Bold = Sample conentration exceeds cleanup level.

[D] Sample is field duplicate of the previous sample.

D = Sample was analyzed at a dilution.

J = Result is an estimate

JH = Result is an estimate with high directional bias.

MH = Matrix inference suspected with high bias.

ML = Analyte result is considered an estimated value biased low due to matrix effects.

ND = Sample result is non-detect. The limit of detection (LOD) is in parentheses

QN = Matrix interference suspected with no directional bias.

QH = One or more quality control criteria failed with high bias.

PCB = Polychlorinated Biphenyl

mg/kg = milligram per kilogram

Table F18 Site 31 PCB Soil Excavation Results
All results are in mg/kg (continued)

	Sample ID	12NC31SS107	12NC31SS108*	12NC31SS109	12NC31SS110	12NC31SS111	12NC31SS112
	Laboratory ID	580-34683-78	580-34683-79	580-34683-80	580-34683-81	580-34683-82	580-34683-83
	Location ID	31-107	31-108	31-109	31-110	31-111	31-112
	Collection Date	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.011)	ND (0.011)	ND (0.012)	ND (0.011)	ND (0.011)	ND (0.011)
8082	PCB-1260	0.078	**2.4 D**	ND (0.0059)	0.25	0.54	0.64
		Cleanup Level is 1 mg/kg.					

	Sample ID	12NC31SS113	12NC31SS114	12NC31SS115*	12NC31SS116	12NC31SS117*	12NC31SS118
	Laboratory ID	580-34683-84	580-34675-1	580-34675-2	580-34675-3	580-34675-4	580-34675-5
	Location ID	31-113	31-114	31-115	31-116	31-117	31-118
	Collection Date	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.011)	ND (0.083) D	ND (0.17) D	ND (0.021)	ND (0.43) D	ND (0.044) D
8082	PCB-1260	0.28	0.66 D	**2.4 D**	0.034	**4.4 D**	0.43 D
		Cleanup Level is 1 mg/kg.					

	Sample ID	12NC31SS119*	12NC31SS120*	12NC31SS121*	12NC31SS122	12NC31SS123	12NC31SS126[D]
	Laboratory ID	580-34675-6	580-34675-7	580-34675-8	580-34675-9	580-34675-10	580-34675-13
	Location ID	31-119	31-120	31-121	31-122	31-123	31-126
	Collection Date	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012
Analytical Method	**Analyte**						Field Duplicate of 12NC31SS123
8082	All other PCBs	**ND (1.1) D**	**ND (1.1)**	ND (0.11)	ND (0.083) D	ND (0.019)	ND (0.019)
8082	PCB-1260	**14 D**	**13 D**	**1.2**	0.77 D	0.096 QN	0.054 QN
		Cleanup Level is 1 mg/kg.					

Notes:

* sample location was excavated following receipt of sample result

Bold = Sample conentration exceeds cleanup level.

[D] Sample is field duplicate of the previous sample.

D = Sample was analyzed at a dilution.

J = Result is an estimate

JH = Result is an estimate with high directional bias.

MH = Matrix inference suspected with high bias.

ML = Analyte result is considered an estimated value biased low due to matrix effects.

ND = Sample result is non-detect. The limit of detection (LOD) is in parentheses

QN = Matrix interference suspected with no directional bias.

QH = One or more quality control criteria failed with high bias.

PCB = Polychlorinated Biphenyl

mg/kg = milligram per kilogram

Table F18 Site 31 PCB Soil Excavation Results
All results are in mg/kg (continued)

	Sample ID	12NC31SS124	12NC31SS127[D]	12NC31SS125	12NC31SS128[D]	12NC31SS129	12NC31SS130
	Laboratory ID	580-34675-11	580-34675-14	580-34675-12	580-34675-15	580-34675-16	580-34675-17
	Location ID	31-124	31-127	31-125	31-128	31-129	31-130
	Collection Date	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012	8/23/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.039) D	ND (0.039) D	ND (0.02)	ND (0.019)	ND (0.022)	ND (0.021)
8082	PCB-1260	0.36 D	0.36 D	0.18 J	0.17 J	0.022 J	0.022 J
		Cleanup Level is 1 mg/kg.					

	Sample ID	12NC31SS131	12NC31SS132	12NC31SS133	12NC31SS134	12NC31SS135	12NC31SS136
	Laboratory ID	580-34675-18	580-34675-19	580-34675-20	580-34675-21	580-34675-22	580-34675-23
	Location ID	31-131	31-132	31-133	31-134	31-135	31-136
	Collection Date	8/23/2012	8/24/2012	8/24/2012	8/24/2012	8/24/2012	8/24/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.022)	ND (0.022)	ND (0.022)	ND (0.089) D	ND (0.022)	ND (0.22) D
8082	PCB-1260	0.062	0.019 J	0.16	0.79 D	0.31	2.7 D
		Cleanup Level is 1 mg/kg.					

	Sample ID	12NC31SS137	12NC31SS138*	12NC31SS139	12NC31SS140	12NC31SS141*	12NC31SS142
	Laboratory ID	580-34675-24	580-34675-25	580-34675-26	580-34675-27	580-34675-28	580-34675-29
	Location ID	31-137	31-138	31-139	31-140	31-141	31-142
	Collection Date	8/24/2012	8/24/2012	8/24/2012	8/24/2012	8/24/2012	8/24/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.023)	ND (0.21) D	ND (0.023)	ND (0.022)	ND (0.47) D	ND (0.022)
8082	PCB-1260	0.24	**2.1 D**	0.075 J MH	0.089 J MH	**3.8 D**	ND (0.011)
Notes:		Cleanup Level is 1 mg/kg.					

* sample location was excavated following receipt of sample result
Bold = Sample conentration exceeds cleanup level.
[D] Sample is field duplicate of the previous sample.
D = Sample was analyzed at a dilution.
J = Result is an estimate
JH = Result is an estimate with high directional bias.
MH = Matrix inference suspected with high bias.
ML = Analyte result is considered an estimated value biased low due to matrix effects.
ND = Sample result is non-detect. The limit of detection (LOD) is in parentheses
QN = Matrix interference suspected with no directional bias.
QH = One or more quality control criteria failed with high bias.
PCB = Polychlorinated Biphenyl
mg/kg = milligram per kilogram

Table F18 Site 31 PCB Soil Excavation Results
All results are in mg/kg (continued)

Sample ID		12NC31SS143*	12NC31SS144	12NC31SS145*	12NC31SS146	12NC31SS147*	12NC31SS148[D]*
Laboratory ID		580-34675-30	580-34675-31	580-34675-32	580-34675-33	580-34675-34	580-34675-35
Location ID		31-143	31-144	31-145	31-146	31-147	31-148
Collection Date		8/24/2012	8/24/2012	8/24/2012	8/24/2012	8/24/2012	8/24/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.44) D	ND (0.022)	ND (0.22) D	ND (0.022)	ND (0.22) D	ND (0.21) D
8082	PCB-1260	**3.9 D**	0.17	**1.9 D**	0.031 J	**2.4 D**	**2.0**
		Cleanup Level is 1 mg/kg.					

Sample ID		12NC31SS149	12NC31SS150	12NC31SS151	12NC31SS152[D]	12NC31SS153
Laboratory ID		580-34675-36	580-34675-37	580-34675-38	580-34675-39	580-34675-40
Location ID		31-149	31-150	31-151	31-152	31-153
Collection Date		8/24/2012	8/24/2012	8/24/2012	8/24/2012	8/24/2012
Analytical Method	**Analyte**					
8082	All other PCBs	ND (0.019)	ND (0.022)	ND (0.023)	ND (0.023)	ND (0.022)
8082	PCB-1260	0.20 J ML	0.027 J MH	0.024 J	0.061	0.11
		Cleanup Level is 1 mg/kg.				

Sample ID		12NC31SS154*	12NC31SS155[D]*	12NC31SS156*	12NC31SS157[D]*	12NC31SS158	12NC31SS159
Laboratory ID		580-34675-41	580-34675-42	580-34675-43	580-34675-44	580-34675-45	580-34675-46
Location ID		31-154	31-155	31-156	31-157	31-158	31-159
Collection Date		8/24/2012	8/24/2012	8/24/2012	8/24/2012	8/24/2012	8/24/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.086) D	ND (0.11) D	ND (0.44) D	ND (0.86) D	ND (0.023)	ND (0.023)
8082	PCB-1260	0.71 D	**1.1 D**	**4.1 D**	**7.6 D**	0.0057 J	0.0091 J
		Cleanup Level is 1 mg/kg.					

Notes:

* sample location was excavated following receipt of sample result

Bold = Sample conentration exceeds cleanup level.

[D] Sample is field duplicate of the previous sample.

D = Sample was analyzed at a dilution.

J = Result is an estimate

JH = Result is an estimate with high directional bias.

MH = Matrix inference suspected with high bias.

ML = Analyte result is considered an estimated value biased low due to matrix effects.

ND = Sample result is non-detect. The limit of detection (LOD) is in parentheses

QN = Matrix interference suspected with no directional bias.

QH = One or more quality control criteria failed with high bias.

PCB = Polychlorinated Biphenyl

mg/kg = milligram per kilogram

Table F18 Site 31 PCB Soil Excavation Results
All results are in mg/kg (continued)

	Sample ID	12NC31SS160	12NC31SS161[D]	12NC31SS162	12NC31SS163[D]	12NC31SS164	12NC31SS165
	Laboratory ID	580-34675-47	580-34675-48	580-34675-49	580-34675-50	580-34675-51	580-34675-52
	Location ID	31-160	31-161	31-162	31-163	31-164	31-165
	Collection Date	8/24/2012	8/24/2012	8/24/2012	8/24/2012	8/24/2012	8/24/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.021)	ND (0.02)
8082	PCB-1260	0.10	0.11	0.012 J	0.018 J	0.27	0.051
		Cleanup Level is 1 mg/kg.					

	Sample ID	12NC31SS166	12NC31SS167	12NC31SS168	12NC31SS169	12NC31SS170	12NC31SS171
	Laboratory ID	580-34675-53	580-34675-54	580-34675-55	580-34675-56	580-34675-57	580-34675-58
	Location ID	31-166	31-167	31-168	31-169	31-170	31-171
	Collection Date	8/24/2012	8/24/2012	8/24/2012	8/24/2012	8/24/2012	8/24/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.02)	ND (0.022)	ND (0.023)	ND (0.021)	ND (0.021)	ND (0.023)
8082	PCB-1260	0.22	0.018 J	0.058	0.062	0.22	0.013 J
		Cleanup Level is 1 mg/kg.					

	Sample ID	12NC31SS172	12NC31SS173	12NC31SS174*	12NC31SS175*	12NC31SS176*	12NC31SS178
	Laboratory ID	580-34675-59	580-34675-60	580-34675-61	580-34675-62	580-34675-63	580-34675-65
	Location ID	31-172	31-173	31-174	31-175	31-176	31-178
	Collection Date	8/24/2012	8/24/2012	8/24/2012	8/24/2012	8/24/2012	8/24/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.023)	ND (0.025)	ND (0.44) D	ND (4.2) D J	ND (0.11) D	ND (0.021)
8082	PCB-1260	0.047	0.071	**4.7 D**	**25 D**	**1 D**	0.042
		Cleanup Level is 1 mg/kg.					

Notes:

* sample location was excavated following receipt of sample result

Bold = Sample conentration exceeds cleanup level.

[D] Sample is field duplicate of the previous sample.

D = Sample was analyzed at a dilution.

J = Result is an estimate

JH = Result is an estimate with high directional bias.

MH = Matrix inference suspected with high bias.

ML = Analyte result is considered an estimated value biased low due to matrix effects.

ND = Sample result is non-detect. The limit of detection (LOD) is in parentheses

QN = Matrix interference suspected with no directional bias.

QH = One or more quality control criteria failed with high bias.

PCB = Polychlorinated Biphenyl

mg/kg = milligram per kilogram

Table F18 Site 31 PCB Soil Excavation Results
All results are in mg/kg (continued)

	Sample ID	12NC31SS179	12NC31SS185[D]	12NC31SS180	12NC31SS186[D]	12NC31SS181	12NC31SS187[D]
	Laboratory ID	580-34675-66	580-34675-72	580-34675-67	580-34675-73	580-34675-68	580-34675-74
	Location ID	31-179	31-185	31-180	31-186	31-181	31-187
	Collection Date	8/24/2012	8/24/2012	8/24/2012	8/24/2012	8/24/2012	8/24/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.021)	ND (0.02)	ND (0.02)	ND (0.021)	ND (0.02)	ND (0.021)
8082	PCB-1260	ND (0.011) QN	0.06 QN	0.012 J	0.012 J	0.013 J	0.025 J
		Cleanup Level is 1 mg/kg.					

	Sample ID	12NC31SS182*	12NC31SS188[D]*	12NC31SS183	12NC31SS189[D]	12NC31SS177	12NC31SS184[D]
	Laboratory ID	580-34675-69	580-34675-75	580-34675-70	580-34675-76	580-34675-64	580-34675-71
	Location ID	31-182	31-188	31-183	31-189	31-177	31-184
	Collection Date	8/24/2012	8/24/2012	8/24/2012	8/24/2012	8/24/2012	8/24/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.5) D	ND (0.48) D	ND (0.052) D	ND (0.051) D	ND (0.021)	ND (0.022)
8082	PCB-1260	**5.1 D**	**5.3 D**	0.46 D	0.46 D	0.11 QN	ND (0.011) QN
		Cleanup Level is 1 mg/kg.					

	Sample ID	12NC31SS190	12NC31SS191[D]	12NC31SS192*	12NC31SS193[D]*	12NC31SS194	12NC31SS195
	Laboratory ID	580-34675-77	580-34675-78	580-34675-79	580-34675-80	280-33320-17	280-33320-18
	Location ID	31-190	31-191	31-192	31-193	31-194	31-195
	Collection Date	8/24/2012	8/24/2012	8/24/2012	8/24/2012	9/13/2012	9/13/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.02)	ND (0.022)	ND (0.23) D	ND (0.22) D	ND (0.022)	ND (0.022)
8082	PCB-1260	0.16	0.16	**1.9 D**	**2.2 D**	0.032 J	0.15
		Cleanup Level is 1 mg/kg.					

Notes:

* sample location was excavated following receipt of sample result

Bold = Sample conentration exceeds cleanup level.

[D] Sample is field duplicate of the previous sample.

D = Sample was analyzed at a dilution.

J = Result is an estimate

JH = Result is an estimate with high directional bias.

MH = Matrix inference suspected with high bias.

ML = Analyte result is considered an estimated value biased low due to matrix effects.

ND = Sample result is non-detect. The limit of detection (LOD) is in parentheses

QN = Matrix interference suspected with no directional bias.

QH = One or more quality control criteria failed with high bias.

PCB = Polychlorinated Biphenyl

mg/kg = milligram per kilogram

Table F18 Site 31 PCB Soil Excavation Results
All results are in mg/kg (continued)

	Sample ID	12NC31SS196	12NC31SS197	12NC31SS223[D]	12NC31SS198	12NC31SS199	12NC31SS200
	Laboratory ID	280-33320-19	280-33320-20	280-33320-46	280-33320-21	280-33320-22	280-33320-23
	Location ID	31-196	31-197	31-223	31-198	31-199	31-200
	Collection Date	9/13/2012	9/13/2012	9/13/2012	9/13/2012	9/13/2012	9/13/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.084) D	ND (0.021)	ND (0.021)	ND (0.022)	ND (0.21)	ND (0.022)
8082	PCB-1260	0.45 D	0.02 J	0.012 J QN	0.014 J	**1.3 D**	0.17
		Cleanup Level is 1 mg/kg.					

	Sample ID	12NC31SS201	12NC31SS202	12NC31SS224[D]	12NC31SS203	12NC31SS204	12NC31SS225[D]
	Laboratory ID	280-33320-24	280-33320-25	280-33320-47	280-33320-26	280-33320-27	280-33320-48
	Location ID	31-201	31-202	31-224	31-203	31-204	31-225
	Collection Date	9/13/2012	9/13/2012	9/13/2012	9/13/2012	9/13/2012	9/13/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.021)	ND (0.022)	ND (0.021)	ND (0.022)	ND (0.021)	ND (0.02)
8082	PCB-1260	0.066	ND (0.011)	ND (0.01)	0.017 J	ND (0.01) QN	0.14 QN
		Cleanup Level is 1 mg/kg.					

	Sample ID	12NC31SS205	12NC31SS206	12NC31SS207	12NC31SS208	12NC31SS209	12NC31SS210
	Laboratory ID	280-33320-28	280-33320-29	280-33320-30	280-33320-31	280-33320-32	280-33320-33
	Location ID	31-205	31-206	31-207	31-208	31-209	31-210
	Collection Date	9/13/2012	9/14/2012	9/14/2012	9/14/2012	9/14/2012	9/14/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.021)	ND (0.022)	ND (0.02)	ND (0.021)	ND (0.021)	ND (0.099)
8082	PCB-1260	0.048	ND (0.011)	0.0051 J	ND (0.011)	0.11	0.64 D
		Cleanup Level is 1 mg/kg.					

Notes:

* sample location was excavated following receipt of sample result

Bold = Sample conentration exceeds cleanup level.

[D] Sample is field duplicate of the previous sample.

D = Sample was analyzed at a dilution.

J = Result is an estimate

JH = Result is an estimate with high directional bias.

MH = Matrix inference suspected with high bias.

ML = Analyte result is considered an estimated value biased low due to matrix effects.

ND = Sample result is non-detect. The limit of detection (LOD) is in parentheses

QN = Matrix interference suspected with no directional bias.

QH = One or more quality control criteria failed with high bias.

PCB = Polychlorinated Biphenyl

mg/kg = milligram per kilogram

Table F18 Site 31 PCB Soil Excavation Results
All results are in mg/kg (continued)

	Sample ID	12NC31SS211	12NC31SS212	12NC31SS213	12NC31SS214	12NC31SS215	12NC31SS216
	Laboratory ID	280-33320-34	280-33320-35	280-33320-36	280-33320-37	280-33320-38	280-33320-39
	Location ID	31-211	31-212	31-213	31-214	31-215	31-216
	Collection Date	9/14/2012	9/14/2012	9/14/2012	9/14/2012	9/14/2012	9/14/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.02)	ND (0.021)	ND (0.021)	ND (0.02)	ND (0.021)	ND (0.021)
8082	PCB-1260	0.015 J	ND (0.011)	0.1	0.19	0.0076 J	ND (0.011)
		Cleanup Level is 1 mg/kg.					

	Sample ID	12NC31SS217	12NC31SS218	12NC31SS219	12NC31SS220	12NC31SS221	12NC31SS222
	Laboratory ID	280-33320-40	280-33320-41	280-33320-42	280-33320-43	280-33320-44	280-33320-45
	Location ID	31-217	31-218	31-218	31-220	31-221	31-222
	Collection Date	9/14/2012	9/14/2012	9/14/2012	9/14/2012	9/14/2012	9/14/2012
Analytical Method	**Analyte**						
8082	All other PCBs	ND (0.022)	ND (0.022)	ND (0.022)	ND (0.021)	ND (0.022)	ND (0.022)
8082	PCB-1260	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	0.007 J QN
		Cleanup Level is 1 mg/kg.					

Notes:

* sample location was excavated following receipt of sample result
Bold = Sample conentration exceeds cleanup level.
[D] Sample is field duplicate of the previous sample.
D = Sample was analyzed at a dilution.
J = Result is an estimate
JH = Result is an estimate with high directional bias.
MH = Matrix inference suspected with high bias.
ML = Analyte result is considered an estimated value biased low due to matrix effects.
ND = Sample result is non-detect. The limit of detection (LOD) is in parentheses
QN = Matrix interference suspected with no directional bias.
QH = One or more quality control criteria failed with high bias.
PCB = Polychlorinated Biphenyl
mg/kg = milligram per kilogram

Table F19 Wipe Sample Results

			Sample ID	12NC13WS001[R]	12NC13WS002[R]	WS13-01[R]	WS13-02	WS13-03
			Laboratory ID	280-33320-1	280-33320-2	ML WS13-01	ML WS13-02	ML WS13-03
			Site	Site 13	Site 13	Site 13	Site 13	Site 13
			Location ID	WS13-01	WS13-02	None	None	None
			Collection Date	9/6/2012	9/6/2012	9/6/2012	9/6/2012	9/6/2012
Analytical Method	Analyte	Units	Cleanup Level	Field Replicates				
8082/DOD	PCB-1016	µg/100 cm^2	10	ND (0.3)	ND (0.3)	ND	ND	ND
8082/DOD	PCB-1221	µg/100 cm^2	10	ND (0.6)	ND (0.6)	ND	ND	ND
8082/DOD	PCB-1232	µg/100 cm^2	10	ND (0.3)	ND (0.3)	ND	ND	ND
8082/DOD	PCB-1242	µg/100 cm^2	10	ND (0.3)	ND (0.3)	ND	ND	ND
8082/DOD	PCB-1248	µg/100 cm^2	10	ND (0.3)	ND (0.3)	ND	ND	ND
8082/DOD	PCB-1254	µg/100 cm^2	10	ND (0.3)	ND (0.3)	ND	ND	ND
8082/DOD	PCB-1260	µg/100 cm^2	10	ND (0.3)	ND (0.3)	ND	0.33	ND

			Sample ID	WS31-01	WS31-02
			Laboratory ID	ML WS31-01	ML WS31-02
			Site	Site 31	Site 31
			Location ID	None	None
			Collection Date	9/6/2012	9/6/2012
Analytical Method	Analyte	Units	Cleanup Level		
8082/DOD	PCB-1016	µg/100 cm^2	10	ND (0.3)	ND (0.3)
8082/DOD	PCB-1221	µg/100 cm^2	10	ND (0.6)	ND (0.6)
8082/DOD	PCB-1232	µg/100 cm^2	10	ND (0.3)	ND (0.3)
8082/DOD	PCB-1242	µg/100 cm^2	10	ND (0.3)	ND (0.3)
8082/DOD	PCB-1248	µg/100 cm^2	10	ND (0.3)	ND (0.3)
8082/DOD	PCB-1254	µg/100 cm^2	10	ND (0.3)	ND (0.3)
8082/DOD	PCB-1260	µg/100 cm^2	10	0.48	1.73

Notes:

Sample IDs that do not begin with "12NC" were analyzed in the field lab, only two samples were analyzed at TestAmerica

[R]Field Replicates, Samples were collected directly adjacent to each other

DOD = Department of Defense

ML = Samples were analyzed at the on-site field laboratory

ND = The result is non-detect

PCBs = Polychlorinated biphenyls

µg/100 cm^2 = micrograms per 100 square centimeters

Table F20   PCB Excavation Rock Analysis from Site 13 and Site 31

		Sample ID	12NC13ROCK-1	12NC13ROCK-4[D]	12NC13ROCK-2	12NC13ROCK-3
		Laboratory ID	280-33360-1	280-33360-4	280-33360-2	280-33360-3
		Location ID	13Rock-1	13Rock-2	13Rock-2	13Rock-3
		Collection Date	9/13/2012	9/13/2012	9/13/2012	9/13/2012
Analytical Method	**Analyte**	**Unit**				
8082A	Aroclor 1016	µg/kg	ND (10)	ND (9.2)	ND (10)	ND (9.6)
8082A	Aroclor 1221	µg/kg	ND (20)	ND (18)	ND (20)	ND (19)
8082A	Aroclor 1232	µg/kg	ND (10)	ND (9.2)	ND (10)	ND (9.6)
8082A	Aroclor 1242	µg/kg	ND (10)	ND (9.2)	ND (10)	ND (9.6)
8082A	Aroclor 1248	µg/kg	ND (10)	ND (9.2)	ND (10)	ND (9.6)
8082A	Aroclor 1254	µg/kg	ND (10)	ND (9.2)	ND (10)	ND (9.6)
8082A	Aroclor 1260	µg/kg	ND (10)	ND (9.2)	ND (10)	ND (9.6)

		Sample ID	12NC31ROCK-1	12NC31ROCK-2	12NC31ROCK-3
		Laboratory ID	280-33360-5	280-33360-6	280-33360-7
		Location ID	31Rock-1	31Rock-2	31Rock-3
		Collection Date	9/13/2012	9/13/2012	9/13/2012
Analytical Method	**Analyte**	**Unit**			
8082A	Aroclor 1016	µg/kg	ND (9.4)	ND (9.6)	ND (9.5)
8082A	Aroclor 1221	µg/kg	ND (19)	ND (19)	ND (19)
8082A	Aroclor 1232	µg/kg	ND (9.4)	ND (9.6)	ND (9.5)
8082A	Aroclor 1242	µg/kg	ND (9.4)	ND (9.6)	ND (9.5)
8082A	Aroclor 1248	µg/kg	ND (9.4)	ND (9.6)	ND (9.5)
8082A	Aroclor 1254	µg/kg	ND (9.4)	ND (9.6)	ND (9.5)
8082A	Aroclor 1260	µg/kg	ND (9.4)	ND (9.6)	ND (9.5)

Notes:
µg/kg = micrograms per kilogram
[D]Sample is a field duplicate of the previous sample.
ND = Non-detect; limit of detection (LOD) in parentheses

Table F21 Site 21 Soil Results

			Sample ID	12NC21SS001*	12NC21SS002	12NC21SS003	12NC21SS004	12NC21SS005*	12NC21SS006
			Laboratory ID	580-34550-1	580-34550-2	580-34550-3	580-34550-4	580-34550-5	580-34550-6
			Location ID	NC21SS001	NC21SS002	NC21SS003	NC21SS004	NC21SS005	NC21SS006
			Collection Date	8/15/2012	8/15/2012	8/15/2012	8/15/2012	8/15/2012	8/15/2012
Analytical Method	**Analyte**	**Unit**	**Site Specific Cleanup Level[1]**	Soil- SW	Soil- SW	Soil- SW	Soil- SW	Soil- SW	Soil- SW
EPA 6020	Arsenic	mg/kg	11	**66**	4.0	5.2	6.0	**62**	6.1

			Sample ID	12NC21SS007	12NC21SS009	12NC21SS010*	12NC21SS008	12NC21SS011[D]	12NC21SS012
			Laboratory ID	580-34550-7	580-34550-9	580-34550-10	580-34550-8	580-34550-11	580-34550-12
			Location ID	NC21SS007	NC21SS009	NC21SS010	NC21SS008	NC21SS011	NC21SS012
			Collection Date	8/15/2012	8/15/2012	8/15/2012	8/15/2012	8/15/2012	8/15/2012
Analytical Method	**Analyte**	**Unit**	**Site Specific Cleanup Level[1]**	Soil- SW	Soil- SW	Soil- SW	Soil- SW	Soil- SW	Soil- FL
EPA 6020	Arsenic	mg/kg	11	8.8	9.4	**190**	3.3	4.7	5.6

			Sample ID	12NC21SS017	12NC21SS018	12NC21SS019	12NC21SS020	12NC21SS021
			Laboratory ID	580-34828-3	580-34828-4	580-34828-5	580-34828-6	580-34828-7
			Location ID	NC21SS017	NC21SS018	NC21SS019	NC21SS020	NC21SS021
			Collection Date	9/4/2012	9/5/2012	9/4/2012	9/4/2012	9/4/2012
Analytical Method	**Analyte**	**Unit**	**Site Specific Cleanup Level[1]**	Soil- SW	Soil- SW	Soil- SW	Soil- SW	Soil-FL
EPA 6020	Arsenic	mg/kg	11	**110**	**320**	**23**	**99**	5.3

Notes:

*Soil from this sample location was removed following receipt of sample results

[1]2009 NE Cape Decision Document

Bold - Sample conentration exceeds cleanup level.

[D]Sample is a field duplicate of previous sample

FL = floor sample

mg/kg = milligrams per kilogram

SW = sidewall sample

Table F22 Site 21 Waste Characterization Results

			Sample ID	12NC21SS013	12NC21SS014[D]	12NC21SS015	12NC21SS016[D]
			Laboratory ID	580-34550-13	580-34550-14	580-34828-1	580-34828-2
			Location ID	NC21SS013	NC21SS014	12N21BW1	12N21BW2
			Collection Date	8/15/2012	8/15/2012	9/4/2012	9/4/2012
Analytical Method	**Analyte**	**Unit**	**Site Specific Cleanup Level[1]**	Soil Waste Characterization	Soil Waste Characterization	Soil Waste Characterization	Soil Waste Characterization
6020	Arsenic	mg/Kg	11	**29**	**22**	**46**	**38**
Theoretical TCLP Arsenic Concentration using the "Rule of 20"		mg/L	5	1.45	1.1	2.3	1.9

Notes:

Samples were shipped as hazardous waste based on samples collected from within the excavation

[1]2009 NE Cape Decision Document

Bold - Sample concentration exceeds cleanup level.

[D]Sample is a field duplicate of previous sample

mg/kg = milligrams per kilogram

mg/L = milligrams per liter

TCLP = toxicity characteristic leachate procedure

Table F23   Site 21 Surface Water Results

			Sample ID	12NC21WA001	12NC21WA002[D]
			Laboratory ID	580-34828-8	580-34828-9
			Location ID	12NC21W001	12NC21W002
			Collection Date	9/5/2012	9/5/2012
Analytical Method	**Analyte**	**Unit**	**ADEC Cleanup Level[1]**	Water	Water
6020	Arsenic (dissolved)	mg/L	0.01	ND (0.004) QL	ND (0.004) QL
6020	Arsenic (total)	mg/L	0.01	0.0052	0.0049 J

Notes:

[1]ADEC cleanup level for groundwater from 18AAC75.345 Table C

[D]Sample is a duplicate of previous sample

J = Result is an estimate

mg/L = milligrams per Liter

ND = Non-detect: limit of detection (LOD) in parentheses

QL = Quality control failure with potential low bias.

Table F24 Site 10 Soil Sample Results

			Sample ID	12NC10SS001	12NC10SS002	12NC10SS003	12NC10SS004	12NC10SS005	12NC10SS018[D]	12NC10SS006	12NC10SS007	12NC10SS008	12NC10SS009	12NC10SS010	12NC10SS011	12NC10SS012
			Laboratory ID	34609-1	34609-2	34609-3	34609-4	34609-5	34609-18	34609-6	34609-7	34609-8	34609-9	34609-10	34609-11	34609-12
			Location ID	10SS001	10SS002	10SS003	10SS004	10SS005	10SS018	10SS006	10SS007	10SS008	10SS009	10SS010	10SS011	10SS012
			Sample Location	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A
			Collection Date	8/18/2012	8/18/2012	8/18/2012	8/18/2012	8/18/2012	8/18/2012	8/18/2012	8/18/2012	8/18/2012	8/18/2012	8/18/2012	8/19/2012	8/19/2012
Analytical Method	**Analyte**	**Unit**	**Cleanup Level**	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	FL	FL
6020	Arsenic	mg/kg	11[1]	6.0	5.0	5.9	6.1	3.1	3.2	3.8	3.8	5.2	**14**	6.4	5.5	7.1
6020	Barium	mg/kg	1,100[2]	49	64	68	56	63	74	52	55	73	39	39	42	67
6020	Cadmium	mg/kg	5.0[2]	0.15 J	0.25	0.23 J	0.23 J	0.25 J	0.36 J	0.31 J	0.30 J	0.41	0.28	0.16 J	0.19 J	0.21 J
6020	Chromium (Total)	mg/kg	25[2]	16	17	24	20	18	21	13	15	19	16	18	13	22
6020	Lead	mg/kg	400[2]	23	36	40	30	19	19	20	22	26	29	23	26	31
6020	Nickel	mg/kg	86[2]	15	10	12	11	7.6	8.7	8.1	9.4	13	10	11	11	13
6020	Selenium	mg/kg	3.4[2]	1.1	1.1	1.4	1.4	2.6	3.3	2.2	2.6	3.0	1.2	1.3	1.1	1.4
6020	Silver	mg/kg	11.2[2]	0.090 J	0.079 J	0.11 J	0.12 J	0.22 J	0.22 J	0.12 J	0.18 J	0.19 J	0.087 J	0.10 J	0.075 J	0.12 J
6020	Vanadium	mg/kg	3,400[2]	30	35	36	32	28	33	29	31	37	34	30	25	38
6020	Zinc	mg/kg	4,100[2]	63	160	61	57	41	43	61	57	59	61	48	100	150
7471A	Mercury	mg/kg	1.4[2]	0.033	0.039	0.042	0.022	0.033	0.041	0.041	0.055 QN	0.066	0.024	0.017 J	0.031	0.027
8015C	Ethylene glycol	mg/kg	190[2]	2.1 J	ND (0.67)	ND (0.66)	ND (0.66)	ND (0.65)	ND (0.66)	ND (0.67)	ND (0.66)	ND (0.66)	ND (0.67)	ND (0.67)	ND (0.65)	ND (0.67)
8082	PCB-1016	mg/kg	1[1]	ND (0.0060)	ND (0.0060)	ND (0.0062)	ND (0.0063)	ND (0.0087)	ND (0.011)	ND (0.010)	ND (0.011)	ND (0.0095)	ND (0.0059)	ND (0.0059)	ND (0.0071)	ND (0.0072)
8082	PCB-1221	mg/kg	1[1]	ND (0.012)	ND (0.012)	ND (0.012)	ND (0.013)	ND (0.017)	ND (0.022)	ND (0.020)	ND (0.022)	ND (0.019)	ND (0.012)	ND (0.012)	ND (0.014)	ND (0.014)
8082	PCB-1232	mg/kg	1[1]	ND (0.012)	ND (0.012)	ND (0.012)	ND (0.013)	ND (0.017)	ND (0.022)	ND (0.020)	ND (0.022)	ND (0.019)	ND (0.012)	ND (0.012)	ND (0.014)	ND (0.014)
8082	PCB-1242	mg/kg	1[1]	ND (0.0060)	ND (0.0060)	ND (0.0062)	ND (0.0063)	ND (0.0087)	ND (0.011)	ND (0.010)	ND (0.011)	ND (0.0095)	ND (0.0059)	ND (0.0059)	ND (0.0071)	ND (0.0072)
8082	PCB-1248	mg/kg	1[1]	ND (0.0060)	ND (0.0060)	ND (0.0062)	ND (0.0063)	ND (0.0087)	ND (0.011)	ND (0.010)	ND (0.011)	ND (0.0095)	ND (0.0059)	ND (0.0059)	ND (0.0071)	ND (0.0072)
8082	PCB-1254	mg/kg	1[1]	ND (0.0060)	ND (0.0060)	ND (0.0062)	ND (0.0063)	ND (0.0087)	ND (0.011)	ND (0.010)	ND (0.011)	ND (0.0095)	ND (0.0059)	ND (0.0059)	ND (0.0071)	ND (0.0072)
8082	PCB-1260	mg/kg	1[1]	ND (0.0060)	ND (0.0060)	0.047	0.052	ND (0.0087)	ND (0.011)	ND (0.010)	ND (0.011)	ND (0.0095)	ND (0.0059)	ND (0.0059)	0.11	ND (0.0072)
8260B	1,1,1,2-Tetrachloroethane	mg/kg	NS	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	1,1,1-Trichloroethane	mg/kg	820[2]	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	1,1,2,2-Tetrachloroethane	µg/kg	17[2]	ND (5.8)	ND (5.5)	ND (6.6)	ND (5.6)	ND (9.9)	ND (14)	ND (12)	ND (15)	ND (11)	ND (4.9)	ND (7.4)	ND (8.1)	ND (6.8)
8260B	1,1,2-Trichloroethane	µg/kg	18[2]	ND (5.8)	ND (5.5)	ND (6.6)	ND (5.6)	ND (9.9)	ND (14)	ND (12)	ND (15)	ND (11)	ND (4.9)	ND (7.4)	ND (8.1)	ND (6.8)
8260B	1,1-Dichloroethane	µg/kg	25,000[2]	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	1,1-Dichloroethene	µg/kg	30[2]	ND (9.8)	ND (9.3)	ND (11)	ND (9.5)	ND (17)	ND (24)	ND (20)	ND (25)	ND (18)	ND (8.4)	ND (13)	ND (14)	ND (12)
8260B	1,1-Dichloropropene	µg/kg	NS	ND (9.8)	ND (9.3)	ND (11)	ND (9.5)	ND (17)	ND (24)	ND (20)	ND (25)	ND (18)	ND (8.4)	ND (13)	ND (14)	ND (12)
8260B	1,2,3-Trichlorobenzene	µg/kg	NS	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	1,2,3-Trichloropropane	µg/kg	0.53[2]	**ND (20)**	**ND (19)**	**ND (22)**	**ND (19)**	**ND (34)**	**ND (47)**	**ND (40)**	**ND (50)**	**ND (37)**	**ND (17)**	**ND (25)**	**ND (27)**	**ND (23)**
8260B	1,2,4-Trichlorobenzene	µg/kg	850[2]	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	1,2,4-Trimethylbenzene	µg/kg	23,000[2]	7.8 J B	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	1,2-Dibromo-3-Chloropropane	µg/kg	NS	ND (98)	ND (93)	ND (110)	ND (95)	ND (170)	ND (240)	ND (200)	ND (250)	ND (180)	ND (84)	ND (130)	ND (140)	ND (120)
8260B	1,2-Dibromoethane	µg/kg	16[2]	**ND (20)**	**ND (19)**	**ND (22)**	**ND (19)**	**ND (34)**	**ND (47)**	**ND (40)**	**ND (50)**	**ND (37)**	**ND (17)**	**ND (25)**	**ND (27)**	**ND (23)**
8260B	1,2-Dichlorobenzene	µg/kg	5,100[2]	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	1,2-Dichloroethane	µg/kg	16[2]	**ND (20)**	**ND (19)**	**ND (22)**	**ND (19)**	**ND (34)**	**ND (47)**	**ND (40)**	**ND (50)**	**ND (37)**	**ND (17)**	**ND (25)**	**ND (27)**	**ND (23)**
8260B	1,2-Dichloropropane	µg/kg	18[2]	ND (6.6)	ND (6.2)	ND (7.4)	ND (6.4)	ND (11)	ND (16)	ND (13)	ND (17)	ND (12)	ND (5.6)	ND (8.4)	ND (9.2)	ND (7.8)
8260B	1,3,5-Trimethylbenzene	µg/kg	23,000[2]	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	12 J	ND (23)
8260B	1,3-Dichlorobenzene	µg/kg	28,000[2]	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)

Table F24 Site 10 Soil Sample Results (continued)

			Sample ID	12NC10SS001	12NC10SS002	12NC10SS003	12NC10SS004	12NC10SS005	12NC10SS018[D]	12NC10SS006	12NC10SS007	12NC10SS008	12NC10SS009	12NC10SS010	12NC10SS011	12NC10SS012
			Laboratory ID	34609-1	34609-2	34609-3	34609-4	34609-5	34609-18	34609-6	34609-7	34609-8	34609-9	34609-10	34609-11	34609-12
			Location ID	10SS001	10SS002	10SS003	10SS004	10SS005	10SS018	10SS006	10SS007	10SS008	10SS009	10SS010	10SS011	10SS012
			Sample Location	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A
			Collection Date	8/18/2012	8/18/2012	8/18/2012	8/18/2012	8/18/2012	8/18/2012	8/18/2012	8/18/2012	8/18/2012	8/18/2012	8/18/2012	8/19/2012	8/19/2012
Analytical Method	**Analyte**	**Unit**	**Cleanup Level**	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	FL	FL
8260B	1,3-Dichloropropane	µg/kg	NS	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	1,4-Dichlorobenzene	µg/kg	640[2]	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	2,2-Dichloropropane	µg/kg	NS	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	2-Butanone (MEK)	µg/kg	59,000[2]	ND (200)	ND (190)	ND (220)	ND (190)	ND (340)	ND (470)	ND (400)	ND (500)	ND (370)	120 J	180 J	ND (270)	ND (230)
8260B	2-Chlorotoluene	µg/kg	NS	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	2-Hexanone	µg/kg	NS	ND (98)	ND (93)	ND (110)	ND (95)	ND (170)	ND (240)	ND (200)	ND (250)	ND (180)	ND (84)	ND (130)	ND (140)	ND (120)
8260B	4-Chlorotoluene	µg/kg	NS	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	4-Methyl-2-pentanone (MIBK)	µg/kg	8,100[2]	ND (98)	ND (93)	ND (110)	ND (95)	ND (170)	ND (240)	ND (200)	ND (250)	ND (180)	ND (84)	ND (130)	ND (140)	ND (120)
8260B	Acetone	µg/kg	88,000[2]	140 QL, J	260 QL	400 QL	120 QL, J	370 QL, J	370 QL, J	480 QL, J	390 QL, J	440 QL, J	110 QL, J	250 QL, J	180 QL, J	260 QL, J
8260B	Benzene	µg/kg	2,000[1]	ND (6.6)	ND (6.2)	ND (7.4)	ND (6.4)	ND (11)	ND (16)	ND (13)	ND (17)	ND (12)	ND (5.6)	ND (8.4)	ND (9.2)	ND (7.8)
8260B	Bromobenzene	µg/kg	NS	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	Bromochloromethane	µg/kg	NS	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	Bromodichloromethane	µg/kg	44[2]	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	**ND (47)**	ND (40)	**ND (50)**	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	Bromoform	µg/kg	340[2]	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	Bromomethane	µg/kg	160[2]	ND (66)	ND (62)	ND (74)	ND (64)	ND (110)	**ND (160)**	ND (130)	**ND (170)**	ND (120)	ND (56)	ND (84)	ND (92)	ND (78)
8260B	Carbon disulfide	µg/kg	23[2]	ND (20)	ND (19)	ND (22)	ND (19)	**ND (34)**	**ND (47)**	**ND (40)**	**ND (50)**	**ND (37)**	ND (17)	**ND (25)**	**ND (27)**	**ND (23)**
8260B	Carbon tetrachloride	µg/kg	630[2]	ND (9.8)	ND (9.3)	ND (11)	ND (9.5)	ND (17)	ND (24)	ND (20)	ND (25)	ND (18)	ND (8.4)	ND (13)	ND (14)	ND (12)
8260B	Chlorobenzene	µg/kg	32[2]	ND (20)	ND (19)	ND (22)	ND (19)	**ND (34)**	**ND (47)**	**ND (40)**	**ND (50)**	**ND (37)**	ND (17)	ND (25)	ND (27)	ND (23)
8260B	Chlorodibromomethane	µg/kg	580,000[2]	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	Chloroethane	µg/kg	460[2]	ND (200)	ND (190)	ND (220)	ND (190)	ND (340)	ND (470)	ND (400)	**ND (500)**	ND (370)	ND (170)	ND (250)	ND (270)	ND (230)
8260B	Chloroform	µg/kg	210[2]	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	Chloromethane	µg/kg	210[2]	ND (200)	ND (190)	**ND (220)**	ND (190)	**ND (340)**	**ND (470)**	**ND (400)**	**ND (500)**	**ND (370)**	ND (170)	**ND (250)**	**ND (270)**	**ND (230)**
8260B	cis-1,2-Dichloroethene	µg/kg	240[2]	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	cis-1,3-Dichloropropene	µg/kg	33[2]	ND (6.6)	ND (6.2)	ND (7.4)	ND (6.4)	ND (11)	ND (16)	ND (13)	ND (17)	ND (12)	ND (5.6)	ND (8.4)	ND (9.2)	ND (7.8)
8260B	Dibromomethane	µg/kg	1,100[2]	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	Dichlorodifluoromethane	µg/kg	140,000[2]	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	Ethylbenzene	µg/kg	6,900[2]	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	Hexachlorobutadiene	µg/kg	120[2]	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	Isopropylbenzene	µg/kg	51,000[2]	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	m,p-Xylene	µg/kg	NS	14 J B	13 J B	16 J B	ND (13)	23 J B	ND (32)	ND (27)	33 J B	ND (24)	11 J B	ND (17)	20 J B	ND (16)
8260B	o-Xylene	µg/kg	NS	11 J B	ND (19)	12 J B	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	15 J B	ND (23)
8260B	Total Xylenes (m, p & o)	µg/kg	63000[2]	25 J B	13 J, B	28 J, B	ND (32)	23 J B	ND (79)	ND (77)	33 J B	ND (61)	11 J B	ND (42)	35 J B	ND (39)
8260B	Methyl tert-butyl ether	µg/kg	1,300[2]	ND (20)	ND (19)	ND (22)	110	390 QN	ND (47) QN	ND (40)	260	ND (37)	270	460	ND (27)	ND (23)
8260B	Methylene Chloride	µg/kg	16[2]	7.1 J B QL	12 J B QL	7.9 J B QL	8.4 J B QL	12 J B QL	**22 J B QL**	**24 J B QL**	**20 J B QL**	**16 J B QL**	15 J B QL	**28 J B QL**	**25 J B QL**	13 J B QL
8260B	Naphthalene	µg/kg	120,000[1]	ND (20)	7.9 J B	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	n-Butylbenzene	µg/kg	15,000[2]	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)

Table F24   Site 10 Soil Sample Results (continued)

			Sample ID	12NC10SS001	12NC10SS002	12NC10SS003	12NC10SS004	12NC10SS005	12NC10SS018[D]	12NC10SS006	12NC10SS007	12NC10SS008	12NC10SS009	12NC10SS010	12NC10SS011	12NC10SS012
			Laboratory ID	34609-1	34609-2	34609-3	34609-4	34609-5	34609-18	34609-6	34609-7	34609-8	34609-9	34609-10	34609-11	34609-12
			Location ID	10SS001	10SS002	10SS003	10SS004	10SS005	10SS018	10SS006	10SS007	10SS008	10SS009	10SS010	10SS011	10SS012
			Sample Location	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A
			Collection Date	8/18/2012	8/18/2012	8/18/2012	8/18/2012	8/18/2012	8/18/2012	8/18/2012	8/18/2012	8/18/2012	8/18/2012	8/18/2012	8/19/2012	8/19/2012
Analytical Method	**Analyte**	**Unit**	**Cleanup Level**	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	FL	FL
8260B	N-Propylbenzene	µg/kg	15,000[2]	11 J B	ND (19)	12 J B	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	p-Isopropyltoluene	µg/kg	15,000[2]	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	15 J	ND (23)
8260B	sec-Butylbenzene	µg/kg	12,000[2]	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	Styrene	µg/kg	960[2]	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	tert-Butylbenzene	µg/kg	12,000[2]	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	Tetrachloroethene	µg/kg	24[2]	ND (9.8)	ND (9.3)	ND (11)	ND (9.5)	ND (17)	**ND (24)**	ND (20)	**ND (25)**	ND (18)	ND (8.4)	ND (13)	ND (14)	ND (12)
8260B	Toluene	µg/kg	6,500[2]	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	trans-1,2-Dichloroethene	µg/kg	370[2]	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	trans-1,3-Dichloropropene	µg/kg	33[2]	ND (6.6)	ND (6.2)	ND (7.4)	ND (6.4)	ND (11)	ND (16)	ND (13)	ND (17)	ND (12)	ND (5.6)	ND (8.4)	ND (9.2)	ND (7.8)
8260B	Trichloroethene	µg/kg	20[2]	ND (6.6)	ND (6.2)	ND (7.4)	ND (6.4)	ND (11)	ND (16)	ND (13)	ND (17)	ND (12)	ND (5.6)	ND (8.4)	ND (9.2)	ND (7.8)
8260B	Trichlorofluoromethane	µg/kg	86[2]	ND (20)	ND (19)	ND (22)	ND (19)	ND (34)	ND (47)	ND (40)	ND (50)	ND (37)	ND (17)	ND (25)	ND (27)	ND (23)
8260B	Vinyl chloride	µg/kg	8.5[2]	ND (3.3)	ND (3.1)	ND (3.7)	ND (3.2)	ND (5.6)	ND (7.9)	ND (6.7)	ND (8.3)	ND (6.1)	ND (2.8)	ND (4.2)	ND (4.6)	ND (3.9)
8270C SIM	1-Methylnaphthalene	µg/kg	6,100[2]	ND (29)	21 J	ND (3.2)	ND (3.2)	ND (4.4)	ND (5.5)	ND (5.0)	ND (5.4)	ND (4.9)	ND (2.9)	ND (2.9)	26 J	36 J
8270C SIM	2-Methylnaphthalene	µg/kg	6,200[2]	ND (29)	32 J	ND (3.2)	ND (3.2)	ND (4.4)	ND (5.5)	ND (5.0)	ND (5.4)	ND (4.9)	ND (2.9)	ND (2.9)	66 J	77
8270C SIM	Acenaphthene	µg/kg	18,0000[2]	ND (29)	ND (30)	ND (3.2)	ND (3.2)	ND (4.4)	ND (5.5)	ND (5.0)	ND (5.4)	ND (4.9)	ND (2.9)	ND (2.9)	ND (35)	ND (36)
8270C SIM	Acenaphthylene	µg/kg	180,000[2]	ND (29)	ND (30)	ND (3.2)	ND (3.2)	ND (4.4)	ND (5.5)	ND (5.0)	ND (5.4)	ND (4.9)	ND (2.9)	ND (2.9)	ND (35)	ND (36)
8270C SIM	Anthracene	µg/kg	3,000,000[2]	ND (29)	ND (30)	ND (3.2)	ND (3.2)	ND (4.4)	ND (5.5)	ND (5.0)	ND (5.4)	ND (4.9)	ND (2.9)	ND (2.9)	ND (35)	ND (36)
8270C SIM	Benzo[a]anthracene	µg/kg	3,600[2]	ND (29)	ND (30)	ND (3.2)	2.7 J	ND (4.4)	ND (5.5)	ND (5.0)	ND (5.4)	ND (4.9)	ND (2.9)	ND (2.9)	ND (35)	ND (36)
8270C SIM	Benzo[a]pyrene	µg/kg	2,100[2]	ND (29)	ND (30)	ND (3.2)	ND (3.2)	ND (4.4)	ND (5.5)	ND (5.0)	ND (5.4)	ND (4.9)	ND (2.9)	ND (2.9)	ND (35)	ND (36)
8270C SIM	Benzo[b]fluoranthene	µg/kg	12,000[2]	17 J	ND (30)	ND (3.2)	4.2 J	ND (4.4)	ND (5.5)	ND (5.0)	ND (5.4)	5.4 J	ND (2.9)	ND (2.9)	ND (35)	ND (36)
8270C SIM	Benzo[g,h,i]perylene	µg/kg	38,700,000[2]	ND (29)	22 J	5.3 J	3.4 J	ND (4.4)	ND (5.5)	ND (5.0)	ND (5.4)	ND (4.9)	ND (2.9)	ND (2.9)	ND (35)	ND (36)
8270C SIM	Benzo[k]fluoranthene	µg/kg	120,000[2]	ND (29)	ND (30)	ND (3.2)	1.9 J	ND (4.4)	ND (5.5)	ND (5.0)	ND (5.4)	3.0 J	ND (2.9)	ND (2.9)	ND (35)	ND (36)
8270C SIM	Chrysene	µg/kg	360,000[2]	120	380	12	9.1	ND (4.4)	ND (5.5)	ND (5.0)	ND (5.4)	ND (4.9)	ND (2.9)	ND (2.9)	ND (35)	ND (36)
8270C SIM	Dibenz(a,h)anthracene	µg/kg	4,000[2]	27 J	21 J	2.9 J	ND (3.2)	ND (4.4)	ND (5.5)	ND (5.0)	ND (5.4)	ND (4.9)	ND (2.9)	ND (2.9)	ND (35)	ND (36)
8270C SIM	Fluoranthene	µg/kg	1,400,000[2]	34 J	140	4.5 J	4.8 J	ND (4.4)	5.1 J	ND (5.0)	ND (5.4)	ND (4.9)	ND (2.9)	ND (2.9)	ND (35)	ND (36)
8270C SIM	Fluorene	µg/kg	220,000[2]	ND (29)	ND (30)	ND (3.2)	ND (3.2)	ND (4.4)	8.1 J	17	8.9 J	13	ND (2.9)	ND (2.9)	ND (35)	ND (36)
8270C SIM	Indeno[1,2,3-cd]pyrene	µg/kg	41,000[2]	21 J	23 J	3.5 J	2.7 J	ND (4.4)	ND (5.5)	ND (5.0)	ND (5.4)	3.4 J	ND (2.9)	ND (2.9)	ND (35)	ND (36)
8270C SIM	Naphthalene	µg/kg	120,000[1]	ND (29)	44 J	ND (3.2)	ND (3.2)	ND (4.4)	ND (5.5)	ND (5.0)	ND (5.4)	ND (4.9)	ND (2.9)	ND (2.9)	53 J	64 J
8270C SIM	Phenanthrene	µg/kg	3,000,000[2]	53 J	ND (30)	15	36	3.1 J	6.0 J	4.7 J	4.3 J	4.2 J	ND (2.9)	ND (2.9)	130	ND (36)
8270C SIM	Pyrene	µg/kg	1,000,000[2]	190	500	13	9.2	ND (4.4)	5.9 J	7.2 J	ND (5.4)	2.9 J	ND (2.9)	ND (2.9)	380	330
AK101	GRO	mg/kg	300[1]	0.31 J B	ND (0.68)	ND (0.82)	ND (0.70)	ND (1.2) ML	ND (1.7) ML	ND (1.5) ML	ND (1.8) ML	ND (1.3) ML	ND (0.61)	ND (0.93)	ND (1.0)	ND (0.85) ML
AK102	DRO	mg/kg	9,200[1]	**10,000**	**11,000**	550	790	72 QN	130 QN	210	200	130	30 B	16 J B	**11,000**	8,600
AK103	RRO	mg/kg	9,200[1]	4500	4400	970	1,000	470 QN	800 QN	1,500	1,400	1,100	250	110 B	6,200	8,700

Notes:

[1] 2009 NE Cape Decision Document
[2] 18AAC75 Section 341, Tables B1 and B2, migration to groundwater
BOLD = Results or Non-detect result exceeds cleanup level.
[D] Sample is a field duplicate of the previous sample.
B = Analyte detected in the method or trip blank, results have potential high bias
DRO = Diesel Range Organics
FL= floor sample
GRO = Gasoline Range Organics
J = Result is an estimate
mg/kg = Milligrams per kilogram
MH = matrix interference suspected with potential high bias.
ML = matrix interference suspected with no directional bias.
MN = matrix interference suspected with no directional bias.
ND = Non-detect; limit of detection (LOD) is in parentheses
NS = Not Stated, the analyte is not listed in 18AAC75.341
PCB = Polychlorinated Biphenyl
QH = Laboratory Quality Control failure with potential high bias. Refer for CDQR for further details.
QL = Quality control fialure with potential low bias. Refer to CDQR for further details.
QN = Quality control failure with no directional bias.
RRO = Residual Range Organics
SW= sidewall sample
SIM = Selective Ion Monitoring
µg/kg = Micrograms per kilogram

Table F24 Site 10 Soil Sample Results (continued)

			Sample ID	12NC10SS013	12NC10SS014	12NC10SS015	12NC10SS016	12NC10SS019[D]	12NC10SS017	12NC10SS020	12NC10SS021	12NC10SS022	12NC10SS023
			Laboratory ID	34609-13	34609-14	34609-15	34609-16	34609-19	34609-17	34609-20	34609-21	34609-22	34609-23
			Location ID	10SS013	10SS014	10SS015	10SS016	10SS019	10SS017	10SS020	10SS021	10SS022	10SS023
			Sample Location	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation B	Excavation B	Excavation B	Excavation B
			Collection Date	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012
Analytical Method	**Analyte**	**Unit**	**Cleanup Level**	FL	FL	FL	FL	FL	FL	SW	SW	SW	SW
6020	Arsenic	mg/kg	11[1]	7.9	6.6	6.7	5.8	6.6	5.6	6.0	5.4	6.1	6.9
6020	Barium	mg/kg	1,100[2]	77	64 J MH	63	65	64	42	41	38	36	52
6020	Cadmium	mg/kg	5.0[2]	0.15 J	0.42 QN	0.32	0.21 J	0.22 J	0.21 J	0.28	0.29	0.13 J B	0.30
6020	Chromium (Total)	mg/kg	25[2]	22	18 J MH	20	22	22	17	11	10	17	19
6020	Lead	mg/kg	400[2]	33	42	35	26	28	31	44	40	35	42
6020	Nickel	mg/kg	86[2]	12	13	13	12	12	8.6	6.6	5.4	11	13
6020	Selenium	mg/kg	3.4[2]	1.5	1.3	1.3	1.3	1.3	1.1	1.1	1.0	1.4	1.0
6020	Silver	mg/kg	11.2[2]	0.10 J	0.13 J	0.12 J	0.14 J	0.14 J	0.15 J	0.14 J	0.16 J	0.12 J	0.12 J
6020	Vanadium	mg/kg	3,400[2]	40	34 J MH	38	36	37	27	23	22	31	32
6020	Zinc	mg/kg	4,100[2]	62	330 J MN	73	60	67	72	77	71	64	70
7471A	Mercury	mg/kg	1.4[2]	0.027	0.054 QN	0.049	0.033	0.037	0.015 J	0.013 J	0.0062 J	0.048	0.037
8015C	Ethylene glycol	mg/kg	190[2]	ND (0.67)	ND (0.69)	ND (0.69)	ND (0.66)	ND (0.67)	ND (0.66)	ND (0.67)	ND (0.66)	ND (0.65)	ND (0.66)
8082	PCB-1016	mg/kg	1[1]	ND (0.0063)	ND (0.0072)	ND (0.0078)	ND (0.0072)	ND (0.0081)	ND (0.0055)	ND (0.0052)	ND (0.0055)	ND (0.0059)	ND (0.0059)
8082	PCB-1221	mg/kg	1[1]	ND (0.013)	ND (0.014)	ND (0.016)	ND (0.014)	ND (0.016)	ND (0.011)	ND (0.010)	ND (0.011)	ND (0.012)	ND (0.012)
8082	PCB-1232	mg/kg	1[1]	ND (0.013)	ND (0.014)	ND (0.016)	ND (0.014)	ND (0.016)	ND (0.011)	ND (0.010)	ND (0.011)	ND (0.012)	ND (0.012)
8082	PCB-1242	mg/kg	1[1]	ND (0.0063)	ND (0.0072)	ND (0.0078)	ND (0.0072)	ND (0.0081)	ND (0.0055)	ND (0.0052)	ND (0.0055)	ND (0.0059)	ND (0.0059)
8082	PCB-1248	mg/kg	1[1]	ND (0.0063)	ND (0.0072)	ND (0.0078)	ND (0.0072)	ND (0.0081)	ND (0.0055)	ND (0.0052)	ND (0.0055)	ND (0.0059)	ND (0.0059)
8082	PCB-1254	mg/kg	1[1]	ND (0.0063)	ND (0.0072)	ND (0.0078)	0.024 MN	0.037 MN	ND (0.0055)	ND (0.0052)	ND (0.0055)	ND (0.0059)	ND (0.0059)
8082	PCB-1260	mg/kg	1[1]	ND (0.0063)	0.0097 J	0.0093 J	0.013 J MN	0.018 MN	ND (0.0055)	ND (0.0052)	ND (0.0055)	0.0058 J	0.0085 J
8260B	1,1,1,2-Tetrachloroethane	mg/kg	NS	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	1,1,1-Trichloroethane	mg/kg	820[2]	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	1,1,2,2-Tetrachloroethane	µg/kg	17[2]	ND (5.3)	ND (4.4)	ND (5.3)	ND (5.1)	ND (6.6)	ND (3.5)	ND (3.2)	ND (4.8)	ND (5.0)	ND (4.9)
8260B	1,1,2-Trichloroethane	µg/kg	18[2]	ND (5.3)	3.1 J	ND (5.3)	ND (5.1)	ND (6.6)	ND (3.5)	ND (3.2)	ND (4.8)	ND (5.0)	ND (4.9)
8260B	1,1-Dichloroethane	µg/kg	25,000[2]	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	1,1-Dichloroethene	µg/kg	30[2]	ND (9.0)	5.0 J	ND (9.0)	ND (8.7)	ND (11)	ND (5.9)	ND (5.4)	ND (8.2)	ND (8.6)	ND (8.3)
8260B	1,1-Dichloropropene	µg/kg	NS	ND (9.0)	ND (7.5)	ND (9.0)	ND (8.7)	ND (11)	ND (5.9)	ND (5.4)	ND (8.2)	ND (8.6)	ND (8.3)
8260B	1,2,3-Trichlorobenzene	µg/kg	NS	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	1,2,3-Trichloropropane	µg/kg	0.53[2]	**ND (18)**	**ND (15)**	**ND (18)**	**ND (17)**	**ND (23)**	**ND (12)**	**ND (11)**	**ND (16)**	**ND (17)**	**ND (17)**
8260B	1,2,4-Trichlorobenzene	µg/kg	850[2]	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	1,2,4-Trimethylbenzene	µg/kg	23,000[2]	15 J B	6.6 J B	21 J B	26 B	35 B	4.7 J B	ND (11)	6.4 J B	6.7 J B	6.2 J B
8260B	1,2-Dibromo-3-Chloropropane	µg/kg	NS	ND (90)	ND (75)	ND (90)	ND (87)	ND (110)	ND (59)	ND (54)	ND (82)	ND (86)	ND (83)
8260B	1,2-Dibromoethane	µg/kg	16[2]	**ND (18)**	12 J	**ND (18)**	**ND (17)**	**ND (23)**	ND (12)	ND (11)	**ND (16)**	**ND (17)**	**ND (17)**
8260B	1,2-Dichlorobenzene	µg/kg	5,100[2]	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	1,2-Dichloroethane	µg/kg	16[2]	**ND (18)**	ND (15)	**ND (18)**	**ND (17)**	**ND (23)**	ND (12)	ND (11)	**ND (16)**	**ND (17)**	**ND (17)**
8260B	1,2-Dichloropropane	µg/kg	18[2]	ND (6.0)	ND (5.0)	ND (6.0)	ND (5.8)	ND (7.5)	ND (4.0)	ND (3.6)	ND (5.5)	ND (5.7)	ND (5.5)
8260B	1,3,5-Trimethylbenzene	µg/kg	23,000[2]	130	6.1 J	9.9 J	12 J	16 J	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	1,3-Dichlorobenzene	µg/kg	28,000[2]	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)

Table F24   Site 10 Soil Sample Results (continued)

			Sample ID	12NC10SS013	12NC10SS014	12NC10SS015	12NC10SS016	12NC10SS019[D]	12NC10SS017	12NC10SS020	12NC10SS021	12NC10SS022	12NC10SS023
			Laboratory ID	34609-13	34609-14	34609-15	34609-16	34609-19	34609-17	34609-20	34609-21	34609-22	34609-23
			Location ID	10SS013	10SS014	10SS015	10SS016	10SS019	10SS017	10SS020	10SS021	10SS022	10SS023
			Sample Location	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation B	Excavation B	Excavation B	Excavation B
			Collection Date	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012
Analytical Method	**Analyte**	**Unit**	**Cleanup Level**	FL	FL	FL	FL	FL	FL	SW	SW	SW	SW
8260B	1,3-Dichloropropane	µg/kg	NS	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	1,4-Dichlorobenzene	µg/kg	640[2]	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	2,2-Dichloropropane	µg/kg	NS	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	2-Butanone (MEK)	µg/kg	59,000[2]	110 J	ND (150)	ND (180)	ND (170)	ND (230)	ND (120)	ND (110)	130 J	ND (170)	ND (170)
8260B	2-Chlorotoluene	µg/kg	NS	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	2-Hexanone	µg/kg	NS	ND (90)	ND (75)	ND (90)	ND (87)	ND (110)	ND (59)	ND (54)	ND (82)	ND (86)	ND (83)
8260B	4-Chlorotoluene	µg/kg	NS	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	4-Methyl-2-pentanone (MIBK)	µg/kg	8,100[2]	46 J	ND (75)	ND (90)	ND (87)	ND (110)	ND (59)	ND (54)	ND (82)	ND (86)	ND (83)
8260B	Acetone	µg/kg	88,000[2]	170 QL, J	80 J	240 QL	68 QL, J	170 QL, J	58 QL, J	50 QL, J	130 J	110 J	110 J
8260B	Benzene	µg/kg	2,000[1]	ND (6.0)	2.6 J	ND (6.0)	ND (5.8)	ND (7.5)	ND (4.0)	ND (3.6)	ND (5.5)	ND (5.7)	ND (5.5)
8260B	Bromobenzene	µg/kg	NS	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	Bromochloromethane	µg/kg	NS	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	Bromodichloromethane	µg/kg	44[2]	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	Bromoform	µg/kg	340[2]	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	Bromomethane	µg/kg	160[2]	ND (60)	ND (50)	ND (60)	ND (58)	ND (75)	ND (40)	ND (36)	ND (55)	ND (57)	ND (55)
8260B	Carbon disulfide	µg/kg	23[2]	ND (18)	6.6 J	ND (18)	ND (17)	**ND (23)**	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	Carbon tetrachloride	µg/kg	630[2]	ND (9.0)	7.3 J	ND (9.0)	ND (8.7)	ND (11)	ND (5.9)	ND (5.4)	ND (8.2)	ND (8.6)	ND (8.3)
8260B	Chlorobenzene	µg/kg	32[2]	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	Chlorodibromomethane	µg/kg	580,000[2]	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	Chloroethane	µg/kg	460[2]	ND (180)	ND (150)	ND (180)	ND (170)	ND (230)	ND (120)	ND (110)	ND (160)	ND (170)	ND (170)
8260B	Chloroform	µg/kg	210[2]	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	Chloromethane	µg/kg	210[2]	ND (180)	ND (150)	ND (180)	ND (170)	**ND (230)**	ND (120)	ND (110)	ND (160)	ND (170)	ND (170)
8260B	cis-1,2-Dichloroethene	µg/kg	240[2]	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	cis-1,3-Dichloropropene	µg/kg	33[2]	ND (6.0)	8.8 QL	ND (6.0)	ND (5.8)	ND (7.5)	ND (4.0)	ND (3.6)	ND (5.5) QL	ND (5.7) QL	ND (5.5) QL
8260B	Dibromomethane	µg/kg	1,100[2]	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	Dichlorodifluoromethane	µg/kg	140,000[2]	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	Ethylbenzene	µg/kg	6,900[2]	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	Hexachlorobutadiene	µg/kg	120[2]	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	Isopropylbenzene	µg/kg	51,000[2]	7.6 J	5.8 J	6.6 J	6.7 J	8.8 J	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	m,p-Xylene	µg/kg	NS	18 J B	14 J B	14 J B	17 J B	26 J B	8.3 J B	ND (7.2)	11 J B	12 J B	ND (11)
8260B	o-Xylene	µg/kg	NS	12 J B	9.7 J B	12 J B	15 J B	20 J B	6.6 J B	ND (11)	ND (16)	ND (17)	ND (17)
8260B	Total Xylenes (m, p & o)	µg/kg	63000[2]	30 J B	23.7 J B	26 J B	32 J B	46 J B	14.9 J B	ND (18.2)	11 J B	12 J B	ND (28)
8260B	Methyl tert-butyl ether	µg/kg	1,300[2]	290	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	74	280	98	ND (17)
8260B	Methylene Chloride	µg/kg	16[2]	12 J B QL	10 J B	15 J B QL	6.0 J B QL	8.9 J B QL	6.3 J B QL	8.9 J B QL	9.8 J B	8.8 J B	9.9 J B
8260B	Naphthalene	µg/kg	120,000[1]	130 B	7.1 J B	9.0 J B	9.2 J B	11 J B	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	n-Butylbenzene	µg/kg	15,000[2]	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)

Table F24 Site 10 Soil Sample Results (continued)

			Sample ID	12NC10SS013	12NC10SS014	12NC10SS015	12NC10SS016	12NC10SS019[D]	12NC10SS017	12NC10SS020	12NC10SS021	12NC10SS022	12NC10SS023
			Laboratory ID	34609-13	34609-14	34609-15	34609-16	34609-19	34609-17	34609-20	34609-21	34609-22	34609-23
			Location ID	10SS013	10SS014	10SS015	10SS016	10SS019	10SS017	10SS020	10SS021	10SS022	10SS023
			Sample Location	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation A	Excavation B	Excavation B	Excavation B	Excavation B
			Collection Date	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012
Analytical Method	**Analyte**	**Unit**	**Cleanup Level**	FL	FL	FL	FL	FL	FL	SW	SW	SW	SW
8260B	N-Propylbenzene	µg/kg	15,000[2]	ND (18)	9.5 J B	12 J B	13 J B	16 J B	ND (12)	ND (11)	8.8 J B	ND (17)	ND (17)
8260B	p-Isopropyltoluene	µg/kg	15,000[2]	120 B	7.7 J	9.3 J B	9.1 J B	12 J B	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	sec-Butylbenzene	µg/kg	12,000[2]	13 J	5.9 J	6.9 J	6.6 J	9.2 J	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	Styrene	µg/kg	960[2]	ND (18)	7.8 J B	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	tert-Butylbenzene	µg/kg	12,000[2]	14 J	7.1 J	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	Tetrachloroethene	µg/kg	24[2]	ND (9.0)	3.1 J	ND (9.0)	ND (8.7)	ND (11)	ND (5.9)	ND (5.4)	ND (8.2)	ND (8.6)	ND (8.3)
8260B	Toluene	µg/kg	6,500[2]	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	trans-1,2-Dichloroethene	µg/kg	370[2]	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	trans-1,3-Dichloropropene	µg/kg	33[2]	ND (6.0)	8.8	ND (6.0)	ND (5.8)	ND (7.5)	ND (4.0)	ND (3.6)	ND (5.5)	ND (5.7)	ND (5.5)
8260B	Trichloroethene	µg/kg	20[2]	ND (6.0)	3.2 J	ND (6.0)	ND (5.8)	ND (7.5)	ND (4.0)	ND (3.6)	ND (5.5)	ND (5.7)	ND (5.5)
8260B	Trichlorofluoromethane	µg/kg	86[2]	ND (18)	ND (15)	ND (18)	ND (17)	ND (23)	ND (12)	ND (11)	ND (16)	ND (17)	ND (17)
8260B	Vinyl chloride	µg/kg	8.5[2]	ND (3.0)	2.5 J	ND (3.0)	ND (2.9)	ND (3.8)	ND (2.0)	ND (1.8)	ND (2.7)	ND (2.9)	ND (2.8)
8270C SIM	1-Methylnaphthalene	µg/kg	6,100[2]	540	2.2 J	ND (3.8)	4.0 J	4.0 J	ND (2.9)	ND (2.7)	ND (2.7)	ND (3.1)	ND (2.9)
8270C SIM	2-Methylnaphthalene	µg/kg	6,200[2]	190	ND (3.5)	ND (3.8)	4.5 J	8.9	ND (2.9)	ND (2.7)	ND (2.7)	3.1 J	ND (2.9)
8270C SIM	Acenaphthene	µg/kg	18,0000[2]	87	3.5 J	ND (3.8)	ND (3.7)	ND (4.0)	ND (2.9)	ND (2.7)	ND (2.7)	ND (3.1)	ND (2.9)
8270C SIM	Acenaphthylene	µg/kg	180,000[2]	120 QH	ND (3.5)	ND (3.8)	ND (3.7)	ND (4.0)	ND (2.9)	ND (2.7)	ND (2.7)	ND (3.1)	ND (2.9)
8270C SIM	Anthracene	µg/kg	3,000,000[2]	ND (3.3)	7.8 QH	ND (3.8)	ND (3.7)	ND (4.0)	ND (2.9)	ND (2.7)	ND (2.7)	ND (3.1)	ND (2.9)
8270C SIM	Benzo[a]anthracene	µg/kg	3,600[2]	ND (3.3)	12	ND (3.8)	ND (3.7)	5.3 J	ND (2.9)	ND (2.7)	ND (2.7)	ND (3.1)	ND (2.9)
8270C SIM	Benzo[a]pyrene	µg/kg	2,100[2]	ND (3.3)	ND (3.5)	ND (3.8)	ND (3.7)	ND (4.0)	ND (2.9)	ND (2.7)	ND (2.7)	ND (3.1)	ND (2.9)
8270C SIM	Benzo[b]fluoranthene	µg/kg	12,000[2]	ND (3.3)	ND (3.5)	ND (3.8)	ND (3.7)	ND (4.0)	ND (2.9)	ND (2.7)	ND (2.7)	ND (3.1)	ND (2.9)
8270C SIM	Benzo[g,h,i]perylene	µg/kg	38,700,000[2]	ND (3.3)	4.9 J	ND (3.8)	ND (3.7)	ND (4.0)	ND (2.9)	ND (2.7)	ND (2.7)	ND (3.1)	ND (2.9)
8270C SIM	Benzo[k]fluoranthene	µg/kg	120,000[2]	ND (3.3)	ND (3.5)	ND (3.8)	ND (3.7)	ND (4.0)	ND (2.9)	ND (2.7)	ND (2.7)	ND (3.1)	ND (2.9)
8270C SIM	Chrysene	µg/kg	360,000[2]	ND (3.3)	14	ND (3.8)	ND (3.7)	11	ND (2.9)	ND (2.7)	ND (2.7)	ND (3.1)	ND (2.9)
8270C SIM	Dibenz(a,h)anthracene	µg/kg	4,000[2]	ND (3.3)	ND (3.5)	ND (3.8)	ND (3.7)	ND (4.0)	ND (2.9)	ND (2.7)	ND (2.7)	ND (3.1)	ND (2.9)
8270C SIM	Fluoranthene	µg/kg	1,400,000[2]	4.1 J	23	ND (3.8)	ND (3.7)	13	ND (2.9)	ND (2.7)	ND (2.7)	ND (3.1)	ND (2.9)
8270C SIM	Fluorene	µg/kg	220,000[2]	170	6.1 J	ND (3.8)	ND (3.7)	ND (4.0)	ND (2.9)	ND (2.7)	ND (2.7)	ND (3.1)	ND (2.9)
8270C SIM	Indeno[1,2,3-cd]pyrene	µg/kg	41,000[2]	ND (3.3)	ND (3.5)	ND (3.8)	ND (3.7)	ND (4.0)	ND (2.9)	ND (2.7)	ND (2.7)	ND (3.1)	ND (2.9)
8270C SIM	Naphthalene	µg/kg	120,000[1]	150	ND (3.5)	ND (3.8)	ND (3.7)	ND (4.0)	ND (2.9)	ND (2.7)	ND (2.7)	ND (3.1)	ND (2.9)
8270C SIM	Phenanthrene	µg/kg	3,000,000[2]	240	31	40	51	72	ND (2.9)	ND (2.7)	ND (2.7)	ND (3.1)	2.3 J
8270C SIM	Pyrene	µg/kg	1,000,000[2]	4.5 J	27	6.4 J	5.9 J	15	ND (2.9)	ND (2.7)	ND (2.7)	ND (3.1)	ND (2.9)
AK101	GRO	mg/kg	300[1]	12	0.23 J B	ND (0.66)	0.37 J B	ND (0.83)	ND (0.44)	ND (0.40)	ND (0.60)	ND (0.63)	ND (0.61)
AK102	DRO	mg/kg	9,200[1]	1,900	34 B	2,900	3,000	3,700	490	13 J B	12 J B	36 B	49 B
AK103	RRO	mg/kg	9,200[1]	180	260 J, MH	1,800	1,400	1,700	350	27 J B	37 J B	300	460

Notes:

[1] 2009 NE Cape Decision Document
[2] 18AAC75 Section 341, Tables B1 and B2, migration to groundwater
BOLD = Results or Non-detect result exceeds cleanup level.
[D] Sample is a field duplicate of the previous sample.
B = Analyte detected in the method or trip blank, results have potential hig
DRO = Diesel Range Organics
FL= floor sample
GRO = Gasoline Range Organics
J = Result is an estimate
mg/kg = Milligrams per kilogram
MH = matrix interference suspected with potential high bias.
ML = matrix interference suspected with no directional bias.
MN = matrix interference suspected with no directional bias.
ND = Non-detect; limit of detection (LOD) is in parentheses
NS = Not Stated
PCB = Polychlorinated Biphenyl
QH = Laboratory Quality Control failure with potential high bias. Refer for CDQR for further details.
QL = Quality control fialure with potential low bias. Refer to CDQR for further details.
QN = Quality control failure with no directional bias.
RRO = Residual Range Organics
SW= sidewall sample
SIM = Selective Ion Monitoring
µg/kg = Micrograms per kilogram

Table F24 Site 10 Soil Sample Results (continued)

			Sample ID	12NC10SS024	12NC10SS025	12NC10SS026	12NC10SS027	12NC10SS028	12NC10SS029	12NC10SS030	12NC10SS032[D]	12NC10SS031	12NC10SS033	12NC10SS034	12NC10SS035	12NC10SS036	12NC10SS037[D]
			Laboratory ID	34609-24	34609-25	34609-26	34609-27	34609-28	34609-29	34609-30	34609-32	34609-31	34609-33	34609-34	34609-35	34609-36	34609-37
			Location ID	10SS024	10SS025	10SS026	10SS027	10SS028	10SS029	10SS030	10SS032	10SS031	10SS033	10SS034	10SS035	10SS036	10SS037
			Sample Location	Excavation B	Excavation B	Excavation B	Excavation B	Excavation B	Excavation B	Excavation B	Excavation B	Excavation B	Stockpile	Stockpile	Stockpile	Stockpile	Stockpile
			Collection Date	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012
Analytical Method	**Analyte**	**Unit**	**Cleanup Level**	SW	SW	SW	FL	FL	FL	FL	FL	FL	SW	SW	SW	SW	SW
6020	Arsenic	mg/kg	11[1]	7.1	6.4	7.8	5.6	5.9	5.0	6.1	5.7	4.2	6.9	6.6	5.9	6.8	6.8
6020	Barium	mg/kg	1,100[2]	33	39	43	42	41	36	44	36	23	66	46	51	54	50
6020	Cadmium	mg/kg	5.0[2]	0.16 J	0.12 J B	0.31	0.20	0.21	0.17 J	0.42	0.35	0.22	0.20 J	0.28	0.19 J	0.30	0.27
6020	Chromium (Total)	mg/kg	25[2]	16	16	14	12	15	11	9.9	8.9	7.7	19	19	16	17	16
6020	Lead	mg/kg	400[2]	36	18	54	28	30	26	64	53	34	27	30	27	49	45
6020	Nickel	mg/kg	86[2]	12	9.4	8.4	7.3	10	7.0	7.2	6.4	3.9	13	11	11	11	11
6020	Selenium	mg/kg	3.4[2]	1.3	1.5	1.3	0.98	1.2	0.97	1.2	1.1	0.82	1.3	1.2	1.2	1.3	1.4
6020	Silver	mg/kg	11.2[2]	0.085 J	0.089 J	0.22	0.14 J	0.11 J	0.14 J	0.16 J	0.14 J	0.20	0.11 J	0.12 J	0.10 J	0.18 J	0.16 J
6020	Vanadium	mg/kg	3,400[2]	33	35	30	25	27	22	23	20	17	38	30	31	29	30
6020	Zinc	mg/kg	4,100[2]	62	44	93	54	53	77	170	110	58	90	64	55	92	100
7471A	Mercury	mg/kg	1.4[2]	0.028	0.047	0.012 J	0.0095 J	0.033	0.022	0.011 J	0.0067 J	ND (0.0079)	0.022	0.015 J	0.029	0.028	0.031
8015C	Ethylene glycol	mg/kg	190[2]	ND (0.68)	ND (0.67)	ND (0.65)	ND (0.68)	**350**	ND (0.66)	**15,000**	**16,000**	ND (0.67)	ND (0.66)	14	ND (0.68)	**39,000**	**40,000**
8082	PCB-1016	mg/kg	1[1]	ND (0.0056)	ND (0.0064)	ND (0.0055)	ND (0.0053)	ND (0.0056)	ND (0.0053)	ND (0.0054)	ND (0.0056)	ND (0.0052)	ND (0.0059)	ND (0.0055)	ND (0.0059)	ND (0.0061)	ND (0.0062)
8082	PCB-1221	mg/kg	1[1]	ND (0.011)	ND (0.013)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.010)	ND (0.012)	ND (0.011)	ND (0.012)	ND (0.012)	ND (0.012)
8082	PCB-1232	mg/kg	1[1]	ND (0.011)	ND (0.013)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.010)	ND (0.012)	ND (0.011)	ND (0.012)	ND (0.012)	ND (0.012)
8082	PCB-1242	mg/kg	1[1]	ND (0.0056)	ND (0.0064)	ND (0.0055)	ND (0.0053)	ND (0.0056)	ND (0.0053)	ND (0.0054)	ND (0.0056)	ND (0.0052)	ND (0.0059)	ND (0.0055)	ND (0.0059)	ND (0.0061)	ND (0.0062)
8082	PCB-1248	mg/kg	1[1]	ND (0.0056)	ND (0.0064)	ND (0.0055)	ND (0.0053)	ND (0.0056)	ND (0.0053)	ND (0.0054)	ND (0.0056)	ND (0.0052)	ND (0.0059)	ND (0.0055)	ND (0.0059)	ND (0.0061)	ND (0.0062)
8082	PCB-1254	mg/kg	1[1]	ND (0.0056)	ND (0.0064)	ND (0.0055)	ND (0.0053)	ND (0.0056)	ND (0.0053)	ND (0.0054)	ND (0.0056)	ND (0.0052)	ND (0.0059)	0.27 MN	ND (0.0059)	ND (0.0061)	ND (0.0062)
8082	PCB-1260	mg/kg	1[1]	0.0038 J	ND (0.0064)	0.0079 J	ND (0.0053)	0.018	ND (0.0053)	ND (0.0054)	ND (0.0056)	ND (0.0052)	ND (0.0059)	0.10 J ML	0.020	ND (0.0061)	ND (0.0062)
8260B	1,1,1,2-Tetrachloroethane	mg/kg	NS	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)
8260B	1,1,1-Trichloroethane	mg/kg	820[2]	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)
8260B	1,1,2,2-Tetrachloroethane	µg/kg	17[2]	ND (4.5)	ND (6.9)	ND (3.5)	ND (3.7)	ND (4.5)	ND (4.1) QL	ND (4.1)	ND (3.7)	ND (2.7)	ND (5.1)	ND (4.8)	ND (5.2)	ND (4.5)	ND (4.4)
8260B	1,1,2-Trichloroethane	µg/kg	18[2]	ND (4.5)	ND (6.9)	ND (3.5)	ND (3.7)	ND (4.5)	ND (4.1) QL	ND (4.1)	ND (3.7)	ND (2.7)	ND (5.1)	ND (4.8)	ND (5.2)	ND (4.5)	ND (4.4)
8260B	1,1-Dichloroethane	µg/kg	25,000[2]	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)
8260B	1,1-Dichloroethene	µg/kg	30[2]	ND (7.7)	ND (12)	ND (6.0)	ND (6.3)	ND (7.6)	ND (7.0) QL	ND (7.0)	ND (6.3)	ND (4.6)	ND (8.7)	ND (8.1)	ND (8.9)	ND (7.6)	ND (7.6)
8260B	1,1-Dichloropropene	µg/kg	NS	ND (7.7)	ND (12)	ND (6.0)	ND (6.3)	ND (7.6)	ND (7.0) QL	ND (7.0)	ND (6.3)	ND (4.6)	ND (8.7)	ND (8.1)	ND (8.9)	ND (7.6)	ND (7.6)
8260B	1,2,3-Trichlorobenzene	µg/kg	NS	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)
8260B	1,2,3-Trichloropropane	µg/kg	0.53[2]	**ND (15)**	**ND (23)**	**ND (12)**	**ND (13)**	**ND (15)**	**ND (14) QL**	**ND (14)**	**ND (13)**	**ND (9.3)**	**ND (17)**	**ND (16)**	**ND (18)**	**ND (15)**	**ND (15)**
8260B	1,2,4-Trichlorobenzene	µg/kg	850[2]	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)
8260B	1,2,4-Trimethylbenzene	µg/kg	23,000[2]	ND (15)	ND (23)	ND (12)	4.7 J B	170	5.7 J B QL	6.6 J B	6.6 J B	ND (9.3)	ND (17)	ND (16)	ND (18)	15 J B	13 J B
8260B	1,2-Dibromo-3-Chloropropane	µg/kg	NS	ND (77)	ND (120)	ND (60)	ND (63)	ND (76)	ND (70) QL	ND (70)	ND (63)	ND (46)	ND (87)	ND (81)	ND (89)	ND (76)	ND (76)
8260B	1,2-Dibromoethane	µg/kg	16[2]	ND (15)	**ND (23)**	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	**ND (17)**	**ND (16)**	**ND (18)**	ND (15)	ND (15)
8260B	1,2-Dichlorobenzene	µg/kg	5,100[2]	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)
8260B	1,2-Dichloroethane	µg/kg	16[2]	ND (15)	**ND (23)**	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	**ND (17)**	**ND (16)**	**ND (18)**	ND (15)	ND (15)
8260B	1,2-Dichloropropane	µg/kg	18[2]	ND (5.1)	ND (7.8)	ND (4.0)	ND (4.2)	ND (5.1)	ND (4.7) QL	ND (4.7)	ND (4.2)	ND (3.1)	ND (5.8)	ND (5.4)	ND (5.9)	ND (5.1)	ND (5.1)
8260B	1,3,5-Trimethylbenzene	µg/kg	23,000[2]	ND (15)	ND (23)	ND (12)	ND (13)	67	5.1 J QL	4.9 J	4.4 J	ND (9.3)	ND (17)	ND (16)	ND (18)	10 J	11 J
8260B	1,3-Dichlorobenzene	µg/kg	28,000[2]	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)

Table F24 Site 10 Soil Sample Results (continued)

			Sample ID	12NC10SS024	12NC10SS025	12NC10SS026	12NC10SS027	12NC10SS028	12NC10SS029	12NC10SS030	12NC10SS032[D]	12NC10SS031	12NC10SS033	12NC10SS034	12NC10SS035	12NC10SS036	12NC10SS037[D]
			Laboratory ID	34609-24	34609-25	34609-26	34609-27	34609-28	34609-29	34609-30	34609-32	34609-31	34609-33	34609-34	34609-35	34609-36	34609-37
			Location ID	10SS024	10SS025	10SS026	10SS027	10SS028	10SS029	10SS030	10SS032	10SS031	10SS033	10SS034	10SS035	10SS036	10SS037
			Sample Location	Excavation B	Excavation B	Excavation B	Excavation B	Excavation B	Excavation B	Excavation B	Excavation B	Excavation B	Stockpile	Stockpile	Stockpile	Stockpile	Stockpile
			Collection Date	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012
Analytical Method	**Analyte**	**Unit**	**Cleanup Level**	SW	SW	SW	FL	FL	FL	FL	FL	FL	SW	SW	SW	SW	SW
8260B	1,3-Dichloropropane	µg/kg	NS	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)
8260B	1,4-Dichlorobenzene	µg/kg	640[2]	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)
8260B	2,2-Dichloropropane	µg/kg	NS	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)
8260B	2-Butanone (MEK)	µg/kg	59,000[2]	ND (150)	ND (230)	ND (120)	ND (130)	ND (150)	ND (140) QL	ND (140)	ND (130)	ND (93)	ND (170)	ND (160)	91 J	100 J	ND (150)
8260B	2-Chlorotoluene	µg/kg	NS	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)
8260B	2-Hexanone	µg/kg	NS	ND (77)	ND (120)	ND (60)	ND (63)	ND (76)	ND (70) QL	ND (70)	ND (63)	ND (46)	ND (87)	ND (81)	ND (89)	ND (76)	ND (76)
8260B	4-Chlorotoluene	µg/kg	NS	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)
8260B	4-Methyl-2-pentanone (MIBK)	µg/kg	8,100[2]	ND (77)	ND (120)	ND (60)	ND (63)	ND (76)	ND (70) QL	ND (70)	ND (63)	ND (46)	ND (87)	ND (81)	ND (89)	27 J	30 J
8260B	Acetone	µg/kg	88,000[2]	130 J	140 J	90 J	63 J	91 J	130 J QL	1,300	890	ND (93)	98 J	96 J	170 J	130 J	160 J
8260B	Benzene	µg/kg	2,000[1]	ND (5.1)	ND (7.8)	ND (4.0)	ND (4.2)	ND (5.1)	ND (4.7) QL	ND (4.7)	ND (4.2)	ND (3.1)	ND (5.8)	ND (5.4)	ND (5.9)	ND (5.1)	ND (5.1)
8260B	Bromobenzene	µg/kg	NS	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)
8260B	Bromochloromethane	µg/kg	NS	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)
8260B	Bromodichloromethane	µg/kg	44[2]	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)
8260B	Bromoform	µg/kg	340[2]	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)
8260B	Bromomethane	µg/kg	160[2]	ND (51)	ND (78)	ND (40)	ND (42)	ND (51)	ND (47) QL	ND (47)	ND (42)	ND (31)	ND (58)	ND (54)	ND (59)	ND (51)	ND (51)
8260B	Carbon disulfide	µg/kg	23[2]	ND (15)	**ND (23)**	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)
8260B	Carbon tetrachloride	µg/kg	630[2]	ND (7.7)	ND (12)	ND (6.0)	ND (6.3)	ND (7.6)	ND (7.0) QL	ND (7.0)	ND (6.3)	ND (4.6)	ND (8.7)	ND (8.1)	ND (8.9)	ND (7.6)	ND (7.6)
8260B	Chlorobenzene	µg/kg	32[2]	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)
8260B	Chlorodibromomethane	µg/kg	580,000[2]	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)
8260B	Chloroethane	µg/kg	460[2]	ND (150)	ND (230)	ND (120)	ND (130)	ND (150)	ND (140) QL	ND (140)	ND (130)	ND (93)	ND (170)	ND (160)	ND (180)	ND (150)	ND (150)
8260B	Chloroform	µg/kg	210[2]	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)
8260B	Chloromethane	µg/kg	210[2]	ND (150)	**ND (230)**	ND (120)	ND (130)	ND (150)	ND (140) QL	ND (140)	ND (130)	ND (93)	ND (170)	ND (160)	ND (180)	ND (150)	ND (150)
8260B	cis-1,2-Dichloroethene	µg/kg	240[2]	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)
8260B	cis-1,3-Dichloropropene	µg/kg	33[2]	ND (5.1) QL	ND (7.8) QL	ND (4.0) QL	ND (4.2) QL	ND (5.1) QL	ND (4.7) QL	ND (4.7) QL	ND (4.2) QL	ND (3.1) QL	ND (5.8) QL	ND (5.4) QL	ND (5.9) QL	ND (5.1) QL	ND (5.1) QL
8260B	Dibromomethane	µg/kg	1,100[2]	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)
8260B	Dichlorodifluoromethane	µg/kg	140,000[2]	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)
8260B	Ethylbenzene	µg/kg	6,900[2]	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)
8260B	Hexachlorobutadiene	µg/kg	120[2]	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)
8260B	Isopropylbenzene	µg/kg	51,000[2]	ND (15)	ND (23)	ND (12)	ND (13)	12 J	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	5.8 J	5.4 J
8260B	m,p-Xylene	µg/kg	NS	ND (10)	ND (16)	ND (8.0)	8.6 J B	31 B	9.6 J B QL	13 J B	12 J B	6.6 J B	12 J B	11 J B	ND (12)	17 J B	16 J B
8260B	o-Xylene	µg/kg	NS	ND (15)	ND (23)	ND (12)	ND (13)	21 B	ND (14) QL	8.4 J B	7.8 J B	5.3 J B	ND (17)	ND (16)	ND (18)	11 J B	11 J B
8260B	Total Xylenes (m, p & o)	µg/kg	63000[2]	ND (25)	ND (39)	ND (20)	8.6 J B	52 B	9.6 J B QL	21.4 J B	19.8 J B	11.9 J B	12 J B	11 J B	ND (30)	28 J B	27 J B
8260B	Methyl tert-butyl ether	µg/kg	1,300[2]	ND (15)	ND (23)	ND (12)	87	100	ND (14) QL	ND (14)	83	ND (9.3)	110	ND (16)	290	240 QN	ND (15) QN
8260B	Methylene Chloride	µg/kg	16[2]	8.1 J B	15 J B	7.5 J B	8.8 J B	10 J B	8.6 J B QL	10 J B	8.9 J B	5.0 J B	12 J B	11 J B	14 J B	**22 B**	**19 J B**
8260B	Naphthalene	µg/kg	120,000[1]	ND (15)	ND (23)	ND (12)	ND (13)	160	ND (14) QL	8.2 J B	11 J B	ND (9.3)	ND (17)	ND (16)	7.5 J B	20 B	18 J B
8260B	n-Butylbenzene	µg/kg	15,000[2]	ND (15)	ND (23)	ND (12)	ND (13)	160	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)

Table F24 Site 10 Soil Sample Results (continued)

			Sample ID	12NC10SS024	12NC10SS025	12NC10SS026	12NC10SS027	12NC10SS028	12NC10SS029	12NC10SS030	12NC10SS032[D]	12NC10SS031	12NC10SS033	12NC10SS034	12NC10SS035	12NC10SS036	12NC10SS037[D]
			Laboratory ID	34609-24	34609-25	34609-26	34609-27	34609-28	34609-29	34609-30	34609-32	34609-31	34609-33	34609-34	34609-35	34609-36	34609-37
			Location ID	10SS024	10SS025	10SS026	10SS027	10SS028	10SS029	10SS030	10SS032	10SS031	10SS033	10SS034	10SS035	10SS036	10SS037
			Sample Location	Excavation B	Excavation B	Excavation B	Excavation B	Excavation B	Excavation B	Excavation B	Excavation B	Excavation B	Stockpile	Stockpile	Stockpile	Stockpile	Stockpile
			Collection Date	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012	8/19/2012
Analytical Method	**Analyte**	**Unit**	**Cleanup Level**	SW	SW	SW	FL	FL	FL	FL	FL	FL	SW	SW	SW	SW	SW
8260B	N-Propylbenzene	µg/kg	15,000[2]	ND (15)	ND (23)	ND (12)	ND (13)	22 B	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	9.2 J B	8.8 J B
8260B	p-Isopropyltoluene	µg/kg	15,000[2]	ND (15)	ND (23)	ND (12)	ND (13)	42	ND (14) QL	6.6 J B	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	9.7 J	8.4 J
8260B	sec-Butylbenzene	µg/kg	12,000[2]	ND (15)	ND (23)	ND (12)	ND (13)	26	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	5.8 J	5.3 J
8260B	Styrene	µg/kg	960[2]	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	6.5 J B	5.8 J B	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)
8260B	tert-Butylbenzene	µg/kg	12,000[2]	ND (15)	ND (23)	ND (12)	ND (13)	7.5 J	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	6.2 J
8260B	Tetrachloroethene	µg/kg	24[2]	ND (7.7)	ND (12)	ND (6.0)	ND (6.3)	2.5 J	15 QL	**25**	23	ND (4.6)	ND (8.7)	ND (8.1)	ND (8.9)	**160**	**130**
8260B	Toluene	µg/kg	6,500[2]	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	7.6 J	7.2 J
8260B	trans-1,2-Dichloroethene	µg/kg	370[2]	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)
8260B	trans-1,3-Dichloropropene	µg/kg	33[2]	ND (5.1)	ND (7.8)	ND (4.0)	ND (4.2)	ND (5.1)	ND (4.7) QL	ND (4.7)	ND (4.2)	ND (3.1)	ND (5.8)	ND (5.4)	ND (5.9)	ND (5.1)	ND (5.1)
8260B	Trichloroethene	µg/kg	20[2]	ND (5.1)	ND (7.8)	ND (4.0)	ND (4.2)	ND (5.1)	ND (4.7) QL	2.3 J	2.5 J	ND (3.1)	ND (5.8)	ND (5.4)	ND (5.9)	7.1 J	6.2 J
8260B	Trichlorofluoromethane	µg/kg	86[2]	ND (15)	ND (23)	ND (12)	ND (13)	ND (15)	ND (14) QL	ND (14)	ND (13)	ND (9.3)	ND (17)	ND (16)	ND (18)	ND (15)	ND (15)
8260B	Vinyl chloride	µg/kg	8.5[2]	ND (2.6)	ND (3.9)	ND (2.0)	ND (2.1)	ND (2.5)	ND (2.3) QL	ND (2.3)	ND (2.1)	ND (1.5)	ND (2.9)	ND (2.7)	ND (3.0)	ND (2.5)	ND (2.5)
8270C SIM	1-Methylnaphthalene	µg/kg	6,100[2]	ND (3.0)	ND (3.2)	ND (2.7)	ND (2.7)	280	ND (27)	ND (27)	20 J	ND (2.6)	ND (29)	10	2.6 J	53 J	62
8270C SIM	2-Methylnaphthalene	µg/kg	6,200[2]	ND (3.0)	ND (3.2)	ND (2.7)	ND (2.7)	200	41 J	38 J	ND (27)	ND (2.6)	37 J	23	3.2 J	100	120
8270C SIM	Acenaphthene	µg/kg	18,0000[2]	ND (3.0)	ND (3.2)	ND (2.7)	ND (2.7)	16	ND (27)	ND (27)	ND (27)	ND (2.6)	ND (29)	ND (2.8)	4.3 J	ND (31)	ND (30)
8270C SIM	Acenaphthylene	µg/kg	180,000[2]	ND (3.0)	ND (3.2)	ND (2.7)	ND (2.7)	ND (2.7)	ND (27)	ND (27)	ND (27)	ND (2.6)	ND (29)	6.8 QH	ND (2.8)	ND (31)	ND (30)
8270C SIM	Anthracene	µg/kg	3,000,000[2]	ND (3.0)	ND (3.2)	ND (2.7)	ND (2.7)	ND (2.7)	ND (27)	ND (27)	ND (27)	ND (2.6)	ND (29)	ND (2.8)	ND (2.8)	ND (31)	ND (30)
8270C SIM	Benzo[a]anthracene	µg/kg	3,600[2]	ND (3.0)	ND (3.2)	ND (2.7)	ND (2.7)	ND (2.7)	ND (27)	ND (27)	ND (27)	ND (2.6)	ND (29)	4.0 J	9.4	ND (31)	ND (30)
8270C SIM	Benzo[a]pyrene	µg/kg	2,100[2]	ND (3.0)	ND (3.2)	ND (2.7)	ND (2.7)	ND (2.7)	ND (27)	ND (27)	ND (27)	ND (2.6)	ND (29)	ND (2.8)	ND (2.8)	ND (31)	ND (30)
8270C SIM	Benzo[b]fluoranthene	µg/kg	12,000[2]	ND (3.0)	ND (3.2)	ND (2.7)	ND (2.7)	1.7 J	ND (27)	ND (27)	ND (27)	ND (2.6)	ND (29)	ND (2.8)	ND (2.8)	ND (31)	ND (30)
8270C SIM	Benzo[g,h,i]perylene	µg/kg	38,700,000[2]	ND (3.0)	ND (3.2)	ND (2.7)	ND (2.7)	ND (2.7)	ND (27)	ND (27)	ND (27)	ND (2.6)	ND (29)	2.4 J	ND (2.8)	ND (31)	ND (30)
8270C SIM	Benzo[k]fluoranthene	µg/kg	120,000[2]	ND (3.0)	ND (3.2)	ND (2.7)	ND (2.7)	ND (2.7)	ND (27)	ND (27)	ND (27)	ND (2.6)	ND (29)	ND (2.8)	ND (2.8)	ND (31)	ND (30)
8270C SIM	Chrysene	µg/kg	360,000[2]	ND (3.0)	ND (3.2)	ND (2.7)	ND (2.7)	36	360	260	270	ND (2.6)	ND (29)	6.3	16	330	360
8270C SIM	Dibenz(a,h)anthracene	µg/kg	4,000[2]	ND (3.0)	ND (3.2)	ND (2.7)	ND (2.7)	ND (2.7)	ND (27)	ND (27)	ND (27)	ND (2.6)	ND (29)	ND (2.8)	ND (2.8)	ND (31)	ND (30)
8270C SIM	Fluoranthene	µg/kg	1,400,000[2]	ND (3.0)	ND (3.2)	ND (2.7)	ND (2.7)	13	130	89	110	ND (2.6)	ND (29)	8.0	19	59 J	71
8270C SIM	Fluorene	µg/kg	220,000[2]	ND (3.0)	6.1 J	ND (2.7)	ND (2.7)	15	ND (27)	ND (27)	ND (27)	ND (2.6)	ND (29)	ND (2.8)	5.4 J	ND (31)	ND (30)
8270C SIM	Indeno[1,2,3-cd]pyrene	µg/kg	41,000[2]	ND (3.0)	ND (3.2)	ND (2.7)	ND (2.7)	ND (2.7)	ND (27)	ND (27)	ND (27)	ND (2.6)	ND (29)	ND (2.8)	ND (2.8)	ND (31)	ND (30)
8270C SIM	Naphthalene	µg/kg	120,000[1]	ND (3.0)	ND (3.2)	ND (2.7)	ND (2.7)	48	29 J	ND (27)	ND (27)	ND (2.6)	36 J	3.8 J	4.5 J	51 J	63
8270C SIM	Phenanthrene	µg/kg	3,000,000[2]	ND (3.0)	2.5 J	ND (2.7)	ND (2.7)	26	ND (27)	77	65	ND (2.6)	ND (29)	8.8	34	130	150
8270C SIM	Pyrene	µg/kg	1,000,000[2]	ND (3.0)	ND (3.2)	ND (2.7)	ND (2.7)	32	310	220	260	ND (2.6)	240	9.4	24	320	420
AK101	GRO	mg/kg	300[1]	ND (0.57)	ND (0.86)	0.19 J B	0.23 J B	3.1 B	ND (0.51)	0.42 J B	0.32 J B	0.25 J B	ND (0.64)	ND (0.60)	ND (0.65)	0.55 J B	0.55 J B
AK102	DRO	mg/kg	9,200[1]	32 B	60 B	16 J B	15 J B	210	3,200	4,900	5,100	7.8 J B	2,400	270	770	4,300	4,800
AK103	RRO	mg/kg	9,200[1]	340	690	46 J B	83 B	260	1,100	1,300	1,400	22 J B	1,900	240	1,500	1,100	1,300

Notes:

[1] 2009 NE Cape Decision Document

[2] 18AAC75 Section 341, Tables B1 and B2, migration to groundwater

BOLD = Results or Non-detect result exceeds cleanup level.

[D] Sample is a field duplicate of the previous sample.

B = Analyte detected in the method or trip blank, results have potential hig

DRO = Diesel Range Organics

FL= floor sample

GRO = Gasoline Range Organics

J = Result is an estimate

mg/kg = Milligrams per kilogram

MH = matrix interference suspected with potential high bias.

ML = matrix interference suspected with no directional bias.

MN = matrix interference suspected with no directional bias.

ND = Non-detect; limit of detection (LOD) is in parentheses

NS = Not Stated

PCB = Polychlorinated Biphenyl

QH = Laboratory Quality Control failure with potential high bias. Refer for CDQR for further details.

QL = Quality control fialure with potential low bias. Refer to CDQR for further details.

QN = Quality control failure with no directional bias.

RRO = Residual Range Organics

SW= sidewall sample

SIM = Selective Ion Monitoring

µg/kg = Micrograms per kilogram

Table F25 Radome Road Soil Sample Results

			Sample ID	12NCRDSS01	12NCRDSS02	12NCRDSS08[D]	12NCRDSS03	12NCRDSS04	12NCRDSS05	12NCRDSS06	12NCRDSS07
			Laboratory ID	580-34701-1	580-34701-2	580-34701-8	580-34701-3	580-34701-4	580-34701-5	580-34701-6	580-34701-7
			Location ID	RD-01	RD-02	RD-08	RD-03	RD-04	RD-05	RD-06	RD-07
			Collection Date	8/25/2012	8/25/2012	8/25/2012	8/25/2012	8/25/2012	8/25/2012	8/25/2012	8/25/2012
Analytical Method	**Analyte**	**Unit**	**Site Specific Cleanup Level**								Background Sample
6020	Arsenic	mg/kg	11[1]	2.6	3.1	3.7	1.7	1.5	1.9	1.2	1.6
6020	Barium	mg/kg	1,100[2]	22	45	59	26	38	38	23	26
6020	Cadmium	mg/kg	5.0[2]	0.18 J	0.17 J	0.18 J	0.19 J	0.23	0.31	0.25	0.38
6020	Chromium	mg/kg	25[2]	6	5.6	5.5	3.7	4.3	4.7	2.6	3.6
6020	Lead	mg/kg	400[2]	40	39	45	29	28	30	21	38
6020	Nickel	mg/kg	86[2]	3.7	3.6	4.1	2.7	2.9	3.6	1.9	2.7
6020	Selenium	mg/kg	3.4[2]	0.78	1.4	1.6	1	0.98	1.1	0.7 J	0.83
6020	Silver	mg/kg	11.2[2]	0.019 J	0.043 J	0.054 J	0.022 J	0.024 J	0.028 J	ND (0.021)	0.03 J
6020	Vanadium	mg/kg	3,400[2]	14	22	23	17	21	22	15	15
6020	Zinc	mg/kg	4,100[2]	42	59	64	48 J MH	59	57	39	87
7471A	Mercury	mg/kg	1.4[2]	0.026	0.024	0.018 J	0.016 J	0.011 J	0.014 J	ND (0.008)	ND (0.0088)
8082	PCB-1016	mg/kg	1[1]	ND (0.0056)	ND (0.0061)	ND (0.0061)	ND (0.0056)	ND (0.0057)	ND (0.0055)	ND (0.0054)	ND (0.0056)
8082	PCB-1221	mg/kg	1[1]	ND (0.011)	ND (0.012)	ND (0.012)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)
8082	PCB-1232	mg/kg	1[1]	ND (0.011)	ND (0.012)	ND (0.012)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)	ND (0.011)
8082	PCB-1242	mg/kg	1[1]	ND (0.0056)	ND (0.0061)	ND (0.0061)	ND (0.0056)	ND (0.0057)	ND (0.0055)	ND (0.0054)	ND (0.0056)
8082	PCB-1248	mg/kg	1[1]	ND (0.0056)	ND (0.0061)	ND (0.0061)	ND (0.0056)	ND (0.0057)	ND (0.0055)	ND (0.0054)	ND (0.0056)
8082	PCB-1254	mg/kg	1[1]	0.0032 J	ND (0.0061)	ND (0.0061)	ND (0.0056)	ND (0.0057)	ND (0.0055)	ND (0.0054)	ND (0.0056)
8082	PCB-1260	mg/kg	1[1]	ND (0.0056)	ND (0.0061)	ND (0.0061)	ND (0.0056)	ND (0.0057)	ND (0.0055)	ND (0.0054)	ND (0.0056)
8260B	Benzene	µg/kg	2,000[1]	ND (6.1)	ND (9.9)	ND (8.3)	ND (7.3)	ND (6)	ND (7.4)	ND (9)	ND (7.1)
8260B	Ethylbenzene	µg/kg	6,900[2]	ND (18)	ND (30)	ND (25)	ND (22)	ND (18)	ND (22)	ND (27)	ND (21)
8260B	m,p-Xylene	µg/kg	NS	ND (12)	ND (20)	ND (17)	ND (15)	ND (12)	ND (15)	ND (18)	ND (14)
8260B	o-Xylene	µg/kg	NS	ND (18)	ND (30)	ND (25)	ND (22)	ND (18)	ND (22)	ND (27)	ND (21)
8260B	Total Xylenes	µg/kg	63,000[2]	ND (30)	ND (50)	ND (42)	ND (37)	ND (30)	ND (37)	ND (45)	ND (35)
8260B	Toluene	µg/kg	6,500[2]	ND (18)	ND (30)	ND (25)	ND (22)	ND (18)	ND (22)	ND (27)	ND (21)
8270C SIM	1-Methylnaphthalene	µg/kg	6,200[2]	ND (2.7)	ND (3.1)	ND (3)	ND (2.8)	ND (2.7)	ND (2.8)	ND (2.6)	ND (2.8)
8270C SIM	2-Methylnaphthalene	µg/kg	6,100[2]	ND (2.7)	ND (3.1)	ND (3)	ND (2.8)	ND (2.7)	ND (2.8)	ND (2.6)	ND (2.8)
8270C SIM	Acenaphthene	µg/kg	180,000[2]	ND (2.7)	ND (3.1)	ND (3)	ND (2.8)	ND (2.7)	ND (2.8)	ND (2.6)	ND (2.8)
8270C SIM	Acenaphthylene	µg/kg	180,000[2]	ND (2.7)	ND (3.1)	ND (3)	ND (2.8)	ND (2.7)	ND (2.8)	ND (2.6)	ND (2.8)
8270C SIM	Anthracene	µg/kg	3,000,000[2]	ND (2.7)	ND (3.1)	ND (3)	ND (2.8)	ND (2.7)	ND (2.8)	ND (2.6)	ND (2.8)

Table F25 Radome Road Soil Sample Results (continued)

			Sample ID	12NCRDSS01	12NCRDSS02	12NCRDSS08[D]	12NCRDSS03	12NCRDSS04	12NCRDSS05	12NCRDSS06	12NCRDSS07
			Laboratory ID	580-34701-1	580-34701-2	580-34701-8	580-34701-3	580-34701-4	580-34701-5	580-34701-6	580-34701-7
			Location ID	RD-01	RD-02	RD-08	RD-03	RD-04	RD-05	RD-06	RD-07
			Collection Date	8/25/2012	8/25/2012	8/25/2012	8/25/2012	8/25/2012	8/25/2012	8/25/2012	8/25/2012
Analytical Method	**Analyte**	**Unit**	**Site Specific Cleanup Level**								Background Sample
8270C SIM	Benzo[a]anthracene	µg/kg	3,600[2]	1.8 J	ND (3.1)	ND (3)	ND (2.8)	ND (2.7)	ND (2.8)	ND (2.6)	ND (2.8)
8270C SIM	Benzo[a]pyrene	µg/kg	2,100[2]	ND (2.7)	ND (3.1)	ND (3)	ND (2.8)	ND (2.7)	ND (2.8)	ND (2.6)	ND (2.8)
8270C SIM	Benzo[b]fluoranthene	µg/kg	12,000[2]	ND (2.7)	ND (3.1)	ND (3)	ND (2.8)	ND (2.7)	ND (2.8)	ND (2.6)	ND (2.8)
8270C SIM	Benzo[g,h,i]perylene	µg/kg	38,700,000[2]	ND (2.7)	ND (3.1)	ND (3)	ND (2.8)	ND (2.7)	ND (2.8)	ND (2.6)	ND (2.8)
8270C SIM	Benzo[k]fluoranthene	µg/kg	120,000[2]	ND (2.7)	ND (3.1)	ND (3)	ND (2.8)	ND (2.7)	ND (2.8)	ND (2.6)	ND (2.8)
8270C SIM	Chrysene	µg/kg	360,000[2]	1.6 J	ND (3.1)	ND (3)	ND (2.8)	ND (2.7)	ND (2.8)	ND (2.6)	ND (2.8)
8270C SIM	Dibenz(a,h)anthracene	µg/kg	4,000[2]	ND (2.7)	ND (3.1)	ND (3)	ND (2.8)	1.9 J	ND (2.8)	ND (2.6)	ND (2.8)
8270C SIM	Fluoranthene	µg/kg	1,400,000[2]	2.1 J	ND (3.1)	ND (3)	ND (2.8)	ND (2.7)	ND (2.8)	ND (2.6)	ND (2.8)
8270C SIM	Fluorene	µg/kg	220,000[2]	ND (2.7)	ND (3.1)	ND (3)	ND (2.8)	ND (2.7)	ND (2.8)	ND (2.6)	ND (2.8)
8270C SIM	Indeno[1,2,3-cd]pyrene	µg/kg	41,000[2]	ND (2.7)	ND (3.1)	ND (3)	ND (2.8)	ND (2.7)	ND (2.8)	ND (2.6)	ND (2.8)
8270C SIM	Naphthalene	µg/kg	120,000[1]	ND (2.7)	ND (3.1)	ND (3)	ND (2.8)	ND (2.7)	ND (2.8)	ND (2.6)	ND (2.8)
8270C SIM	Phenanthrene	µg/kg	3,000,000[2]	ND (2.7)	ND (3.1)	2 J	ND (2.8)	ND (2.7)	1.7 J	ND (2.6)	ND (2.8)
8270C SIM	Pyrene	µg/kg	1,000,000[2]	ND (2.7)	ND (3.1)	ND (3)	ND (2.8)	ND (2.7)	ND (2.8)	ND (2.6)	ND (2.8)
AK101	GRO	mg/kg	300[2]	ND (0.67)	ND (1.1)	ND (0.92)	ND (0.8)	ND (0.66)	ND (0.81)	ND (0.99)	ND (0.78)
AK102 & 103	DRO (nC10-<nC25)	mg/kg	9,200[1]	14 J B	12 J B	11 J B	6.3 J B	6.8 QL J B	4.5 J B	2.5 J B	3.4 J B
AK102 & 103	RRO (nC25-nC36)	mg/kg	9,200[1]	88	39 J QH	71	22 J	ND (28) QL	14 J	ND (26)	ND (27)

Notes:

[1] 2009 NE Cape Decision Document

[2] Cleanup levels from 18AAC75 Section 341, Tables B1 and B2, migration to groundwater

[D] Sample is a field duplicate of the previous sample.

B = analyte detected in the method blank with potential high bias.

DRO = diesel range organics

GRO = gasoline range organics

J = result is an estimate

mg/kg = milligrams per kilogram

MH = matrix interference suspected with potential high bias.

ND = Non-detect; the limit of detection (LOD) is in parentheses

NS = not stated

PCB = polychlorinated biphenyl

QH = one or more QC criteria failed with potential high bias.

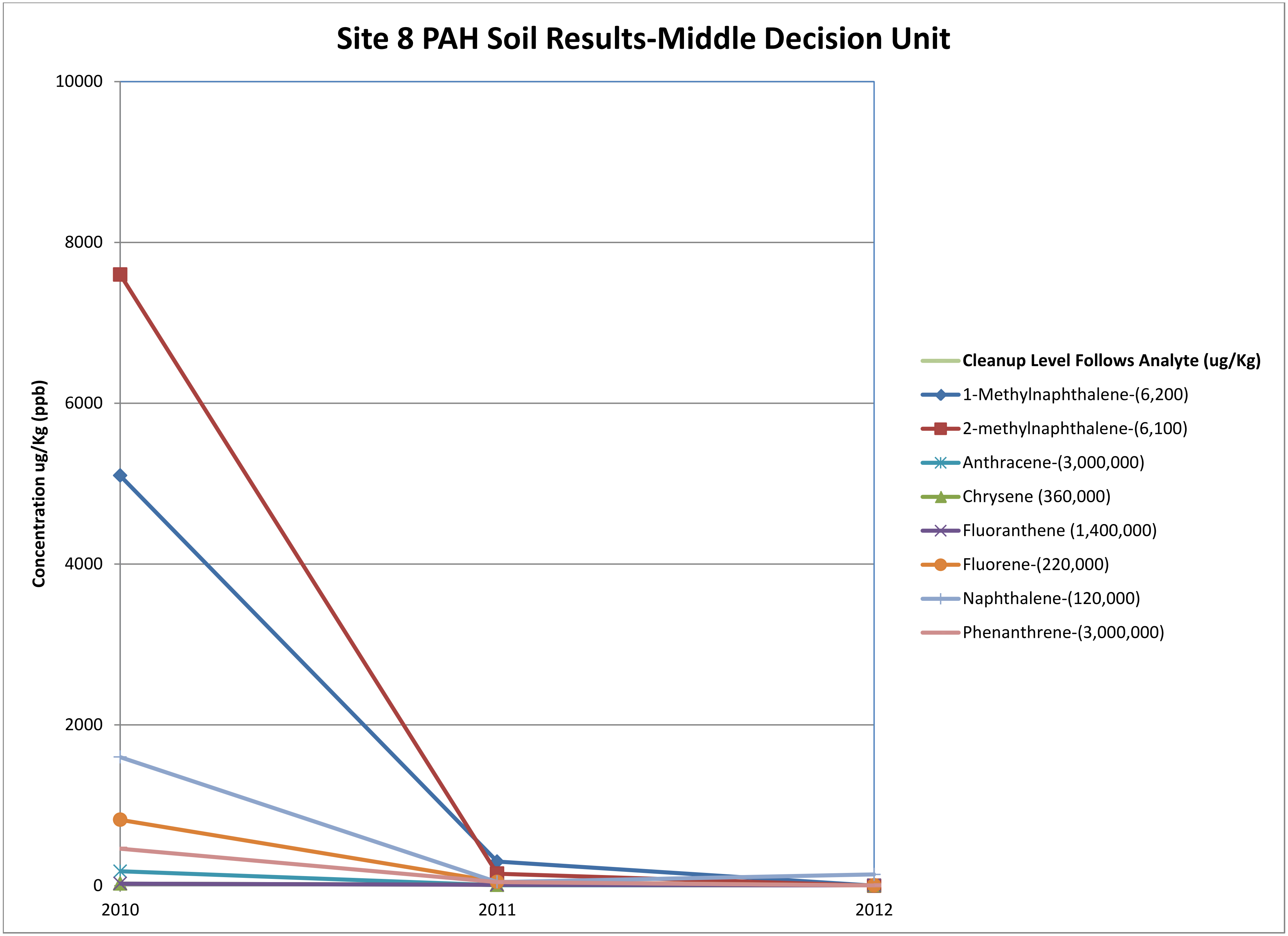
QL = analyte result is considered an estimated value with a low bias due to a quality control failure.

RRO = residual range organics

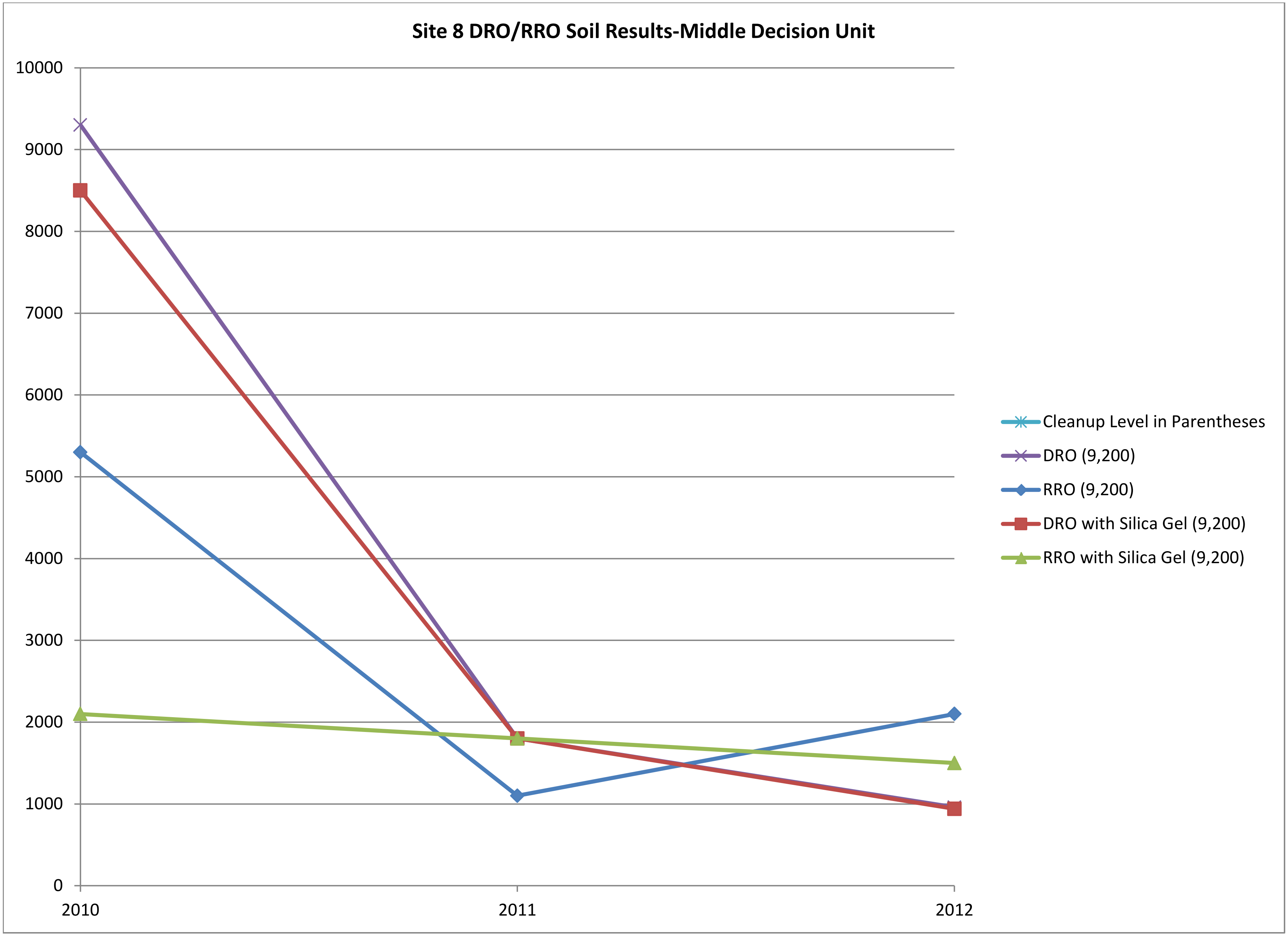
SIM = Selective Ion Monitoring

µg/kg = micrograms per kilogram

Graph 6 Site 8 PAH Soil Results-Middle Decision Unit



Graph 7 Site 8 DRO/RRO Soil Results-Middle Decision Unit



APPENDIX G

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MOC 215 A, B, C, D, E, F, G
BW MOC 215

MOC 216 A, B, C, D, E, F, G

MOC 217 A, B, C, D, E, F

9/12/12

MOC 217 G → MOC BW 217

MOC 218 A, B, C

9/16/12

MOC 218 D, E, F, G MOC BW 218
MOC 219 ABCDEFG MOC BW 219
MOC 220 ABCDEFG MOC BW 220
MOC 221 A

9/17/12

MOC 221 B, C, D, E, F, G MOC BW 221
MOC 222 ABCDEFG MOC BW 222
MOC 223 ABCDEFG MOC BW 223
MOC 224 ABCDEFG MOC BW 224

9/18/12

MOC 225 ABCDEFG 12NCMOCBW 225
13:40

MOC 226 AB

9-21-12

MOC 226 C
MOC 226 D
MOC 226 E
MOC 226 F
MOC 226 G
(~1145) BWMOC 226

MOC 227 A
MOC 227 B
MOC 227 C
MOC 227 D
MOC 227 E
MOC 227 F
MOC 227 G
1030 BW MOC 227

MOC 228 A
MOC 228 B
MOC 228 C
MOC 228 D
MOC 228 E
MOC 228 F
MOC 228 G
1130 BW MOC 228

MOC 229 A
B
C
D
E
F
G
BWMOC 229 (1400)

SITE 28
SEDIMENT

28-01 A
28-02 B
28-03 C
@ 1521

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No. 391

Northeast HTRW

Bristol Environmental Remediation Services

W911KB-06D-0007 and

W911KB-12-C-003

Book 1 of 1

Emily C

INCH

"Rite in the Rain"®
ALL-WEATHER WRITING PAPER

Name Emily Conway

Address 111 W 16th Ave
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Project NE Cape St Lawrence Island HTRW 2012

CONTENTS

NE CAPE
2012

Site 8

RNC08WA009

2 SW samples near Sagi Rv
(Fig. 11) DRO/RRO, PAHs

3 sample DUs
each grid → 4 sections x40 long
grid sqrs = 10×10ft
randomly choose 8 grid sqrs

SW samples for:
pH, DO, conductivity, ORP, temp,
turbidity, nitrate, sulfate, ferrous iron,
alkalinity, dissolved manganese.
Lab analysis for Methane.

Soil Samples
DRO/RRO, TOC, PAHs, DRO-silica, RRO-silica

The 8 soil samples from each DU
will be composited as one sample
field DUP split from one composite
after homogenized

(x2) DUP (MS/MSD (x3))

PAHs - 2 1liters
DRO/RRO - 2 1liter preserved

DUPs every 10 8/23/12

MsMsD every 20

8/24/12

MOC

PAD98: Stockpile → dirty

middle pile need sampling

based on volume

Sample moist soil - dig down

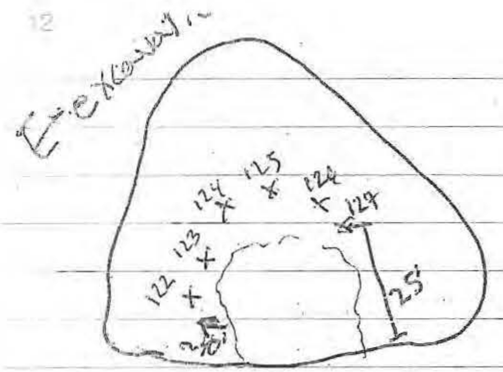
don't sample pile from borrow pit

7 floor samples from G-plume

Start E-71 field screening

~~12MOC~~ 12NCMOCSS122 Next sample confirmation

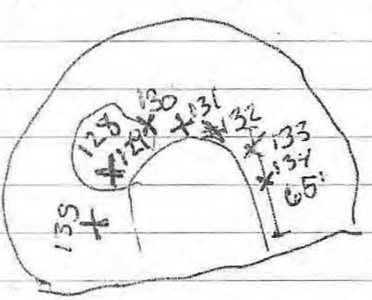
8-25-12



Completed 8-24-12
12NCMOCSS122-127
125 is DUP of 124
MS/MSD on 126

8-24-12
122 @ 1550
123 @ 1556
124 @ 1600
125 @ 1610
126 @ 1612x3 MS/MSD
127 @ 1620

8/25/12



8/25/12
$\boxed{0753}$ NCMOCSS128 @ 0753
DRO/RRO @
129 DUP w/ 0757
dk brown wet organic material

$\boxed{0800}$ 12NCMOCSS 130
brown, wet organic

$\boxed{0805}$ 12NCMOCSS 131
brown/gray silt w/organics

$\boxed{0810}$ 12NCMOCSS 132
gray sand, silt w/ brown wet peat

$\boxed{0815}$ 12NCMOCSS 133
gray silty sand w/ some wet peat
slight odor

$\boxed{0820}$ 12NCMOCSS 134
gray silt, brown peat
slight odor

$\boxed{0825}$ 12NCMOCSS 135
gray silt + brown peat
moderate odor

Need ~~83 total floors.~~ 67 total have 56
~~Have taken 12 of 30 floor samples~~
(073 was first)
11 more + DUPs (2) + 1 more MS/MSD
2 rows of 5 and 6

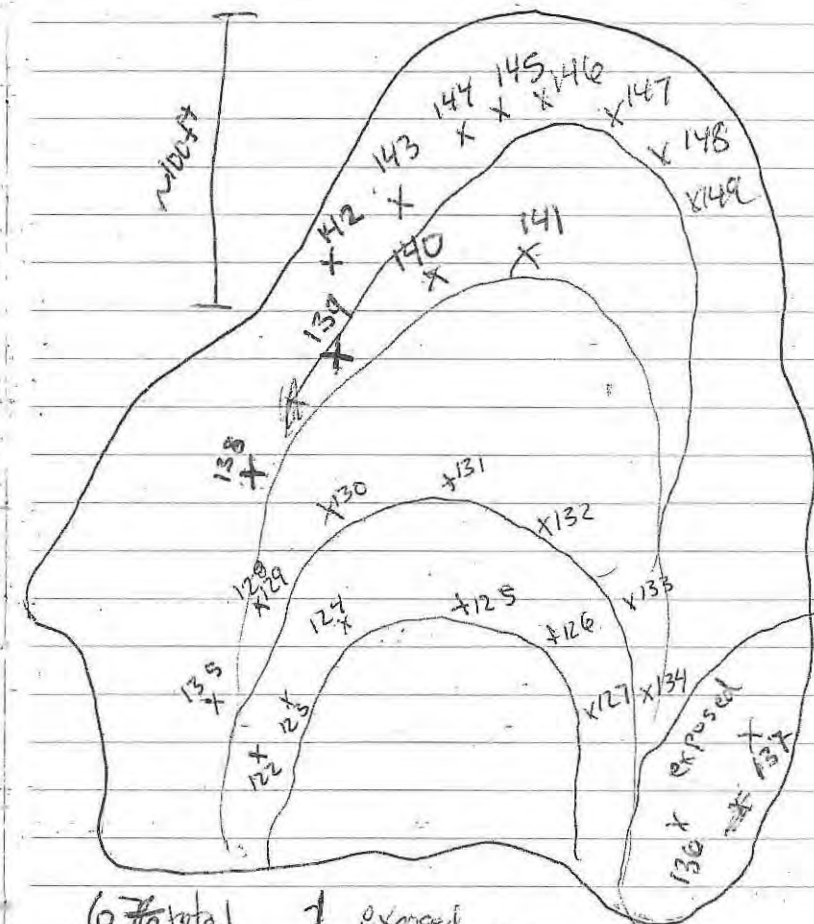
16620.7 sq.ft. /250 67+1=68

Take 1 or 2 from floor above water.
- do MS/MSD there.
136 – ~~140~~ 148 + 2 Dups (148)

First Floor 73   73/79 DUPS
80/81
87/88
98/99
104 MS/MSD
111/112 DUPS
116/121
120 MS/MSD

~~68~~ 62-8=54 primary floor confirmation
Need 68-54 = 14 primary
~~2 Dups~~
1 MS/MSD

3 floor above water, exposed floor (MS/MSD)
5 next step
6 final step N side



67 total 1 exposed

Next/final line will be ~25 ft from North edge so floor samples will cover northern area w/ 8 samples

8/25/12

E-Plume Floor

1035 exposed floor $\boxed{\text{NCMOCS } \cancel{163}}$ 136

*MS/MSD

gray clay/silt w/brown peat

moderate odor

DRO/RRO *Triple volume

1040 Exposed floor $\boxed{\text{NCMOC S 137}}$

gray silty clay, slight odor

1045 western $\boxed{\text{NCMOC S138}}$

gray silty clay w/ organic muck

saturated slight odor

1050 $\boxed{\text{NCMOC S139}}$

gray silty clay & organic muck

moderate odor

1055 $\boxed{\text{NCMOC S 140}}$

gray silty clay and ~~to~~ organic muck

gravel + cobbles up to 2'

moderate odor

1100 $\boxed{\text{NCMOC S 141}}$

gravel and cobbles up + 2ft

organic muck/peat, ~~gray~~ gray silty clay

moderate-strong odor

8/25/12

collected 6 primary floor

2 in exposed

Asked Dale to backfill

until a line 25ft south of

northern sidewall is accessable

Radar Dome Road 12NCRDSS00

BTEX, GRO 4oz/pre-tared + MeOH

10 jars + scale

DRO/RRO, PAHs, PCBs, Metals

2 8oz or 1 16oz

10 16oz or 20 8oz

12NCRDSS01 - 08 7 primary + 1 DUP

1 MS/MSD

Sample for: BTEX, GRO, DRO/RRO, PAH, PCB, Metals

1445 $\boxed{\text{12NCRDSS01}}$

4 oz w/MeOH x1

8oz x2

BTEX, GRO

PAH, PCB, DRO/~~RRO~~, Metals

all samples 8

brown sandy soil w/gravel, dry

some stringy roots

8-25-12

1450 12NCRDSS Ø2
12NCRDSS Ø8 @ 1830 DUP
brown sandy soil w/gravel, dry
some stringy roots

1510 12NCRDSS Ø3 MS/MSD
* triple volume
brown sandy soil, dry, some gravel

1525 12NCRDSS Ø4
brown, sandy soil, dry

1530 12NCRDSS Ø5
brown, sandy soil, dry
some gravel

1535 12NCRDSS Ø6
brown, sandy soil, some gravel
dry

1540 12NCRDSS Ø7 background sample
brown sandy soil, uphill → N
dry, little gravel, loose from #Ø6

NE CAPE 8/26/12

8 samples from E floor, N. edge
just primary, don't need MS/MSD
Field screening, start w/ E-71

12NCMOCS 142 - 149 8 total

All for DRO/RRO
0800 12NCMOCS 142 4 oz jars x1
gray silty clay w/ some organic muck
moist, moderate odor, moist

0805 12NCMOCS 143
gray silty clay w/ brown organic
peat and muck, moderate fuel odor
some gravel & cobbles, moist-wet

0810 12NCMOCS 144
brown peat, organic muck w/ gray silt
wet, strong odor

0815 12NCMOCS 145
gravely (cobbles) gray silt w/ peat
and organic muck, wet
moderate - strong odor

0820 12NCMOCS 146
brown peat
~~high~~ strong odor, moist

8/26/12

~~082~~
0825 $\boxed{\text{12NCMOCS 147}}$
brown peat, moist
strong odor

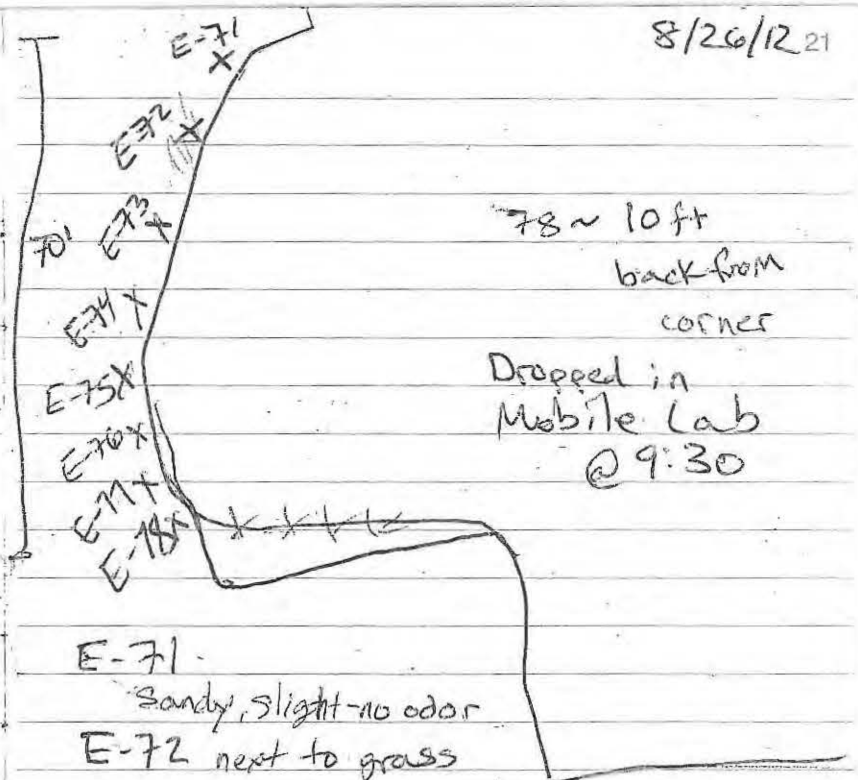
0830 $\boxed{\text{12NCMOCS148}}$
Cobbles + gravely gray silty clay
w/brown peat, wet
Moderate - Strong odor

0835 $\boxed{\text{12 NC MOCS 149}}$
cobbles up to 2.5'
organic silt, moderate odor
moist - wet

Field Screening on west edge of E
water table appears to be about
1.5 - 2 ft below surface.

70ft along western edge.
Samples E 71 - 78
in side wall
surface 71 ~ 0.5ft above water level
78 ~ 7ft " "
samples collected directly above water

8/26/12



78 ~ 10ft
back from
corner
Dropped in
Mobile Lab
@ 9:30

E-71
Sandy, slight-no odor
E-72 next to grass
gray + orange clay
E-73
brown clay, sticky
E-74
clayey gravel
E-75
gravely, sandy clay, brown
glob of white snot?
E-76
gravely brown silt, some peat
E-77 peat w/ gray silt, moderate odor
E-78 silt/sand w/peat, mod. odor

CoCs

one for Radar

one for E-floor

one for Site 8 soil & Methane H_2O

→ wait on soil — Send VOA's

8/23/12

Site 8 water grab Methane-RSK175

12NC0SWA08 @ 1345

07 @ 1335

09 @ 1350

06 @ 1330

05 @ 1320

02 @ 1305

01 @ 1300

03 @ 1310

04 @ 1315

BW-MOC 191 dropped off to lab

8/26/12

NECASE — 8/27/12

Safety: Good weather - stay hydrated

Look out/around

-COCs

MOC-E floor confirmation

122-149 coc# 20 p. 1-3

Cooler ID: 082712-01

Radar Dome 1-8

coc# ~~2-1~~ 19-1

Cooler ID: 082712-02

1415 Bagging at PAD-98

MOC BW 196-197, 198A

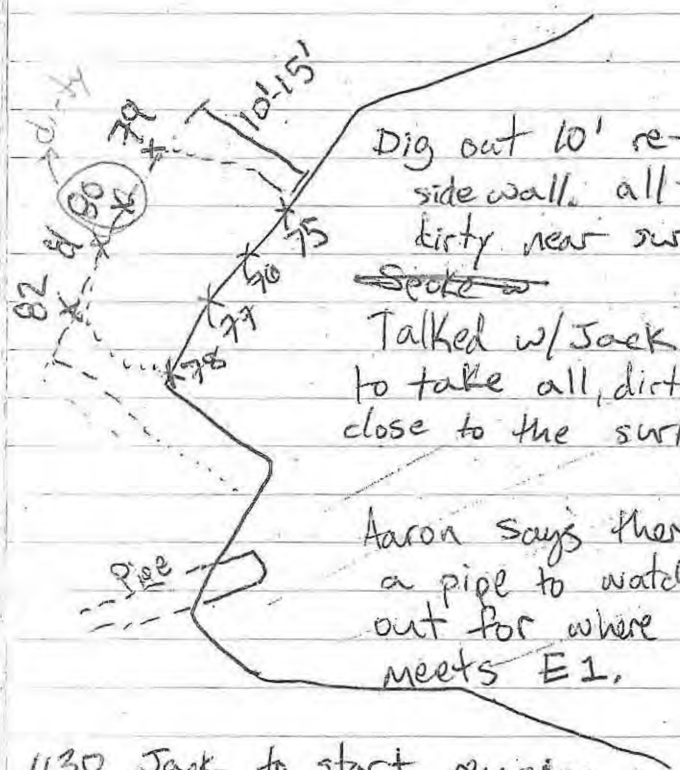
8/27/12

NE CAPE 8/28/12

Strong winds, gusts up to 40 mph
stay aware.

Bagging @ Pad 98
Dig back @ E, build up stockpile @98

E3 to the west - out 10ft
E1 to the southwest



Dig out 10' re-sample
side wall. all → Pad 98
dirty near surface
~~Spoke~~
Talked w/ Jack decided
to take all, dirty too
close to the surface.

Aaron says there is
a pipe to watch
out for where E2
meets E1.

1130 Jack to start removing
over burden from E1, southwest
Sample after lunch

Bagging @ Pad 98
Start w/ MOC-198 A
199
200
198-200 → lab @ 1230

1315 Side wall field screening
@ E SW side
E-79-82

E-79: dry, brown, gravely, sandy, silt

E-80: brown, wet, gravely sandy silt
w/ organics strong odor (DIRTY)

E-81: organic silty, clay, peat
moderate odor

E-82: brown peat, gray silty clay
moderate odor
surface → ~3-4 ft above water

approx 10ft apart
dropped @ lab 1430

Bagging @ Pad 98
BW-MOC-202
200, 201, 202, 203 ⇒ lab 1730

8/28/12

NE CAPE 8/29/12

Wind will start blowing
from North. Weather changing.
0800 Bulk waste sampling @
Pad 98
>20 bags on island
BW MOC-204 → lab @ 1030
205 A, B, C, D, E, F
→ in ENV. Connex w/ log book

8/29/12

NECAPE 8/30/12

Changing winds up to 40 mph

Stockpile sampling.
Find container analysis sheet

E-plume's field sample #E-80
is <u>hot</u> (15,859.91)

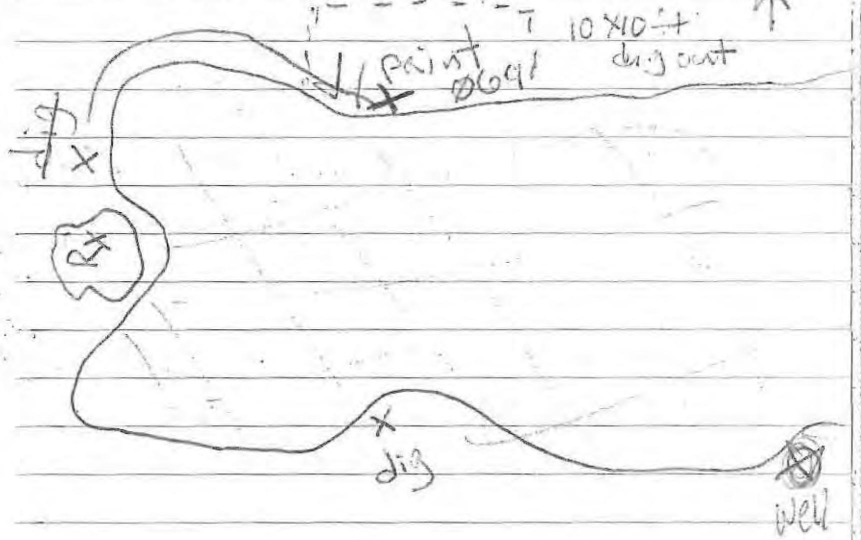
12/30/12

NE CAPE 8/31/12

Cold, wet, windy
- watch out for hypothermia
- building flats
- dig @ G → me
- bagging @ 98 → eric

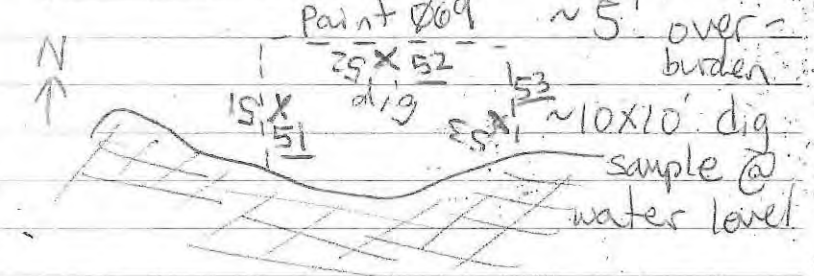
Dig at G = field screen sample start
G2 - at G-51
8-10 ft over burden, take ~6'

N ↑



8/31/12

0815 N-G excavation



dirty confirmation sample Ø69

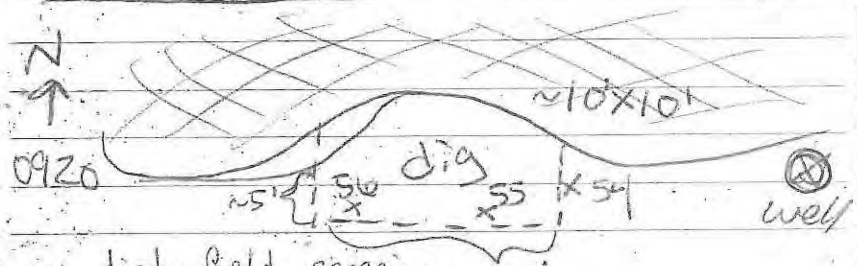
G-51 in situ gray/reddish dry clay
slight odor

G-52 brown gravely sand very loose
~~bo~~ possible all sluff

G-53 - gray/red sand and clay
w/ gravel + ~~cb~~ cobbles up to 2'
dry-damp, loose
moderate odor

8/31/12

S-G excavation 8/31/12



dirty field screening
sample

~5' over burden

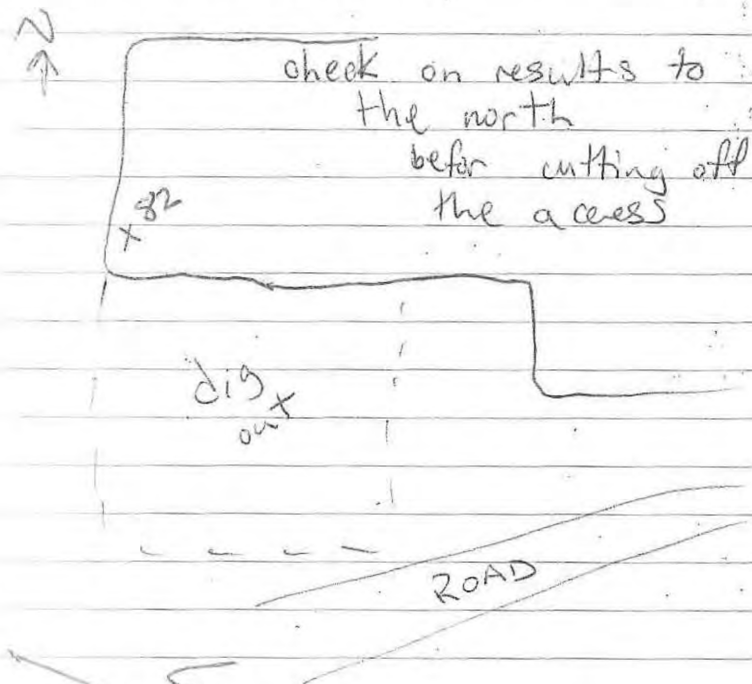
G-54 wet, brown sandy silt ~~w/~~ +
gray clay, trace organics

G-55 damp, gray sandy silt
moderate - strong odor

G-56 moist, gray + brown
silty clay
moderate odor

8/31/12

1040 Dig at E' SW side
E1 2' off top



8/31/12

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ALL-WEATHER

FIELD

Nº 351

Eric Barnhill

Northeast Cape HTRW

Bristol Environmental Remediation Services

W911KB-06-D-007 and

W911KB-12-C-003

Book 1 of 4

INCH 1 2 3 4 5 6

Rite in the Rain®
ALL-WEATHER WRITING PAPER

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Phone 907-563-0013

Project NE Cape St. Lawrence Island
HTRW 2012

CONTENTS

July 3, 2012

FN Anchorage, heading to
ST. Lawrence Island.
@ airport at ≈ 0900 hours
departed ≈ 1100 hours
arrived at ~~Post Lawrence~~ Nome @ 1230

Departed for ST Lawrence @ ≈ 1440
arrived at ST Lawrence Island @ 1515
- camp orientation
- room setup

1900 dinner/end of day

10

July 4, 2012

light rain, cool, light breeze

0700 Safety meeting
- communication (vehicle 132 for us)
- slower is faster
- get help lifting/moving heavy objects
- happy independence day

DQCR -
gathering information for
July 3.

- Camp → finish room setup

- Preparing for Meeting of understanding
and phase meeting

- Site tour
  - Site 13
  - Site 21
  - Site 31
  - Site 28

July 4, 2012
- Cargo Beach
  - Covered with flats/equipment

1200 lunch → 1230

Prepatory Phase meeting &
Meeting of understanding paperwork
setup.

- Julie Clark and Lyndsey Kleppin
measured water levels on MOC wells

- Northland made an attempt to
land on Cargo Beach, aborted attempt
due to mechanical issue. Nothing was
picked up or dropped off.

day end 0545

Total 10.75

July 5, 2012
Clear, mostly sunny, dry

0700
Health and Safety meeting
- be patient; more people coming
into camp
- bugs! repellent is available

Vehicles still being worked on
169 - no beach/sand traffic 4 wheel
drive is out
0900 Camp drinking water sample - SGS
1115 hours -
Security Aviation flight
- Thalia Ibanguen
- Jeb Adkins
- Jeremy Craner
- Carl Calugan
- Mel Bryant

6

July 5, 2012
Mutual Understanding Meeting
1330 hours

Attending:

Jeremy Craner
Eric Barnhill
Chuck Croley
Julie Clark
Lyndsey Kleppin
Marc Thompson
Marty Hannah

POL, PCB, Arsenic
- Locations of MOC pre/during/after sediment removal will be determined in field.

- POL soil - 4781.5 tons from 2011 and 4000 tons from 2012 TOTAL = 8781.50 TONS

- PCB soils 2700 tons
3' possible Priority

- Arsenic - 100 tons

7

July 5, 2012
misc. debris

Poles - 100 poles / tons
misc - 25 tons
drums - 1 ton

Site 8 + MOC wells MNA
-

Radar Dome Sampling
- 6 samples; described in work plan

MI sampling
- Same as in WP
  - Cargo beach
  - Site 6
  - MOC locations

Site 28 sediment mapping
- Sed. mapping from the MOC to Sugi

Site 28 Sediment Removal + Confirmation Sampling

Rite in the Rain

July 5, 2012

- mapping will be key for determining removal area
- 140 bank cubic yards

Removal of Pol liquids and associated stained soil from site 10

- 1 ton metal
- 50 gallons
- 50 tons of associated Contaminated soil.

Field lab Correlation study

- Not Sure where we are. Touching base (MARTY) with Theresa.

July 5, 2012

Prep phase Meetings

MOC Surface water sampling

- Initial sample will happen soon the middle and end sample times will need to be discussed

MI Sampling
- Cargo Beach first

1545
at MOC with QAR Jeremy Craner, Checking on USACE prescribed MOC surface water sampling points.
- water near removed manhole ✓
- pond to E ✓
- pond to W

Site 28
- walking basin with J. Clark J. Craner, L. Kleppin getting an

July 5, 2012
Idea of sediment deposition / site conditions

Arrived on site: Ecoland employees/medic
- Jamie
-
- Abby Page - Medic / Fairweather

10.0

July 6, 2012   Partly cloudy, cool, dry

0700
Safety meeting:
- Communication between workers
- Site communication - CB, hand held radio -
- Slower is faster - take time do things right
- Use extra time to check vehicles
- Keep vehicles clean
- Medic is now on site - Abby Page
- Site orientation for new people after
- Radio channel - Channel 5
- If equipment ~~starts~~ ~~es~~ begins to fail Notify Johnny, Maze
(Doug Byers now on Bristol team)

Jeremy Craner - Safety is important take time to do things right, use the right tool for the job; high profile job (lots of onlookers) Political

Filling out DQCR - gave reports for July 4+5 to Chuck Croley to add his comments

July 6, 2012

1000 - to beach to begin checking areas for MF sampling, The furthest West Unit will be approximately 48 feet wide by 240 feet long

- Crew is moving bags from site 13 to MOC laydown area
- Spoke with Surveyor (Ecolands - Jamie Allan) about laying out corners for first decision unit. Surveyors can do it.

1130 - Surveyors arrive at beach. Spoke about Unit #1, will lay out corners for unit after lunch

Lyndsey Kleppin finished MOC surface water Samples

1200 Lunch

1200 - 1230 Lunch

1230 -
Paperwork / drawing out grid.

1300
- getting samples of POL and PCB soil from excavations (JPA + 13) for the lab to train new people

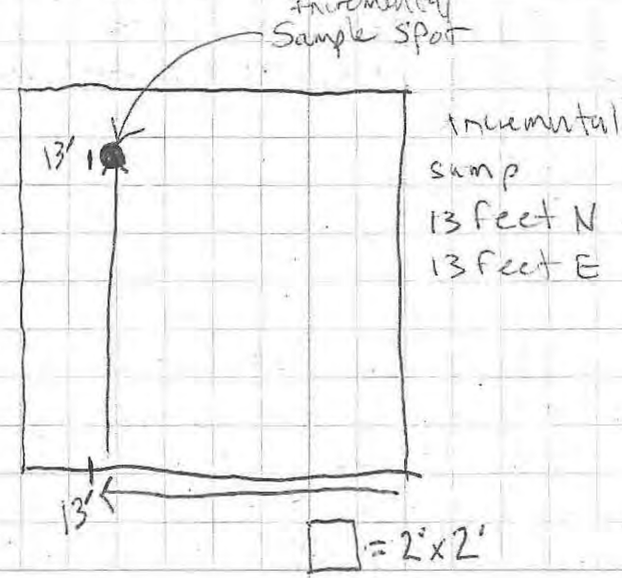
July 6, 2012

1330
@ beach with surveyors laying out grid.

Grid installed
increments are 16' x 16'

~~Field~~ EU Unit is 48 feet N to S and 240 feet E to W.

See drawing notebook for sketch of Unit.



July 6, 2012

12NCBGSS01
@ 1520
western end / western most unit @
Cargo Beach

L. Kleppin sampled MOC surface waters
in morning

Flight Arrived @ 1735:
Arrived on plane:
Russell James
Mylon Kingeekuk
Charles Kava
Albert
Scott
Michael Toolie

10.5

July 7, 2012
Foggy, calm, 40° +/-

0700
Health and Safety meeting
- Boat arrived this morning, heavy loads will be moving around - heavy equipment has the right away, use radio alerts especially today with the thick fog.

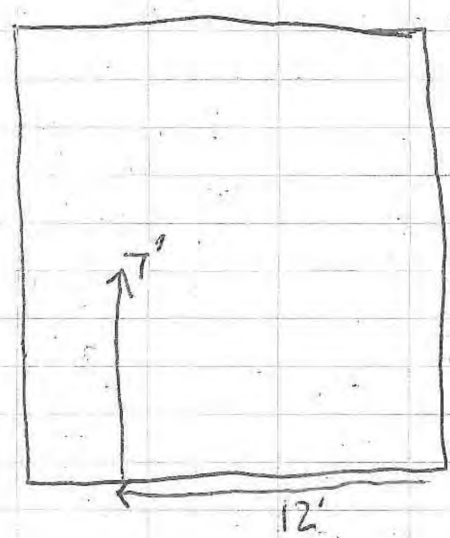
- Make eye contact with heavy equipment operators; make sure they know you are there.

- lifting & pulling & pushing & removing liner, use proper technique.

- MEDIC * clinic location. Come any time and interact.
Confidential sheet, fill out medical info even no issues.
There is an Ambulance
- Let her know if you are ill
- injuries get reported; illnesses do not.

July 7, 2012
At Cargo beach:
Surveyors setting up Unit using
Surveyors equipment

Setting up Unit and grid with
Julie Clark. Unit is 240' X 60'

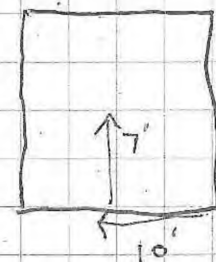


Unit Drawn in large ink in rain figure
excluding Northern side majority due to angle of
Beach and Cobbles.

July 7, 2012

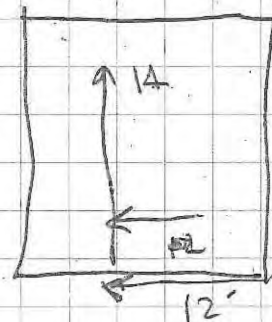
12NCBGSS02
@ 1140

(duplicate of 12NCBGSS02)
@ 1400
12NCBGSS03



(duplicate of 12NCBGSS02)
@ 1425

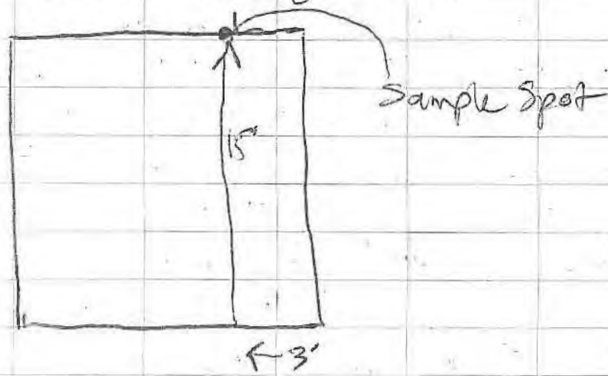
12NCBGSS04



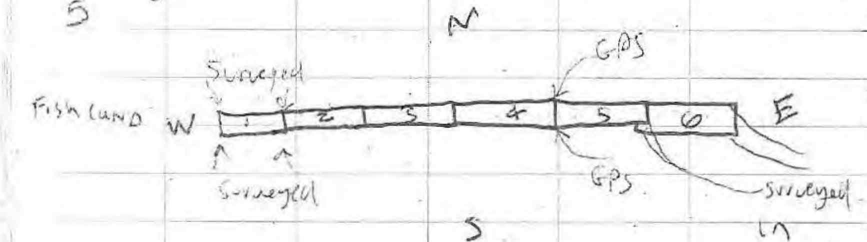
July 7, 2012

12NCBGSS05 (sketch of Unit in
@ 17ØØ large sketch book)

Second Easternmost quadrant



GPS (ing) NW + SW corner of Decision Unit
5



10.5

July 8, 2012 35-40°F Calm

0700 Safety Meeting

- Be aware of fog; traffic etc.
- Use 3 point mount/dismount on equipment.
- No Jumping from back of trucks/vehicles
- Keep in good contact Spotter—Operator coordinate signals

Boat returning in 2.5 to 3 days

Prep Phase meetings
(Gotcha!) • MOC wells + 8 MUA - Same as before
• Site 28 mapping
- additional sampling tools to order

Cargo Beach grid setup with Ecoland.

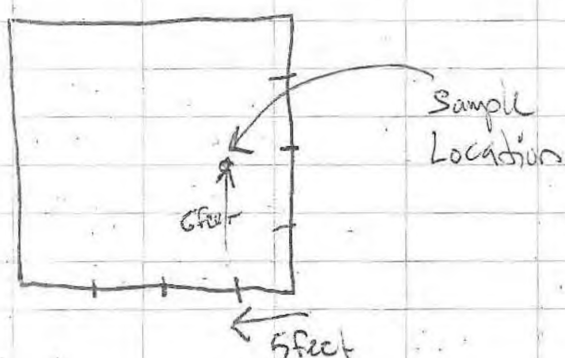
issues with grid, surveyor is going to adjust on computer

July 8, 2012

Lunch:

at Cargo beach. Surveyors laying out grid corners.
R. James, J. Adkins & I laying out incremental units.

Sample 12NCBGSS06
@ 1430



July 8, 2012

third unit laid out

long 210' x 45 wide

10.25

July 9, 2012   mostly sunny 40-45°F calm

Safety Meeting:

- Keep in communication with fellow workers
- PPE for Wood Cutting * hearing Protect hard hat face field, chaps

Environmental Meeting
- 2 units left on Cargo Beach MI sampling

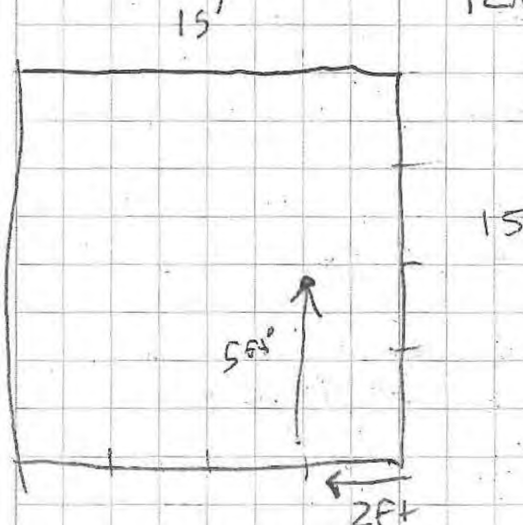
- 2 MOC wells done (LK) 7 to go. Ship on WED/THURS.

Prep Phase: Excavation

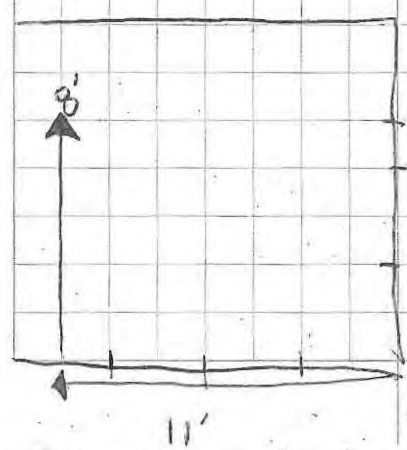
MOC -
PCBs (make sure laborers wear nitrile gloves under other gloves)
Arsenic - 100 tons
- surface water

July 9, 2012

12NCBGSS007
@ 0940

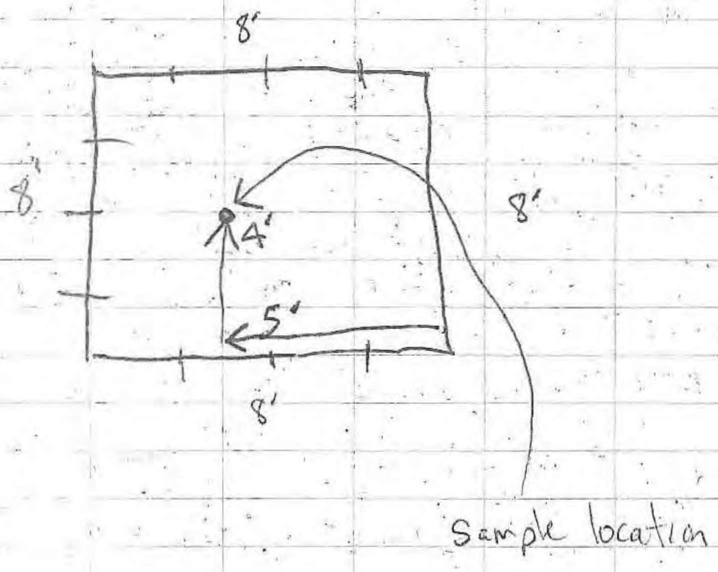


12NCBGSS008
@ 1115



July 9, 2012
Lunch @ 1200
- 1415
plotting grid for MOC staging area across the street from fueling area.

Unit 1 will be 56' by 56' with 8' x 8' grid intervals



starting in SW corner
12NCBGSS09
@ 1045

July 9, 2012

Back to camp.
Cleaning out truck and returning Sampling equipment to environmental storage.

10.0

July 10, 2012 - Cloudy, light breeze, 38°-43°F

Safety meeting - (medivac, new one on WED)
- SSHP covered by C. Croley
Sampling + labeling moc well samples

(3) BTEX, (3) GRO, (3) Methane - VOA's
(2) DRO - check bottle, make sure it has blue preservation sticker
(2) PCB - Non preserv
(2) PAH - Non preserv
(1) Dissolved - (F = filtered for dissolved) plastic
(1) Totals -

Sample 1 = 3 full sets
Sample 2, 3, 4, 5, 6

1200 Lunch

Labeling

Stop 1900

~~12 hours~~ 11.5

ES

July 11, 2012 mostly sunny calm 40-45°F

Safety Meeting - AHAs

Cargo Beach
MF Sampling

DU setup

Sampling prep

ES

Rite in the Rain

July 12, 2012 grey, raining ≈40°F, calm

Safety Meeting
PCB excavation starting
- boot wash area
- Tyvek, booties, gloves x 2 nitrile work gloves

Excavator Safety
- Swing radius
- Track movement awareness

Be aware of contaminant tracking

0700 - 0800
Site 31 prep (start 31-21A
(start BW 31-21)

0800 - 1200
Site 31 Sampling / bagging

1230 - 1730
Site 31 BW Sampling / Field Samples for lab.

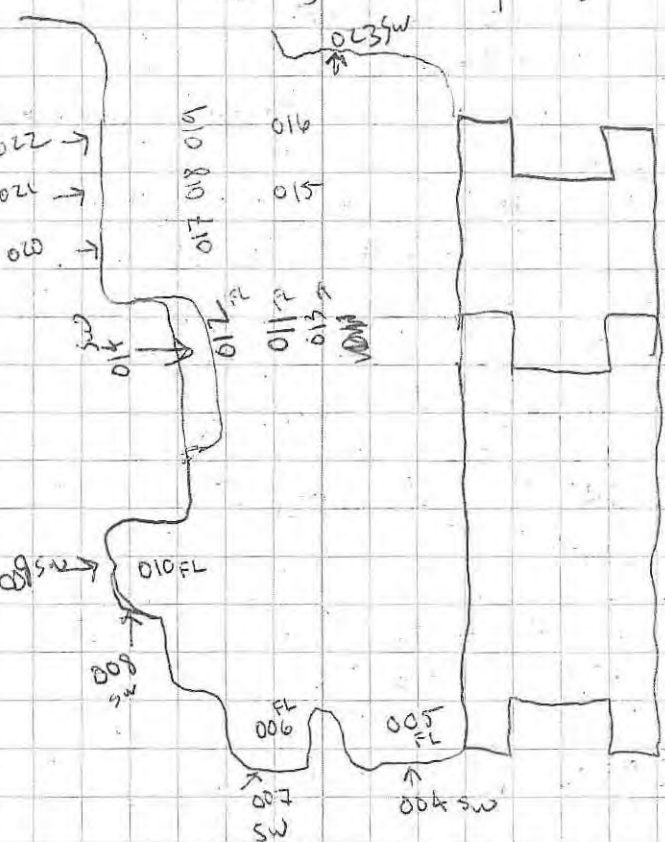
(Finish 31-23A)
(finish BW31-21)

1730 STOP (10.0)

July 13, 2012 Partly Cloudy ±40°, calm, dry

0700 Safety meeting
- slower is faster

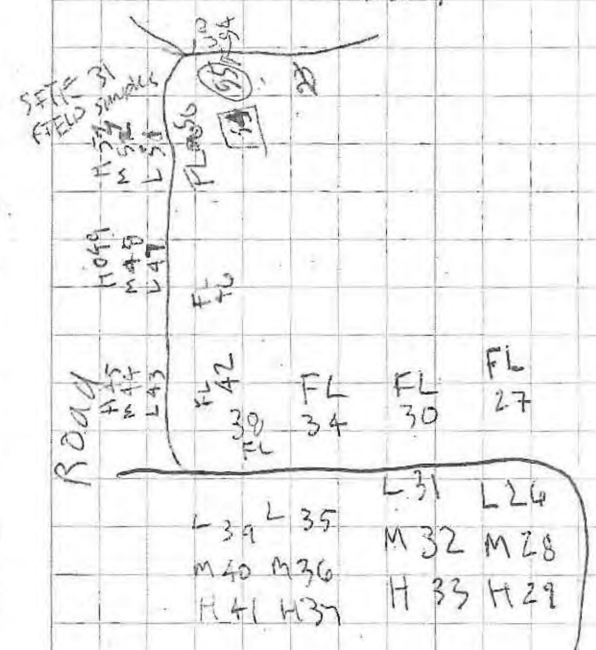
Site 31 Bagging and Sampling



Samples
31-23B → G (6)
BW31-23 (1)
31-24A → G (7)
BW31-24 (1)
B31 25A → G (7)

July 14, 2012
mostly cloudy
≈ 40°, calm

0700
Safety Meeting:
- Fire yesterday
- trash burner
  • Keep caps off of bottles
  • puncture pressurized cans
- shoot extinguisher at base of ignition source
- ~~Steer~~ Don't gather around someone working too much, stand back.



10:25

July 15, 2012 rain light breeze 35-40°F

(First sample will be # 56!)
Safety Meeting
- Rain - Stay Drive
WEEKLY SAFETY AWARD
• Lyndsey Kleppin

Lyndsey @ site 31

ED @ site six setting up Decision units.

unit - closest to road
108 feet N→S; 60' E→W

12NCLBGSS 10 @ 1545
site six, unit closest to road

12NCLBGSS 11 @ 1710
site six, second unit from the road
10.5

10.5 [signature]

July 16, 2012 Partly Cloudy ≈40°, slight breeze
0700
Safety Meeting + Health

PADS - Physical Agent Data Sheets
- cold
- heat
- noise
- hang arm vib
- lasers
- ionizing radiation
- ultraviolet radiation
-

Keep equipment Clean - WINDOWS!

Site Six MI Sampling

Setting corners on last two decision Units (of four).
Last two are 60' wide from E-W
132' from N→S.

35

July 16, 2012

12NCBGSS12
@ 1120

12NCBGSS13
@ 1410

10.00

Rite in the Rain

cloudy/grey
July 17, 2012 windy ≈ I 40°

Safety
- wind
- Liner placement safety in wind

Environmental
sample at site 31
open up site 13

Sampling @ site 31 with Lyndsey Kleppin

Sampling @ site 13

SWPPP inspection report

10.75

EB

July 18

Safety -
- wind
• Sand → eye protection

Environmental

Field Samples

13-001 — 13-030

BW samples
BW 13-35 — BW 13-37

Hot (over 50 ppm area) samples
BW 13-H01 → H06

~~34~~ 24 bags filled

EB

Rite in the Rain

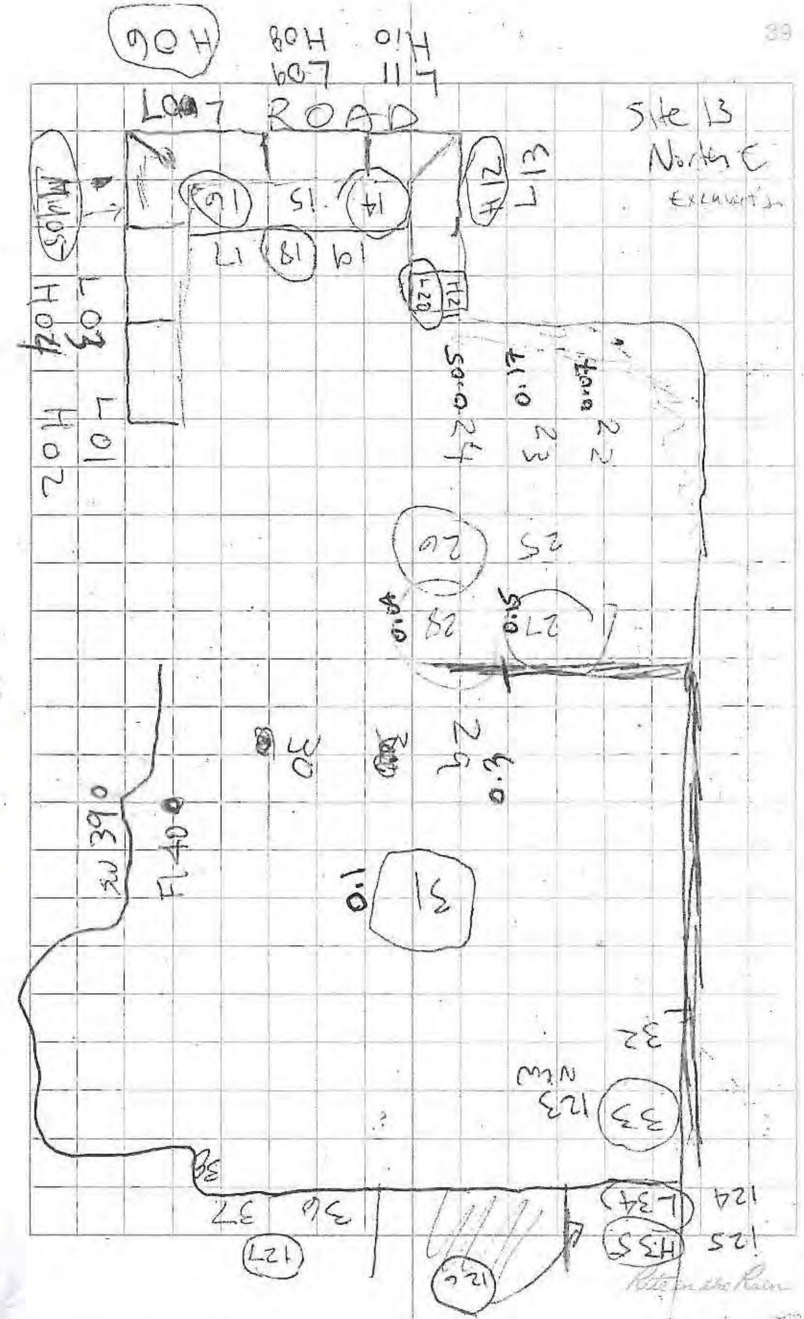
July 19, 2012 — cloudy, misty, fair, ~40°F

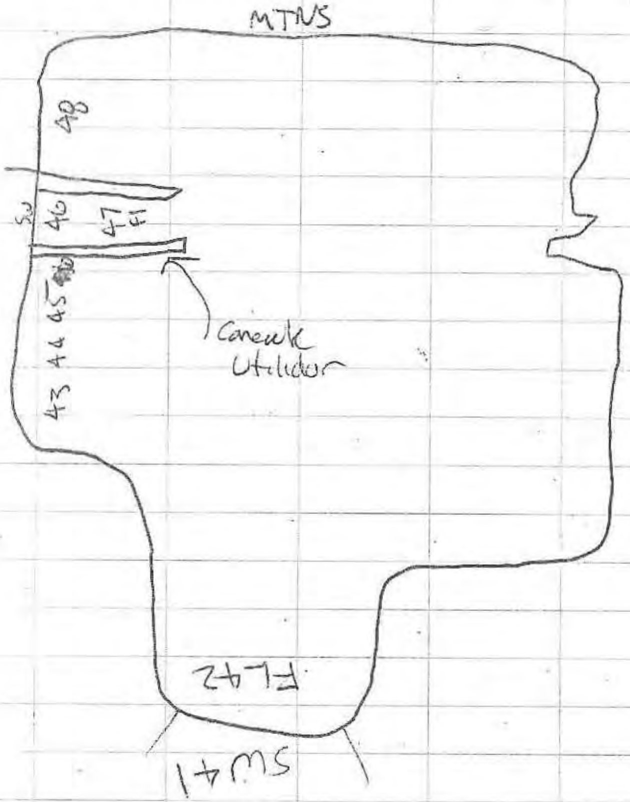
Safety

- stay out of the way of loader
- keep vehicle windows clean

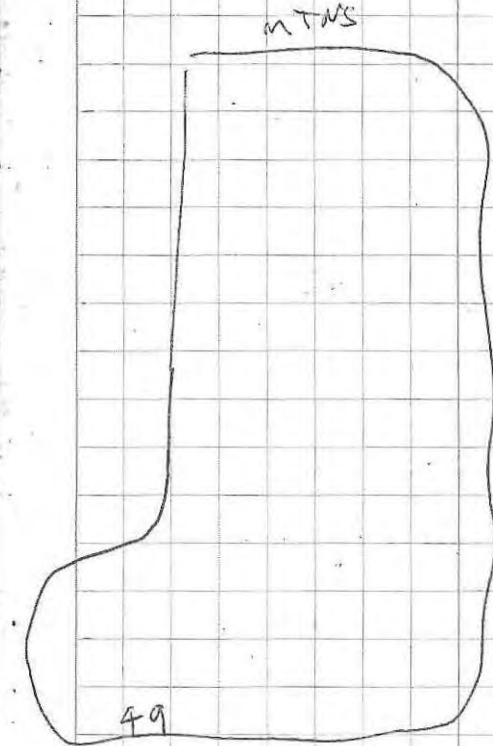
Environmental

Site 13 - continues
Site 20 - continues





Northern
old stock pile



Southernmost
old stockpile

10.25

Field Sampling on Bulk Wash Sampling
the rest of the day

[signature]

July 20, 2012

Safety (Eric Bernhill)
- Vehicle / Heavy Equipment Safety
  - walk arounds
  - secure loads
  - Parking Safety
- Keep in view of Excavator / equipment operator

Enviro
- Continue Site 28
- Continue Site 31

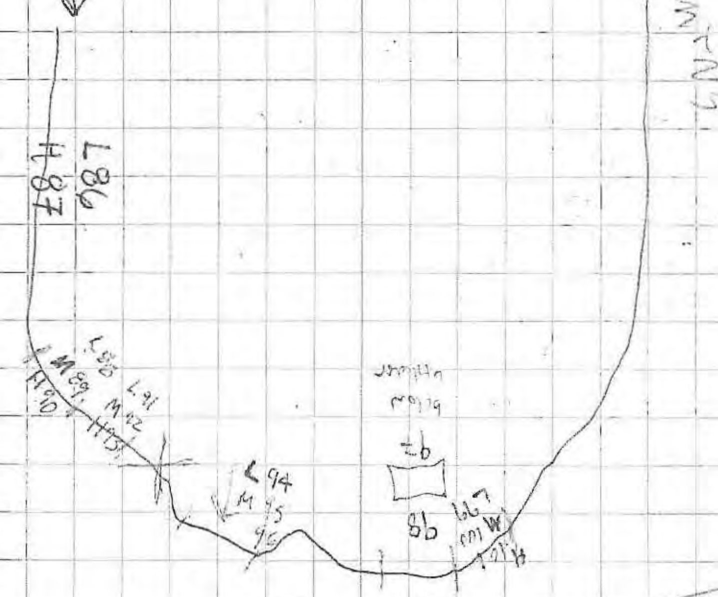
Lunch 1200 - 1230
Sample management Site 6 Samples
Site 13 -
Excavate field sample
Fuel recovery (≈20 gallons from Northernmost dig)
Site 6 Samples
- Shipping - A/C airline

11.0

July 21, 2012

Safety
- Be safe

Environmental
- Site 13
- A-1 - open up find old dirty Confirmation sample
- Site 13 Alcove in SE excavation



10

July 22
Safety-
- safety winner
MEL!

Environmental Meeting

- G+H plume excavation to continue
- Possibly site 21 today or tomorrow
- Site 13

0900 PCB sample results from site 13 excavation. 8 additional cleanout sites

1000 discussing Site 13 excavation logistics with Aaron QAR
- to build ramp?
- what to do with ramp soil
- do we dig deeper than 15"?
- do we dig below water

1100 Digging in site 13, hit a small pocket of water

SW excavation of site 13, Confirmation Sampling.

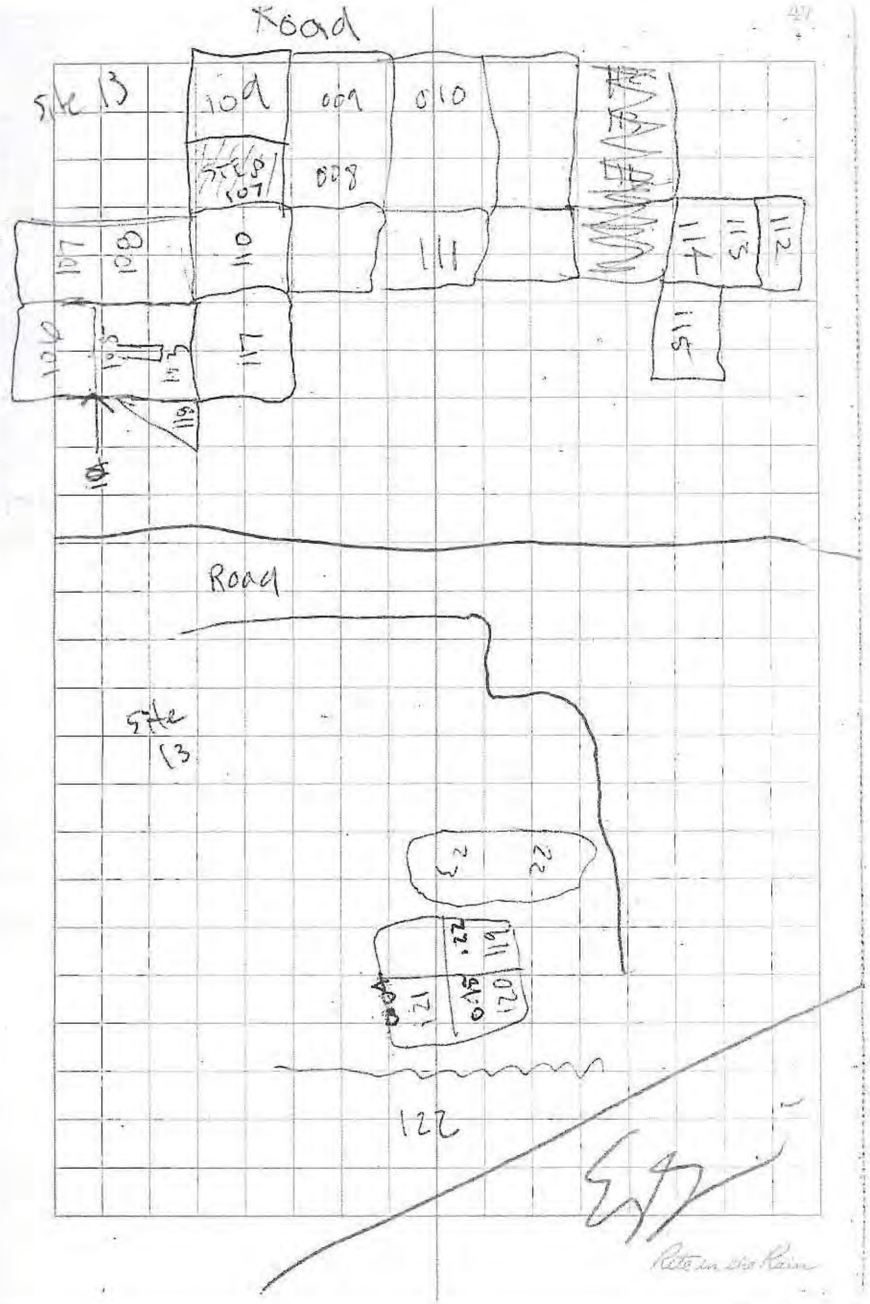
12NC13SS001 (MS/MSD)
@ 1615

12NC13SS002 (dup of 001)
@ 1620

July 23, 2012 | calm

Environmental / Safety

- Fog + radio communications
- Lots of activity in a small area at pad 98 (stay safe; communicate)
- Aaron to check up on depth meter issue at site 13



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No. 351

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Northeast Cape HTRW
Bristol Environmental Remediation Services
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W911KB-12-C-0003
7-24-12 → 8-10-12

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Project NE Cape St. Lawrence Island
HTRW 2012

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CONTENTS

July 24, 2012

Safety

- winds

Enviro

running both POL and PCB operations

- EAB

site 31 after / if finished with 13

- LK

POL bagging / plume digging

Confirmation samples

Site 13

Additional sample results

Bagging / Excavating from all excavations on site

Lunch - 1200 - 1230

- discussed removing concrete utility corridor from SE excavation at site 13.

July 24, 2012

Began removing concrete corridor.

Corridor too big to come out in one piece, excavator is breaking corridor into manageable pieces.

Spoke with QAR about leaving part of corridor in SW excavation because it was part of an area where soil was clean above and near the corridor. This will be done.

TWO South excavations are now connected

10.25

July 25, 2012

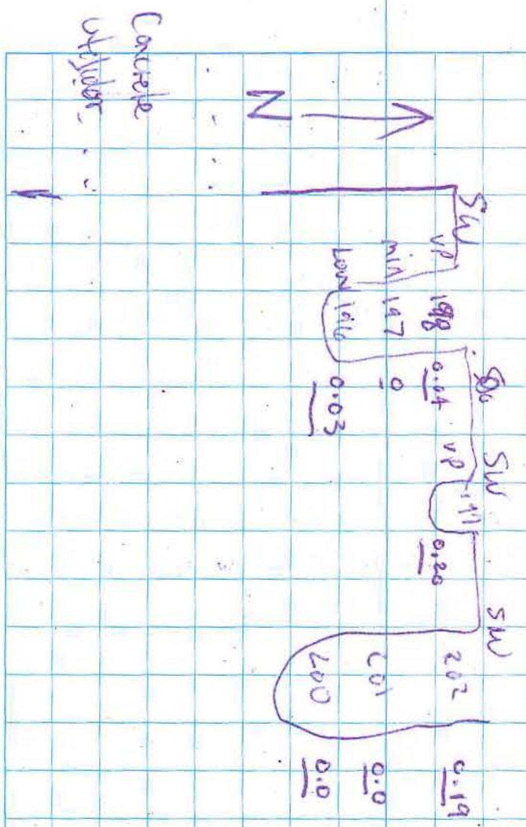
windy, cool
rainy,

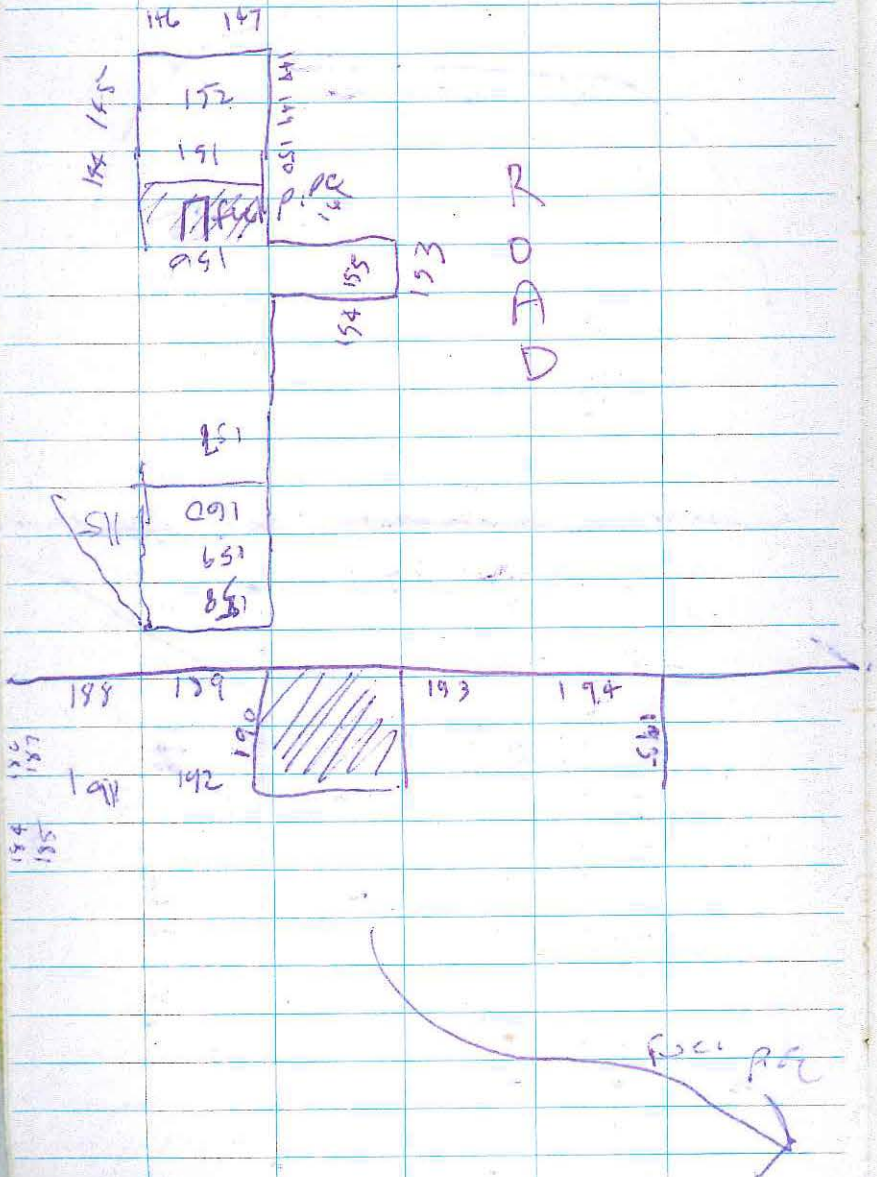
Safety -

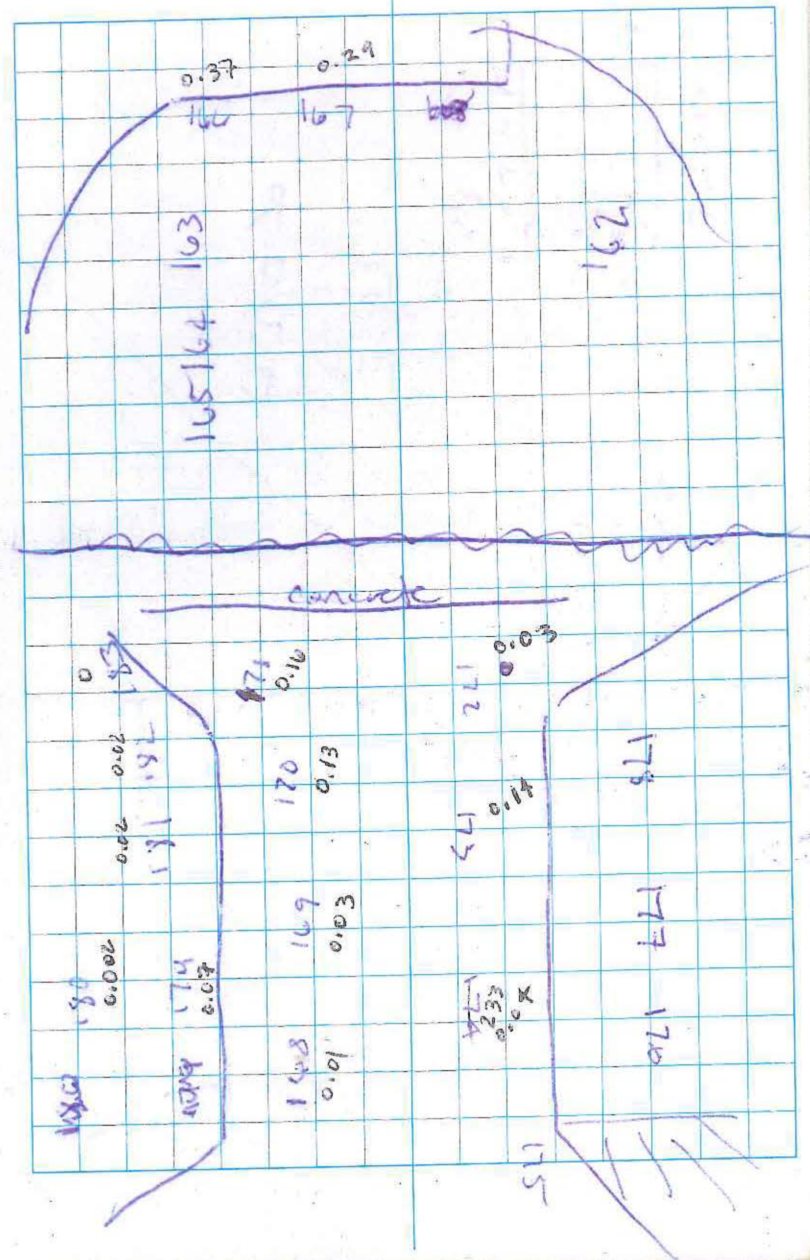
- winds
- wind chill
- rain

Environmental

- site 13 continuing
- waiting for POL results for A1 and G/H
- Site 31 after 13 gets exhausted




146
147
152
151
153
154
155
ROAD
188
189
190
192
193
194


0.37
0.29
166
167
163
162
165 164
concrete
0.03
0.16
170
0.13
0.14
169
0.03
168
0.01
0.002
0.02

Site 13 Field sampling
from all of the site 13
excavations.

11.0

July 26, 2012

Safety
- Be aware of test pits in areas
- Control of bags easier with 4 people
in area
- Do not throw trash
- Always wear Proper PPE
- Be Sure operator knows you are near
- Do things with signals

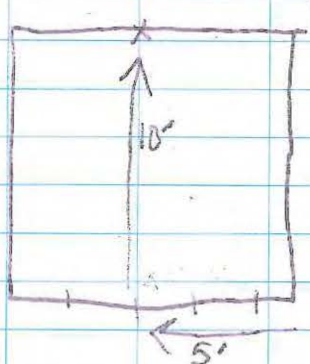
Environmental

- Site 13 waiting on Sample results
- Site 98 - bagging
- MOC = MI-Sampling
- MOC = plume excavation

1st -
Decision unit uphill from
tanks to be laid out.
area to be 60' x 60'
each increment will be 10' x 10'

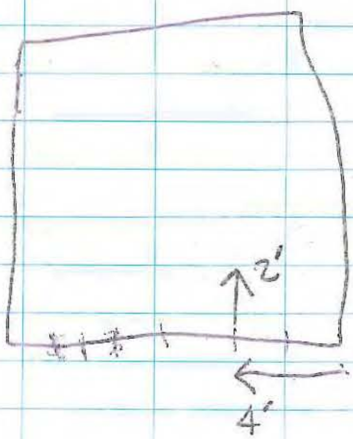
LOC IO - MOC-BS - 2

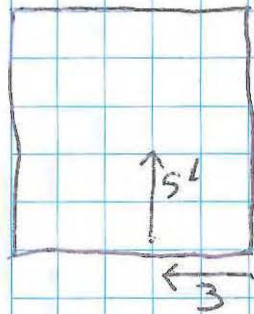
12NCBGSS14
@
1140



12NCBGSS15
@ 1345

(Dup of 14)





12NCBGSS16
@

1420

(Triplicate of 14)

Site 13 Field Sample

10.0

E. B.

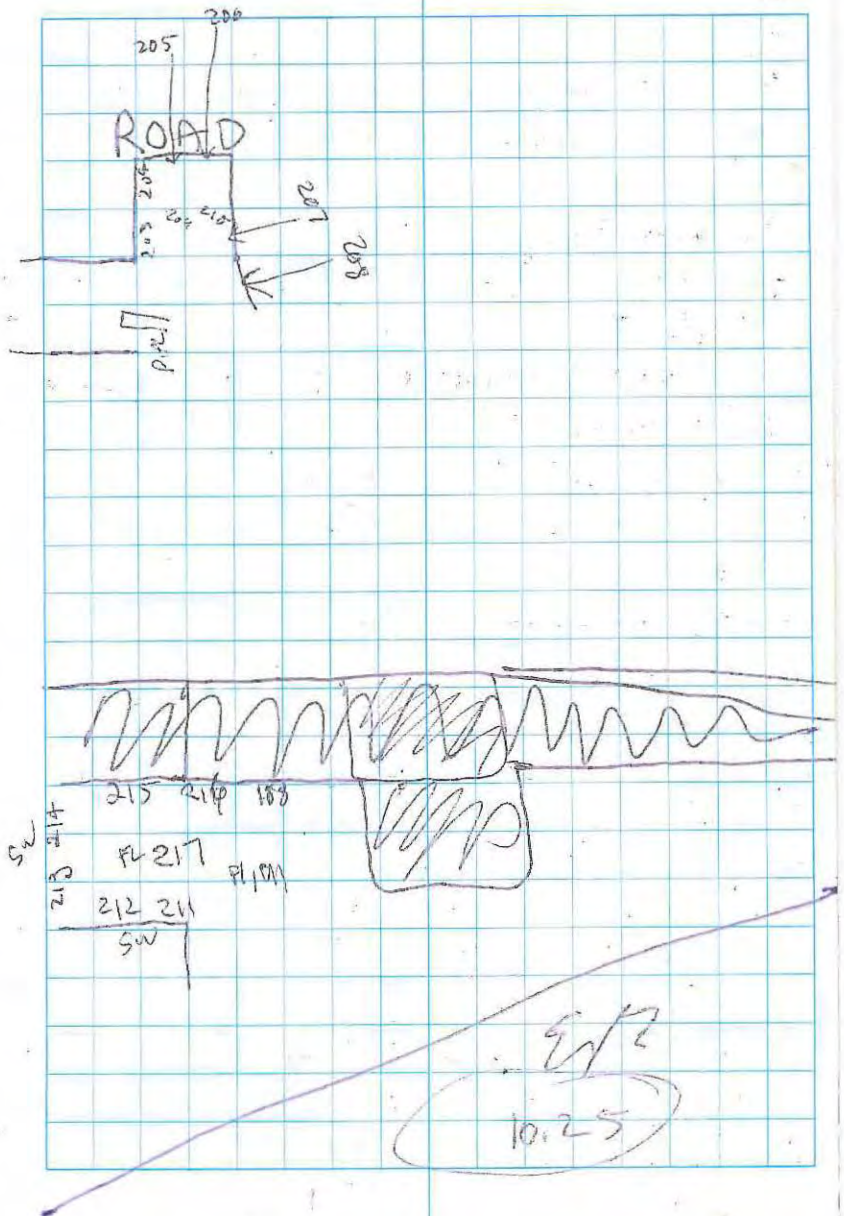
July 27, 2012

Windy, rain misty

Safety
Wind + rain - be cautious.
low visibility an issue

Environmental
- Lyndsey sending Confirmation samples
- Site 13 - waiting for lab samples (coming in the morning)
- Site/Pad 98 - bagging

Sampling (bulk waste) at pad 98



partlycloudy, cool

July 28, 2012 dry

Safety (ME)

- Foot safety
- eye Safety
- be prepared
-
-

Environmental

- MOC to Continue removing overburden and dirty soil to stockpile area and pad 90 respectively
- Moving to site #31
- lab would like us to prioritize when necessary

0800

Boat loading crew still at beach I took a ride down to beach to see progress. Suzanne Lovell, Chucks Admin. assistant rode with me. Laborers and an operator are moving equipment and an Excavator to site 31.

0945

adding a bag frame to site 31

Bagging at site 31

1200 lunch

1245

back at site 31

- bagging + excavating

10.25

July 29, 2012 Raing, Cloudy windy 35 → 40°F

Rain heavy through the night

Safety

- Be aware of things going on around you

Safety award: Awareness of potential situations

Bruce -

Doyle -

- chill factor just above freezing
- rain/wind will/may reduce awareness

Environmental

* pad 98 bagged/soupy
* 31 - Bagging
* POL results forthcoming - dry weights

July 30, 2012 Clear, sunny calm ≈ 40° +/-

Safety -

- proper PPE
  - Level D + Level D + Tyvek
  - Rain + warmth gear
  - hard toe boots
- let someone know if u need good equipment/materials

Environmental

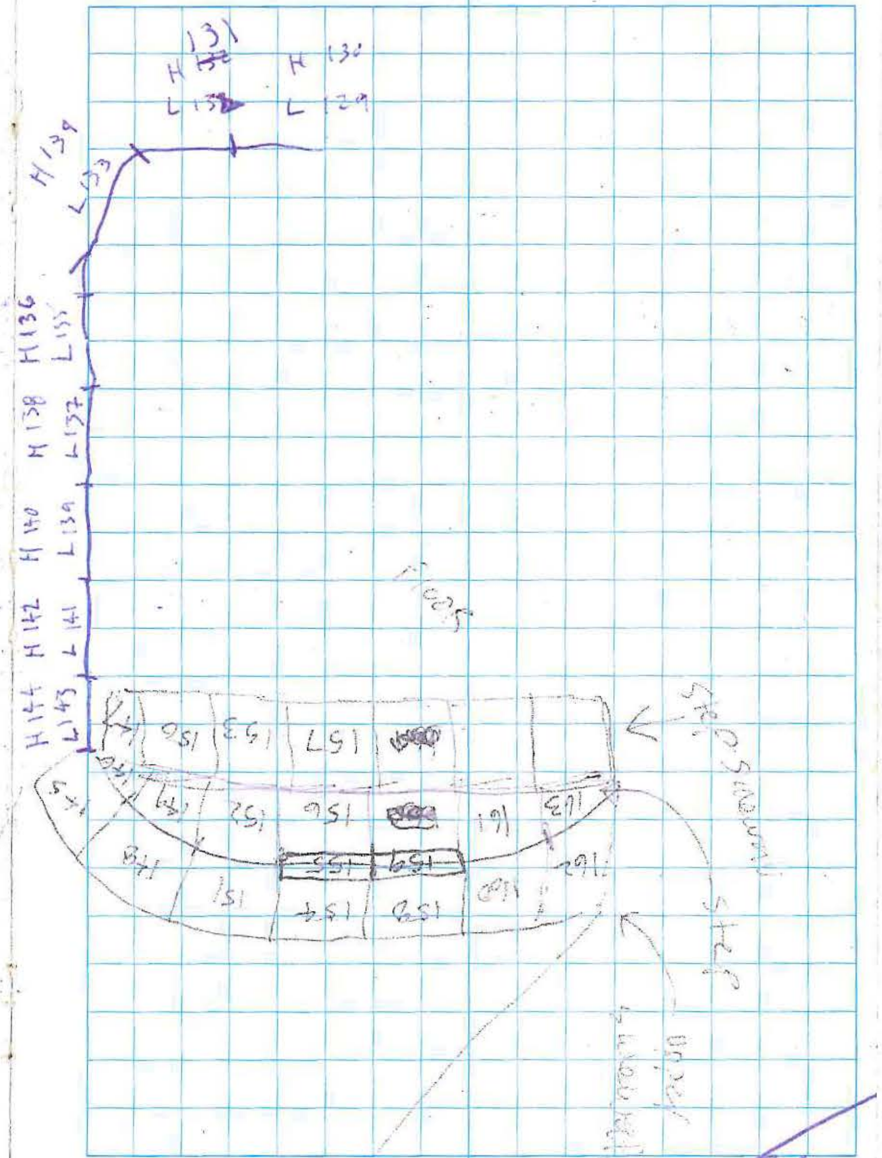
continue on

BW31-37 → 40 (4)

31-145 → 163 (19)

ROAD

EB



EB

July 31, 2012

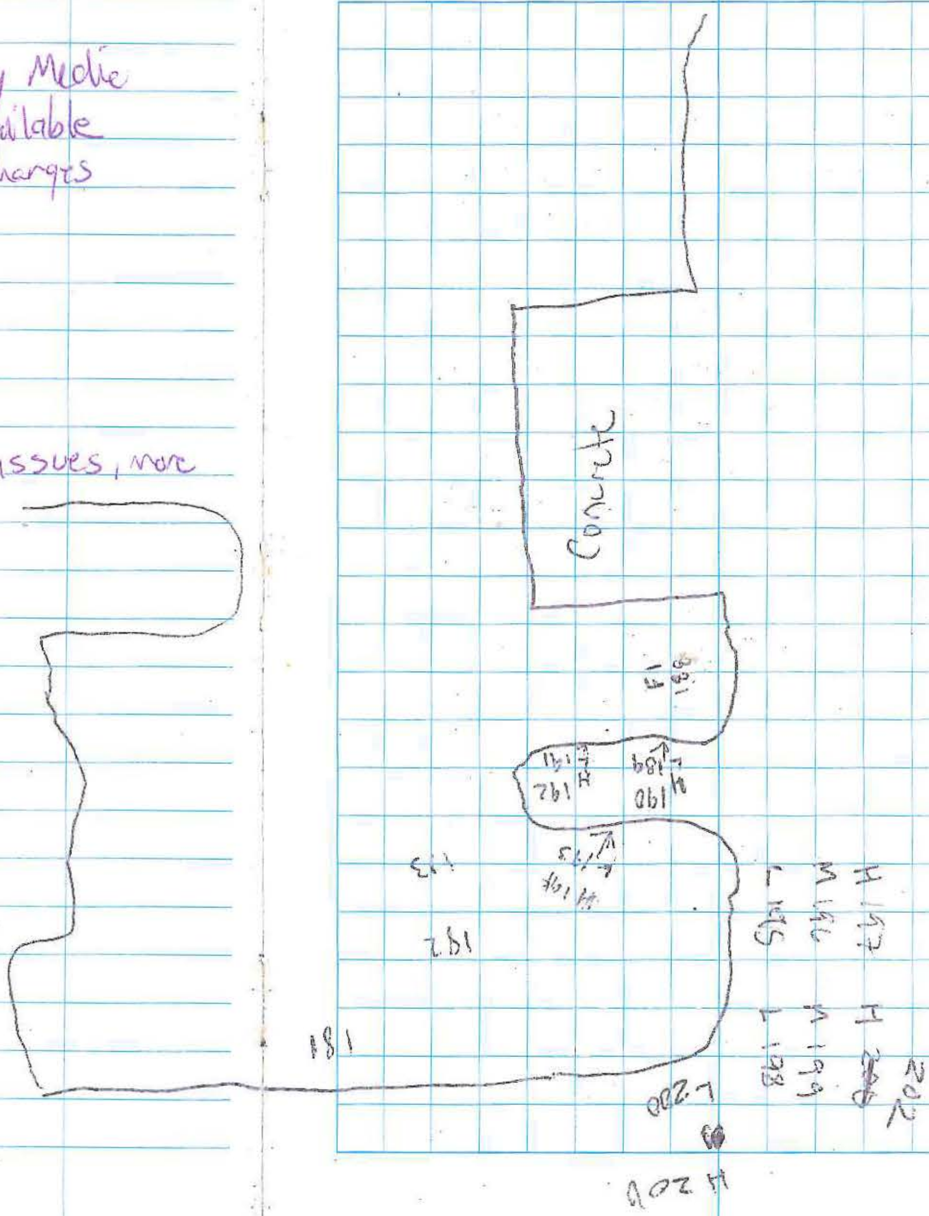
Safety

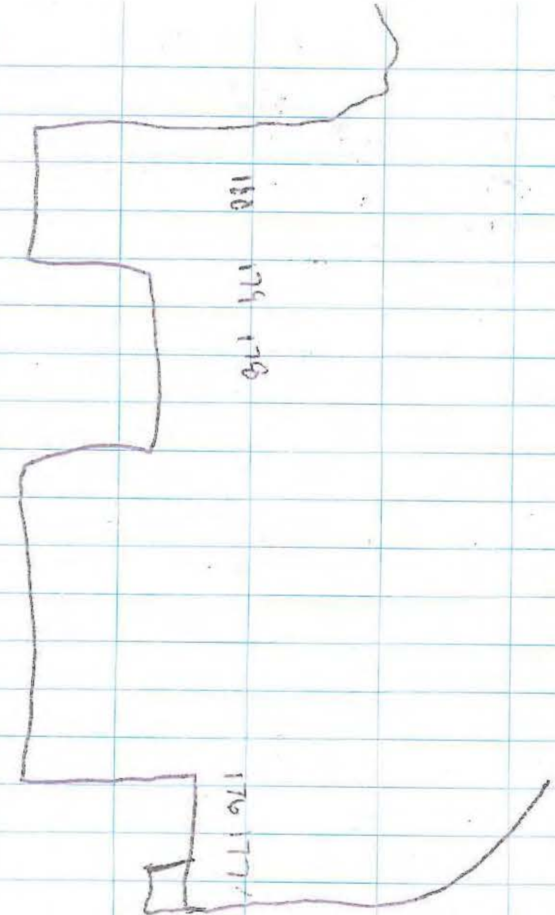
Heat and Coldstress: by Amy Mudie

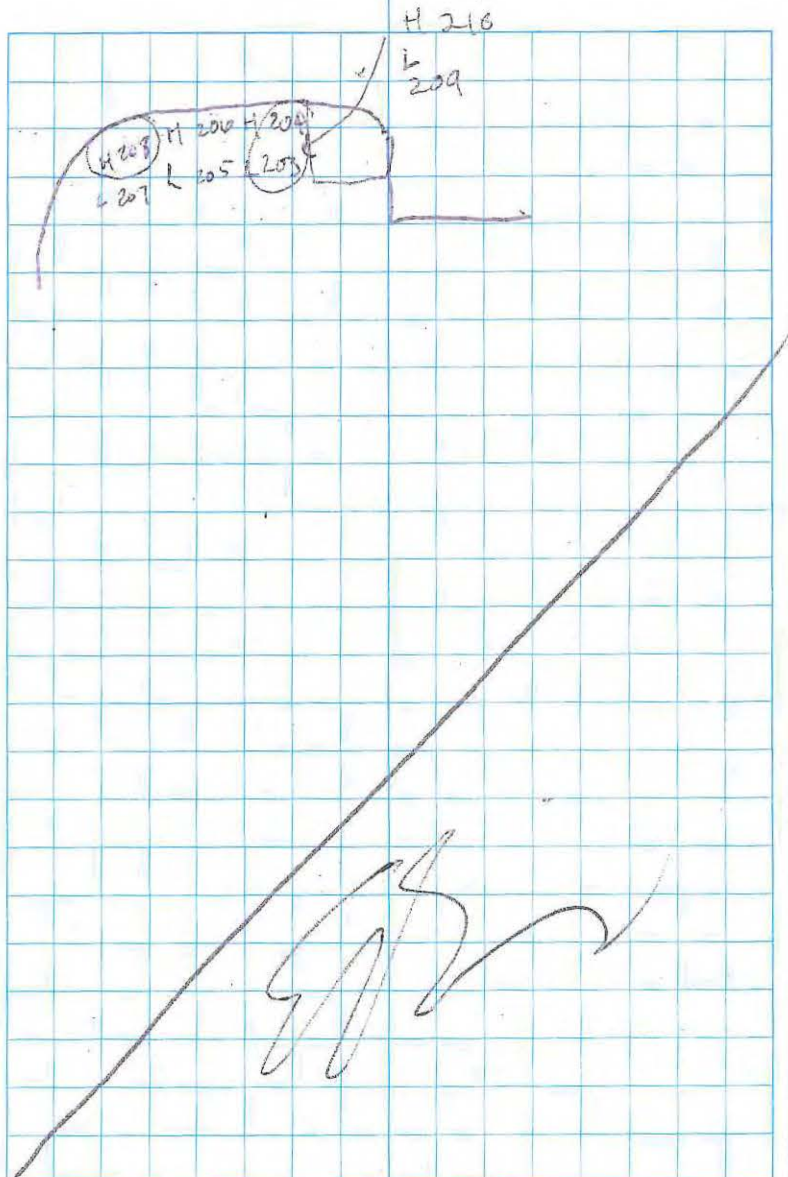
- Keep orange juice available
- Be aware of body changes

Environmental

- POL bagging today
- PCB sampling
- Lab having POL machine issues, more to be revealed.






H 216
L 209
H 208
L 207
H 200
L 205
H 204

August 1, 2012

Safety

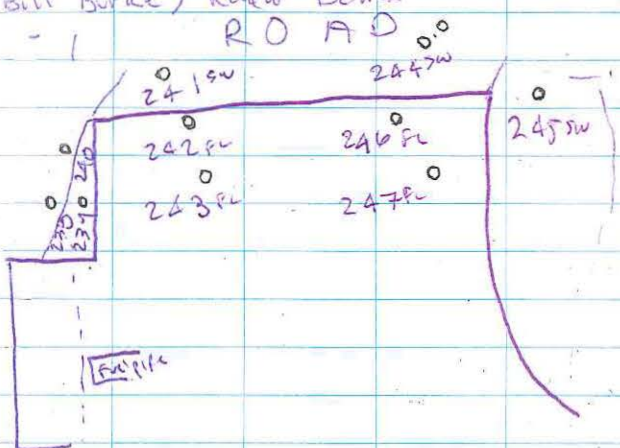
- New visitors

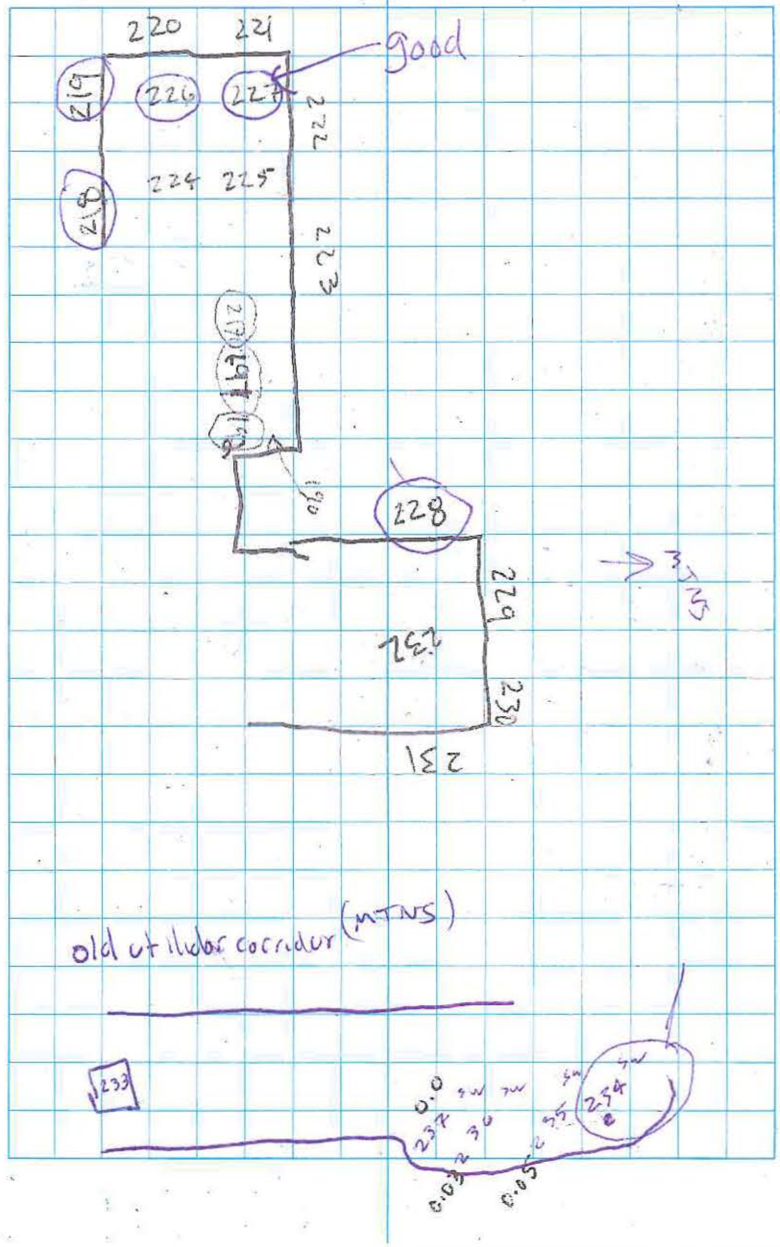
Large equipment has Right of Way

Environmental

site 13 + 31 paused this morning

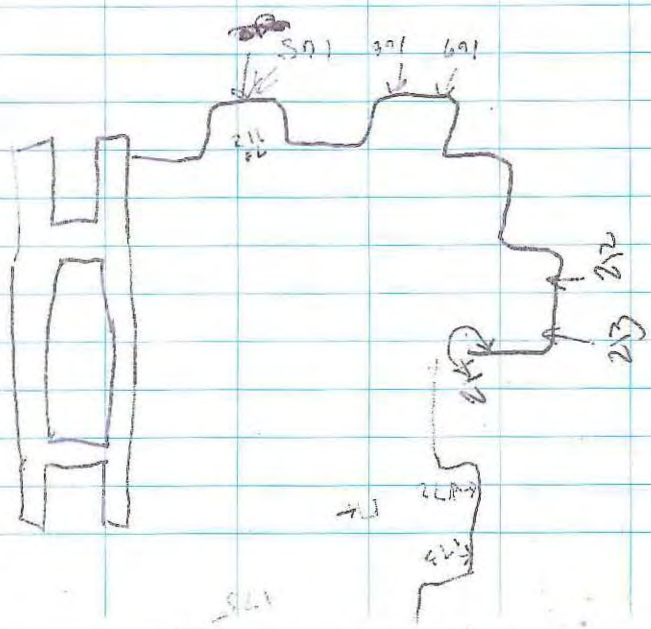
- Pad 98 POL bagging
- visitors checking out site 28, 31 and 13. (Curtis Dunkirk)(Corey Jarrell and Bill Burke) Radar Dome
- 1





August 2, 2012
safety meeting 0700
Environmental:
opening new plume
Site 31 Sampling /Excavation
0800
Site 31
Sampling /Excavating
1200 Lunch
1230
Site 31

Site 31 Sample



Finished at Site 31 with a small amount of soil to dig and samples to take
~~07~~ 1730

10.0

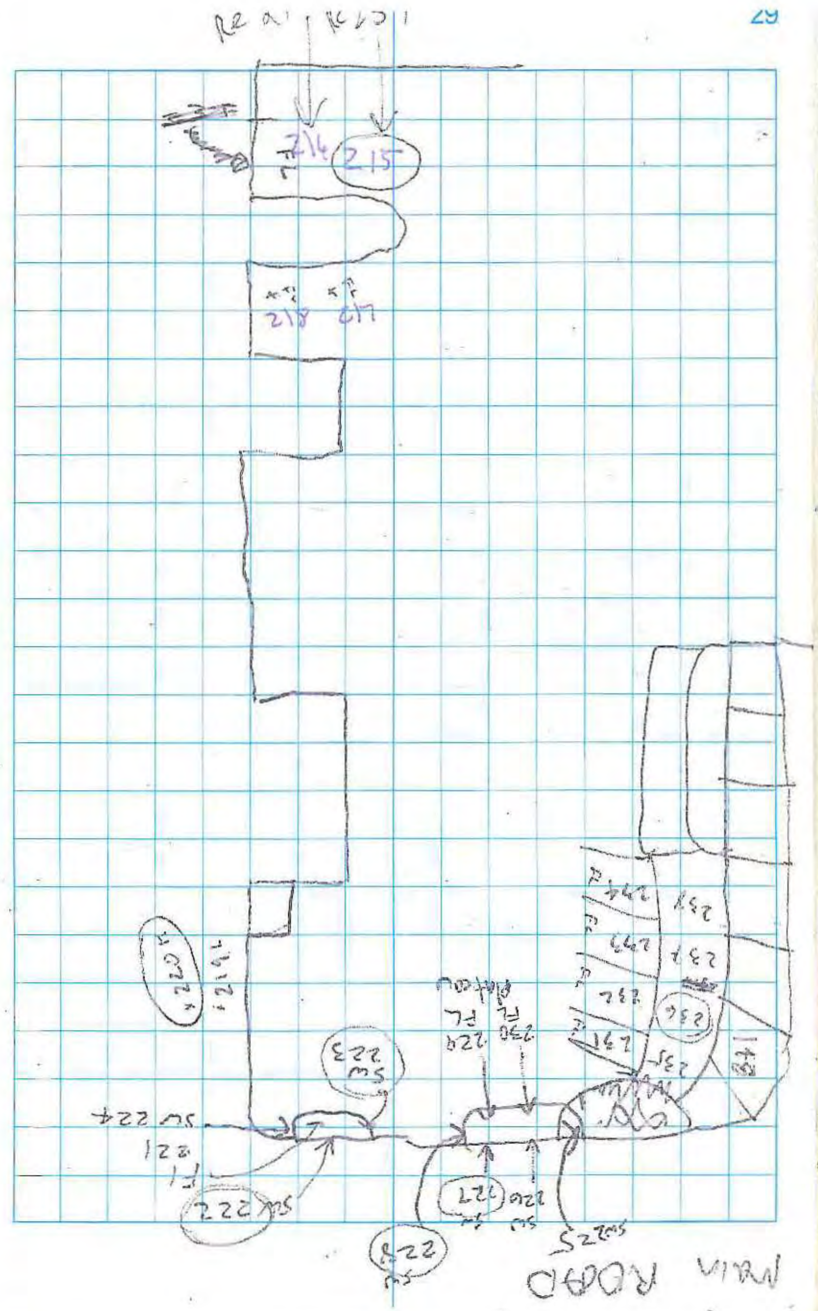
August 3, 2012 ~~[illegible]~~ ☼ 35-40°

Safety
- Choose the right equipment for the right job
  - straps vs chains
  - drum lifters
  - chaps - paper type

~~Safety~~ Enviro
- E plume continuing
- 31 bag and sample
- Pad 98 bagging

0730
Site 31
- remainder of digging

Field samples 31-215 → 31-238 (24)



August 3, 2012
1000 hours
Padsite 98

MOC 122 - G
BWMOC - G
MOC 123A
MOC 123B

August 4
Overcast
≈ 46°F

Safety -
Various activities
- wear proper PPE

POL sample frequency
- 2 samples + 1 per 250²

August 4, 2012

003	1645
004	1646
005	47
006	48
007	1655
008 [dup]	1656
009	1658
Ø1Ø	1707
Ø11	1711 ~~1708~~ EV5
012	1720
013	1721
014	1722
015	1723
016	1724
017	1725
composite ms/msd 018 with 028	1726

August 5 2012

Safety Meeting

Enviro
- E plume
- 13 Sampling

0715
Cleaning and preparing Sample Supplies

0800
site 13

~~NC1213~~

	12NC1355019	0852
	020	0855
	021	0857
	022	0858
	023	0858
	024	0859
	025	0900
(dup of 019)	026	0900
	027	0910
comp ms/msd with 018	028	0927

August 5, 2012

12NC13 SS032 (dup is 042 (comp group) @ 1200) @ 1000
(comp group = 30, 31, 32, ~~41~~ 42, 43, 44)

12NC13 SS031 (dup = 43 @ 1205) @ 1015
comp group = 30, 31, 32

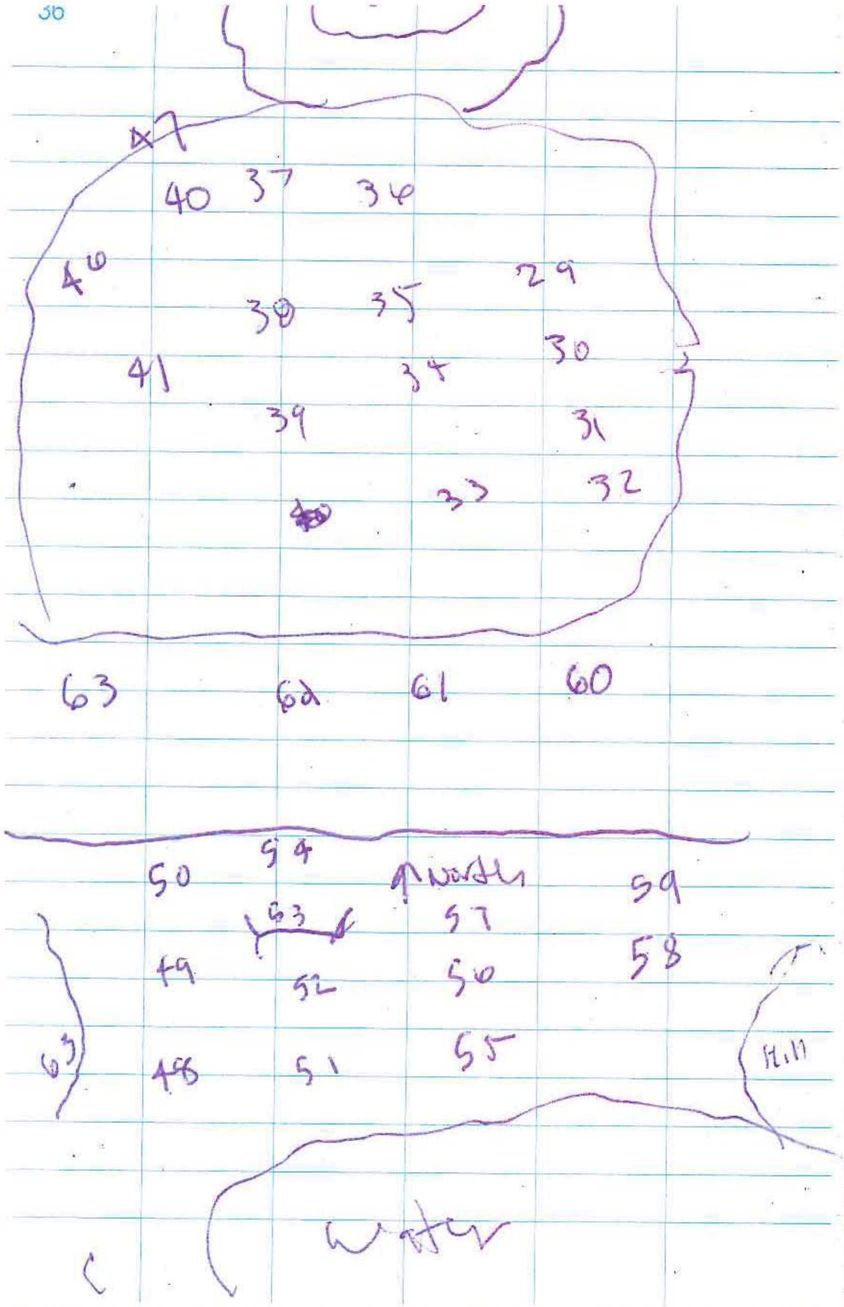
12NC13 SS030 (dup 44 @ 1210) @ 1025

	12NC13SS029	1038
	033	1047
	034	1053
	035	1102
dup is 45	* 036	1108
dup of 36	* 045	1215
	037	1112
	038	1117
	039	1120
	040	1130
	041	1132
	042 *	1200
	043 *	1205
	044 *	1210 ~~1200~~
	045 *	1215

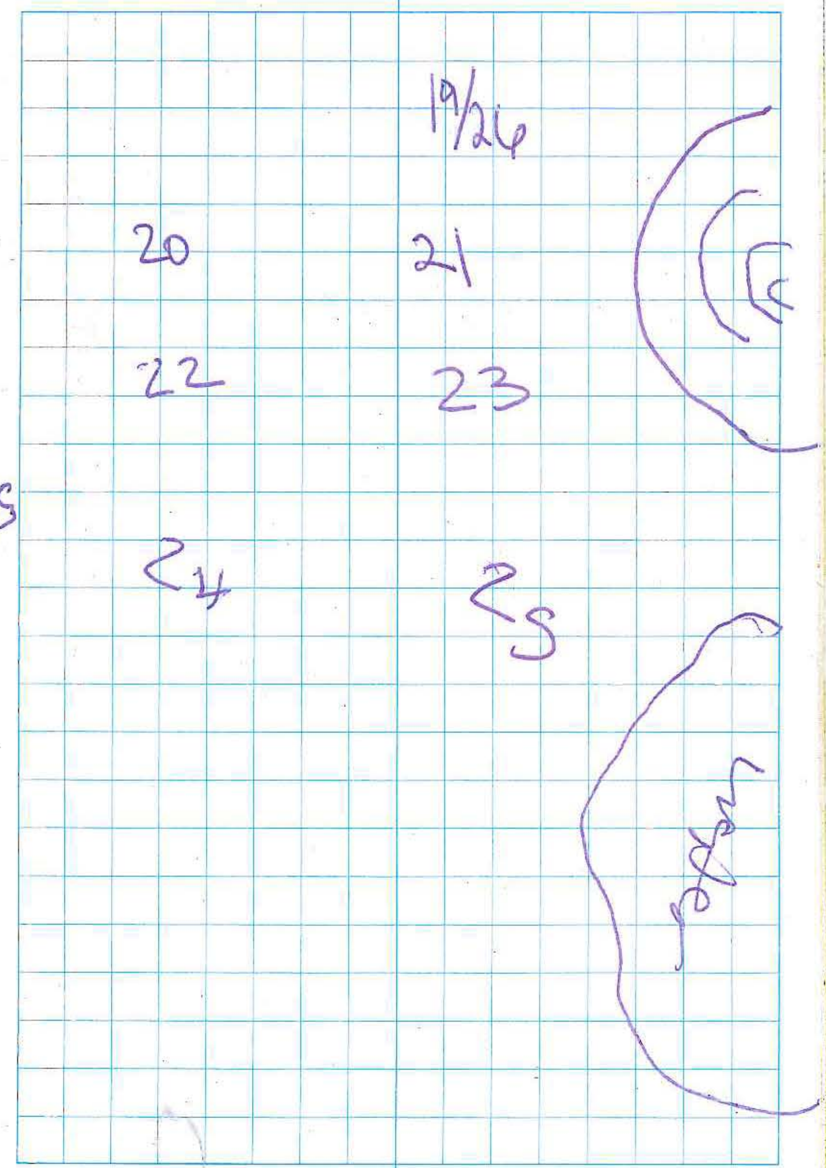
* duplicates

August 5, 2012

	12NC13 SS046	1420
	047	1425
(sw)	048	1430
(sw)	049	1441
(sw)	050	1443
	051	1456
	052	1452
	053	1455
	054	1457
	055	1501
	056	1502
	057	1504
	058	1509
	059	1511
	060	1516
	061	1517
	062	1518
	063	1520


47
40 37 36
40
38 35 29
41 34 30
39 31
33 32
63 62 61 60
54
50 North 59
53 57
49 52 56 58
63 48 51 55
Hill
Water

85


19/26
20 21
22 23
24 25

August 6, 2012

Safety:
PPE

Environmental:
- Sample prep

Packing Samples

PCB Samples 1 → 59 in Cooler
080612-1
PEP samples 60 → 63 in Cooler
080612-2 with MF triplicate
Samples 12NCBG SS 14, 15 + 16

August 7, 2012

Safety -

enviro -

Site 13 Sampling, Confirmation

064	0903
12NC13SS065	0905
066	0906
067	0907
068	0907
069	0909
070	0910
071	0911
072	0912
073	0913
074	0914
075	0920
076	0921
077	0922
078	0924
079	0926

August 7, 2012

12NC13550	080 [duplicates]	0931
	081	0933
	082 [duplicates]	0941
	083	0948
	084	1055
	085	1057
	086	1059
	087	1100
	088	1101
	089	1103
	090	1105
	091	1106
	092	1107
~~[illegible]~~ EB [~~Comp~~ WB MS/MSD]	093	1108
	094	1109 [illegible]
	095	1116
	096	1118
	097	1119
	098	1120
	099	1123
	100	1124
	101	1125
	102	1126
	103	1128

August 7, 2012

104	1130
105	1133
[dupes] 106	1134
107	1138
108	1142
109	1351
110	1353
111	1354
112	1355
113	1358
114	1358
115	1400
116	1401
117	1404
118	1406
119	1410
120	1412
121	1413
122	1414
123	1415
124	1416
125	1417

August 7, 2012

NN 12NC13SS		126	1418
		127	1420
	dupes	128	1437
		129	1438
	dupes	130	1439
		131	1440
	dupes	132	1443
		133	1445
	MS/MSD	134	1452
	dupe	135	1454
		136	1455
	MS/MSD	137	1456
		138	1503
		139	1501
		140	1508
		141	1512
		142	1513

August 7, 2012

Site 31 Confirmation Samples

12NC31SS		001	1624
		002	1625
		003	1626
		004	1627
		005	1628
		006	1629
		007	1631
		008	1633
		009	1638
		010	1640
		011	1640
		012	1642
	MS/MSD	013	1644
	MS/MSD	014	1648
		015	1650
		016	1653
		017	1654
		018	1656
		019	1658
		020	1659
		021	1700
		022	1702
		023	1703

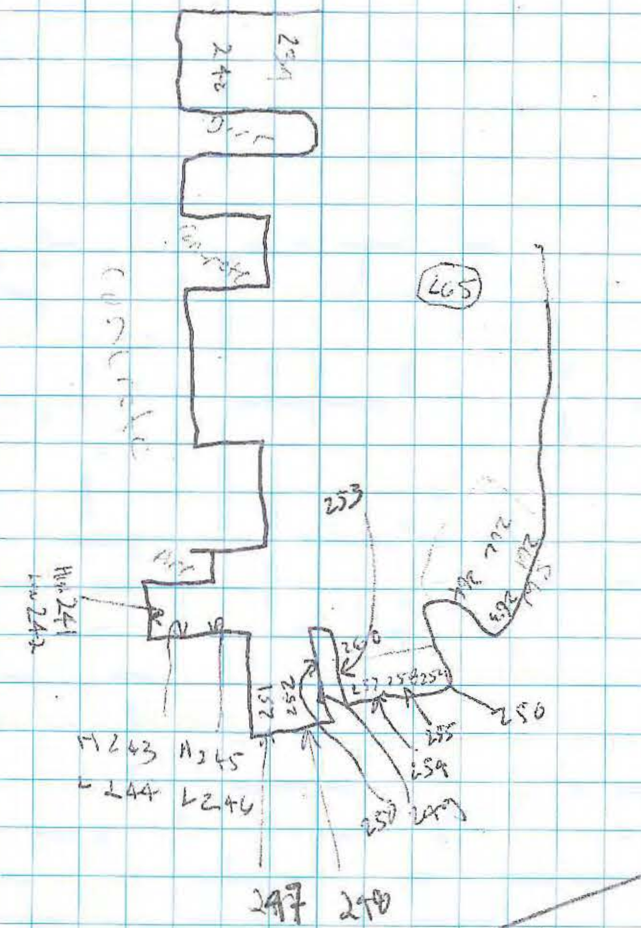
August 7, 2012

Site 31 Confirmation Samples

	12NC31SS 024	1705
	025	1709
	026	1711 ~~1709~~
* dup of 024	027	1715
* dup of 025	028	1716
* dup of 026	029	1717

August 8, 2012

Site 31 Sampling and Excavation



August 9, 2012

LALM
COOL

Safety

Possible winds picking up - proper PPE

environmental

- Site 31 Continuing
- Pad 98

Site 31 Excavation (see samples on Page 45)

Field lap samples 239 → 265
WAL 239 → WAL 265

Pad 98 Bulk waste Sampling
SWPP inspection
- inspect and Pictures
SWPP Inspection writeup

10.5

August 10, 2012

0700 Site Safety meeting
In camp - field prep
Site 13 visit with CQCSM
Lunch
1230
Pad 98 Bulk waste
Sampling

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6 32281 35112 2

8-11-12 ▼ 9-2-12

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Eric Barnhill

Northeast Cape HTRW

Bristol Environmental Remediation Services

W911KB-06-D-0007 and

W911KB-12-C-0003

Book 3 of 4

"Rite in the Rain"

ALL-WEATHER WRITING PAPER

Name Bristol Environmental Remediation Services LLC

Eric Barnhill

Address 111 W 16th Ave

Anchorage AK 99501

Phone 907 563 0013

Project Northeast Cape St. Lawrence

Island HTRW 2012

CONTENTS

August 11, 2012

Safety Meeting

Environmental Meeting
- sites 13 + 31
- Pad 98
Lesa Nelson on site assisting, taking over for when I leave

31 - Excavating + Bagging and Sampling for field lab

moving to site 13

Site 13 Bagging, excavating Field lab sampling

1730 stop

10.0

grey, cloudy
August 12, 2012 misty

Safety meeting

Environmental Meeting -

Pad 98
Site 13 - dig / bag / Sample
Site 31 - field Samples to be taken

Site 13 - excavating + Sampling + bagging
- field lab samples

Site 31 - Field sampling near road

Pad 98 - Lesa Field / bulk waste sampling
<LUNCH>
MOC Water Empoundment Samples
-
- 12NCMOCSWA 009 @ 1415
PAHs
BTEX
MS/MSD + duplicated

August 12, 2012
12NCMOCSWA010 @ 1430
(duplicate of 12NCMOCSWA009)
PAH's
BTEX

Waters sampled from water impoundment after scrubbing to test for contamination above that which will allow dispersal to ground.

Sample packaging.

Assisted L. Kleppin with stockpile (MOC) field sampling

10.0

August 13, 2012

Safety meeting
- pumping out drums

Environmental
- Sample management
- additional soils from E plume area to Pad 98.

Going to Anchorage today as weather allows.
End Eric Barnhill entry, begin Lesa Nelson entry
Collect Bulk waste samples from Pad 98
Samples collected BW-MOC166, BW-MOC-167, & BW-MOC168 to be analyzed for PCBs.

August 14, 2012
- Safety meeting: High winds the next couple of days
- Continue bagging POL soil and bulk waste sampling @ Pad 98.
-> Completed Bulk Waste Samples: BW-MOC169, BW-MOC170 & BW-MOC-171, ~~BW-MOC~~ LN — LN
- Break for Lunch
* Continue on BW-MOC172 — LN
-> Completed Bulk Waste POL Samples: BW-MOC172, BW-MOC173, BW-MOC174. — LN
-> Began BW-MOC175. — LN
[1730] Done for day. — LN

Lesen E Mell 8/14/12

August 15, 2012
- Safety meeting: high winds
- Excavating 5 supersacks out of Site 21 (arsenic contamination
- Collect confirmation samples. Additional details provided in Lindsey's field notebook
- Due to high winds done for the day

Lesen E Mell 8/15/12

August 16, 2012

- Safety meeting: Winds. Dbl check camp, site, + equipment for any problems due to the high winds on 8/15/12 —— ln
- Begin excavating Site 13 @ field screening samples 268 + 269. —— ln

-> Will ~~begn~~ begin on bag 13-57B
-> Completed Bulk Waste Samples: Ø
-> Bags 13-57 B, C, + D Completed

1040 ~~Complete~~ ln Move to Site 31 — ln

Surveyers will mark lab confirmation sample locations >1 mg/kg + will remove soil @ locations WAL 275 -> 278 and WAL-281 —— ln

Begin bags 31-49 —— ln

Filled bags 31-49 A + B. —— ln

1200 Break for Lunch —— ln

1230 Begin on bag 31-49C —— ln

Completed Samples: BW-WAL-49 —— ln

Began BW-WAL-50. Completed bag A

1500 Move to Pad 98 —— ln

Lindsey will stay @ PAD 98. I will begin collecting confirmation field samples @ Site 31. Field Samples 283 -> 290 on east side of excavations. Sample 291 = fixed lab confirmation sample 019 + 292 = fixed lab confirmation sample 009
At Site 13 Sample 275 @ former location of 269 + 276 @ former location of 268 —— ln

August 17, 2012 Partly Cloudy, ~50°F

- Safety meeting: ~~A~~ ln Mosquitos — ln
- Begin ~~excavating~~ ln filling bags @ Site 98
- Completed Samples: BW-MOC177, BW-MOC178, BW-MOC179 + ln

Completed Bags MOC-180A -> E

Break for Lunch —— ln

Completed Samples: BW-MOC180, BW-MOC181, BW-MOC182, BW-MOC183 —— ln

Completed bag MOC 184 A + B — ln

1730 Done for day —— ln

8/17/12

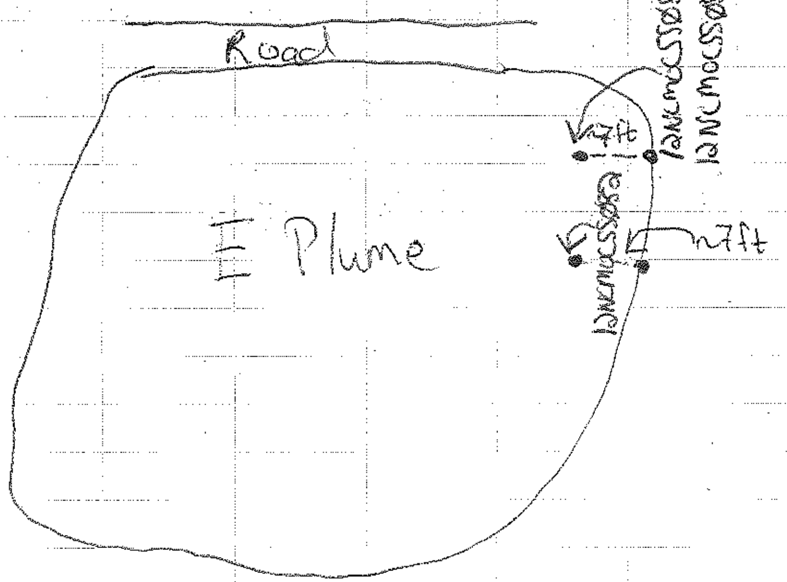
August 18, 2012 Rainy, Slight Wind, ~45°F
- Safety meeting: Rain, & breaks & hydration
-> Begin on bag: MOC-184D ——— LN
Completed Samples: BW-MOC184, BW-MOC185, BW-MOC186, ——— LN
1400 Break for lunch ——— LN
1230 Completed bags before lunch BW-MOC186 A,B,C+D
Completed Samples: BW-MOC187, BW-MOC188, BW-MOC189, BW-MOC190 ——— LN
Completed Bags: MOC-191A
1730 Done for the day ——— LN

8/18/12

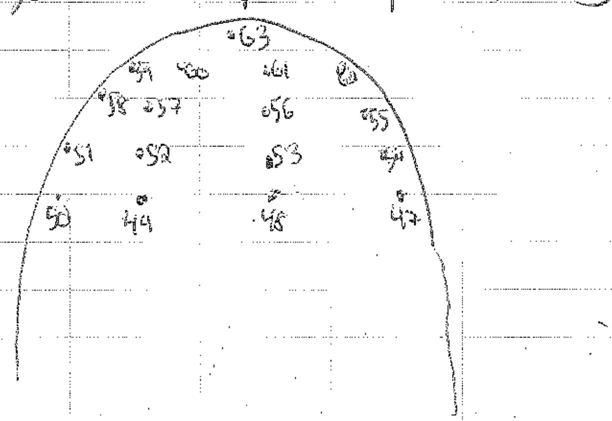
August 19, 2012
-> Safety Meeting: Weather & Communication
-> Head to Site 31 field screen samples WAL-283 + 286 > cleanup level — LN
Start on BW-WAL50B ——— LN
Completed Bags: BW-WAL50 B & C
Confirmation Samples WAL293 + 294
0845 Head to Site 13 ——— LN
Begin w/ Bag 13-57E ——— LN
Completed Samples: BW-1357, ——— LN
Confirmation field samples Collected from Lab Sample Location 003 = 13-277 ——— LN
Completed Samples: BW13-58 ——— LN
Completed bags up to 13-59E — LN
~~1515 Move to site 98~~ LN Decon
1330 Done for the day ——— LN

8/19/12

August 2Ø, 2Ø12 Partly Cloudy, Sligh Wind, ~45°F.
– Health + Safety Meeting: Awareness ——— zn
– Collect 2 Samples from E Plum on West Side of excavation



– Place Flags for stockpile Samples SP47 → 63



August 2Ø, 2Ø12
1200 Break for lunch ——— zn
1230 Begin collecting field Screening Stockpile Samples SP-47 to SP-63 ——— zn
→ Begin staking out field Sample locations @ Site 13. ——— zn
Lab Sample Ø15 = field Screening Samples 13-278 and 13-279. ——— zn
Lab Sample Ø61 = field Screening Samples 28Ø, → 282 zn

E Barnhill reviewed from Break

August 21, 2012

Safety

Environmental
L. Kleppin sampling floor of
Plume E (confirmation)

E. Barnhill - Site 10; drum
sampling

1345 - Sample D-001
mixture of Antifreeze with minor
amount of oil. Neon green
2 Jars

1405 Sample D-002
mixed oil and Antifreeze
2 Jars

1416 - Sample D-003
Antifreeze; Bluish green. 2 Jars

1420 - Sample D-004 2 Jars
clear oil, suspected electrical insulating PCB oil

August 21, 2012

D-005 @ 1435
light blue "Antifreeze"
2 Jars

D-006 @ 1452

Clear oil from drum
marked "electrical insulating"
2 Jars

D-007 @ 1603
motor oil
Brownish/greyish. Clean looking
2 Jars

D-008 @ 1615
Mixed
watery oil mixture
2 Jars

August 22, 2012

Safety meeting

Environmental Meeting

Sites 13 + 31
- excavation / sample prep

August 23, 2012

Site 31 Confirmation Samples

12NC31SS030	0914
31	0916
32	0918
33	0919
34	0922
35	0924
36	0927
37	0931
38	0934
39	0936
40	0937
41	0939
42	0941
43	0944
44	0945

August 23, 2012

12NC3155045		0948
46		1016
47		1018
48		1021
49		1023
50		1024
51	[dup	1025
52	]	1027
53		1034
54		1036
55		1041
56		1050
57		1044 ~~1052~~
58		1047
59		1052
60		1054
61		1102
62		1104
63		1108
64		1111
65	[dup]	1117
66		1119
67	[68 dup	1123

August 23, 2012

12NC3155068	[67 dup]	1125
69		1137
70		1149
71		1142
72		1145
73		1257
74		1259
75		1301
76		1303
77		1307
78	MS/MSD	1309
79		1314
80		1316
81		1319
82		1322
83	MS/MSD	1324
84		1328
85		1331
86		1334
87		1349
88		1351
89	[duplicate]	1355
90		1358

August 23, 2012

12NC3155091	1400
92	1404
93	1405
94	1406
95	1407
96	1411
97	1415
98	1416
99	1421
100	1423
101	1425
102	1427
103	1430
104	1432
105	1434 1434
106	1436 1436
107	1440
108	1442
109	1445
110	1448
111	1559
112	1600
113	1602
114	1604

August 23, 2012

12NC3155115		1606
116		1606
117		1608
118		1611
119		1612
120		1616
121		1616
122		1617
123		1619
124		1620
125		1621
126	dup of 123	1622
127	dup of 124	1623
128	dup of 125	1624
129		1708
130		1710
131		1713

13.0

August 24, 2012

	12NC3ISS 132	0912
	133	0913
	134	0915
	136	0917
	136	0919
	137	0921
	138	0923
MS/MSD	139	0926
MS/MSD	140	0931
MS/MSD	141	0932
MS/MSD	142	0933
	143	0938
	144	0939
	145	0940
	146	0945
[dup]	147	1015
	148	1019
	149	1023
	150	1024
[dup=52]	151	1026

August 24, 2012

12NC3ISS 152	[dup=51]	1048
153		1031
154	[dup]	1035
155		1036
156	[dup]	1041
157		1043
158		1044
159		1045
160	[dup]	1051
161		1052
162	[dup]	1055
163		1054
164		1105
165		1106
166		1107
167		1108
168		1109
169		1110
170		1111
171		1112
172		1113
173		1137
174		1139

August 24, 2012

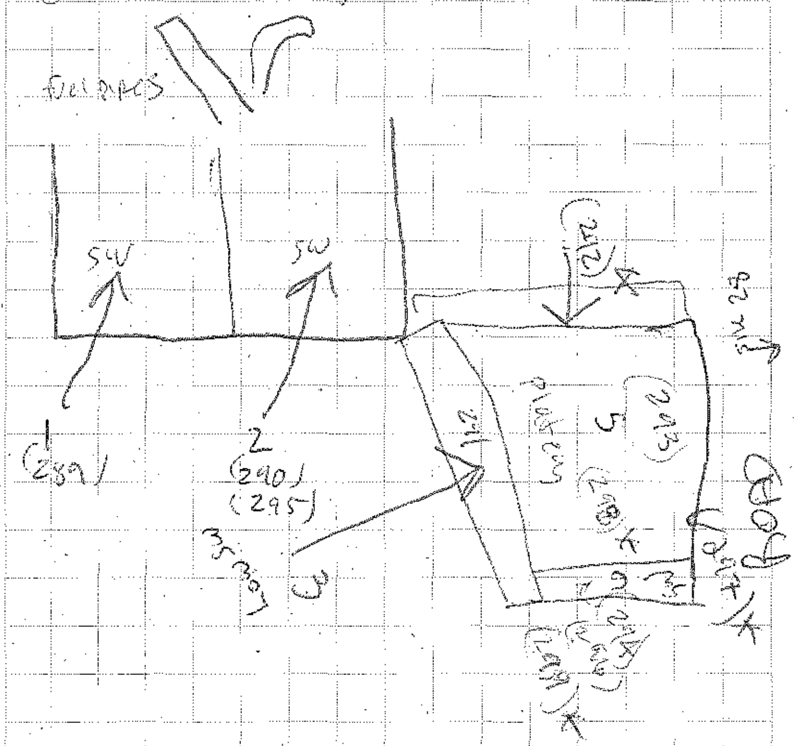
	175		1140
	176		1351
	177	[dup 184]	1400
	178	MS / MSD	1401
	179	[dup 185]	1403
	180	[dup 186]	1404
	181	[dup 187]	1407
	182	[dup 188]	1408
	183	[dup 189]	1410
[177]	184		1411
[179]	185		1412
(180)	186		1416
[181]	187		1418
[182]	188		1420
[183]	189		1424
	190	[dup]	1450
resample of 19	191		1453
resample of 9	192	[dup]	1505
	193		1508

10.25

August 25, 2012

(290 - 0.9
294 - 1.4)

Safety Meeting
Environmental Meeting



$* = 8 \, ft$

Aug 25, 2012

12NC13SS	143	[dup]	1623
	144		1625
	145		1628
	146		1630
	147		1631
	148		1633
	149		1635
	150		1637
	151		1638
	152		1639
	153		1641
	154		1642
	155		1644
	156		1645
	157		1447
	158		1648
	159		1650
	160	[dup]	1651
	161		1652
	162	[dup]	1654
	163		1658
	164		1702

Aug 25, 2012

12NC13SS	165	1703
	166	1705
	167	1707
	168	1708
	169	1710

August 26, 2012

Safety meeting

Environmental Meeting
Site 13

Site 13 Confirmation Samples

12NC13SS	170	0910
	171	0913
	172	0914
	173	0920
	174	0922
	175	0924
[dup]	176	0926
	177	0928
	178	0931
	179	0933
	180	0935
	181	0937
	182	0939
	183	0954
[dup]	184	0956
	185	0958

12NC13SS	186	0950
	187	1000
	188	1011
	189	1016
	190	1020
	191	1026
	192	1027
	193	1032
	194	1034
	195	1036
	196	1039
	197	1041
	198	1045
	199	1050
	200	1055
	201	1238
	202	1240
	203	1241
	204	1243
	205	1245
	206	1247
	207	1248
	208	1249
	209	1250

12NC13SS	210	1252
	211	1253
	212	1254
	213	1256

SB

August 27, 2012

Cool @ 45° F

PCB excavation
no field samples

SB

August 29, 2012

YSI Calibration

① @1030

pH 6.03
DO 6.1% / .68 DO mg/L
Conductivity 0.178 ms/cm / 119 us/cm
ORP -13.2
Temp 7.85

② @1040

pH 7.12
DO 2.6% DO / 0.39 DO mg/L
Conductivity 0.824 ms/cm / 440 us/cm
ORP -126.8
Temp 6.59°C

③ @1050

pH 5.89
~~DO~~ Cond. 0.109 ms/cm / 75 us/cm
~~Conductivity~~ DO 18.1 DO% / 2.12 DO mg/L
ORP 36.3
Temp 8.02

④ @1100

pH 6.20
DO 9.5 DO% / 1.19 DO mg/L
Conductivity 0.121 ms/cm² / 83 us/cm
ORP -2.6
Temp 8.57

⑤ @1110

pH 5.58
DO 8.4% / .99 DO mg/L
Conductivity 0.091 ms/cm² / 62 us/cm
ORP 105.6
Temp 8.05

⑥ @1120

pH 5.77
DO 10.3 DO% / 1.15 DO mg/L
Conductivity 0.096 ms/cm² / 65 us/cm
ORP 81.1
Temp 8.17°C

⑦ @ 1130
pH 5.65
DO
Conductivity 0.159 ms/cm² / 110 us/cm
ORP 20.3 DO% / 2.36 DO mg/L
Temp ~~[illegible]~~ 8.62°C

⑧⑨ @ 1140 / 1150

pH 5.49
DO 8.6 DO% / 1.03 DO mg/L
Conductivity 0.072 ms/cm² / 49 us/cm
ORP 250.6
Temp 8.16°C

⑩ @ 1300
pH 5.27
~~DO~~ Conduct 0.071 ms/cm² / 49 us/cm
DO ~~Conductivity~~ 43.4 DO% / 4.98 DO mg/L
ORP 260.1
Temp 9.19

⑪ @ 1310
pH 5.24
DO 23.1 DO% / 2.56 DO mg/L
Conductivity 0.067 ms/cm² / 47 us/cm
ORP 281.1
Temp 9.52

⑫ @ 1320
pH 5.49
DO ~~2.4~~ 21.4 DO% / 2.57 DO mg/L
Conductivity 0.085 ms/cm² / 59 us/cm
ORP 124.4
Temp 9.59

⑬ @ 1330
pH 5.23
~~DO~~ Cond 0.080 ms/cm² / 55 us/cm
~~CONDuctivity~~ DO 3.7 DO% / 0.44 DO mg/L
ORP 189.2
Temp 8.67

(14) @ 1340
pH 5.23
DO 41.4 DO% / 4.80 DO mg/L
Conductivity 0.078 ms/cm / 51 us/cm
ORP ~~265~~ 263
Temp 9.45

(15) @ 1350
pH 5.39
DO 5.6 DO% 0.67 DO mg/L
Conductivity 0.099 ms/cm 68 us/cm
ORP 82.5
Temp 8.76

(16) @ 1400
PH 5.36
DO 12.3 DO% 1.47 DO mg/L
Conductivity 0.096 ms/cm 68 us/cm
ORP 85.3
Temp 9.11

(17) (18) @ 1410 / 1420
PH 5.40
DO 35.2 DO% 3.89 DO mg/L
Conductivity 0.068 ms/cm / 48 us/cm
ORP 214.4
Temp 9.87

(19) @ 1430
pH 5.34
DO 30.0 DO% / 3.42 DO mg/L
Conductivity 0.070 ms/cm / 49 us/cm
ORP 211.4
Temp 9.51

(20) @ 1610
pH 5.26
DO 19.1 DO% / 2.13 DO mg/L
Conductivity 0.072 ms/cm / 52 us/cm
ORP 261.3
Temp 10.29

21 @ 1627
pH 5.48
DO 12.8 DO% 1.46 DO mg/L
Conductivity 0.111 ms/cm / 77 us/cm
ORP 95.3
Temp 9.37

22 @ 1634
pH 5.46
DO 10.7 DO% / 1.22 DO mg/L
Conductivity 0.074 ms/cm / 52 us/cm
ORP 139.1
Temp 9.3

23 24 @ 1647 @ 1650
pH 6.07
DO 21.7 DO% 2.33 DO mg/L
Conductivity 0.082 ms/cm / 66 us/cm
ORP 27.0
Temp 11.30 °C

25 @ 1656
pH 4.86
DO 28.9 3.22
Conductivity 0.066 ms/cm / 46 us/cm
ORP 243
Temp 9.21

~~26~~ 27 * @ 1713
pH 4.90
DO 26.7 DO% 3.14 DO mg/L
Conductivity 0.072 ms/cm / 49 us/cm
ORP 200.9
Temp 8.24

~~27~~ 26 * @ 1700
pH 4.78
~~DO~~ cond 0.070 ms/cm / ~~113.2~~ 47 us/cm
DO ~~Conductivity~~ 29.3 DO% / 3.51 DO mg/L
ORP 177.4
Temp 7.56

*out of sequence

August 29, 2012

Site 8 Soil Sampling

12NC08SS003 (MS/MSD)
@ 1000

12NC08SS004

12NC08SS004
@ 1100

Site 13

12NC13SS214 @ 1230 [MS/MSD]

12NC13SS215 @ 1235

12NC13SS216 @ 1240

12NC13SS217 @ 1245

12NC13SS218 @ 1250

12NC13SS219 @ 1255

12NC13SS220 @ 1300

12NC13SS221 @ 1305 [dup of 215]

10.5

August 30, 2012

Enviro
Bag shortage
Bag enrolute
Surveyor back - Site 13 & 31
confirmation samples need surveying

Sample marking at site 31 and Site 13.

10.25

August 31, 2012

Health and Safety - (E. Barnhill)

Lab Safety
- team carry heavy gas tanks
- use heavy equipment when able
- Stay clear of GC room and extraction room

PAD - Physical Agent Data Sheet
- Cold stress

- PAD 90 BU sampling

- E plume - additional digouts, digging out

- Lab waste to site six. Placed in H bay # H12.

10.25

September 1, 2012 I 35°

1. Excavator Safety - swing radius eye contact
2. Safety glasses
3. Safety vests
4. radio communication
5. Be prepared
6. Vehicle check - tires, fuel, windows clean
7. Clear communication of objectives
8. stay alert
9. slower is faster
10. $$$$

10.25

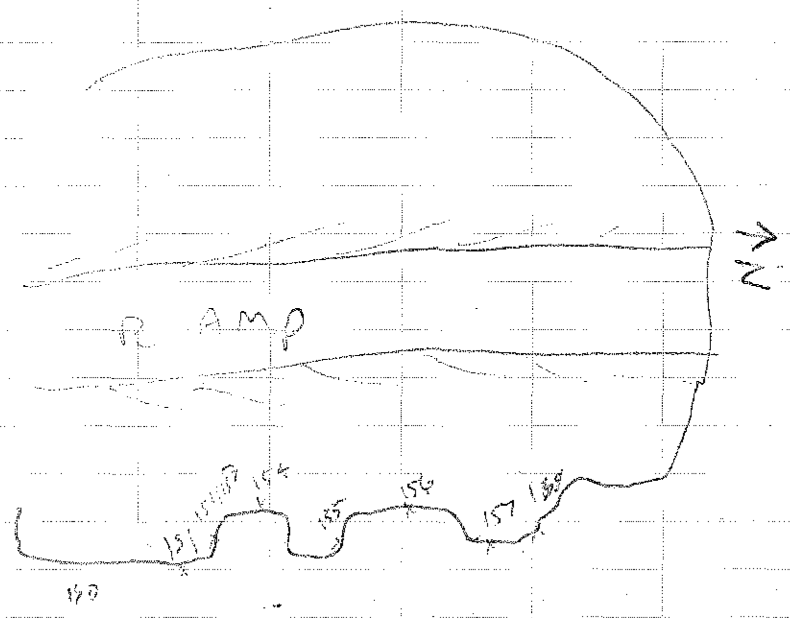
September 2 2012

Safety meeting
1. team left
2. stay warm
Safety Award - Allen Dennis

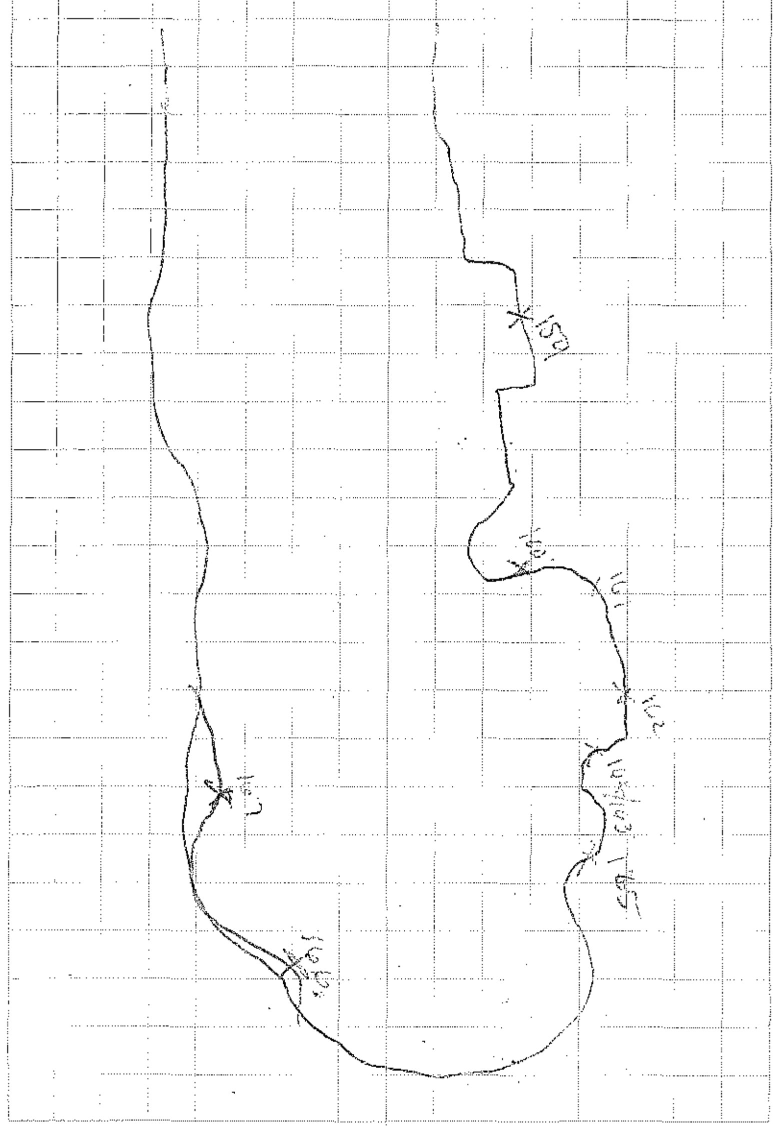
	12UCMOCSS150		1415
E plume	151		1416
	152	[dupes]	1417
	153		1420
	154		1421
	155		1422
	156		1424
	157		1426
	158	ms/MSD	1427
plume	159		1500
	160		1504
	161		1510
	162		1514
	163	[dupes]	1516
	164		1518
	165		1524
	166		1529
	167		1531

9/2/12

E plume

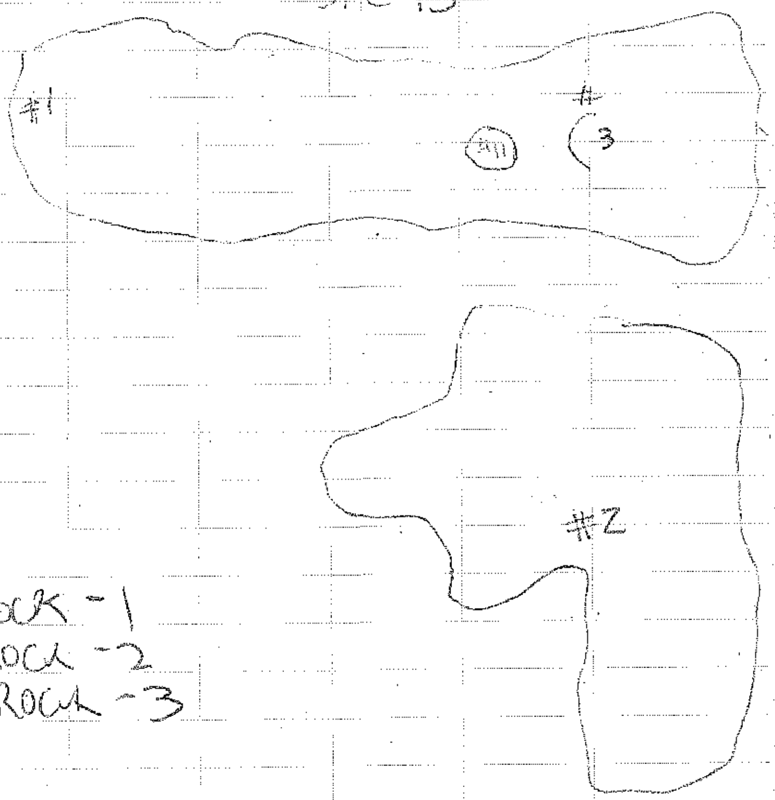


9/2/12 G



9/2/12

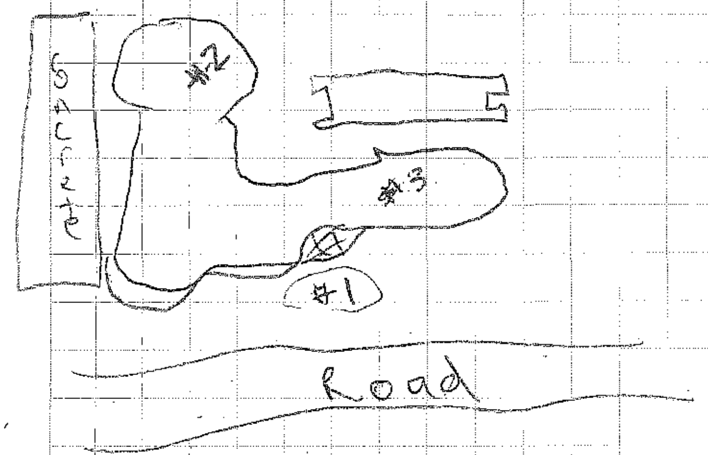
Site 13



13 ROCK - 1
13 ROCK - 2
13 ROCK - 3

9/2/12

Site 31



13Rock - 1
31 Rock - 2
31 Rock - 3

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Erin Barnhill

Address 111 W 16th Ave
Anchorage AK 99501

Phone

Project Northeast Cape St. Lawrence Island HTRW
2012

CONTENTS

12

September 3, 2012

Giving Safety Talk:
PHYSICAL AGENT DATA SHEET
• Hand arm vibration

Pad 98
MOC bagging

In camp:
• Organizing environmental Conex

10

Non sig →

September 4, 2012 Cool Cloudy ≈35°F wind chill 34°F

Safety Meeting:
The Zombie apocalypse and a Juxtaposition between it and Safety at NE Cape

Environmental Meeting
- Pad 98 bagging
- Arsenic - site 21
- Site 10 drum samples

Site 10 drum sample Consolidation/reduction

(2) drum 1 (2 jar) One sample per like
(14) drum 2 (2 jar) Fluids will be sent to
(3) drum 3 (2 jar) lab to minimize # of
(4) drum 4 (2 jar) samples shipped, grouped
(5) drum 5 (2 jar) samples are of similar origin
(6) drum 6 (2 jar) based on observation.
(7) drum 7, 9, 15, 18 (3 jar)
(8) drum 14 (3 jar)
(9) drum 8, 11, 12, 19, 21 (2 jar)
(10) drum 16, 20, 22, 24 (3 jar) 1715
(11) drum 10, 17, 13 (3 jar) 1710
(12) drum 23 (3 jar) 1545
(13) drum 001 @1630 (2 jar)

I 35
September 5, 2012 dork calm

Safety Meetings: Safety Poem

necessities
slips, trips & falls
PPE / Equipment
Proper Clothing
Proper tools for the job

Faster is slower
radio communication
hand washing

Environmental meeting:

- Arsenic dig
- site 10, plume E & G sample management
- PCB spots at site 31

Sample management - 10, E & G

Back to site 31; Excavating confirmation samples return that were above Cleanup (18)

First new dig in a while - continuing

Sept 6 2012

Site 31 wipe Samples

WS 31-01 → 1704
WS 31-02 → 1707

Site 13 wipe Samples

Correlating Test Ammo Samples

WS 13-01 → 1725 (01 @ 1722; 02 @ 1724)
WS 13-02 → 1730
WS 13-03 → 1730

[initials]

10.5

8

September 7, 2012 cool, dry, lite breeze. misty cloudy

Safety Meeting
Comments from the crew regarding safety Right + Wrong.

Site 13 -
Confirmation sample high PCB re-samples/digging
- field lab samples 300 → 311

Shop Pad -
- assisting Johnny Willis construct site 28 sediment trap

10.850

September 8, 2012

Safety meeting:
Fatigue and NE Cape

- Placarding preparations for Arsenic and PCB bags.

- Attaching placards to Arsenic + PCB bags.

Dinner -

evening
- Preparing for safety meeting

10.5

September 9, 2012

Safety meeting -
- Loader Safety
- Stories where proper PPE worked

September 10 calm, dry Cool, 35±

- AM Boat load - 0545

- Site 28 MI sampling discussion discussed options with Jeremy Craner, He's Sending an email to office in Anchorage to go over options for already laid down gravel pad.

- Site 28 - MI sampling tundra north of Pad. (see large graph paper flipback)

laid out grid with Albert K., 6"-12" of peet/grass in upper layer. Removing grass/peet layer with shovel. Sample first visible area of soil/clay/sediment

#1 D.U. is 105'x 105', each increment is 15' x 15". 49 increments.

There will be a second decision unit at pad area.

September 10, 2012
#2 DU (on pad)
Dimensions of unit is 150' Long by 60' wide.
increment are 15' x 15'. There are 40 increments
Unit will be sampled tomorrow. In triplicate.

P.M. Boat load → done at 10:30

12NC28MI001
@ 1610

14.0

September 11, 2012 — partly cloudy 30± °F

Safety Meeting:
Pump Safety - site 28
Water Safety - site 28

A.M. Boat load - loading 20 flats on the Sam

MI Triplicate site 28 - MI Sampling (see sketch book) #2 @ 1100, #3 @ 1120, #4 @ 1140

Site 31 -
heading back to site 31 to dig out spots that yielded confirmation results above cleanup level.

Site 31 - all confirmation results in and available to dig on.

Site 31 - site approximately 60% re-dug as concern hotspots

Turn in BW and field samples

10.25

September 12, 2012 cool, dry, partly cloudy

Safety meeting -

Environmental Meeting -
- 1400 hours site 20 prep phase meeting
- Continue digging site 31 "hot spots"
- eventual pad 90 bagging

Site 31 - Excavating hot spots

10.0

Sept 13, 2012

Site 13/31 Confirm Samples Collected Sept 14

12NC13SS222 @ 0900 | 12NC31SS200 1236
223 @ 0901 | 201 1237
224 @ 0902 | 1238 202 (dup 224)
225 @ 0903 | 203 1239
226 @ 0904 | 204 1240
@0905 227 (dup is 234) | 205 1241
228 @ 0906 | 206 1242
@0907 229 (dup is 235) | 207 1243
230 @ 0908 | 208 1244
231 @ 0909 | 1245 209 (dup 225
232 @ 0910 | 210 1246
233 @ 0911 | 211 1248
234 @ 0912 | 212 1249
235 @ 0913 | 213 1250

31 | 214 1251
12NC31SS194 1236 | 215 1252
195 1231 | 216 1253
196 1232 | 217 1254
1233 197 (dup 223) | 218 1255
198 1234 | 12, 219 1256
199 1235 | 220 1257
221 1258
222 1259
223 1300

224@1301 225@1302

Sep 16

Safety meeting
Acknowledging excellence with the Safety award:

Mylon, Charles, Albert & Michael - headlamps
Eric, Maze and Russell - Leatherman
Enviro meeting - Prep for site 28
Site 28

- MI sampling sumps for uphill run from dredge to Geo-tube.

Sep 17

Enviro
- eventually resume Pad 98
- Site 28 - excavating upper ~~exca.~~ E/S Sediment areas with excavator

Site 28
-

assisting Johnny Willis with dredging at site 28. Beginning at Northernmost area (downstream) heading South (upstream)

- much of the sediment consists of dead / decayed plant material

- filled lower containment area / sump
- pumped to uphill containment / sump

- refilled lower sump

September 17 2012

pumped higher sump into GeoTube and simultaneously pumped lower sump to higher sump

- Water Sample at area behind/ downstream of sediment trap.

12NC28Ø4 [MS/MSD taken]
@ 1550
Turbidity reading 14.1

- Continuing pumping uphill

- Filtering water for dissolved metals in camp with per. pump

EB

11.0

September 18, 2012

Safety

Environmental Meeting

Sample taken from downstream of sediment trap. (WA-01)
12NC28WA005 @ 1500
(duplicate) 06 @ 1530
Turbidity: 33

approximately 3 hours of dredging

September 19, 2012

0700 Safety meeting

Environmental meeting
: 2 to 3 hours of dredging today, then operations at site 28 will cease for the 2012 season.

Sample management
site 28 waters

After Lunch:

Site 28 dredging
- Collected some sediment for possible Analysis in Anchorage.

Water Samples Ø7 = MS/MSD

MS/MSD 12NC28WAØ7 @ 1500 (WA-01) Turbidity - 27.4
12NC28WAØ8 @ 1515 (WA-02) Turbidity - 15.8
12NC28WAØ9 @ 1530 (WA-03) Turbidity - 9.4

10.75 ES

September 20, 2012

0700 Safety meeting
- Careful moving
- inventory well while packing

Environmental
- Site 28 - last water sample post dredging sample

Sep 21, 2012

Safety:
Environmental

Pad 98
Bulk waste Sampling

Site 28
Bulk waste Sampling

Pad 98
12NC MOL BW 226 0945
227 @ 1036
228 @ 1136
229 @ 1400

Site 28
12NC ~~B~~28BWØ1 @ 1527

10

Sept 22, 2012

Safety:

*

Site and Environmental Conex Cleanup

- Connex inventory and organization
- bottle Count
- Tent Cleanup
- Vehicle cleanup
- Bulk waste Sample management

Sept 23, 2012

- Cleanup Activities and Organization activities continued

- Connex
- Truck
- bottles
- Coolers

Travel

Sept 24, 2012

Travel Day After day - In office briefly

Travel from Northeast Cape to Nome
Nome to Anchorage
on Sept 23, 2012

field activities over

"Rite in the Rain"®
ALL-WEATHER WRITING PAPER

ALL-WEATHER
ENVIRONMENTAL FIELD BOOK

Name Lyndsey Kleppin – Bristol Environmental

Address 111 W 16th Ave
Anchorage, AK

Phone 907 563-0013

Project NE CAPE 2012 HTRW
#34120057

This book is printed on "Rite in the Rain" All-Weather Writing Paper - A unique paper created to shed water and enhance the written image. It is widely used throughout the world for recording critical field data in all kinds of weather. For best results, use a pencil or an all-weather pen.

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CONTENTS

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	NE CAPE 2012 HTRW	
	34120057	

Location NE Cape HTRW 2012 Date 07/03/12

Project / Client USACE

July 03 Alaska Airlines 11am → Nome
Julie / Randy / Marty / Eric / Jennifer
Jitendra / Rich / Bruce / 1 global staffer

Bering Air → Job Site

Site Orientation
Set up office / printers
Locate equipment / inventory

19:00 Dinner

10 hours

Location NE Cape Date 07/04/12

Project / Client

07/04/12 Morning Safety Meeting
Environmental group - truck 132
"Shower is faster"
communications - work in progress

Received ADEC comments from Molly
- need to consult Jeremy for MOC surface water sample locations, schedule
- Sediment definition (how deep before tundra mat to be considered a sediment?)
- installation of wells down the road?
- clean backfill at 21? "protective" all backfill would need to be bagged again, IMO

Site Visit - snow in Site 31 excavation
- bags at beach staging area
- no snow at MOC

barge arrives (with TA bottle order)

Location NE CAPE Date 7/04/12

Project / Client ~~34120057~~

14:10 water levels @ MOC wells
- water level meter probe corroded - did not detect water in wells (sounded in soapy water) cleaned with wire metal brush and re-measured water levels
88-1 → mud inside

no ice in any wells encountered by probe
need new 2" well caps

Dinner at 17:30

Location NE CAPE Date 7/05/12

Project / Client 3412ØØ57

7:00 Site Safety + Health Meeting
- barge did not offload yesterday
- slover is faster

2011 → pres. amber IC 2 boxes + some
SGS potable water sample 900 kitchen tap(e)
Security aviation – 5 arrivals, Talia, Jeb,
Jeremy Craner (QAR), Mel, Carl

Meeting of Understanding
- MOC groundwater sampling (9 wells)
- POL PCB Arsenic (100 tons)
soil removal action
- site 8 MNA / surface water
- site 28 mapping
- MI sampling (beach/site 6/MOC)
- MOC surface water

Preparatory Phase
- MOC surface water
- Cazo beach MI sampling
16x16 interval
240 x 48

Location NE CAPE Date 7/05/12

Project / Client 3412ØØ57

Site 28 site walk: Eric Barnhill (CQ/CSM)
Julie Clark, Jeremy Craner (QAR)
Site 28 Basin: soil vs. sediment
iron floc precipitated on active vegetation,
clay, organic (dead, peat) material

MOC surface water sample site selection
low water table (MW88-4 + 88-5 are ~1 ft
lower than mid July 2011)

Dinner 17:30

[signature]

Location NE CAPE Date 7/06/12

Project / Client 3412ØØ57

700 Health and Safety Meeting - site communication

slower is faster

operate on channel 5

medic equipment set-up, moving bags from site 13 excavation

Turbidimeter #1 and YSI #3 calibration
changed batteries in turbidimeter, gelex standards in 5.10, 48.3, 498
YSI #3 calibration - conductivity out of range, recalibrated all OK

All surface water sample sites marked with lathe. Standing water extent not as wide - lower water table than outlined in planning docs.

12NCMOCSWAØØ1 rocky drainage in gully N of site 13

pH	5.93		
DO	7.54 mg/L	1045	
ORP	70.5		
conductivity	0.272 mS/cm	fuel odor, some sheen	
temp.	7.92°C	orange precipitate on	
turb.	8.80	vegetation and in water	

Location NE CAPE Date 7/06/12

Project / Client 3412ØØ57

12NCMOCSWAØØ2	wetland NE of ØØ1
pH 6.01	
DO 6.25 mg/L	1105
ORP 69.2	
Cond. 0.105 mS/cm	odor, sheen, orange mat
temp 7.46	material as in ØØ1
turb 12.8	

12NCMOCSWAØØ3 MS/MSD	E edge of pond to the east of ØØ2
pH 5.87	
DO ~~3.4~~ 3.12	
ORP 19.9	1145
cond 0.128 mS/cm	odor, no sheen, no
temp 8.52	iron floc
turb 5.74	MS/MSD

- take PCB/POL samples for lab extraction training - bulk MOC soil

cargo beach MI sampling - see E. Barnhill notes - Jamie + Ryan surveyed 4 lathe points of ~~eastern~~ western most unit @ cargo beach LK

Location NE CAPE Date 7/07/12
Project / Client 341200057

700 Health and Safety Meeting
- equipment on the road has right of way
- heavy fog, wide loads
- medic capabilities (OTC)
- low 50's sunny <10 mph wind

Barge arrived early this morning
4 lab supplies, test america bottle order

Organize bottle order in environmental conex
Gel Ice coolers relocated

MI sampling with J Clark, E Barnhill
triplicate sample @ cargo beach
— flats moved for sampling

2nd unit from far east cargo beach
MI Sample 15x15 interval
60x

→ see E Barnhill notes for MI samples

1730 Dinner

Location NE CAPE Date 7/08/12
Project / Client 341200057

700 Health and Safety Meeting
- heavy fog, lots of equipment traffic. Communicate on the radio

→ Preparatory phase Meeting
4.10/4.11 WP: Site B and MOC groundwater
casing off the ground (stick-up)
eCOC to Marty + Terri
- containerize BB-4/BB-5 purgewater
- filter (GAC other purge)
- review DEC guidance
- note tubing type/conditions

Site B: sediment composite
surface water samples
MNA (bottle instead of peristaltic)

Groundwater DRO/RRO, GRO, PAH
PCB, RCRA 8 metals, MNA, methane
~~VOC~~ BTEX

Site 28 Mapping / Sampling

sediment (mineral + organic)
visual survey — intrusive survey (auger for thickness) each probe — GPS point

Location NE CAPE Date 7/08/12

Project / Client 34120057

Site 28 preparatory phase

sludge sampler for accurate soil/sed profile? (auger has only 1.5 ft, won't hold loose seds in H_2O)

collect water depth @ each sample point

soil/sed plastic sleeves with cap - suction to hold column in place

clam guns

Macro core sleeves + couplers

sludge sampler (with flaps)

Sampling protocol/frequency TBA following discussion between Carey + Curtis (ADEC) after review of map product)

- veg mat
- H_2O / depth
- sediment + thickness
- undersed material

- iron floc
- black decomposing organic material
- peat/organic silt

C. Croley, E. Barnhill, J. Craner (QAR)

R. James (CQ/CSM), J. Clark, Jeb Adkins

→ preparatory phase meeting attendees

Location NE CAPE Date 7/08/12

Project / Client 34120057

YSI #3 → calibrated (see calibration log), confidence solution

Turbidimeter #1 calibrated, gelex standard

- all accepted range

±2°C / ±0.1 pH / 3% mS/cm / ±10mV / 10% DO / 10% NTU

26MW1 → historical non-detect well

WL meter does not sound - sounds in soapy water, not tap water or formation water

- new battery in WL meter, sounds in tap water

WL probe - 34.80' BTOC

Monsoon submersible pump caught @ 7' btoc - ice obstruction

allowed pump to run dry 2 min to introduce warm air - 10' steel rod driven down into ice/slush, ice plug just shoved further down. C. Croley + J. Willis will fabricate 2" device to lower into well to melt ice plug

22MW2 - some ice, kept punching at ice plug with pump (~7' BTOC)

set pump 7.99' water column

1.3 gal casing volume

~5 gal purge

Location NE CAPE Date 7/08/12
Project / Client 34120057

→ 12NCMOCWA001 15:00 MS/MSD 22MW2
good recharge, no drawdown @ 470mL/min
no odor, clear
well is flush mount, no damage, TOC level with ground surface
teflon tubing, monsoon sub. pump.

decon pump/WL meter/YSI with Alconox + DI rinse
Set up on 26MW1 again - J. Willis + C. Coley
melted ice plug with 2" steel tube 2' long - attached by rope. Heated the lower 1' section on steel + lowered into hole
purge water discharged to surface per ADEC regulations. (No historical detection of COCs, no odor or sheen, no drinking water wells nearby)

→ 12NCMOCWA002 17:00 26MW1
good recharge, no drawdown @ 450 mL/min
no odor, turbid orange first 10 min of purge then clear. No odor or sheen.

1800

Location NE CAPE Date 7/09/12
Project / Client 34120057

700 Health and Safety
- low 50's, sunny, < 10mph wind
Preparatory phase meeting: POL/PCB/As Soil Removal 4.2/4.3/4.4 WP section
- have Jamie locate dig-out spots @ PCB/POL
4782 tons POL 2011 contract Soil
4000 tons POL 2012 soil
8782 tons POL soil
- liners from PCB excavations to be removed
- stockpile lined areas at the MOC
4.2/4.3/4.4 work plan sections
- site 13 chase PCBs before moving on to DRO plumes (A2/B)
- concrete wipe samples
1 correlation per 10 wipe samples for TA tacoma lab
- As bottom of excavation sampling? To be determined

-2,700 tons PCB Site 13 + 31
-100 tons As (50, sample, 50)
- site 21 surface water sample

Location NE CAPE MOC Date 7/09/12

Project / Client 34126057

Calibrate YSI #3, Turbidimeter #1 (see calibration log book)
all in accepted range for 10°C confidence solution
with helper Albert Kulowiyi

1000 Set up on 20MW1, begin purge
clear, no odor
Some drawdown (0.5') @ 480 mL/min - rate
decreased to ~430 mL/min stable WL
Purge water discharged to surface per ADEC regs

→ 12NCMOCWA003 20MW1 1040
somewhat variable pump speeds despite
constant voltage displayed on voltage regulator
decon. pump/WL meter/YSI w/ Alconox + DI rinse

1110 Set up on 88-10, ice @ 3' BTOC
Used melting device - galvanized steel - may
contribute zinc to gw?
Heated end of melting rod + lowered
3x with J. Willis. Packed up equipment
and moved to 17MW1. Set up on 17MW1

1200 Lunch - refridgerated 003 samples, gave
MNA sample to field lab. Bering Air flight.

J. Willis continued to use melting tool on 88-10

1320 Began purging 17MW1. Good recovery, clear
no odor. Some ice in casing @ ~3ft,
used pump to punch through.

Location NE CAPE MOC Date 7/09/12

Project / Client

→ 12NCMOCWA004 17MW1 1320
variable pump speed, stable parameters
<500 mL/min
collected sample (Lk)
Decontaminated pump, WL meter and
YSI probe in Alconox and DI rinse
Purge water discharged to surface per ADEC regs
Returned to 88-10. Ice melted with
tool after 5 repetitions (heat/thaw)

1400 Begin purge of 88-10 - turbid
initially, cleared up quickly. No odor
or sheen. Good recovery.
Variable pump speed - flow controller
displays inaccurate voltage (verified
with multimeter reading)

1420 Begin Sampling
→ 12NCMOCWA005 88-10 1420
Variable pump speed. Good recovery.
Decontaminated pump/WL probe/YSI
with Alconox, DI rinse

Move to 88-1. Damaged flush mount -
mud ran from surface into casing,
cleared area and marked well
location with large rocks on 7/09/12

TD = 23.25 WL = 16.68 BTOC
6.57 x 0.1 x 7 gal/ft = 1.1 gal casing volume
purged 3 gal prior to taking parameters.
Grey, turbid, initially then clear, no odor, no sheen. Good recovery, no ice.

→ 12NCMOCWA006 88-1 1530

Decontaminated pump, WL meter, YSI probe in Alconox, DI rinse.

Refrigerated analytical samples, took MNA samples to field lab. Return to camp.

o SAMPLE COLLECTION
Flow-through cell removed. Sample containers filled in the following order:
- VOA vials HCl preserved (BTEX/GRO/methane)
- DRO 1L HCl preserved amber
- 1L unpreserved amber (PCB/PAH)
- HDPE HNO_3 (total metals)
- HDPE unpreserved (MNA field lab)
- HDPE HNO_3 (filtered metals) filtered in the field

o WATER SAMPLING ADDITIONAL DOCS.
- Groundwater Low Flow Purging Form
- Groundwater Sampling Form
- YSI/turbidimeter calibration log

All groundwater samples taken by L. Kleppin.

o DECONTAMINATION
- Submersible pump + cable submerged in Alconox solution. Pump disassembled to remove sediment + magnetic seds, allowed to run 1 min. Pump then allowed to run several minutes in DI rinse. Cable also wiped with DI soaked paper towel each time it is lowered into a well.
- WL meter and YSI probe washed in Alconox solution, rinsed in DI H_2O

o EQUIPMENT
- SS monsoon pump with car battery voltage regulator attachment.
- teflon lined tubing
silicone tubing for attachment to flow through cell and metals filter

Location NE CAPE Date 7/09/12

Project / Client

1730 Dinner

1900 Sample management, sample labeling
anticipated shipment date of 7/11/12
will collect duplicate sample from 88-4

11 hours

[signature]

Location NE CAPE Date 7/10/12

Project / Client 34120057

700 Health and Safety Meeting
- SSHP review
EM385 1-1
MS/DS PADS sheets available - will cover
AHAs at another meeting

Environmental Meeting
- need to locate PCB hot spots w/ Jamie
- Julie mapping site 28
- Eric done with cargo beach, MOC
MI sampling, will work of GW
sample labels

1030 Set up on 10-1 - begin purge
significant drawdown - lower purge rate to as low as
sub pump will go ~200 mL/min
@ 6.58' BTOC, WL is stable even @
450 mL/min. Recharge slow - allowed
to recharge 1 hour, WL = 5.83
purging resumed at 200 mL/min
WL fell to 6.45 and stabilized.
YSI readings for DO, ORP, pH very
different (pH = 3.03, ORP = 307.6, DO = 5.43)
but these parameters continually dropped to
stabilize again.

Location NE CAPE Date 7/10/12

Project / Client

YSI flow through cell was removed and purge was continued while confidence solution was used to determine YSI was within acceptable range.
Water level had been sounding for a while during recharge (1hr?)

→ 12NCMOCWA007 10-1 1400

Decontaminated pump, YSI, WL meter
dissolved metal sample somewhat orange after sitting (?)

1530 Set up on MW 88-4. Purge water turbid initially - dark grey, fuel odor, no sheen. Purged 3+ casing volumes to allow turbidity to decrease, did not drop below 15 NTU.

→ 12NCMOCWA008 MW 88-4 1700
DUPLICATE SAMPLE 009 1730

Location NE CAPE Date 7/10/12

Project / Client

1730 Set up on MW 88-5, purged 3+ casing volumes due to high turbidity. Flow rate of ~250 mL/min (slowest allowable for sub pump in shallow well). Flow controller highly irregular - continually adjusting voltage. Strong fuel odor, grey and turbid, sheen.

1830
→ 12NCMOCWA010 MW 88-5 1830

Decontaminated pump / WL meter / YSI

Sample management, labeling

1930 End

12 hours

Location NE CAPE Date 7/11/12

Project / Client 34120057

700 Health and Safety Meeting - E. Barnhill

→ AHA forms

→ 6am barge arrival

Sample management Trip Blank Ø1 ~~071712~~ 071112 x 4
(BTEX/GRO)

All VOAs in cooler #12

Trip Blank Ø2 071112 x 2
(methane)

Russel put in temp blanks

COC# 12NC-003-1 MOC GW
12NC-004-1 MOC surface water
(cooler # ØØ9)

Eric shipped 2 coolers (ØØ1 and ØØ2)
Water samples are in (ØØ3 - Ø12)

Waybill electronically submitted by E. Barnhill

Coolers containing VOA or preserved ambers are marked with an excepted quantity (class 8) label

1730 Dinner

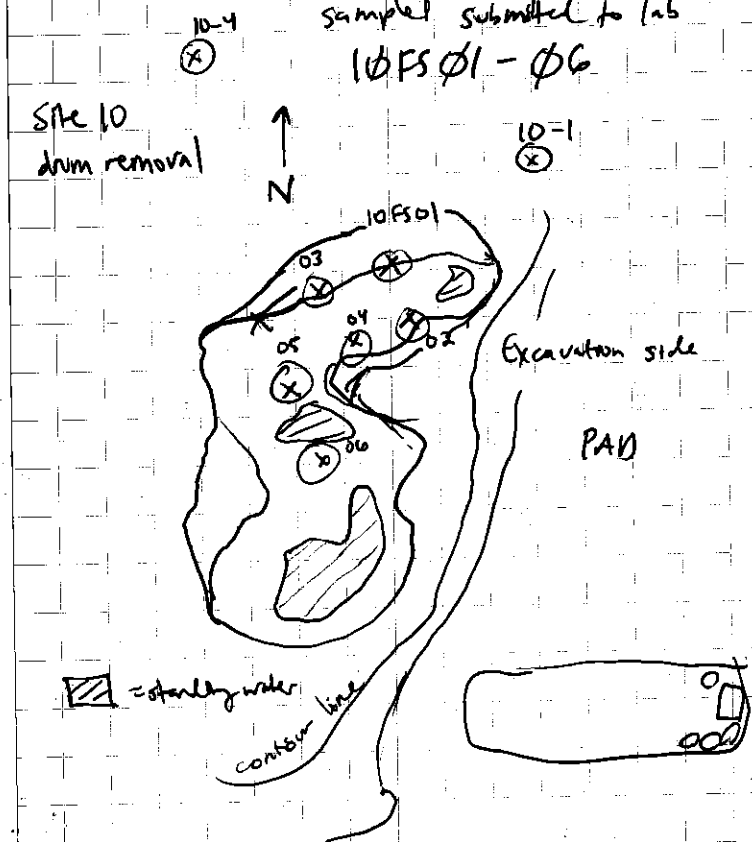
10 hrs

Location NE CAPE Date 7/12/12

Project / Client 34120057

700 Health and Safety Meeting
Site 13 PCB dig
light rain, partly cloudy

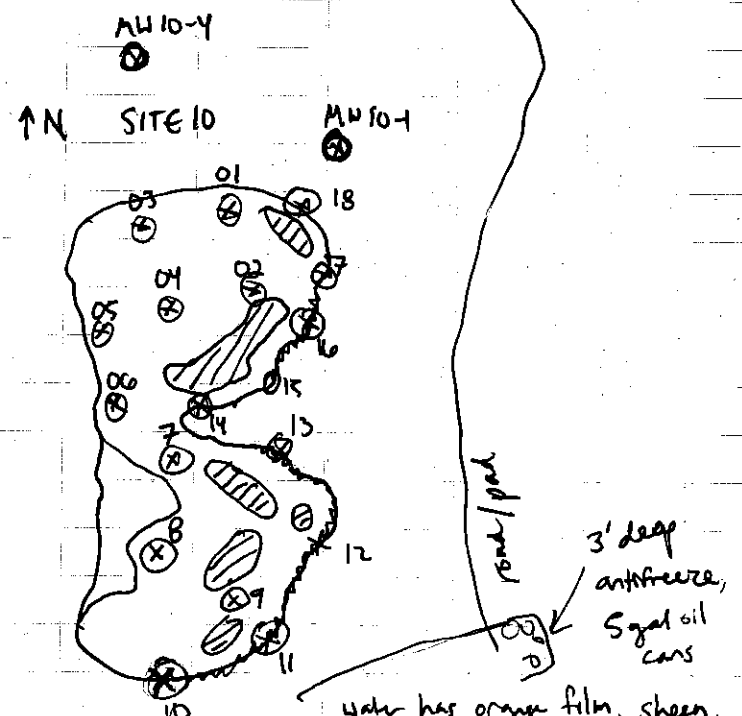
Site 10 drum removal - field screening floor samples submitted to lab
10FSØ1 - Ø6



Location NE CAPE Date 7/12/12

Project / Client 3412ØØ57

collected stockpile samples 10SPØ1 – 10SPØ4



▨ = standing water

〰 = 3'+ sidewall

water has orange film, sheen, light grey + black film

stained soil + black oil spots present in mud. Very loose, wet clayey silt with gravel

Location NE CAPE Date 7/12/12

Project / Client 3412ØØ57

Eugene Toolie indicated exact location of drum pile – excavator dug test pits at areas picked up by the metal detector and struck antifreeze drum. Impacted soil was placed on adjacent liner. 5gal cans of oil were removed and placed in a drum.

Soil stuck to tops of open cans seemed to cap the oil inside – oil began to ooze from cans when jostled. Excavation was stopped and cans were manually removed using a shovel. Antifreeze (bright green) hydraulic fluid (orange) and oil (black) were observed to be leaking from nickel drums/cans.

17:30

Location NE CAPE Date 7/13/12

Project / Client

700 Heath and Safety
-Slower and faster
-hydraulic line break @ beach

Environmental Meeting - want on site to for additional overpack, corps guidance
- Site 8? Last year 8/05/11, too soon to sample this year? Low water.
- GPS points on roadway, beach for hydraulic leak

Look over UVOST logs for depth to fuel at Site 13 excavation

17:30 End
10 hours

Location NE CAPE Date 7/14/12

Project / Client

700 Health and Safety Meeting
- site fire @ incinerator
fire extinguishers on the way

Site 31 sampling with E. Barnhill @ dig out spots Ø24 - Ø53
(see E. Barnhill notes)
samples submitted to lab.

Received sample results from field lab for dig out spots at Site 31

17:30 End
10 hours

Location NE CAPE Date 7/15/12

Project / Client 34120057

700 Site Safety and Health Meeting
-rain, visibility
Environmental Meeting
- MI Sampling at Site 6
- Dig-out spots at site 31

Bulk waste bagging @ site 31
31-28B - 31-~~39~~A

BW31-28 and BW31-29, 30
submitted to lab

Dig out spots through 31-18
Completed (southern dig)

PCB results in: 31-21, 22, 32, 37
>above clean up level

1730 10 hours

Location NE CAPE Date 7/16/12

Project / Client 34120057

700 Health and Safety Meeting
-PADS sheets
heat/cold exposure
Environmental Meeting
Jaime working on draft site 28 map
Results 31-40 - 31-55 in

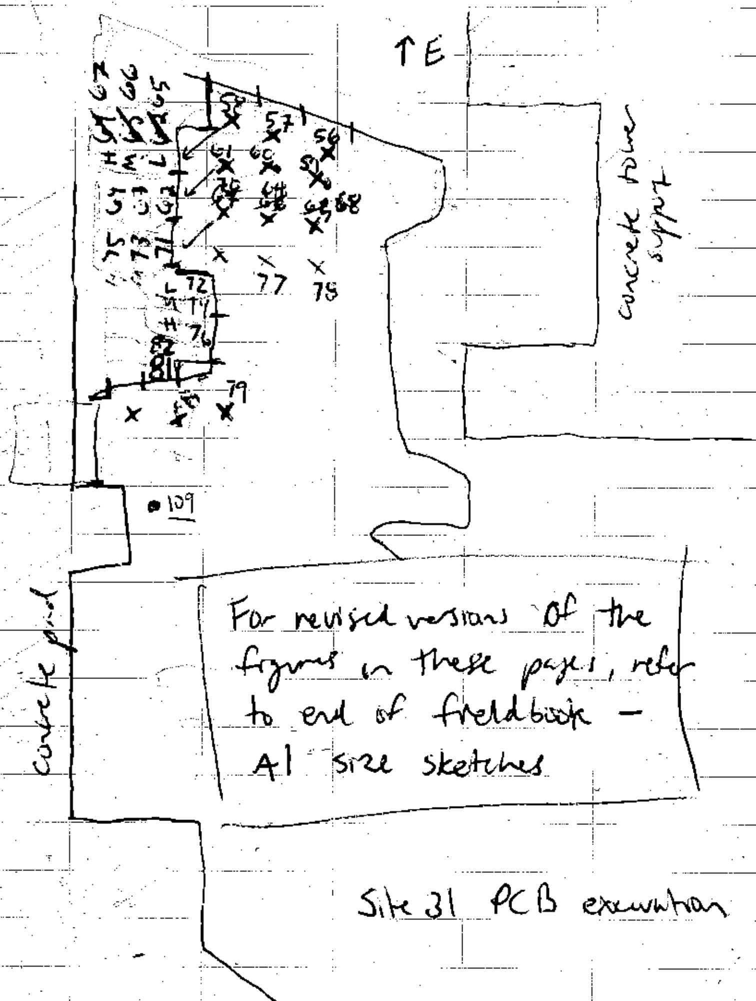
Turn in time sheets

Begin bucket sampling dig-out spots
at Site 31
deep excavation (N) w sidewalls:
31-32, 37, 40, 43-45, 47, 48,
52, 53
shallow excavation 04-06, 10-12, 14
18, 21-23

- still need to dig out 23 and 18
(digging + bagging stopped to get
samples to idle lab team)

Location NE CAPE Date 7/16/12

Project / Client



For revised versions of the figures in these pages, refer to end of fieldbook — A1 size sketches

Site 31 PCB excavation

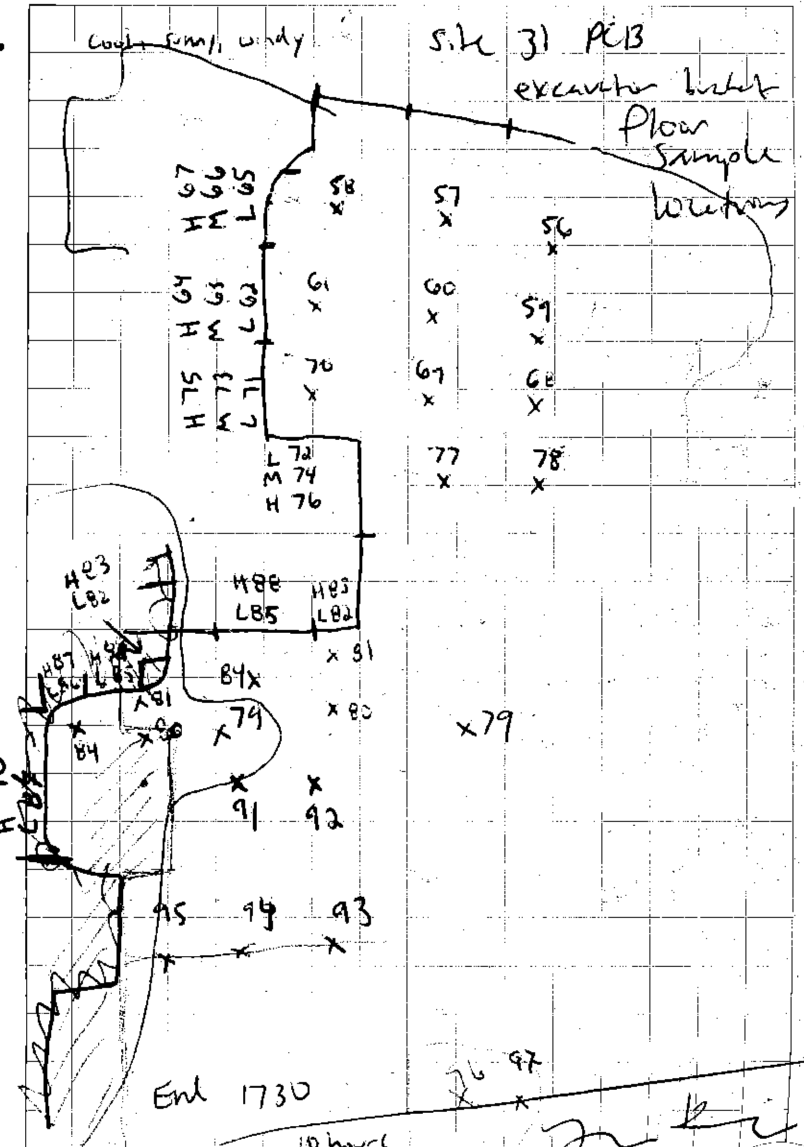
Location NE CAPE Date 7/16/12

Project / Client

Cool, sunny, windy

Site 31 PCB excavation limit

Floor Sample locations



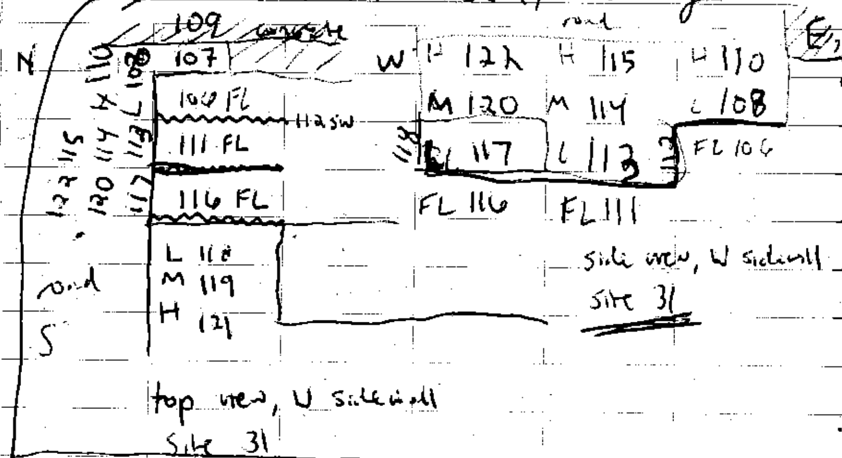
End 1730

10 hours

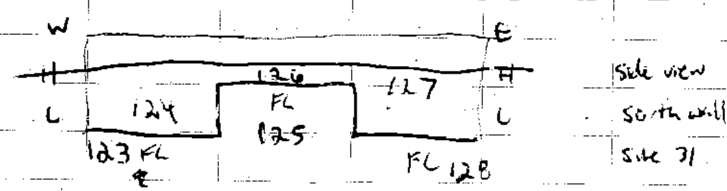
Location NE CAPE Date 7/17/12

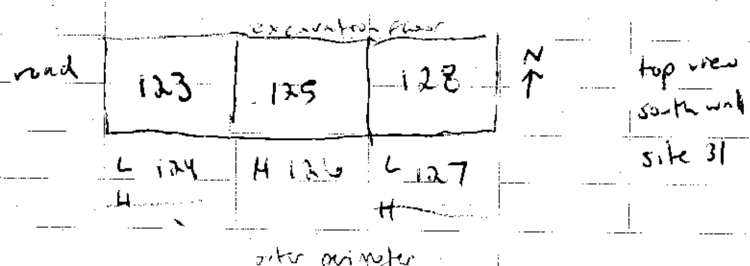
Project / Client

700 Health and Safety Meeting



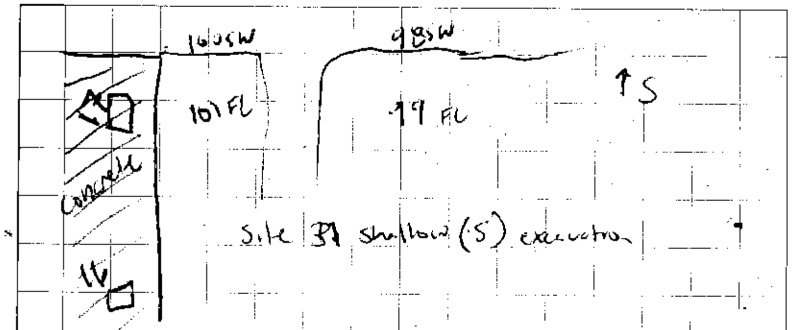
700 Health and Safety Meeting - high winds & Environmental Meeting





Location NE CAPE Date 7/17/12

Project / Client



Full page sample location maps created for Env

Move to site 13 dig-out spot, begin bagging. High winds.

1730 End

10 hours

Location NE CAPE Date 7/18/12

Project / Client

700 Health and Safety Meeting
- Ron concerned about bucket sampling/decon procedure
- Environmental meeting Eric site 13

get jars/methanol vials together for site 28 sediment sampling with J. Clark, Charles Kava

Alconox rinse, DI rinse bottles prepared
Start at Sagi end and work up towards MOC

12NC2855001 - 12NC28550

Security aviation flight - swap QAR
Jeremy Craner w/ Aaron Sherman

Refridgerate samples
17:30 End
10 hours

Location NE CAPE Date 7/19/12

Project / Client

700 Health and Safety Meeting
~~High winds~~
Environmental Meeting
Eric@ site 13
Site 28 sediment sampling with John Clark, Charles Kava. See J. Clark notes.

12NC28550 - 12NC2855036

17:30 End
10 hours

Location NE CAPE Date 7/20/12

Project / Client

700 Health and Safety Meeting
- common mishaps (flat tire, tail open etc)
vehicle walk-arounds
- eye contact with operators
- barge arrived at Tam
Environmental - will ship site 28 sed samples monday. Additional sample locations added - Julie consult with Aaron over sample locs.

Begin 12NC28SSØ37

collected 2 DUPS, an MS/MSD (SSØ5Ø)
used Zodiac boat for the 3 deep pond samples
See J. Clark notes

1730
~~1730~~ End
YK 10 hours

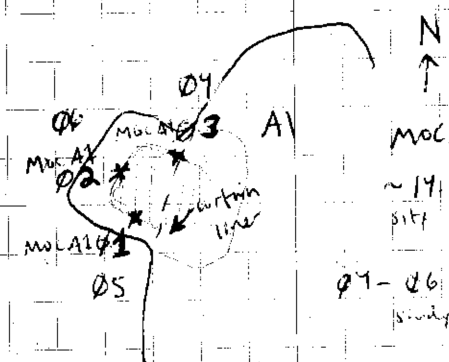
Location NE CAPE Date 7/21/12

Project / Client

700 Health + Safety partly cloudy, calm, 50's

Environmental Meeting - POL excavation start A1 + dig out spot @ NW side of excavation - Jamie will mark as well as G/H plume
+ one PCB GC down in lab (20 sample/day capacity)
Site 13 bucket sampling with E. Barnhill
Jack Willis excavate A1 spot - stockpile clean backfill, dig out + stockpile top 8' of 10' x 5' dig out section

LK
~~@ 8' bgs~~ fuel odor seems isolated to moist grey clayey silt - orange/brown silty sand has slight-to-no fuel odor



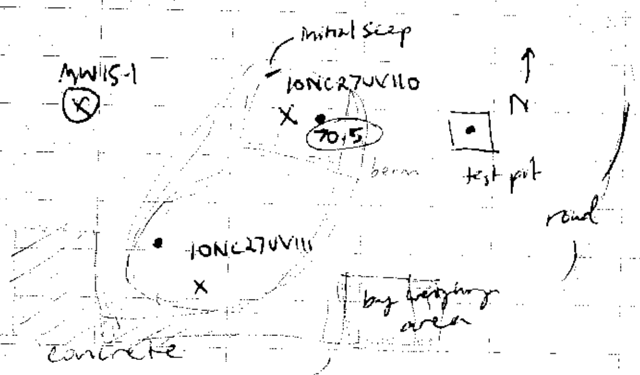
MOCA1Ø1 - Ø3
~14.5 - 15.5' bgs
silty grey

Ø4 - Ø6 ~13-14' bgs
sandy

Location NE CAPE Date 7/21/12

Project / Client

Dig out @ 10NC27UV11Ø - water at 5' bgs
water filling quickly from one small spot (2' wide)
on north side of excavation
Test pit 10' to E of H excavation has lower
water



• 70.5 = water level elevation 17:00 7/21

Jamie surveyed water level in test pit, UV 110
dig out spot

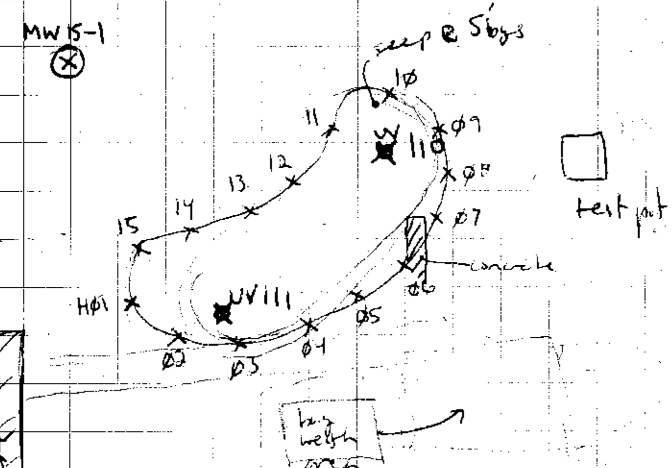
1730 End

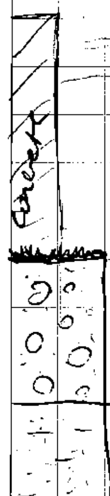
10 hours

Location NE CAPE Date 7/22/12

Project / Client

700 Health and Safety sunny, calm, warm
Busy area at the MOC - POL and PCB digs
Environmental





see All field screening samples from
bucket teeth with Jack Willis
@ standing water level or
slightly above

5' brown silty gravel, wood debris

clayey silt, grey with brown

Water in excavation has orange/brown
oily foam with strong fuel odor

Location NE CAPE Date 7/22/12

Project / Client

Samples taken to lab - should be ready tomorrow. MOCH01-19

Site 13 results - additional dig-out spots Farthest south site 13 excavation clean - collect confirmation sample.

J. Clark preparing site 28 soil sample chain of custody

1730 End / Dinner

10 hours

Location NE CAPE Date 7/23/12

Project / Client

700 Health and Safety

Heavy fog, should burn off by afternoon

use radios on road

Environmental Meeting

Begin bagging at Pad 98 - Aaron would like to bag and screen material. Will try test @ 98

- turn in timesheets

Visit H excavation - H63 @ 9869 mg/kg

water level has come up in pit - Jamie to survey elevation

A1-002 @ 11,135 mg/kg DRO

part of the deep sample grp - Jamie will survey to verify it is above 15' bgs - will use man-basket due to unstable slopes

Pad 98 - screening attempt unsuccessful - C. Copley + Aaron Sherman agree to bag POL soil on pad w/out screening rocks out

MOC 104A, B, C

Water elevations @ H: 7/21 70.5 (1900)

7/23 67.5 (800)

Location NE CAPE Date 7/23/12

Project / Client

Berry Air Flight - Site 28 soil samples, rinsate sample shipped COC # __

End 107 B

BW MOC104, 105, 106 taken to lab all from H plume, wet silty grey material no screening

Jamie survey A1 field screening depths A101 + 03

17:30 End / dinner
10 hours

Location NE CAPE Date 7/24/12

Project / Client

700 Health and Safety
Rain, high winds
Environmental - Env @ site 13
Bagging at Pad 98
- bag remaining of H plume soil
MOC 107 C
D
E
F
G $\boxed{\text{BW MOC 107}}$
MOC 108 A
B
C
D

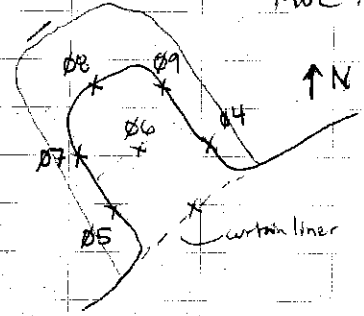
Move to A1 - Jamie's survey results indicate floor currently at 14', sample location ~ 13 ft. Jack excavates ~12ft bags of clean overburden for stockpile.
12 - 15' section taken for screening at Pad 98

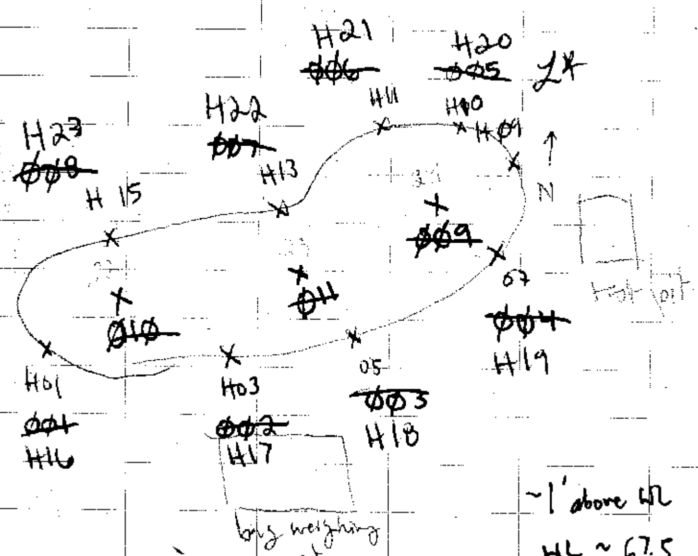
Location NE CAPE Date 7/24/12

Project / Client

M02 A1 field screening

samples taken at ~14 ft bgs, silty grey gravel, moist, strong odor





~1' above WL

WL ~ 67.5

MS/MSD

DUP

Location NE CAPE Date 7/24/12

Project / Client

~~Ø12 DUP OF Ø9~~

~~Ø13 DUP OF Ø06~~

~~Ø5 MS/MSD~~ ZK

- Water level is @ 67.4' from 70.1' elevation - water level dropped by 3'

confirmation samples will be used as field screening samples H16 - H23

17:30 End / Dinner

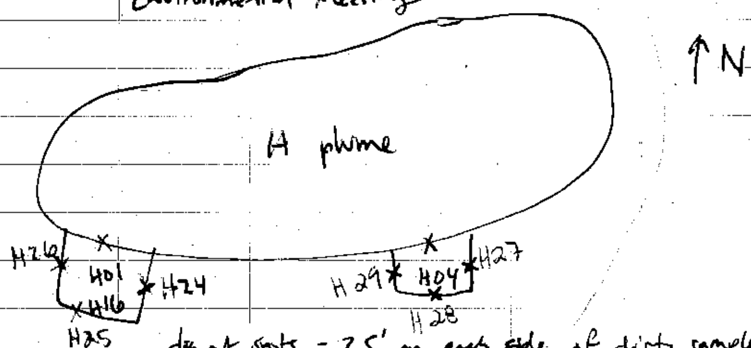
10 hours

Location NE CAPE Date 7/25/12

Project / Client

700 Health and Safety

Environmental Meeting



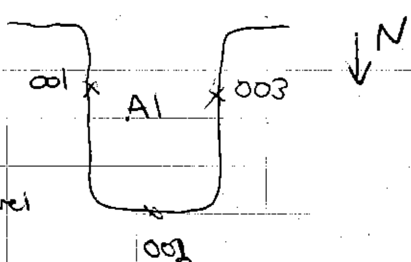
dig at spots - 2.5' on each side of dirty sample location, 5' back. Stockpile first 6' of overburden, dig to 2' below water

A1 confirmation sampling

12 NCMOCSS001 - 004

001
002 - ms/msd
004 - dup of 001
003

moist grey silty gravel
slight fuel odor



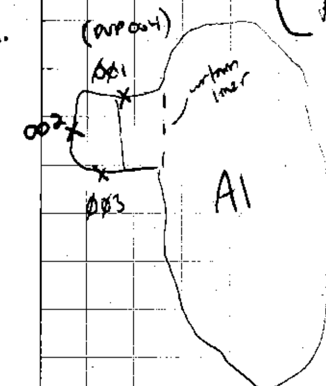
Location NE CAPE Date 7/25/12

Project / Client

1300	12NCMOCSS001
13	12NCMOCSS002 MS/MSD
13	12NCMOCSS003
13	12NCMOCSS004 dup 001

Bagging at Pad 98 BW MOC 108

Test Pits G1 (near MW108) to evaluate water level



Begin removal of overburden from G-2 water @ ~9' bgs

1730	End 10 hours

Location NE CAPE   Date 7/26/12

Project / Client

700 Health and Safety Meeting

drizzly, overcast, calm 50's

- 4 people per load frame on windy days is safer
- eye contact with operators
- demarcation of excavations could be better
- new test pits @ G

Environmental Meeting

- maybe move to site 31 in the afternoon
- re-screen material from H
- WL @ H as of yesterday 6.75'

Bagging at Pad 78: 109B - 109F

Jamie surveying confirmation sample locations at

A1 ØØ1 - ØØ4

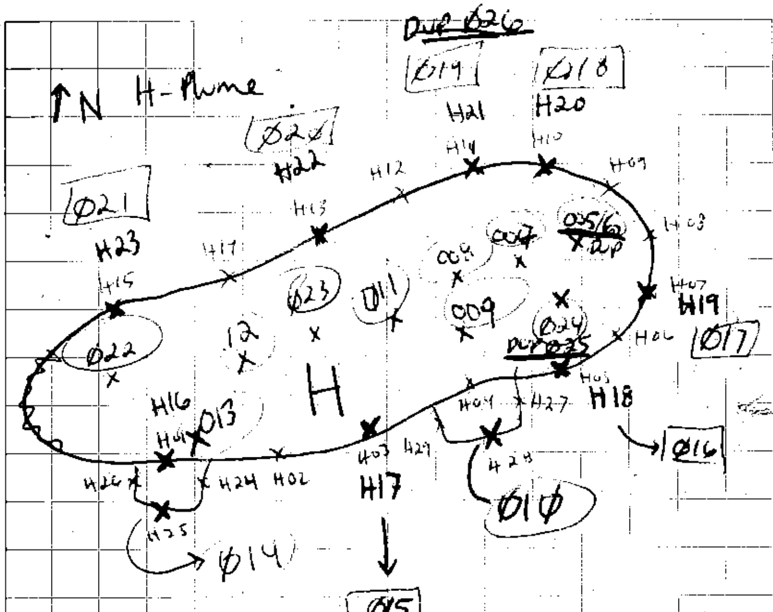
Remove 6'-7' over-burden from G-2

water @ ~9' bgs

Remove 2'-3' dry, dirty material for screening, remove additional material (wet) from below water to 2' below for direct bagging

Location NE CAPE   Date 7/26/12

Project / Client



11NCMOCSSØØ5 - Ø26

3 DUPLICATES
1 MS/MSD

Jack Willis - confirmation sampling

floor approx. 2300 sq ft

take 10 floor samples

(2 samples 1st 250 sq ft + 1/250 sq ft additional)

use untared 8 oz amber jars

1430 → 5 min intervals/sample

1730 10 hours

700 Health and Safety
High winds, rain expected through the day
vehicles fogging, communication
Camp courtesy - visitor hours
Environmental Meeting
Lab caught up with samples - results for 13 in 16

create 12NC-008-01 to 12NC-008-05
for shipment of A1 and H PCL
confirmation samples
- email COCs to Marty to verify/proof
- sample management - labels, bubble wrap
all in one cooler
2 MS/MSD sample ØØ2 and ØØ18
4 DUPLICATES ØØ1 DUP ØØ4
ØØ5 DUP ØØ6
Ø19 DUP Ø26 | Ø24 DUP Ø25
ØØ1-ØØ4 A1 plume
ØØ5-Ø26 H plume cooler# 072712-01

ØØ5 - ØØ9, Ø11-Ø13, Ø22-Ø25
Floor samples 2' below water level

AkAir waybill #

-need to collect floor samples from A1
-sidewall sample from backfill area?

Bagging @ Pad 98/MOC110 G
BW MOC 111 1500
BW MOC 112
MOC 113 B

17:30

54

Location NE CAPE Date 7/28/12

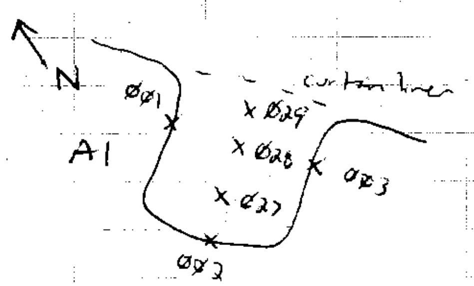
Project / Client

700 Health and Safety
- Eric's tips for youth excursions / barge arrival

cool, calm, cloudy high 40's
- Environmental - lab processing PCB samples

A1 floor samples - 3 (~500 sq ft)

→ 12NCMOCSSØ27, Ø28, Ø29 (830, 835, 840)
slough cleared away, water infiltrating
samples wet-to moist @ 15' bgs
(Jamie to survey)



- Jamie overlay G1/2 + H plume on excavation extent - small dig-out spot at H to reach full extent in workplan

H 10/11 → co-located field screening samples and confirmation samples
Ø18 Ø19
H13 → Ø2Ø

55

Location NE CAVE Date 7/28/12

Project / Client

Jamie surveying excavation extent, depth, sample locations at H plume → significant sloughing at dig-out spots
(sample locations Ø14, Ø1Ø (sidewall) samples taken 1' above standing water (~67.4 ft) now under slough)

co-located confirmation samples
Ø18 → H09
Ø19 → H11/H12

Field screening samples @ G2
G2-Ø1 to G2-17 1' above WL

Bagging at Pad 98
114 A

1730 End
10 hours

Location NE CAPE Date 7/29/12

Project / Client

700 Health and Safety
high winds - heavy rain
safety award - awareness (Bruce + Dale)

Bagging at Pad 9B 114B

BW MOC 114 wet, grey, silty G2 material
BW MOC 115

POL results from lab G201 - G215
G201-03 and G208-11 dirty
G201 = 18,357 mg/kg
(waiting on G216 + G217)

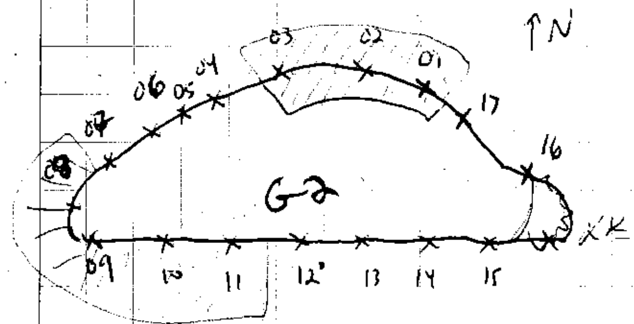
Dig out spots

Remove 5-6ft overburden
2' below groundwater

Location NE CAPE Date 7/29/12

Project / Client

G2-01 to 03
G2-08 to 11



1730 End
10 hours

Location NE CAPE Date 7/30/12

Project / Client

700 Health and Safety Meeting
- improved weather - light wind, partly cloudy
- PPE - change gloves, under-clothes as they become wet or worn

Turn in time sheets - 3411008 Job # for POL tonnage

G2 - remove lower 2' below water table at dig-out G2-01 to G2-03

Field screening G2
G2-18 to G2-26
26-29

G2-16 results in - dirty

Clean out Environmental conexes
- sample jar stock ok?
- Jamie to survey MW PVC casing, metal protective casing, ground surface

Bulk waste sampling at site 31

17:30 End

Location NE CAPE Date 7/31/12

Project / Client

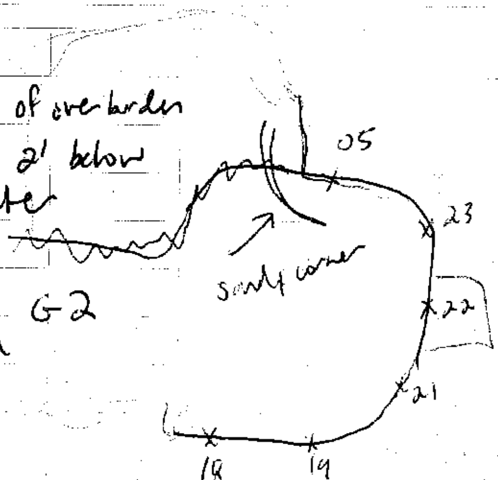
700 Health and Safety
Windy, cool, cloudy
- heat exhaustion, hypothermia symptoms
Environmental
Pad 98 Bagging
Eric field screen sampling @ site 31

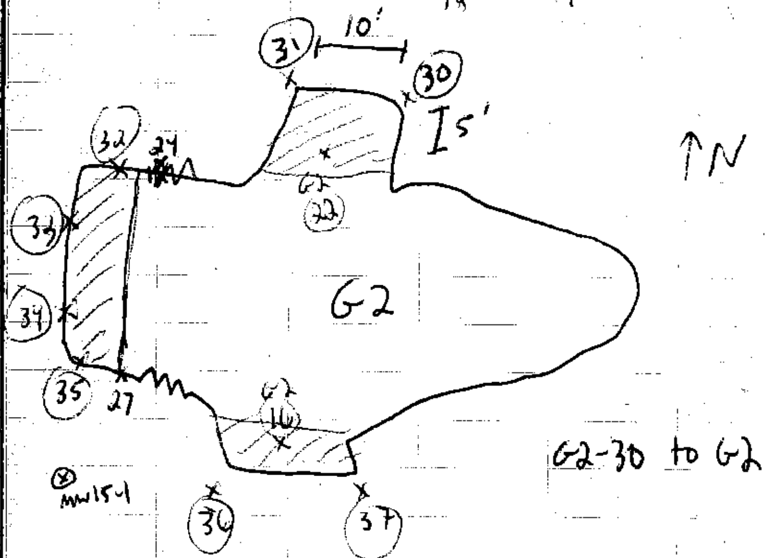
Pad 98 Bagging - G2 dig-out spots
116 C
BWMOC116
BWMOC117
BWMOC118
BWMOC119
MOC116A rebagged due to "oozing" - misshapen bag fell out of straps - mixed in with other material @ pad 98
MOC-120 C
- QAR switch Jeremy Craner / Aaron Shewman
Security Aviation flight arrive

G2-30

Removed 5' of overburden
Excavated to 2' below
standing water

-material will not
be screened





G2-30 to G2-37

Heavy rain, winds

2 samples taken at each field screening flag location – one 0.5-1.5 ft above WL and one 1' above lower sample

Bill Burke
Greg Jarrell
Julie Clark
Curtis Dunkin
Corey Coisk boom
Jeremy Craner
} security air flight

-emailed Terri Torres (TestAmerica) regarding sample 10 question 12NCMOC SS008 vs 018 and MS/MSD

1730 End
10 hours

Location NE CAPE Date 8/01/12

Project / Client

700 Health and Safety
visitors on site today

Environmental Meeting
- visitors visit POL/PCB sites, radar dome,
site 28

Bagging at Pad 98 Mx 120 D
POL site walk E Barnhill, L James, J Craner
C Dunkin (ADGC)

A1, G2, H → leave excavations with dirty floor samples 2' below current WL open for future excavation when WL is lower?

Curtis

H excavation first this season - unlikely to encounter lower WL during field season

- consult with Jamie of confirmation sample placements for survey

Pad 98 Bagging End 122 F

Location NE CAPE Date 8/01/12

Project / Client

Terri Torres - will use sample
12NCMOCSS013 (920) as MS/MSD
and pull all volume from one jar
(008 incorrectly identified as MS/MSD on COC)

H and G2 narrative - estimates of captured material
→ H plume began 7/22
water level variation over time - earlier in the season lower water level? Look at well data. (88-1 and 88-10)
WL form, sampling sheet, recent measurements correct?

Well ID	7/09/12	7/04/12	7/14/12
881	16.63	17.15	15.17
88-10	20.81	20.80	18.13 (7/18)
88-5	10.15	10.27	8.40

End 17:30
10 hours

Location NE CAPE Date 8/02/12

Project / Client

700 Heath and Safety Meeting
heavy fog, calm, cloudy, 40's F
move up to Site 31
Environmental Meeting
- outstanding POL results (20)
- begin excavation at E4

site walk with C.Coley, B. Burke, R. James
drum removal at slope immediately N of E4
- set up silt fencing, lined lay down area for drums, over-pack for liquid-bearing drums

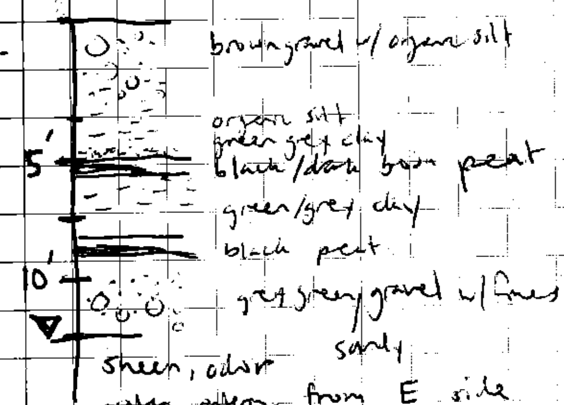
Bulk bag duplicate name - MOC120D
change 19 to MOC120D2

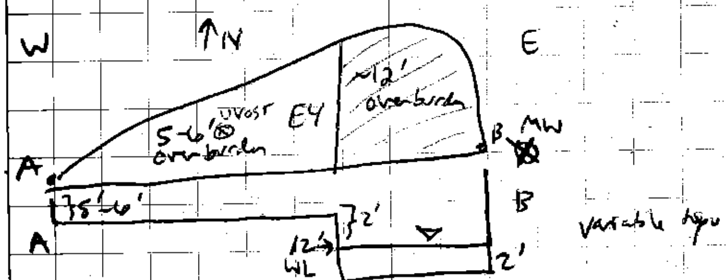
Jack removes crushed empty drums from slope
1 full drum, all on liner
Silt fence in place
Remove vegetated over-burden for stockpile
5' of overburden

Location NE CAPE Date 8/02/12

Project / Client

LIF % peak @ 9-10' bgs 10NCMOCUV009 25%





East side of E4 - no odor @ 5' bgs, 6' bgs
additional 3' excavated to separate "clean" stockpile for field screening - dry brown peat / grey clay - water @ ~12' bgs sheen
- strong odor at peat + clay on W side at 6' bgs ~ 5' overburden

Location NE CAPE Date 8/02/12

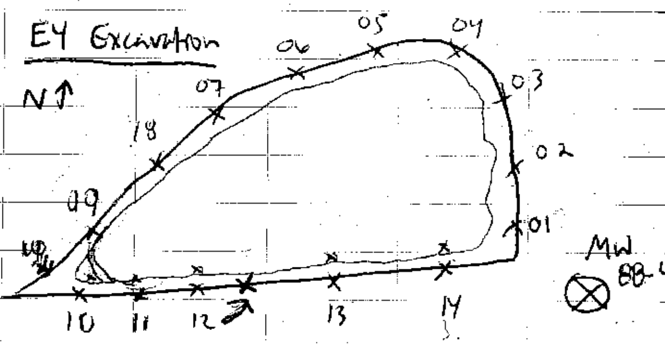
Project / Client

10NCMOCUV005 - peak @ 4' bgs @ E3
009 - peak @ 9.5' bgs @ E4

sidewall sample @ 4' and 9.5' @ E3/E4 boun

E4 Excavation

N ↑



E4-01 to E4-10 taken 1' above water
in clayey grey gravel with sand

E4-11 to E4-14 H taken in black/brow
peat layer directly above gravel
~4' above water

17:30 End
10 hours

Location NE CAPE Date 8/03/12

Project / Client

700 Health and Safety
The right tools for the right job
hoisting - chains vs straps vs cable
Environmental Meeting
Move from site 31 to 13

Excavate area to N of E4 plume on berm
to 1' above WL per Crucke - peat,
dry organic material placed in separate
stockpile to S of main stockpile

Bagging at Pad 98

MOC 123 G   BW MOC 123

MOC 124 A
MOC 124 B
MOC 124 C
MOC 124 D
MOC 124 E
MOC 124 F
MOC 124 G   BW MOC 124

Location NE CAPE Date 8/03/12

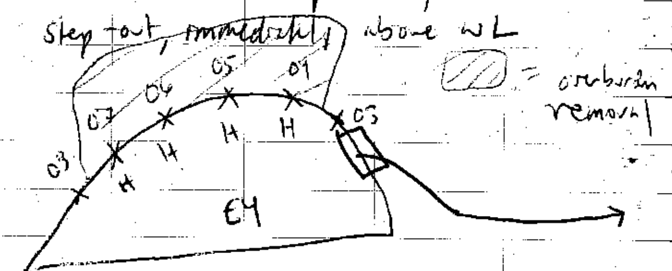
Project / Client

MOC 125 A
B
C
D
E
F
G BW MOC 125

MOC 126 – Eric Barnhill collected BW MOC 126

G2-38

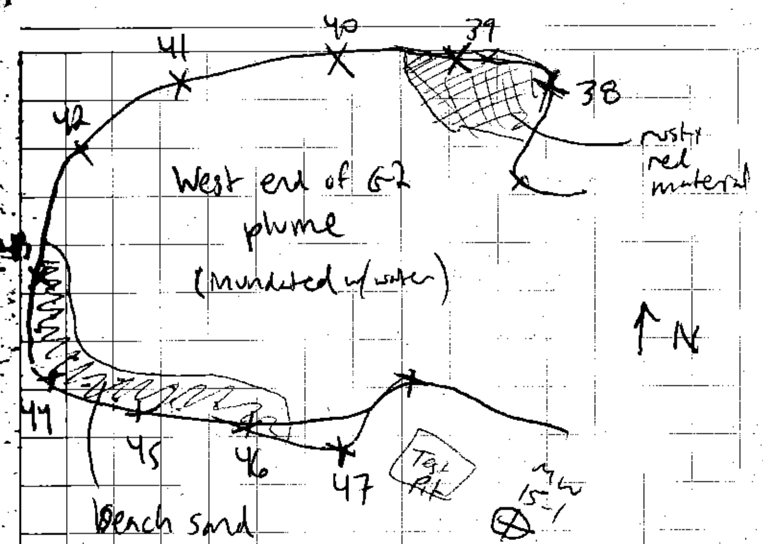
E4-Ø4 H to E4-Ø7 H
taken in black peat layer at
step-out, immediately above WL



peat layers above have no fuel odor
layer @ standing WL has Strong
fuel odor

Location NE CAPE Date 8/03/12

Project / Client



G2-38 to G2-47

38 - exclusively silty red material 39 - some red material
43 + 44 - primarily beach sand - possibly slough?
The rest are silty brown-grey gravel, moist

Soil profile @ E4, sample location E4-Ø3

silty gravel, brown

black peat, no odor

grey silty clay

black peat, strong odor, wet
droplets of oil

12:30 End
10 hours

Location NE CAPE Date 8/04/12

Project / Client

700 | Health and Safety Meeting

Environmental Meeting - Eric pre POL stockpile sampling / site 13 confirmation

Pad 98 | BW MOC 127 A and B

E4 - POL results for E4-01 to E4-14

E09 only dip at spot in sandy grey gravel layer beneath peat - 3 of 4 peat samples are super hot → E4-13H 413,225 mg/kg

Begin E3 remove 2' overburden
strong fuel odor at 1' - E3-01 to E3-02 taken to determine if less overburden should be removed - hauled it to just below lower peat layer, above water

water pouring in from NW side of E3 excavation @ 3' bgs

17:30 End
10 hours

Location NE CAPE Date 8/05/12

Project / Client

700 | Health and Safety
Safety Award - recipient not present
attention to 4 wheelers, high winds
Environmental Meeting
Excavation at E3, Bagging @ Pad 98
Site 13 confirmation sampling

E3 excavation - water level slightly below contaminated peat layer

Pad 98 Bagging: MOC 127 C

BW MOC 127
BW MOC 128
BW MOC 129
BW MOC 130 through D

High winds - lab goggles used instead of safety glasses

15:30 Shut down early due to high winds

8 hours

Location NE CAPE Date 8/06/12

Project / Client

700 Health and Safety Meeting
- injury yesterday due to high winds
debris blown into eye during POL soil
bagging, under safety glasses
- do not delay care

Eric to get site 13 confirmation samples
ready for shipment

Pad 98 POL bagging - start MOC 130 E

POL results on E3Ø1-Ø3:
Ø1 dirty, Ø2 clean, Ø3 borderline dirty LCK

E. Barnhill trade POL bulk waste sampling,
confirmation sampling @ G-2

End bagging @ MOC 137 C

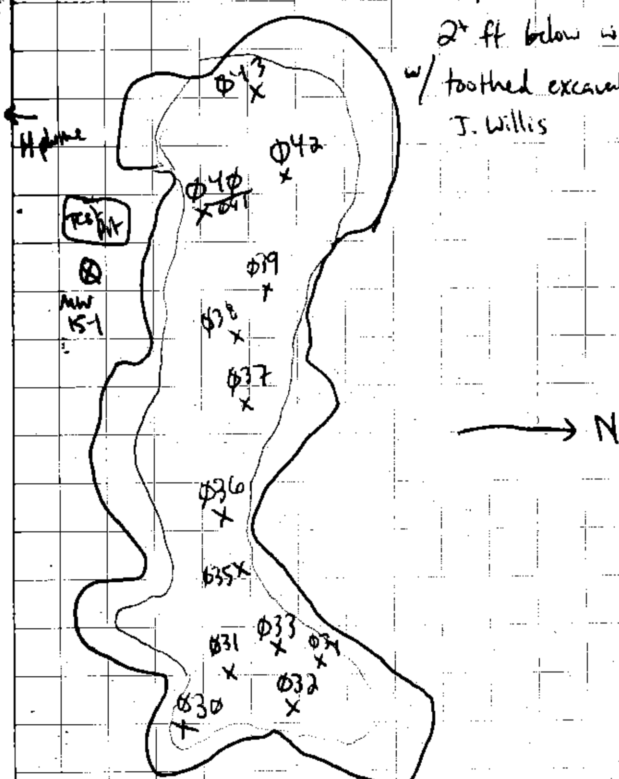
48 bags

Location NE CAPE Date 8/06/12

Project / Client

G2 Floor confirmation samples

2+ ft below water
w/ toothed excavator bucket
J. Willis



1620 Ø3Ø sandy silt 1650 Ø38 bottom settled silt, sheen
1625 Ø31 MS/MSD sandy silt 1700 Ø39 sandy silt
1630 Ø32 coarse sandy gravel - wet 1705 1710 Ø40/Ø41 DUP silty sand brownish grey
1635 Ø33 lean clay, grey, wet 1715 Ø42 sandy gravel, sheen, grey
1640 Ø34 " " with sheen 1720 Ø43 brown clayey gravel
1645 Ø35 silty sand, grey, wet
1647 Ø36
1648 Ø37

17:30 End 10 hours

Location NE CAPE Date 8/~~06~~07/12

Project / Client

700 Health and Safety Meeting

Environmental Meeting
- Bagging at Pad 98
- Confirmation sampling site 13

Pad 98 - material from E3 moist to dry
black/brown peat, strong fuel odor
MOC 137 D

BW MOC 137
BW MOC 138
BW MOC 139
BW MOC 140
BW MOC 141
BW MOC 142
BW MOC 143 A-E

17:30 End
10 hours

Location NE CAPE Date 8/08/12

Project / Client

700 Health and Safety Meeting
Carl's Birthday!
Environmental Meeting
Eric will send out site 13 confirmation samples

H plume - 3 spots exceeding 20' for
confirmation sampling - add 3 new locations

H PLUME CONFIRMATION SAMPLES

12NCMOLSS Ø44	8^{30}
Ø45 (DUP Ø62) 1015	8^{35}
Ø46	8^{40}

G2 PLUME CONFIRMATION SAMPLES

12NCMOLSS Ø47	900	Ø58	955
Ø48	905	Ø59 DUP Ø69	1000/1003
Ø49	910	Ø6Ø	1005
Ø5Ø	915	Ø61	1010
Ø51	920	~~Ø62~~ (DUP OF Ø45)	~~1015~~
Ø52	925	Ø63	1020
Ø53	930	Ø64	1025
Ø54	935	Ø65 DUP Ø68	1030/1033
Ø55	940	Ø66	1015
Ø56	945	Ø67	1020
Ø57 MS/MSD	950	O	

Location NE CAPE Date 8/08/12

Project / Client

Dig at spot @ G2 - 41 and 45
hot spot G2-4 not excavated yet due to access issues w/excavator. G2-4 excavated, 3 sidewall field screening samples taken: G2 48-50

MOC "during" soil excavation surface water sample event: E plume excavation underway
MOC surface water samples

1540/1550 loc ID ~~001~~ 001 12NCMOCSWA005 (DUP) culvert
1600 loc ID 002 12NCMOCSWA006 middle
1620 loc ID 003 12NCMOCSWA007 (MS/MSD) E side of pond

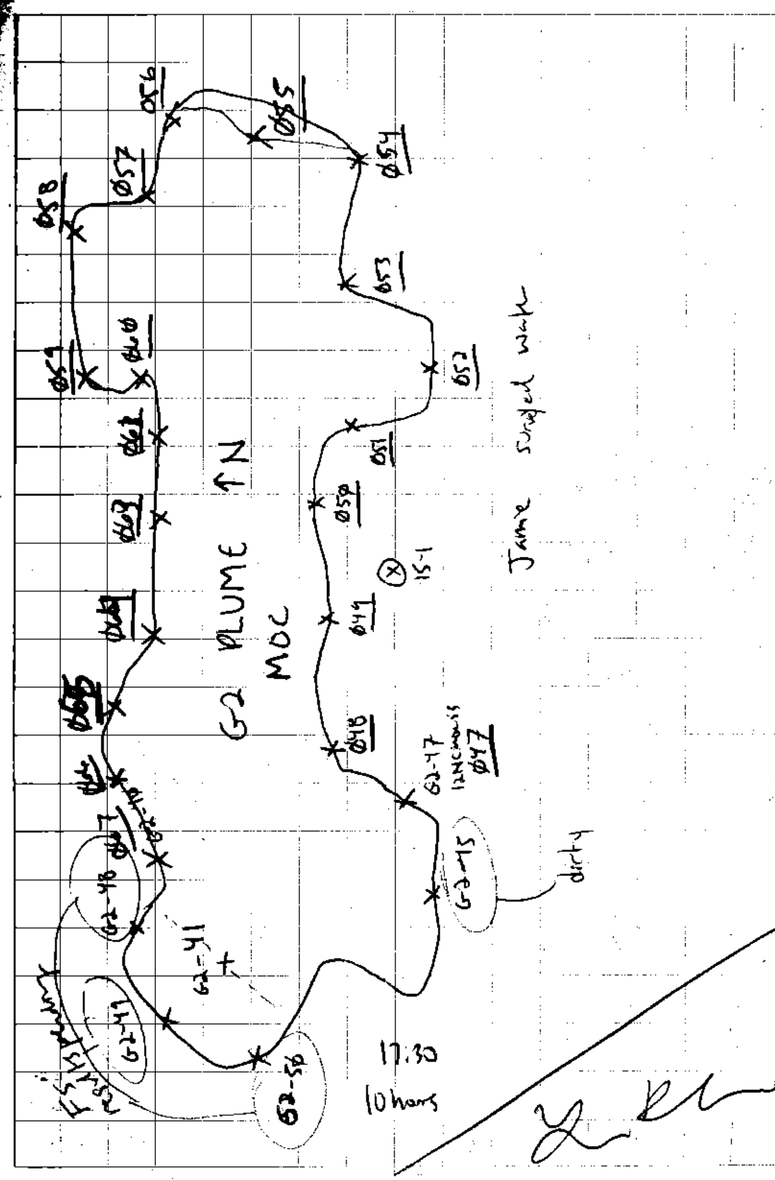
- 001 iron floc, ~~no~~ sheen, ~~slight~~ moderate odor 005/006 DUP
  temp 13.06 ORP 35.8
  sp.cond 0.265 DO error (180%)
  pH 6.66 turb. 42.1

- 002 iron floc, no sheen, slight odor
  temp 10.92 ORP 54.9
  sp.cond 0.100 DO 6.98
  pH 6.01 turb. 2.60

- 003 no floc, biogenic sheen present, no fuel odor
  temp 10.46°C ORP 29.1 pH 5.67 MS/MSD
  sp cond 0.104 turb 16.1 DO 3.50

Location NE CAPE Date 8/08/12

Project / Client



17:30
10 hours

Location NE CAPE Date 8/9/12

Project / Client

700 Health and Safety Meeting
clear and calm 40's

outstanding dig at spots:
G2-42 E4-09

Eric bagging at site 31 / field screen sampling

E3 excavation - E301, E303 surface samples
above cleanup - scrape 1' overburden, rest to pad 98
take E4-15 to E4-18

Pad 98 bagging
MOC 143 F

BW MOC 143
BW MOC 144
BW MOC 145
BW MOC 146
BW MOC 147
MOC 148 A

1730 End - 10 hours

NE CAPE Date 8/10/12

/ Client

Health and Safety Meeting
foggy and rainy - bring proper gear
Environmental Meeting
- set up wood frame at site 21 (5 bags)
Bagging at Pad 98 - MOC 148 B
Matt Faust, CQCSM filling for Russell

- COCs: H confirmation
G2 confirmation
MOC surface water

- site 21
- site 8
- radar dome

Pad 98 POL Bagging 008
BW MOC 148
BW MOC 149
BW MOC 150
BW MOC 151

Site 10 Drum Removal 057
one drum antifreeze - black overpack
one drum blue fluid - yellow overpack
~~four~~ drums clear fluid - black overpack
↳ ammonia/chemical
type odor -

Location NE CAPE Date 8/10/12

Project / Client

5 drums on overpack

10 drums on containment

→ liquids in containment

light oil - (mineral?)

90 wt oil

antifreeze

solvent

brake fluid

liquids in containment pumped into 55 gal drum using peristaltic pump

Leesa Nelson on

17:30 End

10 hours

ØØ8 6h

Ø57 5h

NE CAPE Date 8/11/12

Client

Health and Safety Meeting

Environmental Meeting

Ene site 31 with Leesa 2 bagging questions

Pad 98 Bagging

BW MOC 155

BW MOC 156

BW MOC 157

BW MOC 158

BW MOC 159

BW MOC 160 C

17:30 End

10 hours

ØØ8

Location NE CAPE Date 8/12/12

Project / Client

700 Health and Safety

Site 13 and Pad 98 busy - lots of people and lots of equipment. Be mindful (Bruce's birthday)

Environmental Meeting

Cedar + Env @ Site 13, POL busy @ 98

MOC 160 D

MOC 160

MOC 161

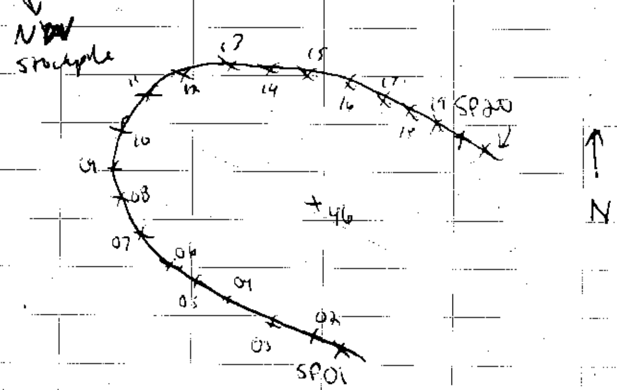
MOC 162

MOC ~~136~~ 163

SP01 - SP20 SP-21 to SP-46 NW stockpile

MOC 164

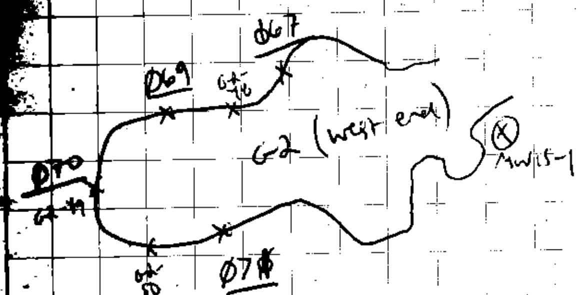
MOC 165 D → Contains field screening samples

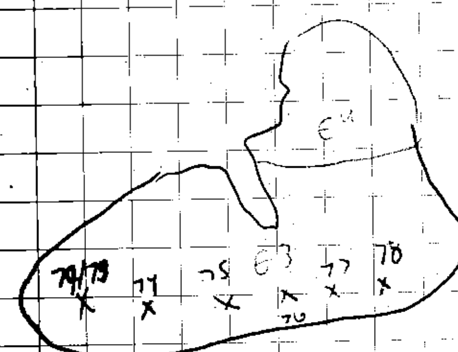


NE CAPE Date 8/12/12

Client

MOC	soil confirmation	sampling	with excavator bucket
30	12NCMOCSS069		~1' above water level
35	070		
40	071		





074 ms/msd 1450

073 1700

074 1705 MS/MSD

075 1710

076 1715

077

078 1720

1725

079 1730

17:30 End 10 hours

079 dup 073

074 MS/MSD

Location NE CAPE Date 8/13/12

Project / Client

700 Health and Safety
Site 10 drums - transfer fluid from drums - PPE
Environmental Meeting
E. Barhill, M. Faust, A. Smith out
Sample management

MOC SOIL CONFIRMATION SHIPMENT
2 Ø64 IDs: G2 DUP of Ø59 collected 8/02
renamed Ø72; sample Ø72 (DUP Ø73) renamed
Ø79 (from phone E3)

DUPS for this shipment:
12NCMOCSSØ59 and Ø72
Ø65 and Ø68
Ø45 and Ø62
Ø41 and Ø40

MS/MSDs
Ø31
Ø57
Ø74

MOC SURFACE WATER
12NC MOCSWAØØ5 - ØØ8
Ø5 and Ø8 DUPS
Ø7 MS/MSD

Location NE CAPE Date 8/13/12

Project / Client

COC # 12NC-012-1 (surface water MOC)
COC # 12NC-013-1 to 4 (soil from H, G-2 and E3)
Ø81312:
cooler 01 → Eric PCB confirmation
cooler 02 → SWA005 and SS Ø54-Ø72, 74
cooler 03 → SWA ØØ6 - ØØ8
cooler 04 → SSØ3Ø → Ø53

Rest of E3 floor samples taken 8/12 held pending DEC guidance Ø73, Ø75-Ø79 (Ø73 DUP Ø79)

E2 Excavation: 14 ft overburden - dry brown silty gravel to 11 ft bgs - just above water contamination present in black/dark brown peat layer

17:30
10 hrs

Location NE CAPE Date 8/14/12

Project / Client

700 Health and Safety
- high winds building into tomorrow

Environmental Meeting
- bagging @ pad 98
- excavation at E2

Discontinuous upper peat lenses (strong Arctic odor) with gray silty clay

Field screening
E-01 to E-35, sidewall in lower continuous peat layer

E 01 and E10 light brown silt
E 30 and 31 sphagnum moss

Jamie surveyed field screen location points

End 1730 # 008
10 hours

NE CAPE Date 8/15/12

Client

Health and Safety Meeting
- high winds

Environmental Meeting
- Arsenic dig
- site 13 dig-out spots

Arsenic dig - 5 bags removed
16k - 18000 lbs at excavation perimeter (already below 2' water)

~~12NCMDC X~~ 12NC2155013 (014 dup)
bulk waste sample

12NC2155001 - 12NC2155012

012 = MS/MSD, floor sample

008 + 011 DUP

End 1200 due to high winds (~70 mph, rain)
8 hrs # 057

Location NE CAPE Date 8/16/12

Project / Client

700 Health and Safety
- assess wind damage, repairs
- high winds diminishing

Environmental Meeting
- site 13/31 dug-out spots
- excavation E phone

Arsenic Shipment COC # 12NC-014-1

1100	12NC21SS 001	reddish brown silty peat
1105	002	dark brown peat, moist
1110	003	" "
1115	004	" "
1120	005	reddish brown silty peat, moist
1125	006	dark brown peat, moist
1130	007	" "
1135	008	greyish brown silty peat, ~~moist~~ wet
1140	009	dark brown peat, moist
1145	010	reddish brown silty peat, moist
1150	011	DUP of 008
1155	012 MS/MSD N floor	greyish brown silty peat, wet
1050	013	> BW DUP dark brown silty peat, wet
1055	014	

NE CAPE Date 8/16/12

Client

... out of helium - results SP-41 to 46 pending
... top of stockpiles samples SP-21 to 40
came back hot

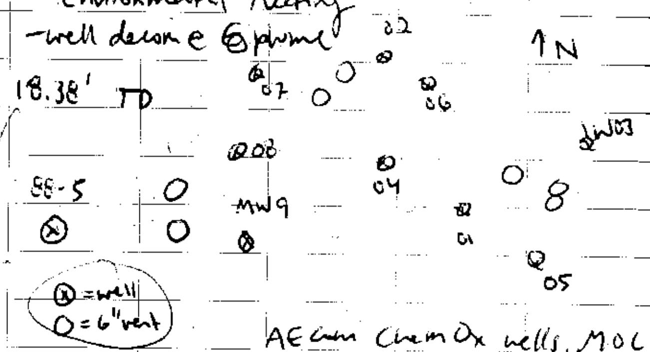
1730 End
10 hrs

Location NE CAPE Date 8/17/12

Project / Client

700 Health and Safety
- winds shifting, rain anticipated
- Environmental Meeting
- well decom @ plume

18.38' TD



AECom ChemOx wells, MOC

PVC, no monument or outer casing
water @ 10.75'

⊗ 2" diameter (ICOMW01?)

dig to 11' - abandon ~ 8ft

8 x 0.163 ≈ 1.3 gal bentonite

bentonite to 7.6 ft bgs

6" diameter PVC vents 4.5 - 6.5 ft bgs

88-5 2" TD 14.85

88-4 2" TD 15.31

granular bentonite - slurry

↳ sinks in water

17:00 End
10 hours

Location NE CAPE Date 8/18/12

Project / Client

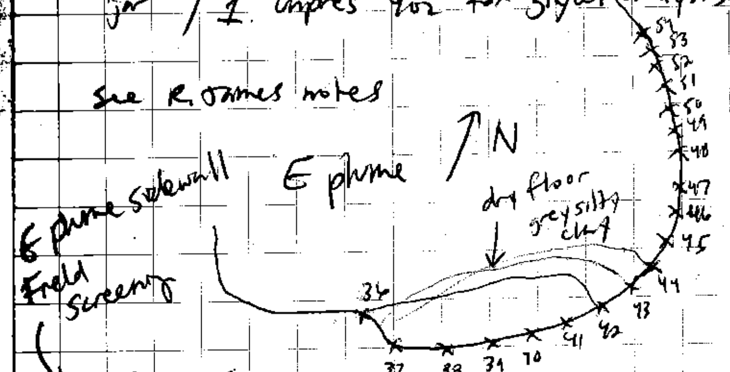
700 Health and Safety Meeting

Environmental Meeting - site 10 sampling with R. James - drum removal area

80' linear ft. 2/250 + 1/800 sq. ft floor

1 16 oz jar / 1 4oz methanol pres. tared jar / 1 unpres 4oz for glycol analysis

See R. James notes



E plume Field screening

E-36 to E-59

bucket sample with Allen Dennis - brown peat sidewall material

MS/MSD 12NC10SS007 Site 10 drums

DUP 12NC10SS005 /18 See R. James notes

1730
10 hours

Location NE CAPE Date 8/19/12

Project / Client

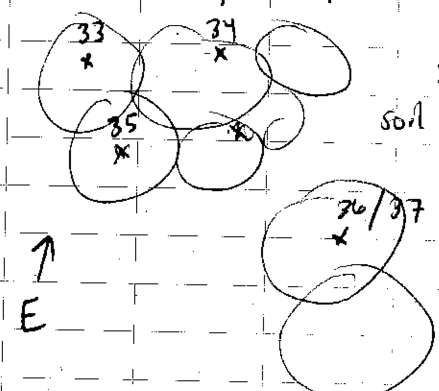
700 Health and safety
High winds

Environmental Meeting
- Site 10 sampling PCB, PAH, DRO/RRO, metals
GRO/VOC (4oz methanol preserved)
glycol (4oz unpreserved)

MS/MSD 12NC10SSØ14
DUP 12NC10SSØ16/19 1040/1045
DUP 12NC10SSØ30/32

Finish lower site 10 drum area, stockpiles, upper drum removal area (east)

33-37 stockpile samples 12NC10SS033-37



Site 10 drum soil stockpile @ MOC

samples taken ~2' below surface

1730

NE CAPE Date 8/20/12

/ Client

0 Health and Safety
wind, rain
timesheets turned in

Environmental Meeting
Eric arrives today / NALEMP - Lisa to perform NALEMP Sampling
COC # 12NC-15-1 MOC E phone flow
12NC-16-1 to 4

Lesa stockpile re-sample after removal
SP47-63

Methanol preservation
dangerous goods in excepted quantities
~~Air Air~~ haz specialist on extended
Leave → ship via NAC?

Sample management, floor confirmation
notes

1730

Location NE CAPE Date 8/21/12

Project / Client

700 Health and Safety
- wind, rain, fog 40's
- security aviation flight

Environmental Meeting

Gene site 10 drum characterization

Lesa NALEMP

E plume floor confirmation samples

2+ ft below water

bucket sampling approx 10' from excavation edge

12NCMOLCSS083 -121

87+88 DUPS → dry peat

98+99 DUPS

112+111 DUPS

104 MS/MSD

116 MS/MSD → 116/121 DUP

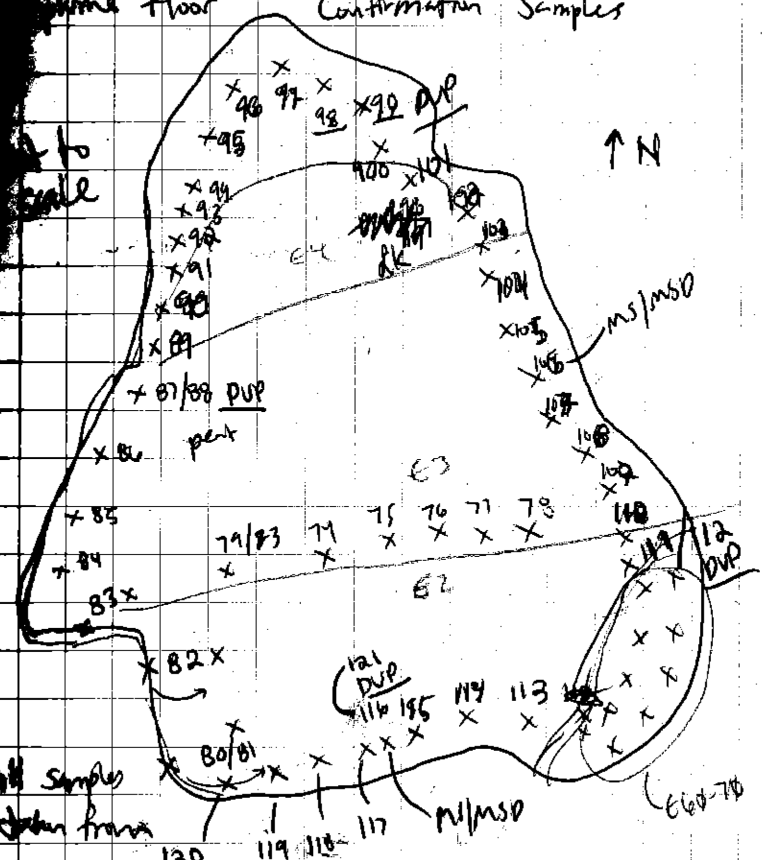
120 MS/MSD

4 DUPS, 2 MS/MSD

NE CAPE Date 8/21/12

Client

Plume floor Confirmation Samples



all samples taken from ~10ft in from sidewall

8' to 2' below water level

1730

10 hours

Location NE CAPE Date 8/22/12

Project / Client

700 Health and Safety
foggy, calm
security aviation re-schedule

Environmental Meeting

12NC-17-1 to 4
12NCMOCSS083-12NCMOCSS121
4 DUPS, 2 MS/MSDS

shipment 12NC-15 and 16 still at
Bering Air - no NAC flights today or yesterday
due to weather
shipment 12NC-17

Emily Conway, Talon Ibanguen arrive
MOC site orientation
E plume, site 10, 62/H

End 1730
10 hours

Location: NE CAPE Date 8/23/12

Project / Client

Health and Safety
- barge loading
- Eric safety guide
Environmental Meeting
- stockpile results - one hot spot SP-50
- site 8 | CDV with E Conway
outfall water samples for DRO/RRO, PAH
E 56-59 clean → E sidewall of E plume

Hot spots @ E plume:
E 39, 42-44, 47, 51-53
E21-35 dirty (E29 clean)

E1-20 dug out, resampled

Calibrate YSI #3 and turbidimeter #1
new conductivity solution, new
confidence solution

E Conway Site 8: collect YSI parameters,
methane VOA vial samples, SOM inpans
HDPE for Hach kit MNA using
peri pump

Location NE CAPE Date 8/23/12

Project / Client

12NC08SWA01/~~02~~ MS/MSD 1130

with Emily Conway no odor, clear, from

~~2.80°C~~ 40 spring near outlet to

~~0.730 mS/cm~~ Sugi river. No sheen, no

~~7.92 pH~~ ZK Iron floc present.

1.75 °C 7.06 pH

0.656 mS/cm -76.0 ORP

2.34 mg/L DO Turb. 260

12NC08WA001 LDU D10 1300

9.07 °C 6.27 pH

0.151 mS/cm 585 turb

3.47 mg/L DO 349 ORP

12NC09WA002 LDU C10 1305

2.32 °C 8.70 pH

0.913 mS/cm -106.6 ORP

~~2.01~~ mg/L 0.32 turbity

2.01 ZK mg/L DO

Sample taken @ spring outflow location

NE CAPE Date 8/23/12

WA003 LDU A8 1310

C 6.83 pH

.71 mS/cm 140.9 ORP

3 mg/L DO 126 NTU

08WA004 LDU B6 1315

5 C 5.69 pH

.072 mS/cm 114.5 ORP

.60 mg/L 68.9 NTU

NC08WA005 LDU A5 1320

8.94 °C 5.77 pH

0.072 mS/cm 187.8 ORP

7.52 mg/L DO 32.2 NTU

NC08WA006 LDU D4 1330

9.31 °C 5.70 pH

0.072 mS/cm 160.2 ORP

6.04 mg/L DO 118 NTU

12NC08WA007 LDU B2 1335

9.04 °C 5.65 pH

0.081 mS/cm 168.9 ORP

6.49 mg/L DO 22.9 NTU

Location NE CAPE Date 8/23/12

Project / Client

12NC08WA008 LDU C1 1345

9.50 °C 5.69 pH
0.064 mS/cm^c 228.2 ORP
7.83 mg/L DO ~~228.2~~ 6.31 NTU

DUPLICATE 009 1350

12NC08SWA02/03 DUP 1500/1515

biogenic sheen, slight odor, iron floc present

8.56 °C 5.69 pH
0.078 mS/c 163.6 ORP
4.40 mg/L DO 19.6 NTU

12NC08SS001 1600
DUPLICATE 12NC08SS002 1610
composite sample LDU Site 8 —
brown moist peat with gray silt
strong fuel odor
D10/C10/A8/B6/A5/D4/B2/C1

NE CAPE Date 8/23/12

Client

... samples packaged

... 8 Mn, Fe, nitrate, sulfate, alkalinity Hach
...- colorimeter standards not located
— acid digestion/filtration prior to reading?
... to email Marty + verify procedures
from previous years, order standards

Still need Site 8 soil MS/MSD from
upper unit, methane dups for each
deeper unit and MS/MSD for methane.

End 17:30

10 hours

Location NE CAPE Date 8/24/12

Project / Client

700 Health and Safety
High winds - no Yam barge
Environmental Meeting
Package samples for shipment - site 8 outfill water

Get figures from Jamie - QC check
collect SP-64 (dig out spot on SP-50)

need additional floor samples
at G2, H
- dirty field screen spot @ G2
- dirty confirmation spot @ H sidewall

17:30 End
10 hours

NE CAPE Date 8/25/12

Health and Safety meeting
winds have died down, clear, calm
E plume backfill
floor samples - confirmation bucket sampling
E. Canyon (see E Canyon notes for map, soil samples) 2+ feet below water level
12NCMOCSS 128
129
130
131
132
133
134
135
- site 8 water sample shipment (2 coolers)
- Bering Air flight out of camp
- AK Air afternoon flight
NOME → ANC
16:00 End
9 hours

Location NE CAPE Date 9/3/12

Project / Client

Return to NE Cape from leave in AN

1000 check-in for Ak Air → Nome

1400 Bering Air arrive NE CAPE

environmental connex clean-out

Site 21 Arsenic results - 3 dig-out spots

12NC2155005, 01, 10

all along E wall

1730 End

8 hours

NE CAPE Date 9/4/12

Health and Safety

- disaster scenario applicability to camp

Environmental meeting

- 2 wells @ site 9, 1 well along cargo road to decommission
- site 21 Arsenic dig
- POL bagging (MOC 214 B)

bag loading frame East (take from 31)

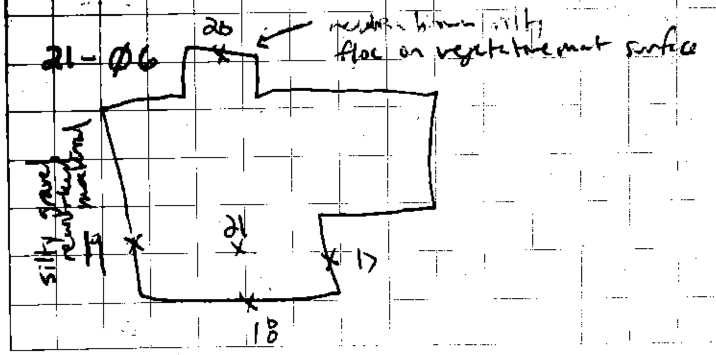
MOC 214, 215

Bulk Waste Bag IDs 21-Ø6 to 21-1Ø

12NC2155Ø15 - bulk waste 1400

12NC2155Ø16 - duplicate bw

21-Ø6



Location NE CAPE Date 9/4/12

Project / Client

site 21 Arsenic 2nd 2012 excavation sampling:

12NC21SSØ15	1400	moist brown peat
12NC21SSØ16	DUP 1405	reddish brown silt
12NC21SSØ17	1450	reddish brown silty peat, moist
12NC21SSØ18	1455	red-brown silty peat, moist
12NC21SSØ19	1500	MS/MSD brown silty peat gravel
12NC21SSØ2Ø	1505	reddish brown silt with peat
12NC21SSØ21	1510	brownish grey silt with brown peat, wet

1700 End
10 hours

NE CAPE Date 9/5/12

Client

Health and Safety Meeting
- NE CAPE poem 2 In Eric
- site 21 - more tonnage (1 by)
- site 31 PCB dig-out spots

Environmental Meeting
- Chuck arrives today, J. Crane QAR

Site 21 Arsenic - bulk waste sample taken to add to composite/DUP set 015/016

12NC21SSØ18 dig-out, resampled at 910. Reddish brown wet silt with peat

→ 12NC21SSØ18 910 9/5/12
(more tonnage needed)

12NC21WAØØ1	1400	MS/MSD
ØØ2	1410	DUP

samples collected from water in excavation, dissolved arsenic samples filtered using peristaltic pump + filter

Location NE CAPE Date 9/5/12

Project / Client

Sample management site 21 soil and water samples

Arsenic site 21 soil + excavation water
COC # 12NC-28-1

17:30 End
10 hours

E CAPE Date 9/6/12

alth and Safety

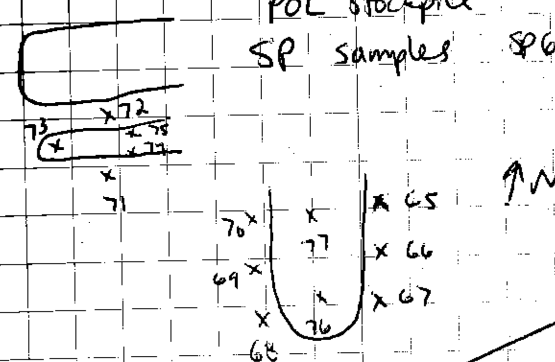
nmental Meeting
- decommission wells (3)

0 to bottom 3.91 stick-up
" 6.55 " " plastic bailer inside
" 1.60 " " 17.90 to water

ice @ 6' - melt using 50 lb
bar on a rope

9-1, 9-3 removed by hand, filled with granular bentonite

POL stockpile
SP samples SP65-75



17:30 End
10 hours

Location NE CAPE Date 9/07/12

Project / Client

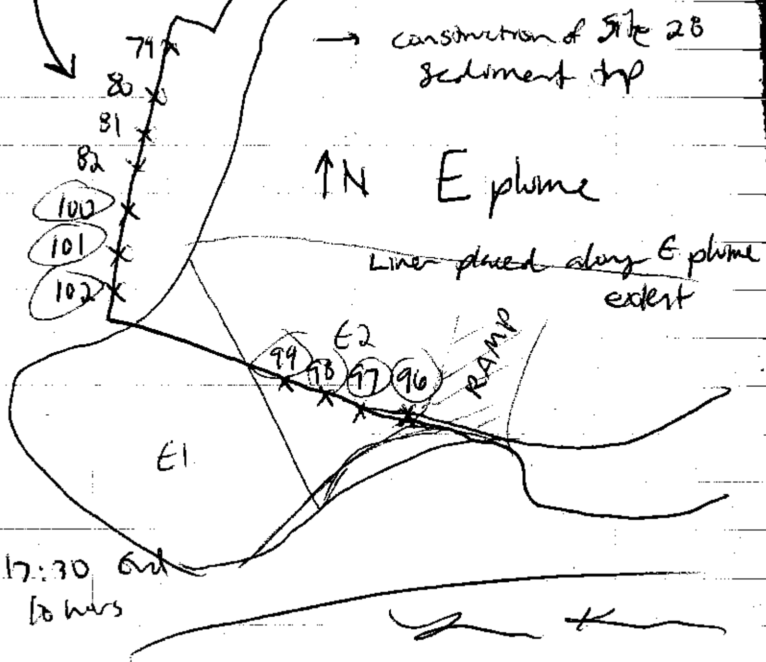
700 Health and Safety
- boat arrival @ 7pm tonight

Environmental
Drop at spots @ 13

E - 96 to 102 - updated map from Jamie

→ Finish abandonment/decommission of 26MW3 w/ granular bentonite, excavator removal of PVC casing

→ construction of Site 28 sediment trap



17:30 End
10 hrs

CAPE Date 9/08/12

...th and Safety
- fatigue (mental + physical)

...onmental
- all E plume field screen samples above clean-up
- haz bag placards

... haz bag manifests
... drop at spot at SP-68 (... corner of stockpile)
... bag placarding with R James + E Birkhill

Placards, stickers, manifests for Arsenic and PCB haz bags

17:30 End
10 hours

Location NE CAPE Date 9/09/

Project / Client

700 Heath and Safety
- anecdotes, local traffic + visibility
Environmental Meeting
- site 28 sediment trap location/surface
water sample locations TBA
- barge unloaded

haz waste manifests

17:30 End
16 hours

CAPE Date 9/10/12

[illegible] and Safety
PPE anecdotes / use of [illegible] dredge
[illegible]mental Meeting
[illegible] Mt @ site 28 pad
[illegible] dredge placement, sed. trap placement?

[illegible] waste manifests for Suzanne
[illegible]C 1KOB - 12

[illegible] water sampling with Leah Nelson
NALEMP 49029/40 4 hours

plane depart with R Bayles, Mel, Scott

4 1L amber, 3 VOA, 1 poly HNO_3
3 4oz jars, 1 4oz septa w/ MeOH
01-05 05 dup of 11
NE CAPE
4hrs NALEMP rest HTRW

17:30 End
10 hours

Location NE CAPE Date 9/11/12

Project / Client

700 Health and Safety
- dredge operation / barge @ ~
Environmental Meeting
- one more MI area to sample @ site 28 pad
- decide surface water sample locations
- 6 dig-out spots @ site 31
- POL bagging

Look up TestAmerica results for G

Eric Barnhill + I collect MI sample at site 28 pad

Site walk with R James to locate site 28 surface water sample locations

17:30 End
10 hours

Date 9/12/12

and Safety
role of fear and common sense
mental meeting
out spots at 31

490 29/40 3 hours
sample, prep + sample
coolers (8) with water samples
(2 excepted quantities coolers
) w/ Lesa Nelson
Lesa Nelson field notes)
@ Pad 98 MOC 217 G

28 preparatory phase meeting
Chuck, Jeremy, J. Willis, Eric, Russell
- surface water samples
need filters
- dredge need ~12 ft - need "leap frog" pump + containment system

End 17:30
10 hours

Location NE CAPE Date 9/13/12

Project / Client

700 Health and Safety
- practical jokes, improvised safety
Environmental Meeting
- begin dredge test, containment construction

Sample labels for 12NCMOCSWA 009-0
12NC28WA01 - 03

calibrate YSI #3, turb #1
MOC "post" action surface water DRO/RRO
- 12NCMOCSWA009 / ~~012 DUP~~ 012 DUP 1400/~~1400~~ 1410
iron floc, sheen
5.75°C 6.16 pH 4.6 ORP
0.178 mS/cm 7.01 mg/L DO 45.2 NTU
loc ID SWA001
- 12NCMOCSWA 010 1420
no iron floc, blacky sheen
5.31°C 6.24 pH -23.7 ORP
0.164 mS/cm 3.27 mg/L DO 2.03 NTU
loc ID SWA002
- 12NCMOCSWA 011 1425
no iron floc, no sheen
5.71°C 3.25 mg/L DO 21.7 ORP
0.106 mS/cm 5.91 pH 3.50 NTU
loc ID SWA003

NE CAPE Date 9/13/12

12NC28WA01 1600 28-W-01
pond immediately N of proposed silt trap
iron floc, fuel sheen when disturbed, odor
GRO/RRO, DRO/RRO, tot + dissolved metals
turbidity, PAH, PCB
- dissolved metals collected in unpreserved poly + filtered w/ peristaltic pump at camp → 17.4 NTU
12NC28WA02 1630 28-W-02
mid way between sed. trap + step, bottle?
small ponded area
orange iron floc, no sheen or odor 16.7 NTU
~~12NC28WA03 1700 28-W-03 MS/MSD~~
ZK
- Samples 12NC28WA01 and 02 refridgerated and packed at camp, dissolved metals samples filtered using peristaltic pump

End 1800
10.5 hrs

Location NE CAPE Date 9/14/

Project / Client

700 Health and Safety
windchill and cold weather
Environmental Meeting
-sample shipment
Site 28 "PRE REMOVAL" surface water samp
12NC28WAØ3 MS/MSD 0900
outlet to swgi - clear, no odor or non floc
-dissolved metals samples filtered in camp
using peristaltic pump
turbidity: 10.2 NTU

Sample shipment:
12NCMOCSWA 009
010
011
012 Dup of 009
12NC~~MOC~~28WA01
02
03 MS/MSD

COC# 12NC-33-1 TripBlank Ø91412
COC# 12NC-32-1

Shipped to Test America Denver
(4 coolers)

CAPE Date 9/14/12

...# 1

... decision unit 12NCOBWA__
(D10) slight fuel odor Overrange
(..) 96.9 NTU
(C8) 38 NTU
(C7) overrange
(5D) 712
(5A) 36.7 NTU
(A3) 10.4 NTU
(B1) 2.38 NTU
.. Dup of 17
19 (A10) 6.70 NTU
.. (A4) 32 NTU (floc) allowed to settle 20.6 NTU
.. (C9) 6.96 NTU
22 (D6) 13.3 NTU
23 (C6) 1.51 NTU
24 Dup of 23
25 C4 4.74 NTU
26 (B3) 73 NTU
27 (A2) 3.61 NTU

End 17:30
10 hours

Location NE CAPE Date 9/15/

Project / Client

700 Health and Safety
- cold stress

Environmental Meeting
- dredge test, containment set-up

Sample label + bottle prep

site 28 sediment trap placement
- dug in ~3 ft below water
unrolled cellulose matting, placed 3 inside box

dredge pump test

17:30 End
10 hours

Date 9/16/12

...lth and Safety
... awards
... - liner for sump - difficulty with wind
...0 stockpile 12NC10SS036/37
... - discrete bulk waste sampling
BAG ID #

10-01A - dug at spot (previously sampled)
10-01B - 12NC10BW01 ~~BW02~~ MS/MSD
920 ~~925~~ ZK
10-01C 12NC10BW02/03 925/930
10-01D 12NC10BW04 945
10-01E 12NC10BW05 1000
10-01F 12NC10BW06 1010

Sampled in 4oz jar w/methanol for VOC analysis
Dups/MS/MSD homogenized

MOC 218 D, E

End logging at 15:30 due to rain/sleet + high winds
- began confirmation sampling QC

17:30 End
10 hours

Location NE CAPE Date 9/17/

Project / Client

700 Health and Safety
- new snow on mountain, JP + Talia fl
stay warm, timesheets

Environmental Meeting
- line intermediary samps, begin dredg
barge @ Pad 98

COC 12NC-34-1 Site 10 bulk waste
12NC10BW01 - 06 VOC
Trip Blank 091712 cooler # 091712
Excepted Quantity - ship via NAC

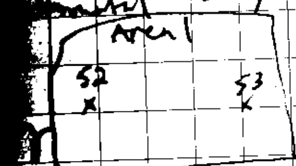
Env to collect 28-W-01 discharge samples

Pad 98 bagging MOC221B → MOC224
MOCBW 221, 222, 223, 224

17:30 End
10 hours

CAPE Date 9/18/12

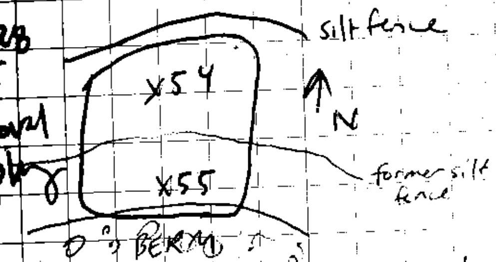
h and Safety - increasing wind
- dredge operations, lab breakdown



SS052 brownish grey, slatey silt with sand - moist, strong odor

sand seam is ~ 0.5' from bottom under silt

2SS053 / DUP 056
1030 1035



12NC28SS054 organic silt with peat
1045 dry, strong odor, brown to dark brown

12NC28SS055 " " with light brown organic
1050 silt lense

light organic material - 2x MeOH

Location NE CAPE Date 9/18/1

Project / Client

Pad 98 bagging MOC 225A

12NCMOCBW 221 1300 9/17/12
12NCMOC BW 222 1430
12NCMOC BW 223 1530
12NCMOC BW 224 1700
12NC MOC BW 225 1340 9/18/12

MOC 226B last bag

12NC28TWA01/02 DUP 1630/1700
taken from discharge - 2 discharges, each container 1/2 and 1/2 from the 2 discharges

1730 End
10 hours

NE CAPE Date 9/19/12

Client

Health and Safety
inclement weather - M. Hannah + Lab team
at today, change out filter material @ site 28 water
last day of dredging
Environmental Meeting
impoundment water to be shipped to SGS - need MS/MSD - recollect
12NC28TWA 01/02, include MS/MSD

- need pre-treatment impoundment sample
- wait for treatment pumps to start

12NC28TWA03 1000 325 NTU
orange-brown, slight odor
12NC28TWA02 1045 DUPLICATE
taken from near geotube in containment

post treatment 12NC28TWA01 1030
orange-brown 214 NTU
taken directly from treatment outlet pipe from blue container scrubber

track down site 10 BW samples - in Tacoma!
12NC-34-1

Location NE CAPE Date 9/19

Project / Client

prepare 12NC-35-01 for TestAm
Site 28 soil sample

→ DRO BW samples from Pad 98
will stay pending more samples

12NC-36-01 SGS
impoundment samples

low fog, no plane

sample management, "during" dredge
operations samples taken from 3
locations 28-W-1, 2, 3
by E Barnhill

17:30 End
10 hrs

NE CAPE Date 9/20/12

- Health and Safety
  - anticipated end Monday, bags to arrive on Casa today

- Erin e POL bagging operations

12NC28TWA04 - sample with R. James
taken from treated water impoundment,
site 28 - pump started 10 min prior to
sampling

Site 28 surface water sampling with
Doug Byers "post" sediment removal
3 locations

1430 12NC28WA11 no sheen observed
28-W-03 7.01 NTU
1445 12NC28WA12
28-W-02 7.20 NTU
1505 12NC28WA10 7.92 NTU
1515 12NC28WA13 28-W-01
← DUPLICATE

17:30

Location NE CAPE Date 9/2

Project / Client

700 Health and Safety
— fly out today w/ J. Willis

sample management — TWA and

cooler ID	12NC28UA00__ :
072112 - 01	07
02	07, 05, 09, 10, 11, 12
03	09
04	10/13
05	11/12

Booked coolers with AK Air
TWA to SGS for rapid turnaround

→ NOME → ANC arrive
22:30

Date

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

GROUNDWATER LOW-FLOW PURGING FORM

Job Name: NE CAPE HTRW
Well No.: 22MW2 (12NCMOCWA001) MS/MSD
Job Number: 34120057
Well Type: ☒ Monitor ☐ Extraction ☐ Other
Company: BERS
Well Material: ☒ PVC ☐ St. Steel ☐ Other
Date: 7/08/12
Time: 14:30
Purged by: Lyndsey Kleppin
(Signature)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):

☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other

Total Depth of Casing (TD in feet BTOC): 34.55

Water Level Depth (WL in feet BTOC): 26.56

7.99' water column
1.3 gal = casing volume

35.62
~~7.99~~

PURGE METHOD

☒ Pump – Type: SS monsoon proactive

☒ Submersible ☐ Centrifugal ☐ Bladder ☐ Peristaltic.

☐ Other – Type: Monsoon

PUMP INTAKE SETTING

☐ Near Bottom ☒ Near Top ☐ Other

Depth in feet (BTOC): ______ Screen Interval in Feet (BTOC)

PURGE TIME

14:30 Start 1455 Stop 25 Elapsed

PURGE RATE

Initial 470 mL/pm Final ~470 mL/pm

ACTUAL PURGE VOLUME

5 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	Water Depth below MP	Pump Dial	Purge Rate (ml/min)	T ☒°C ☐°F	Specific Cond. mS/cm	pH	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Cumulative Volume Purged
0	26.58	15V	472	3.33	0.108	5.81	192.0	12.68	6.64	
10	26.58	15V	463	3.50	0.108	5.79	203.0	12.55		
20	25.58	15V		3.51	0.108	5.79	204.3	12.54	6.77	
25	25.58	15V	470	3.54	0.108	5.79	204.6	12.45	3.84	5 gal

8oz/30 sec

GROUNDWATER SAMPLING FORM
(To Accompany Low-Flow Purging Form)

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

Job Name NE CAPE HTRW
Job Number ______ Date 7/08/12 Time: 1500
Recorded by [signature] (Signature) Sampled by LK

WELL INFORMATION

Well Number 22MW2 **Well Location** MOC

Casing Diameter (D in inches): Total Depth of Casing (TD in feet BTOC): 34.55

☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other ______ Water Level Depth (WL in feet BTOC): 26.56

WELL SAMPLING

SAMPLING METHOD

☐ Bailer – Type: ______ ☐ Grab – Type ______
☒ Submersible ☐ Centrifugal ☐ Bladder ☐ Other – Type: ______

SAMPLING DISTRIBUTION

Sample No.	Volume	Analysis Requested	Preservatives	Lab	Comments
12NCMOCWA001	1L x 6	DRO/RRO	HCl	Test America	
	500 x 6	metals tot/fil	HNO_3		filtered on site
	40mL x 9	GRO	HCl		
	" "	BTEX	HCl		
	" "	methane	HCl		
	1L x 6	PAH	—		
	1L x 6	PCB	—		

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.
~~12NCMOCWA001~~	

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.
MS/MSD	12NCMOCWA 001

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

GROUNDWATER LOW-FLOW PURGING FORM

Job Name: NE CAPE HTRW
Job Number: 34120057
Company: BERS
Purged by: L. KLEPPIN

Well No.: 26MW1 (12NCMOCWA002) 1700
Well Type: [X] Monitor [ ] Extraction [ ] Other
Well Material: [X] PVC [ ] St. Steel [ ] Other
Date: 7/08/12 Time: 16:35

(Signature)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
[X] 2-inch [ ] 4-inch [ ] 6-inch [ ] Other

Total Depth of Casing (TD in feet BTOC): 41.92

Water Level Depth (WL in feet BTOC): 34.80

36.0

PURGE METHOD

[X] Pump – Type:
[X] Submersible [ ] Centrifugal [ ] Bladder [ ] Peristaltic.
[ ] Other – Type: SS Monsoon (proactive)

PUMP INTAKE SETTING

[ ] Near Bottom [X] Near Top [ ] Other
Depth in feet (BTOC): Screen Interval in Feet (BTOC)

PURGE TIME

1635 Start 1700 Stop 25 Elapsed

PURGE RATE

Initial 450 mL/m Final 450 mL/m

ACTUAL PURGE VOLUME

3 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	Water Depth below MP	Pump Dial	Purge Rate (ml/min)	T [X] °C [ ] °F	Specific Cond. mS/cm ~~(µS/cm)~~	pH	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Cumulative Volume Purged
0	34.80	~~14.8~~	~~450~~	~~3.31~~						
10	34.80	14.8	450	3.31	0.084	5.79	189.9	12.56	7.87	
15	34.80	15	450	3.44	0.084	5.81	191.2	12.46	4.51	
20	34.80	15	450	3.27	0.084	5.80	194.7	12.48	3.72	
25	34.80	15	450	3.22	0.084	5.79	197.2	12.40	4.14	~3

GROUNDWATER SAMPLING FORM
(To Accompany Low-Flow Purging Form)

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

Job Name NE CAPE 2012
Job Number 34120057 Date 7/8/12 Time: 1700
Recorded by [signature] (Signature) Sampled by LK

WELL INFORMATION

Well Number 26MW1 **Well Location** MOC

Casing Diameter (D in inches): Total Depth of Casing (TD in feet BTOC): 41.92

☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other ____ Water Level Depth (WL in feet BTOC): 34.80

WELL SAMPLING

SAMPLING METHOD

☐ Bailer – Type: ☐ Grab – Type
☒ Submersible ☐ Centrifugal ☐ Bladder ☐ Other – Type:

SAMPLING DISTRIBUTION

Sample No.	Volume	Analysis Requested	Preservatives	Lab	Comments
12NCMOCWA	1L x ~~6~~ 2	DRO/RRO	HCl	Test America	
002	1L x ~~4~~ 2	PAH	—		
	1L x 2	PCB	—		
	40 mL x 3	GRO	HCl		
	" "	BTEX	HCl		
	" "	methane	HCl		
	500 mL	metals (total)	HNO_3		
	500 mL	metals (dissolved)	HNO_3		filtered on site

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.

Bristol

ENVIRONMENTAL
REMEDIATION SERVICES, LLC

GROUNDWATER LOW-FLOW PURGING FORM

Job Name: NE CAPE
Job Number: 3412ø057
Company: BERS
Purged by: L. Kleppin

Well No.: 20MW1 12NCMOCWAØ03 1040
Well Type: ☒ Monitor ☐ Extraction ☐ Other
Well Material: ☒ PVC ☐ St. Steel ☐ Other
Date: 7/09/12 Time: 1000

(Signature)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):

☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other

Total Depth of Casing (TD in feet BTOC): 28.82

Water Level Depth (WL in feet BTOC): 21.75

22.40

PURGE METHOD

☒ Pump – Type: SS monsoon

☒ Submersible ☐ Centrifugal ☐ Bladder ☐ Peristaltic.

☐ Other – Type: SS Monsoon w/control box

PUMP INTAKE SETTING

☐ Near Bottom ☒ Near Top ☐ Other

Depth in feet (BTOC): ______ Screen Interval in Feet (BTOC)

PURGE TIME

1000 Start 1035 Stop 35 Elapsed

PURGE RATE

Initial 430 mL/pm Final 450 mL/pm

ACTUAL PURGE VOLUME

~3 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	Water Depth below MP	Pump Dial	Purge Rate (ml/min)	T ☒°C ☐°F	Specific Cond. (mS/cm)	pH	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Cumulative Volume Purged
15	22.01	14V	430	2.98	0.145	5.77	232.6	8.94	4.39	
20	21.92	14V	430	3.02	0.145	5.77	232.8	8.75	2.73	
25	21.95	19.8	430	3.75	0.145	5.76	231.1	8.63	2.50	
30	22.01	19.8	450	3.78	0.144	5.77	231.2	8.79	2.66	
35	22.05	19.8	450	3.39	0.143	5.76	231.5	9.04	2.77	3 gal

GROUNDWATER SAMPLING FORM
(To Accompany Low-Flow Purging Form)

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

Job Name: NE CAPE 2012
Job Number: 3412 0057 Date: 7/09/12 Time: 1040
Recorded by: [signature] (Signature) Sampled by: L. Kleppin

WELL INFORMATION

Well Number 20MW1 **Well Location** MOC

Casing Diameter (D in inches):

☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other

Total Depth of Casing (TD in feet BTOC): 28.82

Water Level Depth (WL in feet BTOC): 21.75

WELL SAMPLING

SAMPLING METHOD

☐ Bailer – Type: ☐ Grab – Type

☒ Submersible ☐ Centrifugal ☐ Bladder SS Monsoon w/ ~~flow thru~~ 2K ☐ Other – Type:

SAMPLING DISTRIBUTION

Sample No.	Volume	Analysis Requested	Preservatives	Lab	Comments
12NCMOCWA	1L × 2	DRO/RRO	HCl	TestAmerica	
003	1L × 2	PAH	—		
	1L × 2	PCB	—		
	40mL × 3	GRO	HCl		
	" "	BTEX	HCl		
	" "	Methane	HCl		
	500 mL	Total Metals	HNO_3		
	500 mL	Dissolved Metals	HNO_3		filtered

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

GROUNDWATER LOW-FLOW PURGING FORM

Job Name: NE CAPE
Well No.: ~~88-10~~ 17MWI 12NCMOCWA004 1320
Job Number: 34120057
Well Type: ☒ Monitor ☐ Extraction ☐ Other
Company: BERS
Well Material: ☒ PVC ☐ St. Steel ☐ Other
Date: 7/09/12 Time: 1300
Purged by: L. KLEPPIN
(Signature)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):

☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other

Total Depth of Casing (TD in feet BTOC): 16.80

Water Level Depth (WL in feet BTOC): 12.15

12.30

PURGE METHOD

☒ Pump – Type: SS monsoon

☒ Submersible ☐ Centrifugal ☐ Bladder ☐ Peristaltic.

☐ Other – Type: SS monsoon

PUMP INTAKE SETTING

☐ Near Bottom ☒ Near Top ☐ Other

Depth in feet (BTOC): ______ Screen Interval in Feet (BTOC)

PURGE TIME

1300 Start 1320 Stop 20 Elapsed

PURGE RATE

Initial 450 ml/~~gpm~~ Final 450 ml/~~gpm~~

ACTUAL PURGE VOLUME

~1 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	Water Depth below MP	Pump Dial	Purge Rate (ml/min)	T ☒°C ☐°F	Specific Cond. (µS/cm)	pH	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Cumulative Volume Purged
5	12.10	9V	450	2.71	0.108	5.45	200.9	9.57	2.86	
10	12.10	9V	400	2.74	0.108	5.39	205.4	9.39	2.66	
15	12.10	10V	480	2.74	0.108	5.41	205.9	9.34	2.18	
20	12.10	10V	450	2.74	0.108	5.45	205.5	9.22	2.23	1g

GROUNDWATER SAMPLING FORM
(To Accompany Low-Flow Purging Form)

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

Job Name: NE CAPE 2012
Job Number: 34120057 Date: 7/09/12 Time: 1320
Recorded by: [signature] (Signature) Sampled by: L. Kleppin

WELL INFORMATION

Well Number 17MW1 **Well Location** MOC

Casing Diameter (D in inches):

☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other

Total Depth of Casing (TD in feet BTOC): 16.80

Water Level Depth (WL in feet BTOC): 12.15

WELL SAMPLING

SAMPLING METHOD

☐ Bailer – Type:
☐ Grab – Type
☒ Submersible ☐ Centrifugal ☐ Bladder SS monsoon ☐ Other – Type:

SAMPLING DISTRIBUTION

Sample No.	Volume	Analysis Requested	Preservatives	Lab	Comments
12NCMOCWA	1L x 2	DRO/RRO	HCl	test america	
Ø04	1L x 2	PAH	–		
	1L x 2	PCB	–		
	40mL x 3	GRO	HCl		
	" "	BTEX	HCl		
	" "	methane	HCl		
	500mL	total metals	HNO_3		
	500mL	dissolved metals	HNO_3		filtered

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

GROUNDWATER LOW-FLOW PURGING FORM

Job Name: NE CAPE 2012
Job Number: 34120057
Company: BERS

Well No.: 88-10 12NCMOCWA005 1420
Well Type: [X] Monitor ☐ Extraction ☐ Other
Well Material: [X] PVC ☐ St. Steel ☐ Other
Date: 7/09/12 Time: 1400

Purged by: L. Kleppin
(Signature)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):

[X] 2-inch ☐ 4-inch ☐ 6-inch ☐ Other

Total Depth of Casing (TD in feet BTOC): 25.40

Water Level Depth (WL in feet BTOC): 20.81

PURGE METHOD

☐ Pump – Type: SS Monsoon

[X] Submersible ☐ Centrifugal ☐ Bladder ☐ Peristaltic.

☐ Other – Type:

PUMP INTAKE SETTING

☐ Near Bottom [X] Near Top ☐ Other

Depth in feet (BTOC): 21.5 Screen Interval in Feet (BTOC)

PURGE TIME

1400 Start 1421 Stop 21 Elapsed

PURGE RATE

Initial 420 mL/pm Final 450 mL/pm

ACTUAL PURGE VOLUME

~2 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	Water Depth below MP	Pump Dial	Purge Rate (ml/min)	T [X] °C ☐ °F	Specific Cond. (mS/cm)	pH	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Cumulative Volume Purged
5	20.98	10V	420	1.59	0.144	5.69	165.4	0.70	8.31	
10	20.91	9V	390	1.39	0.139	5.74	15	1.31	8.20	
15	20.81	9V	250	1.45	0.136	5.74	154.2	0.65	9.10	
18	20.82	11V	450	1.52	0.128	5.76	147.2	0.65	9.16	
21	20.86	11V	450	1.61	0.124	5.74	146.6	0.66	7.04	~2 gal

GROUNDWATER SAMPLING FORM
(To Accompany Low-Flow Purging Form)

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

Job Name NE CAPE 2012
Job Number 34120057 Date 7/09/12 Time: 1420
Recorded by [signature] (Signature) Sampled by L. kleppin

WELL INFORMATION

Well Number 88-10 **Well Location** MOC

Casing Diameter (D in inches): Total Depth of Casing (TD in feet BTOC): 25.40

☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other ______ Water Level Depth (WL in feet BTOC): 20.81

WELL SAMPLING

SAMPLING METHODS

☐ Bailer – Type: ______ ☐ Grab – Type ______

☒ Submersible ☐ Centrifugal ☐ Bladder SS monsoon ☐ Other – Type: ______

SAMPLING DISTRIBUTION

Sample No.	Volume	Analysis Requested	Preservatives	Lab	Comments
12NCMOCWA	1L x 2	DRO/RRO	HCl	test-america	
005	1L x 2	PAH	–		
	1L x 2	PCB	–		
	40mL x 3	GRO	HCl		
	" "	BTEX	HCl		
	" "	methane	HCl		
	500 mL	total metals	HNO_3		
	500 mL	dissolved metals	HNO_3		filtered

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

GROUNDWATER LOW-FLOW PURGING FORM

Job Name: NE CAPE HTRW
Job Number: 34120057
Company: BERS

Well No.: 88-1 12NCMOCWA066 1530
Well Type: [x] Monitor [ ] Extraction [ ] Other
Well Material: [x] PVC [ ] St. Steel [ ] Other
Date: 7/09/12 Time: 1500

Purged by: L. Kleppin
(Signature)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):

[x] 2-inch [ ] 4-inch [ ] 6-inch [ ] Other

Total Depth of Casing (TD in feet BTOC): 23.25

Water Level Depth (WL in feet BTOC): 16.68

PURGE METHOD

[ ] Pump – Type: SS Monsoon

[x] Submersible [ ] Centrifugal [ ] Bladder [ ] Peristaltic.

[ ] Other – Type:

PUMP INTAKE SETTING

[ ] Near Bottom [x] Near Top [ ] Other

17.60 Depth in feet (BTOC): Screen Interval in Feet (BTOC)

PURGE TIME

1500 Start 1531 Stop 31 Elapsed

PURGE RATE

Initial 600 mL/pm Final 300 /pm

ACTUAL PURGE VOLUME

~4 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	Water Depth below MP	Pump Dial	Purge Rate (ml/min)	T [x] °C [ ] °F	Specific Cond. (mS/cm)	pH	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Cumulative Volume Purged
20	16.70	13V	600	~~2.69~~						3 gal
23	16.71	10V	350	2.69	0.110	5.49	222.6	1.94	7.17	
26	16.70	10V	350	3.06	0.110	5.52	222.1	1.78	7.29	
29	16.70	10V	300	3.28	0.110	5.54	222.5	1.69	7.00	
31	16.70	10V	300	3.27	0.111	5.52	225.9	1.58	5.53	~4 gal

GROUNDWATER SAMPLING FORM
(To Accompany Low-Flow Purging Form)

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

Job Name NE CAPE 2012
Job Number 34120057 Date 7/01/12 Time: 1530
Recorded by [signature] (Signature) Sampled by L. Kleppin

WELL INFORMATION

Well Number 88-1 **Well Location** MOC

Casing Diameter (D in inches): Total Depth of Casing (TD in feet BTOC): 23.25

☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other ____ Water Level Depth (WL in feet BTOC): 16.68

WELL SAMPLING

SAMPLING METHOD

☐ Bailer – Type: ____ ☐ Grab – Type ____

☒ Submersible ☐ Centrifugal ☐ Bladder SS Monsoon ☐ Other – Type: ____

SAMPLING DISTRIBUTION

Sample No.	Volume	Analysis Requested	Preservatives	Lab	Comments
12NCMOCWA	1L x 2	DRO/RRO	HCl	test America	
ØØ6	1L x 2	PAH	–		
	1L x 2	PCB	–		
	40mL x 3	GRO	HCl		
	" "	BTEX	HCl		
	" "	methane	HCl		
	500 mL	total metals	HNO_3		
	500 mL	dissolved metals	HNO_3		filtered

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

GROUNDWATER LOW-FLOW PURGING FORM

Job Name: NE CAPE HTRW 2012 | Well No.: 10-1 (12NCMOCWA007) 1400
Job Number: 34120057 | Well Type: ☒ Monitor ☐ Extraction ☐ Other
Company: BERS | Well Material: ☒ PVC ☐ St. Steel ☐ Other
Date: 7/10/12 | Time: 1035
Purged by: L. Kleppin | (Signature)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):

☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other

Total Depth of Casing (TD in feet BTOC): 11.32

Water Level Depth (WL in feet BTOC): 5.44

~~6.50~~ 7.01

PURGE METHOD

☒ Pump – Type: SS Monsoon

☒ Submersible ☐ Centrifugal ☐ Bladder ☐ Peristaltic.

☐ Other – Type:

PUMP INTAKE SETTING

☐ Near Bottom ☒ Near Top ☐ Other

Depth in feet (BTOC): ______ Screen Interval in Feet (BTOC)

PURGE TIME

1035 Start 1315 Stop 3h 40m Elapsed

PURGE RATE

Initial 600 gpm Final 200 gpm

ACTUAL PURGE VOLUME

~7 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	Water Depth below MP	Pump Dial	Purge Rate (ml/min)	T ☒°C ☐°F	Specific Cond. (mS/cm)	pH	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Cumulative Volume Purged
5	6.05	9V	600	2.11	0.165	5.30	240.2	8.01	10.7	
10	6.6?	7.5V	450	2.30	0.158	5.25	248.2	5.67	8.09	2 gal
15	6.6?	6.9V	260	2.74	0.157	5.30	246.2	5.01	10.2	
20	6.58	6.8V	240							
30	6.58	6.8V	200	3.52	0.158	5.31	243.1	4.12	8.48	
40	6.58	6.8V	200	3.64	0.157	5.31	239.9	4.14	7.57	3.5
50	6.48	6.8V	200	3.62	0.157	5.31	240.2	4.18	7.19	
60	6.30	0	0							
125	5.83	6.8V	200	3.33	0.161	3.09	337.3	4.92	4.81	

? → WL fell to below top of pump, pump lowered to allow WL

lunch - allowed well to recharge. Water level sounding upon return

YSI sensor problem? — confidence solution in range pH 7.02 for 6.8-7.2 solution

GROUNDWATER LOW-FLOW PURGING FORM (continued)

10-1 7/10/12

YSI confidence solution reading taken - within range

FIELD PARAMETER MEASUREMENT (Continued)

Minutes Since Pumping Began	Water Depth below MP	Pump Dial	Purge Rate (ml/min)	T ☒ °C ☐ °F	Specific Cond. (mS/cm)	pH	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Cumulative Volume Purged
130	6.25	6.8V	240	3.41	0.159	3.63	307.6	5.43	2.77	
135	6.35	6.8V	240	3.25	0.159	4.18	278.3	5.09		
140	6.40	6.8V	230	3.48	0.158	4.5	263	4.92	1.36	
145	6.45	6.8V	200	3.66	0.158	4.76	252.9	4.26	1.50	
155	6.68	6.8V	200	4.10	0.153	5.36	260.7	3.18	1.18	
160	6.68	6.8V	200	4.38	0.153	5.36	250.5	3.20	1.63	7 gal
165	6.68	6.8V	200	4.42	0.153	5.37	251.6	2.93	3.2	

GROUNDWATER SAMPLING FORM
(To Accompany Low-Flow Purging Form)

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

Job Name: NE CAPE 2012
Job Number: 34120057 Date: 7/10/12 Time: 1400
Recorded by: [signature] (Signature) Sampled by: L. Kleppin

WELL INFORMATION

Well Number 10-1 **Well Location** MOC (site 10)

Casing Diameter (D in inches): Total Depth of Casing (TD in feet BTOC): 11.32

☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other ____ Water Level Depth (WL in feet BTOC): 5.44

WELL SAMPLING

SAMPLING METHOD

☐ Bailer – Type: ____ ☐ Grab – Type ____
☒ Submersible ☐ Centrifugal ☐ Bladder SS Monsoon ☐ Other – Type: ____

SAMPLING DISTRIBUTION

Sample No.	Volume	Analysis Requested	Preservatives	Lab	Comments
12NCMOCWA	1L x 2	DRO/RRO	HCl	Test America	
ØØ7	1L x 2	PAH	–		
	1L x 2	PCB	–		
	40mL x 3	GRO	HCl		
	" "	BTEX	HCl		
	" "	methane	HCl		
	500 mL	total metals	HNO3		
	500 mL	dissolved metals	HNO3		filtered

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

GROUNDWATER LOW-FLOW PURGING FORM

Job Name: NE CAPE
Job Number: 34120057
Company: BERS
Well No.: 88-4 (12NCMOCWA08) 1700 DUPLICATE 09 1730
Well Type: ☒ Monitor ☐ Extraction ☐ Other
Well Material: ☒ PVC ☐ St. Steel ☐ Other
Date: 7/10/12 Time: 1540
Purged by: L. Klepple (Signature)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):
☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other

Total Depth of Casing (TD in feet BTOC): 15.31

Water Level Depth (WL in feet BTOC): 8.06

9.00

PURGE METHOD

☒ Pump – Type: SS monsoon
☒ Submersible ☐ Centrifugal ☐ Bladder ☐ Peristaltic.
☐ Other – Type:

PUMP INTAKE SETTING

☐ Near Bottom ☒ Near Top ☐ Other
Depth in feet (BTOC): Screen Interval in Feet (BTOC)

PURGE TIME

1540 Start 1630 Stop 50 Elapsed

PURGE RATE

Initial 300 ml/m Final 400 ml/m

ACTUAL PURGE VOLUME

~4 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	Water Depth below MP	Pump Dial	Purge Rate (ml/min)	T ☒°C ☐°F	Specific Cond. (mS/cm)	pH	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Cumulative Volume Purged
5	8.10	6.3V	300	3.03	0.194	6.31	-30.1	0.75	122	
10	8.10	6.4V	300	2.59	0.199	6.32	-27.7	0.50	63.9	
15	8.10	6.9V	240	2.66	0.206	6.37	-31.3	0.47	45.9	
20	8.10	7.1V	250	3.15	0.207	6.40	-37.2	0.40	38.5	
25	8.10	7.4V	70	3.95	0.206	6.41	-43.5	0.36	32.8	
30	8.10	10.1V	350	3.97	0.211	6.43	-37.7	0.40	40.5	
35	8.10	10.1V	350	2.75	0.214	6.39	-35.8	0.27	36.4	~3gal
40	8.10	10.1V	250	2.62	0.212	6.37	-39.1	0.26	19.5	
45	8.10	10.1V	230	2.86	0.215	6.38	-34.4	0.31	21.8	

voltage flow controller fluctuated between 6.3 and 10.1 volts - variable flow rate as a result

GROUNDWATER LOW-FLOW PURGING FORM (continued)

88-4

FIELD PARAMETER MEASUREMENT (Continued)

Minutes Since Pumping Began	Water Depth below MP	Pump Dial	Purge Rate (ml/min)	T ☒ °C ☐ °F	Specific Cond. (µS/cm)	pH	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Cumulative Volume Purged
50	8.12	9.6V	400	2.01	0.230	6.41	-51.7	0.35	16.6	~4 gal

GROUNDWATER SAMPLING FORM
(To Accompany Low-Flow Purging Form)

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

Job Name: NE CAPE 2012
Job Number: 34120057 Date: 7/10/12 Time: 1700
Recorded by: [signature] (Signature) Sampled by: L. Kleppin

WELL INFORMATION

Well Number 88-4 **Well Location** MOC

Casing Diameter (D in inches): Total Depth of Casing (TD in feet BTOC): 15.31

☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other ______ Water Level Depth (WL in feet BTOC): 8.06

WELL SAMPLING

SAMPLING METHOD

☐ Bailer – Type: ______ ☐ Grab – Type ______

☒ Submersible ☐ Centrifugal ☐ Bladder SS monsoon ☐ Other – Type: ______

SAMPLING DISTRIBUTION

Sample No.	Volume	Analysis Requested	Preservatives	Lab	Comments
12NCMOCWA	1L x 2	DRO/RRO	HCl	Test America	
ØØ8	1L x 2	PAH	–		
	1L x 2	PCB	–		
	40mL x 9	GRO	HCl		
	" "	BTEX	HCl		
	" "	methane	HCl		
	500mL x 2	total metals	HNO_3		
	500mL x 2	dissolved metals	HNO_3		filtered

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.
12NCMOCWA008	12NCMOCWAØØ9
	1730

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

GROUNDWATER LOW-FLOW PURGING FORM

Job Name: NE CAPE HTRW 120
Job Number: 3412ØØ57
Company: BERS

Well No.: 88-5 12NCMOCWAØ1Ø 1830
Well Type: [X] Monitor [ ] Extraction [ ] Other
Well Material: [X] PVC [ ] St. Steel [ ] Other
Date: 7/10/12 Time: 1730

Purged by: L. Kleppin
(Signature)

WELL PURGING

PURGE VOLUME

Casing Diameter (D in inches):

[X] 2-inch [ ] 4-inch [ ] 6-inch [ ] Other

Total Depth of Casing (TD in feet BTOC): 14.85

Water Level Depth (WL in feet BTOC): 10.15

10.90

PURGE METHOD

[X] Pump – Type: SS Monsoon

[X] Submersible [ ] Centrifugal [ ] Bladder [ ] Peristaltic.

[ ] Other – Type:

PUMP INTAKE SETTING

[ ] Near Bottom [X] Near Top [ ] Other

Depth in feet (BTOC): Screen Interval in Feet (BTOC)

PURGE TIME

1730 Start 1820 Stop 50 Elapsed

PURGE RATE

Initial 260 ml/m Final 250 ml/m

ACTUAL PURGE VOLUME

4 gallons

FIELD PARAMETER MEASUREMENT

Minutes Since Pumping Began	Water Depth below MP	Pump Dial	Purge Rate (ml/min)	T [X] °C [ ] °F	Specific Cond. (µS/cm)	pH	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Cumulative Volume Purged
5	10.30	7.8V	260	2.56	0.281	6.16	-46.2	0.60	122	
~~36~~									46.3	
38	10.40	8.8V	250	2.20	0.264	6.16	-22.5	0.56	27.0	3gal
41	10.39	8.3V	260	2.45	0.263	6.16	-23.7	0.48	17.8	
43	10.40	8.1V	260	2.65	0.266	6.16	-26.6	0.55	~~30.3~~ 17.3	
48	10.40	8.7V	250	2.63	0.262	6.18	-25.4	0.49	18.9	4gal
						condensation	on turbidity vial			
						builds during	analysis			

GROUNDWATER SAMPLING FORM
(To Accompany Low-Flow Purging Form)

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

Job Name: NE CAPE 2012
Job Number: 34120057 Date: 7/10/12 Time: 1830
Recorded by: [signature] (Signature) Sampled by: L. Kleppin

WELL INFORMATION

Well Number 88-5 **Well Location** MOC

Casing Diameter (D in inches):
☒ 2-inch ☐ 4-inch ☐ 6-inch ☐ Other ____

Total Depth of Casing (TD in feet BTOC): 14.85
Water Level Depth (WL in feet BTOC): 10.15

WELL SAMPLING

SAMPLING METHOD

☐ Bailer – Type: ____ ☐ Grab – Type ____
☒ Submersible ☐ Centrifugal ☐ Bladder SS monsoon ☐ Other – Type: ____

SAMPLING DISTRIBUTION

Sample No.	Volume	Analysis Requested	Preservatives	Lab	Comments
12NCMOCWA	1L x 2	DRO/RRO	HCl	Test America	
Ø1Ø	1L x 2	PAH	–		
	1L x 2	PCB	–		
	40mL x 3	GRO	HCl		
	" "	BTEX	HCl		
	" "	methane	HCl		
	500 mL	total metals	HNO_3		
	500 mL	dissolved metals	HNO_3		filtered

QUALITY CONTROL SAMPLES

Duplicate Samples

Original Sample No.	Duplicate Sample No.

Blank Samples

Type	Sample No.

Other Samples

Type	Sample No.

Bristol
ENVIRONMENTAL
REMEDIATION SERVICES, LLC

7/04/12

WATER LEVEL FORM

J. Clark and L. Kleppin

Well Name	Measurement Time	Measuring Point	Depth to Water	Elevation of Measuring Point	Water Level Elevation	Comments
88-10	1545	TOC	20.80	88.76	67.96	no ice encountered by sounder 25.40
20MW1	15:25 ~~14:20~~		22.14 ~~22.16~~	91.41	69.27	23.82
22MW2	15:10 ~~14:30~~		26.95 ~~34.48~~	96.09	69.14	34.55
26MW1	15:15		35.34	109.72	74.38	41.92
17MW1	15:30		12.20 ~~12.20~~	74.42	62.22	Total depth = 16.80 Well jacked ~6" above concrete. No casing has metal cap
10-1	1540		4.64	73.89	69.25	Total depth = 11.32 Well jacked ~8" above outer casing.
88-1	1555		17.15	84.53	67.38	Total depth = 23.25. Well compromised a little - outer casing full of mud, a little bit went down well see pics. Well cap (metal) was located a few feet away.
88-4	1600		8.26	70.67	62.41	Total depth = 15.31 Well jacked ~2-3" above outer casing.
88-5	1605		10.27	70.46	60.19	Total depth = 14.85

8/14 survey report

"Rite in the Rain"®
ALL-WEATHER
FIELD
No. 351

Russell James
NE Cape HTRW
Bristol Environmental Remediation
W911KB-06-D-0007 and
W911KB-12-C-0003
7/7/2012 - 8/2/2012
Book 1 of 3

"Rite in the Rain"®
ALL-WEATHER WRITING PAPER

Name Russell James - CQCSM

Bristol Environmental (BERS)

Address 111 W. 16th Ave, 3rd Floor

Anchorage, AK 99504

Phone (907) 563-0013

Project NE Cape HTRW Remedial Actions

Project No.: 34120057

Contract: W911KB-06-D-0007 Task order

W911KB-12-C-0003

Clear Vinyl Protective Slipcovers (Item No. 30) are available for this style of notebook. Helps protect your notebook from wear & tear. Contact your dealer or the J. L. Darling Corporation.

CONTENTS

Fog, Cool 34120057
Winds NNW @ 3-5 mph
0700 Safety: Barge arrived @ ~0400 and freight was unloaded.
- Use Radios in the thick fog
- Use eye contact w/operators
- Will be hauling loads to the MOC and the camp today from the beach
- Will be pulling liner from the excavations today - Use proper lifting techniques when pulling liners
- Orientation will follow the safety Meeting
- Chuck requests time sheets filled out for yesterday
- Introduces the Medic, Abby
  - Gives intro about Medic facilities and work

0710 Staff Meeting: Barge/Equipment arrived. Freight on beach, but there is room for MI Sampling
- 60 flats arrived
- Barge will be back (Greta) @ 5:00 am tomorrow morning

- Sampling supplies arrived on the Greta
- Jeremy mentions DEC comments
- Marty says take 10% of wipe samples for correlation - 1 sample to the lab and 1 sample to TestAmerica - Samples should be taken adjacent to each other

0730 Site orientation
- Charles, Mylon, Michael, Albert, Scott, Myself, Chuck
- Handouts are passed around
- Use VPN on computer to download most recent version of Work Plan
- Talk to Craner about Job. He notes a couple concerns/details:
  1. Keep safety priority #1 at all times
  2. Keep in mind that even though the job is remote, we are very high profile
  3. Protect the MWs @ the MOC as best we can. Put flagging/lath/protective barriers around them

  4. Add SWPPP inspections to the DQCRs and be sure to conduct them appropriately
  5. Be alert/aware of all spills and Manage/mitigate ASAP
     - Do not hesitate to report a spill
  6. Add/attach AHAs to the prep phase meeting checklists

- Begin work (1430) on prep phase for Site 8 and MOC MWs
- Begin prep phase for POL, PCB and As soil removal @ 1630
- Complete prep phase for Site 28 sediment Mapping
- Removed Liner from part of Site 13
- 2 DU's @ Cargo Beach were sampled - Easternmost DU(6) was sampled in triplicate
  - The furthest west and the easternmost 2 DUs are complete

- GPS 2 DU corners @ Cargo Beach

End @ 1900 (11)

R. James

7/8/2012 - Sunday NE Cape HTRW

34120057 Foggy, Cool R. James

0700 Safety:
- Greta was loaded @ ~0500 this morning
  - Fog - Be aware of traffic; Use Radios
- Prep for next boat today moving flats around and loading bags
  - 3-point Mount/dismount
  - PPE - Vests - stay Visible
  - Use spotters around the equipment and Know the signals
- Landing Craft May return in ~2.5 - 3 days.

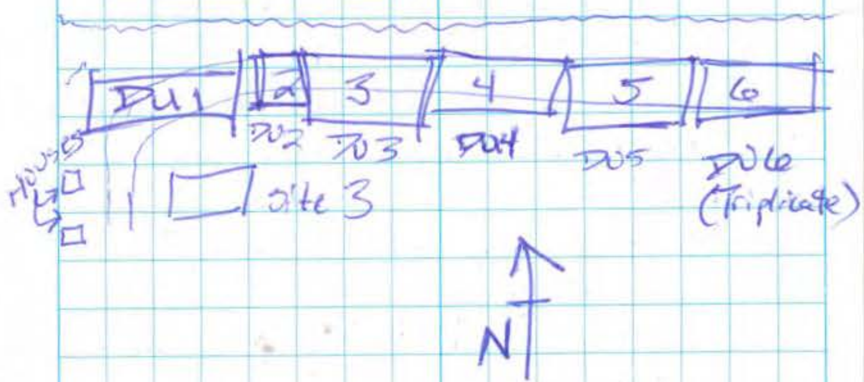
Objective:
1. Pull bags from around site 31
2. Prep bags for loading the next landing craft
3. Continue MI Sampling @ Cargo Beach

- Talk to Chuck about the APP
  - Has to go over the APP w/the crew
  - Mentioned the Equipment checklist is still needing to be done

- order Macrocore and sludge Sampler from TTT
    - order sleeves
- Prep phase meetings are held for:
① Site 8 MNA / Moc GW Wells
② Site 28 Sediment Mapping
  - It was determined during the Site 28 meeting that a variety of tools will be ordered for probing the sediment, including:
    ⓐ Clam Guns
    ⓑ Macrocore Sampler w/sleeves
    ⓒ Sludge Sampler w/sleeves
  - The definition of sediment was determined to include any loose Material, ~~[illegible]~~ Organic or mineral
• 0900 - Scanning prep phase papers and converting to PDFs
- 1400 - DU 4 is Sampled @ Cargo Beach

Moc Wells Sampled today:
① 22MW2
② 26MW1

Note on Cargo Beach DUs:



 Monday, 7/9/2012, R. James, NE Cape HTRW
Clear, cool NNW winds

0700 Safety:
- PPE for cutting the poles
- Communications

Staff Meeting:
- Chuck discusses getting started on Site 10
- Says he will get the crew working on containerizing the poles and the debris

- Prep phase for Soil Removal is conducted
- All decision units are completed by 1200 hrs. 2 DUs were completed today @ Cargo Beach
  - photos of the final DU (the smallest DU) were taken. View is to the West
- Bering Air is scheduled to arrive this afternoon
- Bering Air Navajo arrives @ 1400 hrs
  - Marty Hannah, Dan Monslave and Abby depart the site, George Mack and Allen Dennis arrive

- 1430 - Begin MI sampling @ the Bulk Bag staging area across the Road from the fuel containment within the MOC Perimeter Rd
- 1537 took photos of Lindsey sampling well 88-1
  - 20MW-1, 88-10, 88-1 and 17MW-1 were completed today
- SAR brought up some concerns about the SOW that he does not want to overlook:
  1. 3 SW sampling events associated w/Sed Removal @ Site 28
  2. Concrete Risers from MW should be used for backfill in POL excavations

R. James

34120057. Partly Cloudy w/Fog R. James

0700 safety: ① Medic is off-site, but a replacement is on the way
② Chuck presents the WP and APP to the crew. Goes through the APP point by point

- I Relay to SS Coley the information that Cranes passed on to me yesterday regarding the SW samples @ site 28 and the concrete debris associated w/the Monitoring wells

- Work on DQCR for 7/9/2012
- Visit site 28
- Excavations Begin @ site 10 - Drums are found and some are pulled out and placed on ~~the~~ a liner
- All MOC GW wells were completed today
  - 3 wells total
- Excavation @ site 10 began, QAR Cranes requested that excavated soil be placed on a liner

R. James

Clear, Cool 34120057

0700 Safety
- Eric Reads over the AHAs Including: ① Debris Removal/Staging
② Vehicle Operation
③ Equipment operations
④ Drum Removal
⑤ Excavations
⑥ Equipment Operations
⑦ Contaminated soil Removal

- Barge - Sam Taalak was loaded this Morning @ ~0700 hrs

- Environmental Team spent the Morning packing coolers for shipping
  - 12 coolers will be shipped this afternoon: 9 samples from PU (MK samples).
  - 3 SW samples from ~~the MOC~~ site 28 ⇒ Pre-samples for MOC dig
  - 10 GW samples from MOC GW Monitoring Wells

- COCs were sent to M. Hannah for QC/QA checks prior to shipping.
- Bering Air arrives ~14:30 hrs
  - Coolers are shipped ~~to~~ off-site on the Navajo @ 1440 hrs
  - Medic Amy arrived on-site
- Complete Decon for yesterday's work
- Bag loading frame is being installed @ Site 31
- Site 10 is uncovering >50 drums - Most are empty but some have water/oil mix
  - photo taken
- There is some water in the Site 10 excavation at the Northern end - Contains oil/sheen on the water

34120057, R. James, Light Rain, low/no Wind
Winds North, 1-2 mph, 47°F

0700 Safety Meeting

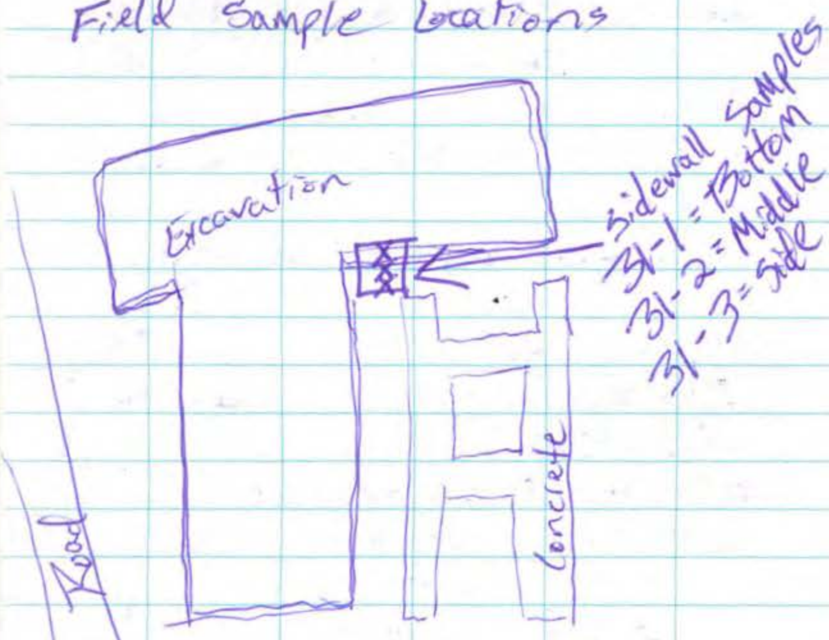
1. PCB Excavation PPE and Decon
   - setting up boot wash
   - Nitrile Gloves
2. Excavator Safety - watch swing radius; watch out for movement; Make eye contact

Staff Meeting

QAR Craner suggests removing ~18" of material from the floor of the excavations and 12" from the sidewalls per iteration of removal

- 0607 hrs email from Maureen Fitzgerald stating that the Nunaniq will arrive ~2100 hrs tonight

• Site 31 PCB Excavation
Field Sample Locations



* Field samples collected from excavator bucket to be submitted to the field lab

• More drums were uncovered @ Site 10 Containing oil and antifreeze. Chuck wants to ask USACE How they would like us to proceed w/Recovering the drums and the oil. It appears

that there may be more liquid than the scoped amount in the contract.
- 5 gallon containers are being encountered w/oil and antifreeze
• 15 bags completed @ Site 31
- 5 Samples (PCB) taken to the lab ⇒ 3 sidewall and 2 WC
• Site 10 Field Samples:
- 10FS01 - 10FS09
- 10SP01 - 10SP04
- 10FS10 - 10FS18
• Site 31 Field samples
- BW31-21 → BW31-22
- 31-1 thru 31-3

- The Nunaniq is loaded @ ~2100hrs

(10.5)

Friday 7/13/2012 NLS Cape Hatchw R-James

Jul = 2005 ?, High Clouds, Cool

0700 Safety = Slower is Faster - Take the time to do it Right

- There was an issue w/ hydraulics yesterday on a piece of equipment
- GPS the spill this Morning and take photos of hydraulic spill
- Croley indicates to cranes(QAR) that we will be reaching the contract limits @ Site 10
- Find out if we are prepared to sample Site 8

- 0800 GPS the hydraulic spill areas from the 988
  1. 1 area on the beach where sand has been piled up
  2. 1 area on Cargo Beach Rd between Site 7 and the "Y" - This area consists of a linear shape ~6' wide
  - there is heavier staining where the 988 was stopped
  - the leak began as

the 988 was running down the road toward the Shop Pad and stopped when the forks Jammed into the Ground

- 1400 hrs - 13 DRO/RRO Sample Results were received from the field Lab, 3 samples exceeded site specific cleanup levels and will require Removal:
  1. 10FS04
  2. 10FS08
  3. 10FS09

~1500 hrs - Fire breaks out @ the trash burner. A pallet next to the burner w/a tote containing trash sets Fire. The diesel fuel line running from 55-gal drum to the Eliminator sets fire and catches a 2nd fuel line (diesel) on fire that is connected to a 2nd 55-gal drum. L Kleppin noticed the fire and Kleppin and James attempt to extinguish the fire w/fire extinguishers. SS Croley arrives and uses an extinguisher to aid R. Black also assists w/fire extinguisher. The fire is put out. Some damage occurred to the trash burner (eliminator).

- Work on DQCRs and pass on to SS Croley for Review.

• Site 28 Probing is continuing
- C. Kave is assisting Julie

• Bering Air King Air arrives @ 1715 hrs
Jebb Adkins leaves the site
• 23 bags weighed @ Site 31
- 19 FL Samples ⇒ 31-4 thru 31-22
- 3 BW Samps ⇒ BW 31-23 thru 25
1700 temp = 56°F; Wind 4mph from E
- Begin work on DQCR for today
End 1900 hrs (11)

/Russell James

High clouds, Cool, 31120057

0700 Safety ① ~~Safety~~ Fire @ the trash burner - Be aware of what is being thrown away - Compress H_2O bottles empty aerosols + cans and hole - Will have to order more fire extinguishers
② Give people room to work - If not directly involved, keep distance
③ Housekeeping is Important
Science Meeting
- Re: spill - Croley plans to send a sample of beach sand mixed w/hydraulic oil to the lab for "fingerprinting" the oil from the 988 loader
• POL Results received from the field lab.
- Printed out POD Form 2051 and passed on to SS Croley to fill out re: the fire @ the trash burner yesterday
• Completed the DQCR for yesterday and forwarded to Croley

• Work @ site 31 Continues today
• The surveyors are staking points @ Site 13 for PCB removal @ that site
- PCB sample Results 31-001 thru 31-018 Received from Field lab
FW31-21 and FW31-22 were also Received
- Samples 1, 3 thru 7, 10 thru 12, 14 and 18 remain above Cleanup levels and will be excavated further
- 16 bulk bags filled @ Site 31
- Ended on 31-28A

R. James, Rainy, Cool

0700 Safety

① Rain - Can affect concentration and awareness. Reduces visibility.
- Dress appropriately
- Safety Award - Lyndsey Kleppin

Science Meeting

- Carey mentions that site 6 is opening up and is almost ready for MI sampling
- Craner requests that we put some boom down @ site 10 on the oily water.
- Craner mentions SWPP BMPs and wants to make sure we have them in place
• QAR Craner suggests adding:
- ~~Ca~~ # of poles that we have gathered to the DQCR
- Weight of drums @ Site 10
- Estimate the weight and add to the DQCR

• Complete DQCRs up through 7/14/12 and email to M. Walker, G. Jarrel, and J. Craner
  - Still have not sent USACE copies of DQCRs 1, 2, and 3 - Awaiting completion from SS Croley
• 3 BW samples from Site 31 were submitted to the lab (field lab) BW31-28-30
- PCB results received from field lab: 31-023; 31-040 thru 055, and BW31 023, 024 and 025
  - 12 of 20 results are above cleanup level
• 1800 - Work on DQCR for todays activities

End @ 1900
(11)

34°F-50°F, Cloudy, Cool

0700 safety
① PADS - Physical Agent Data Sheets - Chuck Reviews w/crew: ⓐ Heat ⓑ Cold ⓒ Noise ⓓ lasers ⓔ UV Radiation
- SSHO Croley reads the cold stress PADS and Heat stress PADS
② Keep equipment clean, especially the windows

Staff Meeting
• EB will continue @ Site 6 MI Sampling
• LK is guiding the excavation @ Site 31
• ECO-LAND is producing the Site 28 sediment Map
• 2 DU's were completed @ Site 6 - 2 samples collected to be analyzed for DRO and PCBs
• Bulk Bags are being hauled to the beach

• PCB sample results received for 9 samples (All Waste Characterization).
- 7 were above cleanup levels (0.8 is our threshold for excavation)
- of the 4 bags (H01, H02, H03, and H04) marked for haz waste, H02, H03 and H04 were all above 50mg/kg

[signature]

34120057 Cloudy, cool. S winds ~20mph

0700 Safety
Winds - up to 25mph - Point vehicles into wind, open 1 door @ a time. Keep secure hold on doors. Good Housekeeping - Keep debris out of wind.

Staff Meeting
- Eric will sample @ site 31 (Field lab) and then move to site 15 for PCB excavation

~0830 - Meet w/ J. Clark and J. Graner Regarding Site 28 sed sampling - Decision is made to produce a draft sampling location map showing the proposed areas to be sampled. J. Clark will work on the map.

~1034 - SSW Winds 20-25mph 46°F, Wind Chill = 36°F

- Beginning excavation @ NW corner of site 13. Strong fuel odor
  - Very high winds ~25-30 Mph

- Received PCB sample results 31-056 thru 31-075 from Field Lab, 8 of them will require over excavation 31-067 had the highest concentration @ 9.6 Mg/kg

end Mod(11)

R. James

34120059. Windy, Cloudy, Cool

0700 Safety
- Winds - Eyewash
- Crane brings up an observation from R. Broyles regarding sampling from excavator and decon. Suggests placing the bucket on ground for both activities

Science Meeting
- Eric Requests J. Allen survey a few items - Site 13 and site 6
- Excavation Continues @ Site 13
- Security Aviation arrives @ ~1230
  - Aaron Shewman arrives and Crane departs

R. James

34120057 R. James, Cloudy, Fog, Cool

0700 Safety
- Fog/Rain - Affect visibility - Keep windows clean
- Keep vehicles away from the work site. Allow workers room to work.

- Request that Aaron receive the emails from the lab.
- Complete DQCR for 7/18
- Excavation @ Site 13 - Results are received from Site 13 w/ some hot spots that are excavated
- Soil sampling continued @ Site 28
- Bags are hauled to the beach

- 37 total samples collected @ Site 28
- Landing Craft was loaded @ ~1300 hrs. Greta took 20 flats

Rull James

34120057, Partly Cloudy, Cool 45-50°F

0700 Safety
- Vehicle - Equipment safety. Walk around inspection. Secure loads in back of trucks. Be aware of parking areas. Check attack-packs for proper equipment. Don't walk up behind operators.
- Landing Craft is loaded this morning @ ~0530 hrs - Takes 12 flats to Island (Nunaniq)
  - Crew loaded on short notice
  - E. Barnhill lead the safety Meeting
- Site 13 excavation continued
- Site 28 soil sampling was completed
- Bering Air arrived ~1800 with groceries. R. Black left the site.

Rull James

 Saturday 7/21/2012 NE Cape HTRW R. James
3412OO57, Partly, Cloudy, Cool, 45°F
Calm North Winds 0-5 mph

0700 Safety
- Communications - Use radios, relay messages
- Hand Signals - Make them clear and if unclear, then find out what the signals are

Objectives: ① Sampling @ site 13
② Begin Excavation @ the Al Hot Spot

- Hot spot @ Al (11NKMOCSS068) is being uncovered. Curtain liner is intact.
- Fuel pipe @ site 13 shows stained soil beneath. Will require excavation/Bagging
- G+H Plume excavations began - Water infiltrated excavations. Water levels & excavation depths were surveyed

Rue James

Sunday 7/22/2012 NE Cape HTRW R. James
Sunny, clear, cool NE Wind 1mph 3412OO57
44°F

0700 Safety
- Use boot wash outside the wash tent
- Keep up the good communications, especially in the tight areas
- Mel Bryant got the safety award for making sure people were clear of equipment during bagging operations

- Groundwater is visible in the deepest parts of the site 13 excavation.
- Excavation plan is discussed w Aaron Snowman.
- Excavation depths are approaching or exceeding 15' in some places. Aaron will find out if further excavation will be necessary

Rue James

 Monday 7/23/2012 NE Cape HTRW R James
3412005T Foggy, Cool 44°F W Winds 2Mph

- 0330 hrs - loaded the Saw Tank
w/21 flats (42 bags) - Took off 160
- Ask Aaron about Screen plant
  - He requests screening the dry stuff

0700 Safety ① Fog - Radio Communications
② Bag POL @ Pad 98 - Keep aware of surrounding equipment

Staff Meeting
- Aaron requests screening of dry POL Soil
- Lyndsey recommends keeping a distance from the A1 excavation
- POL excavations @ Pad 98 today
- Winds steadily increasing throughout the day, becoming South 20-25mph w/heavier gusts.

R James

Tuesday 7/24/2012 NE Cape HTRW R James
3412005T Strong South Winds 20-30mph

0700 Safety
① Winds - Point vehicles into wind. Hang on securely to door handles
② Watch for children, especially near the fish camp.

Objectives
Bag PCB and POL soils @ Pad 98 and site 13
- The concrete utilidor is removed from the site 13 excavation
⇒ Will be wipe sampled

R James

 Wednesday 7/25/12 NE Cape HTRW
34120057. Rain, S Winds 20-30 mph
R. James
- 0400 Sam Taalak - [illegible] 22 Flats
<u>0700 Safety</u>
① Poor Weather - strong winds around 30 mph - was gusting to 50 mph overnight - Wear PPE and have secure hold on doors
<u>Objectives</u>: ① still have some spots to dig @ site 13, might move up to site 31
② PoL Results will be delivered early this morning.
- Confirmation Samples collected from AI

Thursday 7/26/12 NE Cape HTRW R. James
34120057 Light Rain

<u>0700 Safety</u>
- Individuals adding commentary about safety
① More hands helping when it's windy is helpful
② Don't throw trash to get it out of the way
③ Keep hard hats on at all times
④ Always use spotter
⑤ Eye Contact ⑥ Always let excavator operator know when a bag is ready to be loaded
⑦ Mark the excavations
<u>Objectives</u>:
① Bag @ Pad 98
② Test pits to find water level at G Plumes ③ Re-run some material through the screen plant
④ MI Sampling @ the MOC Bag staging area south of the fuel containment

QAR - A. Shewman instructed Bristol to proceed w/PCB excavations @ Site 13 and 31 to attempt to clean up two sites. USACE will fund the operation by transferring money from the POL quantities (converting the quantities to PCB)

- Sam ~~Taak~~ Taalak loaded @ 1900 with 22 flats (44 bags). 10 flats w/no bags were sent off-site.

- Confirmation samples were collected from G ~~and~~ F3 At plumes

- 3 PCB samples (13-200 thru 13-202) submitted to the field

James

34120057 Rain, Winds S 14 mph 47°F
Wind Chill - 39°F

0700 Safety
① Prepare for Rain & Wind
② Camp courtesy - visitors must be accompanied and start leaving camp @ 9:00 pm

- Landing craft is expected to arrive @ ~ 0700 tomorrow morning
- PCB results are expected @ ~ 1000 hrs
  - print a copy for Aaron

- Field lab results received from the field lab ~ 0930 hrs. There are additional locations @ site 13 that will require excavation

- Bulk Bag operations @ 1300
  - start w/ Bag MOC-111F

 Saturday 7/28/12 NE Cape HTRW
R. James, Cloudy, ~45°F Low Wind

- 0630 hrs - head to Cargo Beach to load bulk bags onto Sam Taalak
- Excavating @ site 31
- Loading bags @ Pad 98

~~MOC-108A~~ MOC-108A was punctured - Will be loaded into another bag.

- Running material through the screen plant @ Pad 98, the reject material appears to have quite a bit of fines attached to it and the machine is a wet, dirty, mess

(10.5)

Sunday 7/29/12 NE Cape HTRW R. James
34120057 Rain, N Winds 20mph 44°F
Wind Chill 34°F

0700 Safety

① Admin announcement Put hours worked @ each site on timesheets
② Material that goes into bags is variable, we have to adapt our strategies
③ Safety Award, 2 ppl - Dale Winslow and Bruce Senneves
④ Wind Chill is in the 30's

Staff Meeting:

- Keep on @ site 31 and Pad 98
- Results will come in this morning from G Plume

- Winds are blowing 25-30mph @ 0715 hrs

- 0815 hrs - 20 PCB results received for site 13 - 4 of the samples contain PCBs in excess of cleanup levels

• 0830 hrs - PDL Results received from the field lab from samples collected in the G2 excavation
- Of 15 samples, 7 were above cleanup levels and will be excavated further

— 46°F @ 1730 hrs
NW Winds 10-20 mph —

54120057, Clear, light SW Winds Cool

0700 Safety
• PPE - Level D - Wear appropriate gear, clothes, etc.
If you need to change clothes or gear, then do it.
- Stay warm, stay dry, stay comfortable
• Aaron requests a ride to the Radar dome sampling site. Will take some UTVs up there today
• Excavation @ Site 13 - 27 bags filled. Field screening samples collected
• Dozer makes a way up to the radar dome. A. Snowman and I take a UTV up to the Radar dome road and inspect the site for stressed/bare vegetation.

End 1730 hrs
(10)

 Tuesday 7/31/12 NE Cape HTRW R. James
34120057. Clear, cool 45°F
Winds 10mph East
0700 Safety
① Heat and Cold Stress - Hydration, not only water, but juice, eg. orange juice Replenish the electrolytes and sugars
- Visitors will be on site today, BAR Craner will return and A. Shewman will leave.

Objectives: ① Bag POL soil @ Pad 98
② Collect PCB samples @ Site 31
Note: A. Shewman asks about the DUs @ the Bag Staging area south of the fuel Containment. Does it need to be expanded? or do additional DUs need to be added? Ask Curtis via Jeremy

- Security arrives @ 1245 hrs
Arrive: Carrie Cossaboom, G. Jarrell, Bill Burke, J. Clark, J. Craner, Curtis Dunkin
Leave: C. Cossaboom, Aaron Shewman

Wednesday 8/1/12 NE Cape HTRW R. James
34120057, Partly Cloudy, No Wind

0700 Safety
① Visitors on-site - Introduces Curtis Dunkin, Bill Burke, Greg Jarrell
② Heavy equipment has the right-of-way

- Visit site 31, 13 and MOC w/ Craner and Dunkin
- Note @ MOC - Water elevations over time - Report these numbers
~~Visit site 13 w/ Cu RS~~
- Visit the Radar dome Road w/ Dunkin and Craner. Curtis recommends collecting the samples directly along each side of the Road and to collect approximately 2 background samples in the vicinity.

 Thursday 8/2/12 NU Cape HTRW
R. James. Cloudy, No Rain, Low Winds

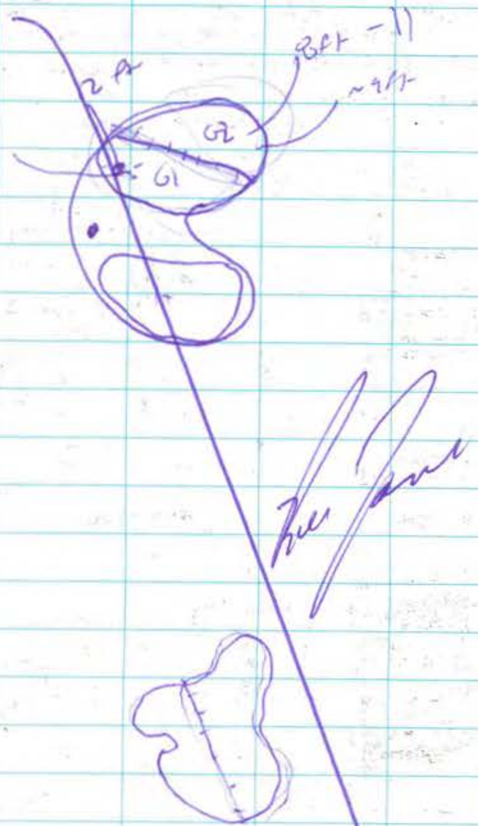
0700 Safety
- Fog - Use Radios
- Slow this Morning - New POL excavation will be opened
- Directions for correlation Sampling @ Field lab for PCBs received.

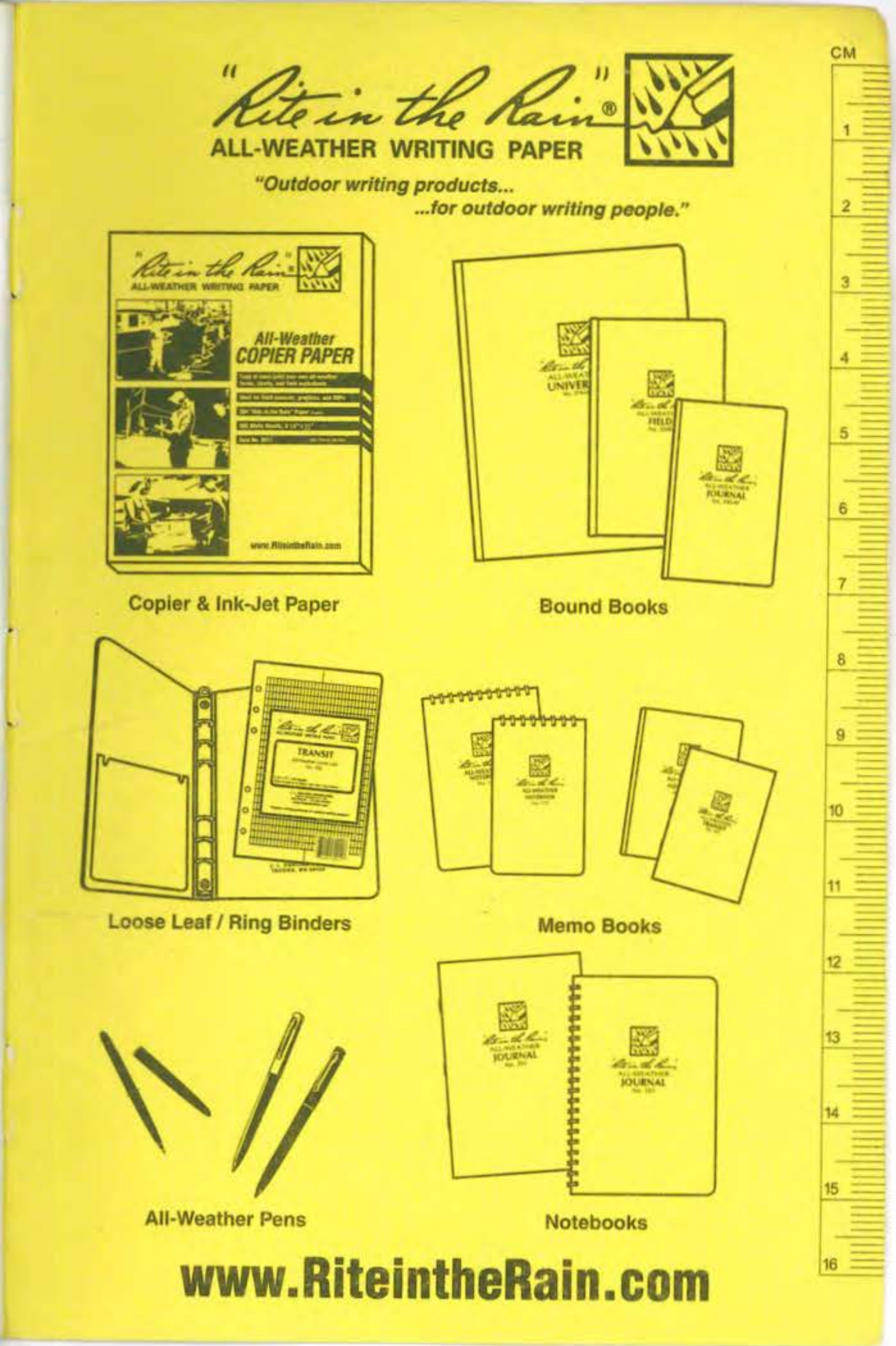
Correlation Samples (PCB):
~~BW31-H06 RS~~
~~BW15-50 RS~~
~~31-144 RS~~
~~31-178 RS~~
~~31-207 RS~~

- The PE Sample (known PCB concentration) is submitted to Field Lab.
- DQCRs complete and handed over to Craner for comments @ 1300 hrs.
- E plume is being excavated
  - Beginning today.
  - Drums @ the north edge are going to be removed

- Northeast Side of E4 plume has product on the water and spilling in from the sides
- ~15 drums were recovered from North of E plume, one contains product ~45-50 gallons

RJ
RJ


2 ft
8ft - 11
~4ft
G2
G1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No. 351

Russell James

NE Cape HTRW

Bristol Environmental Remediation

W911KB-06-D-0007 Task Order 0007

W911KB-12-C-0003

8/3/2012—9/7/2012

Book 2 of 3

"Rite in the Rain"®
ALL-WEATHER WRITING PAPER

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Project NE Cape HTRW Remedial Actions
Project No: 34120057
Contract: W911KB-06-D-0007, Task Order 0007; W911KB-12-C-0003

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2 Friday 8/3/12 NE Cape HTRW R. James

34120057, Fog, low wind

0700 Safety

① Proper tools for the job.
ex: Chaps last year
② Straps vs. Chains - ex: Using chains for weighing at Cape Sab. Generally will not use chain for hoisting ③ Check Radios
- Will load a 55-gal drum into overpack today
- Watch out for excavations @ the Moc and Site 31
- Short time today @ 31 and then we'll be bagging @ Fal 98
- Complete DQCRs for 7/31 and 8/1 and email to distribution list.

Saturday 8/4/12 NE Cape HTRW R. James 3

34120057, Fog 46°F, Winds 2 mph West

0700 Safety

① Transition day.

- Yesterday's Field Samples:
  - 31-215 thru 238
  - BWMoc 122 thru 126
- New stockpile area (POL) is being sampled today
  - Liner is laid down
- Bagging @ Site 13
- Excavating E4 into E3
- 18 Confirmation samples collected @ Site 13

Weather 1700 hrs: 49°F NW Winds 5 mph

Sunday 8/5/12 NE Cape HTRW

R. James 341200578, Cloudy, cool
40°F, 15-20 mph SW Winds

0700 Safety

① Bagging operations Be aware of equipment and traffic

Objectives

① Confirmation samples @ Site 13
② Excavate POL ③ Bag POL @ Pad 98

Yesterday's Field Lab Samples:
31-156, 31-150, PE Sample
E4-041t thru E4-07H
G2-38 thru G2-47
PSP-1 thru PSP-31
13-248 thru 13-255

- Sustained wind ~30 mph in the morning. Much higher gusts
- Excavating the E3 plume + hauling to Pad 98
- Confirmation Sampling southern excavation @ Site 13
- Bagging @ Pad 98
- Surveyin @ E Plume
- 1245 hrs Avg Wind Speed in Camp = 30mph SSW

- End shift @ 1530 hrs due to high winds (weather)

Todays Field Lab. Samples:
E3-01 to E3-03 - POL X3
BW MOC 127 to 129 - POL X 3

(10)

Monday 8/6/12 NE Cape HTRW R. James
3412005?, Cloudy 46°F

0700 Safety ① Close proximity work - Be aware
② worker got sand in eye and didn't use eye wash - Use eyewash right away don't try to rub it out

Notes: ① Survey stockpile of overburden @ the MOC to get the volume.
② Ask Jamie for a map of the H Plume w/confirmation locations
③ Ship PCB samples today
④ South excavation @ 13 has been sampled
⑤ Excavations yesterday @ G2 locations
⑥ Incident forms have been filled out for Scott and will be given to USACE

• Correlation samples are collected and packaged for shipment to lab. Sample IDs:
① 12NCCRPE ② 12NCCR31-196
③ 12NCCR31-204
④ 12NCCR31-150 ⑤ 12NCCR31-156
⑥ 12NCCRBW31-40

- Samples will be shipped to TestAmerica and analyzed for PCBs. Results will be compared to these Results received from our field lab.
• Bering Air arrives @ 1400
- Richard Lesche leaves,
R. Shane Pearson leaves
- Scott Kingeekuk arrives
and Paul Monroy arrives
• Bag @ Pad 98
• L. Kleppin is collecting Confirm samples @ G2
• Turn in 2 WC samples from MOC to lab - DRO

• 030 - 043 @ G2 Confirmation

8 Tuesday 8/7/12 NE Cape HTRW R. James
Clear, Cool - N Winds 5-10mph 34120057
47°F
0700 Safety
• Moderate weather for the next couple days - temps will be relatively high. Keep sun glare off the windows and keep them clean.
Objectives
- Bagging @ Pad 98
- PCB confirmation Sampling
0715 Winds 12 mph N, 47°F
• Waste characterization sample collected from oil drum @ 1400
- 12NCDRUM01 - will be analyzed for DRO/RRO, TCLP VOC/SVOC, TCLP Metals, Ignite, corrosivity

• 1730 Weather N wind 4mph, 51°F

Wednesday 8/8/12 NE Cape HTRW R. James 9
34120057 Clear,
No Wind, 48°F

0700 Safety
• Nice Day - Stay Cool in Tyvek
• PCB Bagging
Objectives:
① Confirmation sampling of Floors @ the E Plume, Sidewalls @ the G Plume
② Prepare PCB samples
③ Excavate @ Site 13

Note: • Mid-Construction MOC SW Samples
• Containment water sample
• Package PCB samples and Oil Sample for shipment

• Met w/Cranes this morning regarding:
① Radar Dome Road - proceed w/sampling
② Rock (large) sampling - still unsure if this will be done
- Await further decisions

⑤ Backfill of G and H - the sites will be backfilled this year
④ Debris and concrete @ Site 13 - will be backfilled into the excavation deeper than 6 feet
⑤ Grassy area of E3 plume, west side - will not be excavated at the moment - May be part of site 28 instead.
⑥ Arsenic cleanup level @ Site 21 - USACE wants to investigate whether it should classify as soil or sediment
⑦ Site 28 Removal methods - proceed as planned

• 1400 Bering Air

Thursday 8/9/12 NE Cape HTRW M. Faust
34120057 Clear, 43°, 10 mph wind

0700 Safety meeting: Another nice day, watch the wind, eye protection. Watch each other
Objectives Continue to dig on the E plume, dig up hot spots @ Site 31

Today we took soil out of 31 & re collected field screens. Also took POL soil of of E Plume excavation & bagged soil off Pad 98.

1700 Temp = 58°F Wind Ave 7 mph

Friday 8/10/12 NECape HTRW M.Faust
34120057 Cloudy, 48°F, Ave Wind 8 MPH

0700 Safety meeting topics include scattered rain showers forecast for today, keep rain gear handy even if you're not wearing it all day
Objectives Bagging dirt off of Pad 98, setting up a load frame @ site 21
~~Start~~ Work removing drums/debris @ Site 10.

Site 10 removed 5 x 55 gallon drums into 85 gallon over packs. Some antifreeze, some orange or blue liquid, some clear. All mostly full. Also 10 x 55 gallon drums into a containment area (out of over-packs) rigged on a platform. All @ least partially full. Also 7-8 ~~a~~ oil buckets, & 3 drum remnants.

~~Frid~~ Saturday 8/11/12 NE Cape HTRW
M.Faust ~~Scattered~~ ~~Showers~~ Partly Cloudy
54°F, Ave Wind 11 mph - 55, 9 mph
0700 Safety Meeting wind, eye protection
Objectives Digging 50-bags @ Sites 13 & 31, bagging POL-soil @ Pad 98
1200 Lunch
After lunch, @ Site 31 observing removal operation
1730 Dinner, end of shift

M.Faust

Sunday 8/12/12 NE Cape HTRW M. Faust
34120057 Foggy, 45°F, winds Ave 3mph

Safety Meeting Close quarters, w/ lots of heavy equipment, Watch out for others

Objectives May be some sampling of G plume Dis & sites 13 & 31, bagging @ Pad 98

1200 Lunch
After lunch, helping Eric sample MOC enpoundment as well as Lyndsey do stockpile sample

1730 End of day

Monday 8/13/12 NE Cape HTRW M. Faust
34120057 Light rain, 51°F, wind Ø

Safety Meeting PPE for dealing w/ drums: Tyvek if needed, hand protection due to sharp metal edges.

- Bering Air Beech 1900 arrives @ 1600 hrs
  - R. James, R. Losche, J. Majors, and J. Arms arrive
  - E. Barnhill, A. Smith, M. Faust, J. Orarleck leave the site @ 1630 hrs

- 57°F - S winds 15 mph

 Tuesday 8/14/12 NE Cape ATRW R. James
34120057 - Cloudy, S Winds

0700 Safety
· Prepare for winds, they are supposed to build over the next couple days. 15-30 mph today.
· Be careful around doors. Park into wind. Be aware of Connex doors.
Objective: Bag loading @ Pad 98 - watch out for dust/dirt blowing in wind
· Site 10 - Waste Sampling for drum oil and Soil Sampling
- Review QAPP Comments from USACE

· Populate Bulk Bag and Field Lab sample spreadsheets
· Work on DQCR for 8/13/2012
- Note: Liquid drums should be labeled; Consolidate the open top's liquid into bung tops
· Sampling - Field Lab Sampling @ E Plume

R. James

Wednesday 8/15/12 NE Cape ATRW R. James
34120057 - Cloudy, Very Strong S Winds
55°F, Avg S winds 25 mph
0700 Safety
· High winds thru thursday - wind is gusting to 50 mph.
· Will try to get some work done, but primarily, stay safe
· Will work site 21 - 5 bags - prepare w/wind shelters
· Excavate E and haul to Pad 98
· Will chase PCBs @ 13 and 31
Note: check when the SW sample @ site 21 should be collected, before or after excavation
- Wind Gusts to 50 mph
- 5 bags filled from site 21
· Field Crew shift ended @ 1200 hrs due to weather. - Winds gusting to 70 mph
· Complete DQCRs

R. James

34120057 - Mostly Cloudy, Strong S winds

0700 Safety
- Secure the work area - yesterday's winds hit at least 76 mph - a conner was blown over @ the MOC
  - Assess all work sites for wind damage and take note
  - Check if anything was blown away

Objectives: ① Remove POL soil from the overburden stockpiles that were high for DRO/RRO
② Excavate PCB hot spots

Note: Check for PCB confirmation sample Results
- NALEMP will be here Monday

Drum Contents
DØ1 = Mangled drum; Minimal soil
> 55-gal - Odor
DØ2, Yellow Overpack - Empty, cut drum w/very minimal liquid

- Bulk Bagging POL @ Pad 98
- Excavating @ E Plume
- Bering air @ 1830 - Maze Thompson & Gary (Camp Maint) arrive. Talia leaves

Russ James

34120057 - Partly Cloudy, 47°F
Wind = 3 mph South

0700 Safety
- Winds predicted to switch to North
- Rain predicted - Keep Raingear on hand
- NALEMP will be here next week and will use 1 vehicle

Objectives: Bag @ Pad 98 and Excavate @ E. Plume

Note: Arsenic Samples were shipped to TestAmerica yesterday

QAR Comments
- Carey re. Site 10 drums
- POL floor confirmation samples

- MW 88-4 was decommissioned/Removed - Bentonite Slurry used
- MW 88-5 will be decomm'ed
- ICOMWØ1 will also be decom'ed

Russ James

 Saturday 8/18/2012 NE Cape HTRW
R. James - 34120057 - Mist/Rain, High ~~B~~ winds
E winds - 18 mph - 50°F
0700 safety
• Wind + Rain - keep rain gear on hand - stay comfortable and hydrated.
• Fuel Containment was reconstructed yesterday - Maze thanked the crew for job well done
• Note: check on SP sample Results
• Informed Crew of PCB results

Site 10 Sampling - Soil
GRO, VOCs, DRO/RRO, PAHs, PCBs, Metals, Glycol
① 12NC10SS01 @ 1500
② 12NC10SS02 @ 1530
③ 12NC10SS03 @ 1540
④ 12NC10SS04 @ 1550
⑤ 12NC10SS05 @ 1555 Dupe = 18 @ 1705
⑥ 12NC10SS06 @ 1600
⑦ 12NC10SS07 @ 1610 (MS/MSD)
⑧ 12NC10SS08 @ 1615
⑨ 12NC10SS09 @ 1620
⑩ 12NC10SS10 @ 1630
~~⑪ 12NC10SS11 @ 1635~~ RJ

~~⑫ 12NC10SS12 @ 1640~~ RJ
1730 - Return samples to Enviro Connex
- label 12NC10SS07 MS/MD Jars
• Complete DQCR and email to Group
End 1900

Rob James

 Sunday 8/19/2012 NE Cape HTRW F. James
34120057 - Windy, Misty, 43°F, 32°F Chill
N Winds Avg 20mph
0700 Safety
• Safety Award - Allen Dennis and Dale Winslow - Efforts during the windy day
• Weather - High winds and cool temps
• Keep up good Radio Communications and general communications
• Feel free to contribute project ideas to the Foreman or SS
Objectives: ① Site 10 Soil Sampling
② Remove the hot spots from the POL stockpile ③ PCB removal @ Sites 31 and 13
• Work on DQCR 047
1300 - Follow up Inspections for:
① Site 8/MOC GW
② Soil Excavation
③ MI Sampling
- Prep Phase held for:
① MW Abandonment
Field Lab Samples:
3 x PCB Field Screen ① 13-277, BW 13-57 + 58 (Bulk Waste x 2)
→ WAL 293 + 294

F. James

Monday 8/20/2012 NE Cape HTRW
F. James 34120057, Partly Cloudy
43°F, SW Winds 5 mph
0700 Safety
• Various small projects today - wear the appropriate PPE and have it nearby, including Rain Gear
• New arrivals to camp today
- Site 10 was sampled yesterday
Objectives: ① PCB field Screening samples will be collected
Note: Think of survey needs
1440 - Bering Air arrives - NALEMP Crew arrives on site. E. Barnhill arrives
• Stockpile POL Field Lab Samples were collected
• Site 13 PCB Field Screening Samples were collected
• 2 confirmation samples collected from the floor of the E excavation
• Flats are arranged on the Beach

F. James

 Tuesday 8/21/2012 NE Cape HTRW R. James
34120057, S Winds strong, Cloudy, Mist
S Winds 24 mph, 48°F
0700 Safety
- Wear Tyvek and Nitrile Gloves during drum removal @ site 10
- Be aware of wind
Objectives: ① Drum Recovery - Windblown/sandblasted drums recovered from site 10 are marked electrical Insulated Oil.
Note: Samples need alternative shipper
Note: Barge may be offshore early tomorrow morning - Flats will be staged at the beach in prep

- Site 10 - Drums are being recovered - Clear Oil is recovered - suspected as Electrical Insulating Oil - Can Read ~~site~~ as much on one of the old drums - Sample is collected
- Boot washes are brought to the site
- 11 liquid drums as of 1600 hrs plus one old drum filled w/oil

49°F @1730 - End - [signature]

Wednesday 8/22/2012 NE Cape HTRW
R. James, 34120057 - 47°F, S Winds 13 mph

0700 Safety

Objectives: ① site 10 Drum Removal/Pump
② Build Flats @ Beach
③ Prep Samples for shipment (E Plume floor samples)
- Additional Drums and Gas Cylinders are in Nome - May have to be Air Freight out here
Field Lab Samples Yesterday:
E60 - E70 from E Plume excavation

- Site 10 - Drums pulled from the excavation including 80/20 wt oil and solvent - Alcohol Smell

[signature]

 Thursday 8/23/2012 NE Cape HTRW
R. James - 34120057 - 40°F - 3mph SW Winds

0500 - Load Sam Taalak
w/ 25 flats

Site 31 Sampling
- Discuss Rock Sampling
w/ A. Shewman
- Site 8 ~~sampling~~ - 1 SW
Sample and LDU is
completed
- Site 10 drums are being
cut and loaded into
overpacks
- Mark Site 10 drums
- 1630 - Load 25 flats
on Sam Taalak
- Rain in the afternoon ~1630
- Winds S ~ 20mph
- 2nd SW sample collected
@ Site 8
- Sam Taalak returns @ 1845
and is loaded w/ 25 flats
- A1 Excavation was backfilled today

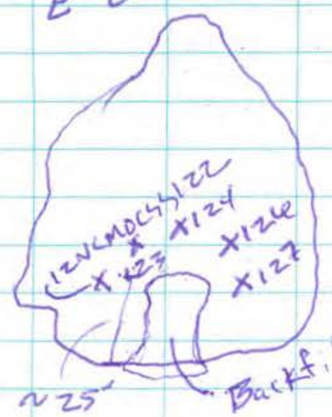
[signature]

Friday 8/24/2012 NE Cape HTRW R James
34120057, Cloudy, Cool, S Winds 25-30 mph
48°F - Avg Wind 29mph South
0700 Safety
- High Winds - Big storm across Bering
straight/Norton Sound areas
- Protective Eyewear - Keep it on
- Keep trash picked up

Objectives: ① Site 10 Drum cutting
② Backfill Haul
③ Stockpile Hot Spot Removal
④ PCB Confirmation Samples @ 31
⑤ Survey bottom of excavation
Note: Look into Hach Kits - Do they
need calibration or SOPs?

Confirmation Sampling @ E Plume
Analyzing for DRO/RRO
① 12NCMOCSS122 @ 1550
- Gray Moist Clay - from beneath
groundwater - moderate odor
② 12NKMOCSS123 @ 1556
- Beneath water - Fine sand w/
organic clay

E-Excavation



⑤12NCMOC124 @ 1600 - dupe is 125
⑥12NCMOC126 @ ~~1610~~ - MS/D
@1612 hrs
⑦12NCMOC127 @ 1620
- All beneath GW - All a
gray silty clay

(11.5)

[signature]

Saturday 8/25/2012 NE Cape HTRW R. James

34120057, Partly Cloudy, Windy
48°F, 14 mph SW Winds
0700 Safety - Tyvek, gloves and hearing
protection @ the drum cutting @
Site 10

Objectives: ① Site 10 Drums
② Excavation Backfill
③ E Excavation Floor Confirmation
sampling
④ Site 17 PCB Removal
0800 - Load Sam Taalak w/25 flats

- Radar Dome Road Sampling
12NCRDSS01 @ 1445
12NCRDSS02 @ 1450
- Duplicate SS08
} Brown sandy soil, some gravel
Sampling for GRO, BTEX, ~~DRO~~/RRO,
PAHs, PCBs, Metals
12NCRDSS03 @ 1510 - MS/D
12NCRDSS04 @ 1525
12NCRDSS05 @ 1530
12NCRDSS06 @ 1535
12NCRDSS07 @ 1540 ← Background

- 1830 - Load Sam Taalak w/25 flats
- 2100 - Sam Taalak Returns for another load of 25 flats
- Loaded 3 loads onto the Landing Craft today - The Sam is passing (pass-pass) the flats to the Port of Joe Barge in Kitnayak Bay and Returning to the Beach (Cargo Beach)
- 150 flats have been loaded since the Sam Taalak and the Barge arrived on 8/23/12

(13)

Sunday 8/26/2012 NE Cape HTRW
34120057 - Clouds/Fog, Cool R. James
45°F - W Winds 6 mph

- 0500 Hrs - Landing Craft loading - 25 flats
- 0700 Safety
  - Complacency
  - Site Hazards
- 0830 hrs - Landing Craft - 26 flats - this completes the Barge's goal of 200 flats since 8/23 - The Barge will leave and the Sam will pick up one more load on this evening's tide @ ~1900 hrs
- E excavation Backfill
- Site 13 excavation
- POL Excavation @ Pad 98
- Silt Fence Install North of E Plume - Boom was placed in the E-Excavation
- 1900 hrs - Sam Taalak returns - 9 flats, some debris containers and Fuel ISOs are loaded

32 Monday 8/27/2012 NE Cape HTRW
R. James - 3412005 7 - Clear, Cool
10Mph SW Winds, 48°F
0700 Safety
* Nice Weather - Bagging Operations - Stay Hydrated
• Keep good Communications
• Safety Award - George Mack
Objectives: ① POL Removal @ G Plume
② Sample Shipment

0730 - Mark the Hot Spots @ the G Plume for Removal - overburden will be Removed and then contaminated soil will be hauled to Pad 98

0800 - Pad 98 POL Bagging
First bag will be 192B

Field Screen @ G

- Field Screen Samples GFS1 and GFS2 collected directly above water level. Mix of Gray silty clay and a brown sandy soil
- GFS3 - Gray, wet mix of sand, silt, clay
- GFS4 - Brown sand mixed w/gray clay

1015 hrs - Pad 98 - MOC193C is filled

1045 hrs - Sample MOCBW193 - for field Lab - DRO/RRO

Field Screening SW Corner of G excavatio

1130 hrs- Bering Air arrives - CASA - Bags Arrive
1400 hrs- Bering Air arrives
- Jitendra Patel, Medic arrive
- John Majors and Paul Monroy left the site

1800 - Enter weights from today's bags

34120057 - Fog, Cool, 45°F R-James

0700 Safety
- Weather - High winds in the forecast
- Keep aware

Objectives: ① POL Bagging @ Pad 98
② Excavate E Plume
③ Site 8 Sampling

- Eric and Charles collected water samples from ~~the~~ all DU's @ Site 8

- Excavation @ E
- Bagging @ Pad 98
- Bags were hauled from Site 6 and staged on flats @ the beach ~15 flats were built from 12:30pm to 5:30pm

 Wednesday 8/29/2012 NE Cape HTRW

R. James - Job no: 34120057, Misty, Cool
46°F, 10 mph NE Winds

0700 Safety

- Watch out for traffic on the road to the beach
- Winds turning to the North

Objectives:

- Continue Bagging
- Build Flats on Beach

- Building flats on Beach
- Hauling Backfill
- Load bags @ Pad 98
- Bering Air ~ 1830 hrs
  - Suzanne Lovell, Jamison Allen, Ryan Pomrenke arrive
  - Rhonda Nienziurd Charles Kava leave

Thursday 8/30/2012 NE Cape HTRW

Job No. 34120057 - Cool, Clouds R. James
42°F - W winds 13 mph

0700 Safety

- High winds from N today - predicted to gust to 40 mph
- Take care entering/exiting equipment and vehicles
- Return tools/equipment where you got them when you're finished using them.

Note: Survey: ① ~~PCB field screen~~ ② Confirm sampling ② G Hot Spot (ou9)
③ Overburden stockpile
④ Site 8 DA Corners and Samp locs ⑤ G Plume extent
⑥ Water levels

1245. hrs - Bering Air CASA arrived - Bags & Compressed GAS
1500 Bering Air CASA
1520 - Bering Air and Security Aviation leave
- 1700 weather - 14 mph NW winds 41°F

- Bering Air CASA @ 1730
- 11 bags, 160 Liners

[signature]

Friday 8/31/2012 NE Cape HTRW
R. James - 34120057 - Light Rain
NW Winds 24 mph, 39°F
0700 Safety
- Lab Safety - stay out of GC Room and Extraction Room
- Cold Stress - PADS

Objectives:
1. Stage flats on Beach
2. Dig Hot spots @ G and E

Bering Air Navajo @ 1500 w/Groceries - E. Conway left site
- Bering Air @ 1545 CASA Drums and Bulk Bags
- 3 single Bags, 23 on 2 Pallets 26 total Bags today received

1715 hrs - NW winds 17 mph - 40°F

Saturday 9/1/2012 NE Cape HTRW
K. James - Job 34120057 - 39°F
WNW winds 15 mph
0700 Safety ① Sleep
② Be flexible w/work activities
③ Excavator Safety ④ PPE
⑤ Radio Communication
⑥ Be prepared ⑦ Equipment Check
⑧ Communicate objectives
⑨ Slower is faster
Objectives: ① Bagging @ Pad 98
② Haul Bags to Beach

Yesterday's Field Lab Samples:
- G51 - G56 - For Field Screen
- BWMOC205 - BWMOC207

1100 hrs - Checking liquid drum contents @ Site 10-
Drum D20 = Amber Oil, low/no odor
D19 = lightweight clear oily? liquid - thicker than water
D18 - Thick viscous amber oil w/alcohol odor
D13 - watery appearance, alcohol odor

D14 - clear, oily water appearance
D15 - Heavy amber oil, alcohol odor
D16 - Dark brown, black oil/H_2O mix, oil odor
1200 - lunch
1230 - Sample from the G excavation sidewall
- Bulk Bagging @ Pad 98
- Hauling Backfill to MOC
- DACR 60

Drum Samples
① KNC10DM20 @ 1600
② 19 @ 1610
③ 18 @ 1630
④ 17 @ 1650
⑤ 16 @ 1715

Field Lab Samples
E83-95 (13) 16 Field screen
G57-59 (3)
BW MOC 208 - 211 (4) Waste Char
DM 16, 18, 19 (3) Waste Char
↳ Water - can't be analyzed

 Sunday 9/2/2012 NE Cape HTRW
R. James - 34/2005-Z, Partly Cloudy 38°F
E Winds - 6 mph
0700 Safety
Safety Award - Allen Dennis

• DQCR
• Backfill East side of E excavation
• Backfill E excavation
• Pump Drums @ Site 10
• Stack flats @ Beach
Drum Sampling @ Site 10
DM21 - Trichloroethylene @ 1520
DM22 - oil/water @ 1535
DM23 - Milky liquid @ 1545
DM24 - oil/water Mix @ 1600
DM15 - Honey-like, sticky Amber oil @ 1610
DM14 - Pink, low viscosity liquid @ 1625
* DM13 - Alcohol - Similar to DM10 @ 1635
DM12 - oil/water Mix @ 1645
DM11 - tan oil/water Mix @ 1700
* DM10 - Alcohol, Like DM13 @ 1710
DM09 - Amber Oil @ 1720

Will combine 22+24, 10+13, 12+11
Will be analyzed for DRO/RRO,
Total Halogens, metals, flashpoint, PCB,

VOCs, Corrosivity and Glycol
- Will be 8 samples from this group DM21-24, 9-15
DM?? sample was collected from drum containing what appears to be tar @ 1630
• Survey Crew surveyed the Radar Dome sample locations
• Rock Samples were collected from the PCB excavations and placed into a tote. - Will be shipped tomorrow

R. James

 Monday 9/3/2012 NE Cape HTRW
34120057. Windy, Rain, Cold 41°F
NW Winds 25 mph
- Timesheets - Signatures
0700 Safety: PADS - Vibration

Objectives: ① Fogging @ Pad 98
② Fuel Containment and 150
tank placement ③ Site 10
④ Build Flats
- DQCR completed
- 1415 hrs - Navajo arrives - L. Kleppin arrives - Bulk Bags arrive
- 1500 hrs - CASA arrives - Bulk Bags arrive
~72-75 bags arrive today

Note: Pick up wire laying by the A1 excavation

[signature]

Tuesday 9/4/2012 NE Cape HTRW
R. James - 34120057 - Fog
37°F - SW Winds 9 mph
0700 Safety
- Zombie Apocalypse related to our site safety
- Clean Windows, lights, etc. - to fight against the mud

~1430 hrs - Security arrives on-site. C. Cossaboom, Carl Saden, Steve Johnson and Jeremy Cramer arrive. Departs @ 1630 with Cossaboom, Ron Broyles, Steve Johnson, and Carl Saden

[signature]

 Wednesday 9/5/2012 NE Cape HTRW

R. James - 34120057 - Cloudy, cool
41°F 13 mph NW Winds

0700 Safety: Safety Poem
by E. Barnhill

- Site 31 Excavation
- Site 21 - 1 Bag
- Pad 98 - 1 Bag

Field Lab Samples
Wal 295 - 305 (11)
BW Wal 50-51 (2)
BW Mac 216 (1)

[signature]

Thursday 9/6/2012 NE Cape HTRW

34120057 - 37°F - SW 12mph wind - R. James

0700 Safety
- Work transitions over the next few days
objectives:

- Site 31 excavation
- MW Abandon
- Stage flats for LCs
- 5 wipe sample locations
- Site 10 Drum Chopping

→ Boring 9-3 and 9-1

- Wipe Sample WS13-01 will be duplicated and sent to the lab @ TestAmerica. Also sent to the field lab. Piece of concrete was sampled in triplicate.

1730 hrs - 41°F - ~~SW~~ 3 mph wind North

48 Friday 9/7/2012 NECape HTRW R. James
54120057 · 38°F, light Rain
2 mph NE Winds

0700 Safety
• Crew Contributions • Tidy-up vehicles • Yield to heavy equipment

Objectives: ① Excavate @ Site 13
② Drums @ Site 10

QAF indicates that USACE wants to proceed as planned w/site 28

- MW 2 & MW 3 will be abandoned today

R. James

DURA Rite
WATERPROOF ®

TRANSIT

Waterproof Notebook
No. 601

Russell James - Bristol Environmental

NE Cape HTRW
Contract: W911KB-12-C-0003
9-8-2012 Thru 9-23-2012
Book 3 of 3

4 5/8" x 7" - 48 Numbered Pages

DURA Rite®
WATERPROOF

Name Russell James - Bristol
Environmental Remediation
Address 111 W 16th Ave, Third Floor
Anchorage, AK 99504
Phone 907-563-0013

Project NE Cape HTRW
Project No. 34120057
Contract No. W911KB-12-C-0003

Clear Vinyl Protective Slipcovers (Item No. 30) are available for this style of notebook. Helps protect your notebook from wear & tear. Contact your dealer or the J. L. Darling Corporation.

CONTENTS

PAGE	REFERENCE	DATE

2 Saturday 9/8/2012 NE Cape HTRW
34120057 R. James
39°F N winds 16 mph
0700 safety
· Haz Waste Manifests were filled out and bulk bags were placarded and labelled for shipping
- Drum containerization @ site 10 was completed
· Flats are being built on Cargo Beach
- Sed trap is being constructed at shop Pad
· Backfill @ E excavation

1745 - 39°F N winds 11 mph

Rae James

Sunday 9/9/2012 NE Cape HTRW 3
R. James 34120057
37°F N winds 3 mph
0700 Safety
Loader Safety - Operators have limited site when hauling
- 2 LCs this morning - Sam Taalak and Greta
- DRCRs - 2
· Pipes & Hoses are being set up @ Site 28
- Backfilling w/overburden stockpiles
- Flats are being staged @ Cargo Beach for future LCs

1800 hrs 2 LCs - Sam + Greta
· The Nunaniq arrived @ 2130 hrs

End @ 2230 hrs

4 Monday 9/10/2012 NE Cape HTRW
R. James 34120057

0700 Safety

0715 - 41°F Winds N 12mph

0600 hrs - Greta and Sam Taalak ~~Air~~ King Air
- 23 flats each
· Bering Air CASA
Bering Air arrives @ 1500 hrs
- Rich Losche, Scott Kingeekuk, Patrick Fraley, Jess Reynolds, and Jake Ollanna leave the site
· Dave Eppinger arrived on-site
- MI Sampling @ the Site 28 Pad/impound
- Greta and Sam Taalak @ 1800 hrs - 46 flats are shipped off
- E plume excavation is being backfilled
· Manifest the next boat @ 2300 hrs.
- will have 20 flats

~~RJ 15~~ (15.5)

Rod James

Tuesday 9/11/2012 NE Cape HTRW 5
R-James 34120057
43°F. Partly Cloudy, Winds N 12mph
0700 Safety
- Pump Safety -
- Water Safety

0800 - 43°F NE Winds 11mph
0900 - Sam Taalak - 20 flats
- Complete MI sampling of the Site 28 Pad/Impound

1730 weather 45°F N winds 12mph

- Site 31 PCB soil Removal
- 7 bags @ 93.29 tons
- Hauled borrow material for backfill.

Rod

6 Wednesday 9/12/2012 NE Cape HTRW
R. James 34120057, Partly Cloudy
39°F, NW Winds 6 mph
0700 Safety
- Maxine email regarding
germophobia/paranoia/fear
Objectives: ① Site 31 ② Look for Site 10
sample results ③ Prep phase
for site 28 @ 2:00pm (1400 hrs)
Site 31 Completed @ 1400 hrs
- Bering Air arrives @ 1500 hrs
- 11 ppl leave site
including Leon Nelson, Robert,
Elmer, Eugene Toolie,
Carl Calugan
- Prep phase meeting for Site 28
Sed Removal held @ 1530 hrs.
- will be attached to DQCR
- POL bagging @ Pad 98

Rex James

Thursday 9/13/2012 NE Cape HTRW R James 7
34120057 - Misty, Cool
35°F, N Winds 3 mph
0700 Safety
Proper tools, PPE and Planning
for the job

Objectives: ① Site 31 - One (1) removal
area ② Build flats on the beach
in prep for Northland
③ Site 28 preparations

- Containment was built @
Site 28 and Geotubes were
set in place
- The dredge pump was tested
- Water Samples were collected
from site 28 (surface water)
the post-construction MOC
surface water sample and
the pre-construction Site 28
surface water was collected
- Flats were staged @ the beach
- Meeting @ Site 28 Areas 1 and
2 to discuss excavation options

R James

8 Friday 9/14/2012 NE Cape HTRW R. James

34120057 - Windy, Clear, Cool
40°F, N winds 13 mph

0700 Safety
- Wind Chill handout/chart - stay warm & dry

Objectives: ① Remove the hot spot at G-Plume ② Site 28 setup
③ Bag the Perc hot spot from the liner @ the MDC

- Bering Air arrives @ 1330 hrs
- Samples are shipped out, PCB soil samples and SW samples from Site 28
- Waders, Tyvek, metal, Tape, Paper was received

[signature]

Saturday 9/15/2012 NE Cape HTRW 9

34120057, Windy, Cool R. James
35°F

0700 Safety
- Working near/in water today
- stay dry

Objectives: ① Install silt trap
② Test the dredge @ the site
③ Remove sed areas 1 and 2
④ Bag PCB sample @ the site 10 stockpile

1330 hrs - Installing the sed trap @ Site 28

[signature]

 Sunday 9/16/2012 NE Cape HTRW

34120057, Windy, Cool F. James

37°F 26 mph N winds

0700 Safety

- Winds - Advisory through afternoon
- Safety Awards - ~~Samp~~ Bagging Crew, E. Barnhill, M. Thompson, F. James

Objective: ① MI sampling @ Site 28
② Bagging soils from Site 10 stockpile, then @ Pad 98

Complete DQCR

- Check on Sed trap @ 1000 hrs
  - Water is flowing through and appears clean on the outflow - photos taken
  - Water on upstream side is not backing up
- MI Samples from Site 28 where sumps will be installed during pumping activities.
- Dirty stockpile from Site 10 was bagged

1530 weather = 36°F 31 mph N winds - Rain/Snow

Monday 9/17/2012 NE Cape HTRW

F James 34120097,

36°F, WNW winds 11 mph

0700 Safety: Carefully work w/liner, watch footing on uneven ground

Objectives: ① Remove Sed from areas 1 and 2 @ Site 28.
② Set up pump-sumps @ Site 28

0950 hrs - Areas 1 and 2 @ Site 28 are excavated - appears very organic soil ~ 25 yd^3

- Asked Jeremy about Confirmation Sampling - Are we going to sample from the excavated area? He said he'll ask USACE office

- 1115 hrs - Both sumps @ Site 28 have been installed - Pumping is ready to begin and will commence later today

Dredging on Area 1 @ Site 28 begins @ 1430 hrs
- Sheen on water in 1st sump - Very Watery and dark in color
- Water pumped into the Sed collection tube. Too early to tell how effective the tube will be
- photos taken of the sumps and the tube containment
- Obvious fuel odor in the tube containment
- QAR Craner informs Bristol that USACE wants to take sample @ Site 28 from areas that have had Sed Removal @ the same frequency as the earlier Sed Mapping samples. ~15 total
- Bering Air arrived this afternoon
- J. Patel, T. Ibarguen left
- M. Hannan arrived on-site.

Fed James

34120057, Windy, Cool R. James
39°F, N Winds 14 mph, 31°F Chill
0700 Safety: Containment/Liner installation - Proper lifting techniques

Objectives: ① Liner installation
② Pad 28 bagging operations

- POL soils were bagged @ Pad 28
- 4 Soil Samples were collected @ Site 28 Areas 1 and 2
- Dredging operations in the afternoon -
- Impoundment water was scrubbed and pumped into secondary containment
- Impoundment water Sample collected
- Surface water sample collected north of Sed trap
- 1800 - 2000 hrs - Mylon + Albert continued water scrubbing after dinner
1715 weather - N 15 mph winds
38°F

34120057, Mist, Cool R. James
39°F, NNW Winds 15 mph
0700 Safety

- Winds - Wind direction

Objectives: ① Pump water today and continue dredging @ Site 28
② Change filter media in the water scrubbers ③ Impound water sample ④ Site 28 impound water sample

- Today will be last day of dredging.
- Samples collected from Impoundment

- 1330 hrs - begin dredging @ Site 28, Area 4
- New Impoundment is being installed North of the Work Pad
- Complete/Stop dredging ~1530 hrs
- New impoundment installed
- Dozer uncovered @ beach - Photo taken

R. James

34120057, Cool R. James

0700 Safety
- Tear down/Camp Break down activities

Objectives: ① Site clean-up and break down

Security arrives ~ 1100 hrs
- M Hannah, J Arms, D Effinger, Croner leave site
Bering Air arrives (CASA) @ 1415 hrs
- Water Scrubber totes
- Bags + Liners
- Sample Coolers/Bottles
Bering Air arrives @ 1700 hrs
- 5 pallets of bags
- Coolers + Bottles
- Dale Winslow left on the Security flight today

R. James

 Friday 9/21/2012 NE Cape HTRW
34120057, Cool, 36°F R. James
N Winds 7 mph
0700 Safety: Bagging Operations

Objectives: ① Bag @ Pad 98 and bag the soil/sed from site 28 Areas 1 and 2 ② Ship samples

- Bag POL Soils @ Pad 98
- Bag Site 28 Sediment
- GPS Pole Locations

- Bering Air CASA @ 1230 hrs
- Bering Air NAVAJO ~1400 hrs
- Tyler Ellingboe arrived
- L. Kloppin, J. Willis, J. Allan, R. Pomrenke (Eco-Land), B. Olnes (Fairweather) left the site.
- Drums were labeled and Connex was placarded
- Site 31 sides were sloped

1700 hrs weather - 38°F
N winds 8 mph

Rico James

Saturday 9/22/12 NE Cape HTRW
34120057, Breezy, Cool R. James
35°F - N winds - 23° Chill
0700 Safety
- Winds are building
- Safety Goggle/Glasses

Objectives: ① Placard Drum Connex
② Dunnage for drum connex
③ NALEMP Waste Organization
④ Metal Detect @ Site 10
⑤ Site 28 Containment

- 0900 - N Winds 22 mph
- Placard the Drum Connex on all sides
- GPS Mag anomalies @ Site 10
- Organize Enviro Connex
- Teardown Personal equipment
- DQCRs 81 and 82 Final DQCRs
- Get Supersack Shipping spreadsheet from Chef
- Sample burn pit soil for NALEMP
- Pack up gear

Rico James

 Sunday 9/23/2012 NE Cape HTRW
34120057, Clear, Cold R. James

0700 Safety
· Cold Temps - Below freezing this morning. Be aware of pipes/pumps/drains - Don't let freeze

Objectives: Consolidate equipment around the work sites

- Depart Site -

Russ James

APPENDIX H

Historical Well Information

Boring Logs

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.: 2198.0230 | BORING NO.: 6-1 | SHEET 1 OF 1

PROJECT NE Cape SITE 6 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-14-94 WEATHER Sunny, Windy LOCATION COORDINATES 1010778.3376 (Northing) / 99712.6878 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 4 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 2.5" split TOTAL DEPTH (FT) 9.5 DEPTH TO SWL (FT) 5.5 TOP OF HOLE ELVEVATION 46.96

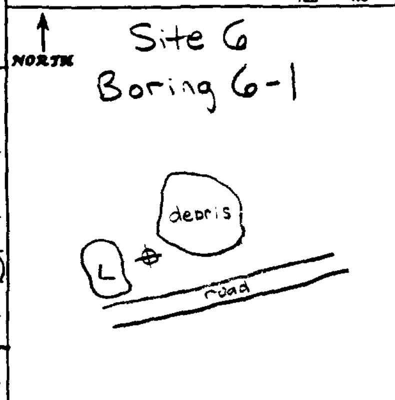
WELL COMPLETED? [X] YES [ ] NO

Sample ID	DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SOIL DESCRIPTION (ASTM 2488)
	0									Grasses - Boulders
	0–2		15	5	80	2	ML		2000 7-14	SILT WITH GRAVEL: brown, moist, firm, fine to coarse subangular gravel, fine-grained sand, no apparent staining from 0-4, anticipated green silts for geotech sample at 2-4 (off auger) not present, screen only
06032 SB +QA/QC	2–4								2015 7-14	
06152 SB	4–6	6, 8, 10	35	50	15	.5	SM	∇	2025 7-14, 1000 7-15	SILTY SAND WITH GRAVEL: olive brown, slightly moist, dense, cobbles, fine to coarse subangular gravel, fine to coarse grained sand, mostly fine to med. grained sand
	7		10	15	75	.1	ML			SILT WITH SAND: brown, very moist, firm, fine to coarse subangular gravel, fine to medium grained sand, 10% clay
_033 S3	8–9.5								2045 7-14	cobbles causing auger refusal

Boring terminated at 9.5 fbg
Groundwater encountered at approx. 5.5 fbg
Installed 2" groundwater monitoring well

Allowed augers to remain in hole overnight, check water level in morning, at 5.5 fbg

Moved boring 2 feet north to collect 4-6' sample 7-15-94, after well completion on first hole. Backfilled with bentonite



LOCATION SKETCH

JOB No. 0000.0000 File: user name/project/File Name Time: 00-XXX-00 00:00

MONTGOMERY WATSON Anchorage, Alaska

SOIL BORING LOG

PROJECT NO.: 2198.0230 | BORING NO.: 6-2 | SHEET 1 OF 1

PROJECT NE Cape SITE 6 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-15-94 WEATHER Sunny, clear LOCATION COORDINATES 101219.4170 (Northing) / 99613.6931 (Easting) ELEVATION DATUM MSL (MSL/Other)

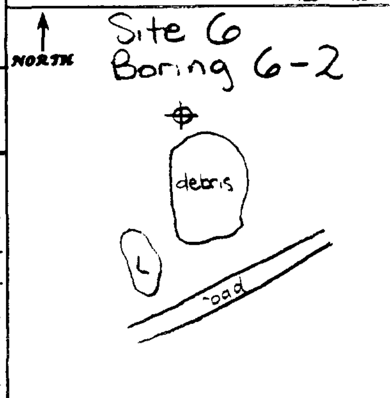
DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 2 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 2.5" split TOTAL DEPTH (FT) 5.5 DEPTH TO SWL (FT) 3.0 TOP OF HOLE ELVEVATION 47.57

DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0										Grasses - boulders
		0	0	100	-	OL		1500		ORGANIC SOIL: dk br, very moist, soft, rootlets
1		5	5	90	1	ML				SILT: brown, moist, firm, fine to coarse subangular gravel, fine-grained sand
2								1515		no apparent staining, 5% clay
3							▽			
5										boulders

06153
253
353
SB

WELL COMPLETED? ☒ YES ☐ NO



LOCATION SKETCH

Boring terminated at 5.5 fbg
Groundwater encountered at approx. 3fbg
Installed 2" groundwater monitoring well

Could not drill through first hole beyond 2fbg.
Moved hole 4 feet east.

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.: 2198.0230
BORING NO.: 6-3
SHEET 1 OF 1

PROJECT NE Cape SITE 6 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-16-94 WEATHER Sunny, breezy LOCATION COORDINATES 101282.1879/99722.3187 (Northing) (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 3 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 2.5" split TOTAL DEPTH (FT) 6.0 DEPTH TO SWL (FT) NA TOP OF HOLE ELEVATION 47.3709

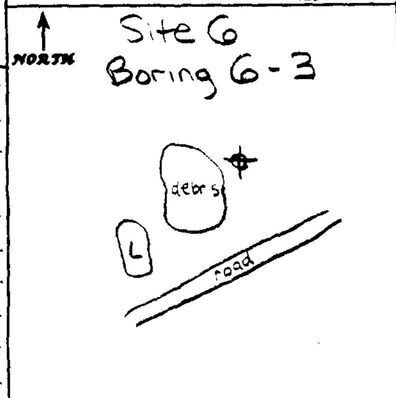
WELL COMPLETED? YES ☐ NO ☒

DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0										Grasses - Boulders
		5	5	90	1	ML		0930	X	SILT: brown, moist, firm, fine to coarse subangular gravel, fine grained sand, no apparent staining 0-6, collect 2-4' sample
2								0955	■	from auger due to boulders encountered at 2 fbg
4	9							1020	X	60% recovery
5	24									
	31									
6										boulders - cobble sized rock fragments in cuttings

Boring terminated at 6 fbg due to auger refusal
No groundwater encountered.
Backfilled with Volclay and given a bentonite plug and cap.

Moved hole 4 feet south after encountering boulders (auger refusal) at 6 fbg, first hole. Encountered boulders at 5 fbg, second hole. Both holes backfilled with Volclay and given a bentonite cap and plug.

Site 6 area covered extensively with boulders (12 to 16 inches).



LOCATION SKETCH

06154 SB

SOIL BORING LOG

MONTGOMERY WATSON

PROJECT NO.:	BORING NO.:	SHEET
2198.0230	7-1	1 OF 1

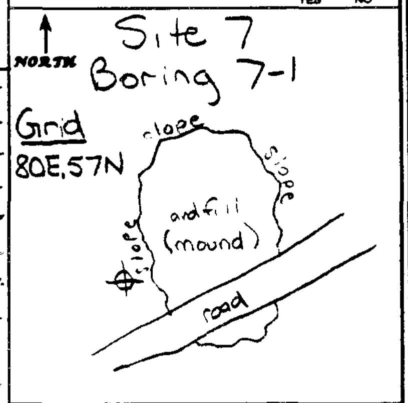
PROJECT NE Cape SITE 7 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-10-94 WEATHER Cloudy, Calm LOCATION COORDINATES 100473.4808 (Northing) / 98857.5381 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 8 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 2.5" split TOTAL DEPTH (FT) 29.0 DEPTH TO SWL (FT) NA TOP OF HOLE ELEVATION 56.3639

WELL COMPLETED? YES ☐ NO ☒



LOCATION SKETCH

DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0									X	TUNDRA MAT
		0	0	100		OL		1410		ORGANIC SOIL: dark brown, very moist, soft, mossy debris, rootlets, no apparent staining
2	20	5	5	90	4	ML		1420	■	SILT: green, moist, stiff, subangular cobbles, fine to coarse subangular gravel, fine to medium grained sand, exhibits iron staining (natural?) giving a mottled appearance, 100% recovery from 0-6', frozen pore water at 5' (2" lens)
3 (07028 SB)	61								■	
	31								■	
4	12							1430	X	
5	3								X	
	13								X	
6										iron staining ceases
7										cuttings are very moist due to surface water mix
8										could be "blue" silts
10 (07143 SB)	15							1510	■	
	30								■	
11 (4,2oz 4,4oz)	16	15	65	20	3	SM			■	SILTY SAND WITH GRAVEL: green, moist, dense fine to coarse subangular gravel, fine to coarse grained sand, mostly fine grained sand, no apparent staining natural green/aqua color?, 5% clay, 70% recovery
15 (07144 SB 2,4oz)	10							1530	■	50% recovery
	15								■	
16	35								■	
20	10							1600	X	20% recovery
	30								X	
21	30								X	

JOB No. 0000.000X File: user name/project/File Name ime: 00-XXX-00 00:00

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.:	BORING NO.:	SHEET
2198.0230	7-1	2 OF 2

PROJECT NE Cape SITE 7 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-10-94 WEATHER Cloudy, calm LOCATION COORDINATES 100473.4808 (Northing) / 98857.5381 (Easting) ELEVATION DATUM MSL (MSL/Other)

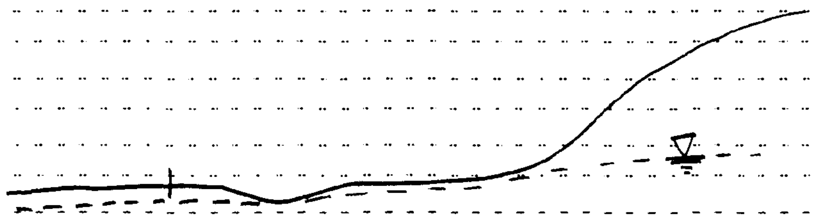
DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 8 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 2.5" split TOTAL DEPTH (FT) 29.0 DEPTH TO SWL (FT) NA TOP OF HOLE ELEVATION 56.3629

WELL COMPLETED? YES ☐ NO ☒

LOCATION SKETCH: NORTH — See P.1

Sample ID	DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
	20										
	21										
	22										
	23										cobbles causing drilling resistance, slow drilling
	24										
07145 SB 4,2oz 3,4oz	25	34, 38, 35							1700	■	70% recovery
	26										coarse-grained sand fraction increases (26-27 fbg)
	27										cobbles causing drilling resistance, rig hot
	28										50% recovery at 29-31'
07146 SB 3,4oz	29	>50							1750	■	Boring terminated at 29.0 fbg. No groundwater encountered. Backfilled with Volclay and given a bentonite cap and plug.
	30										
	31										
	32										
	33										Area may be hydrogeologically unfavorable for near surface groundwater due to upgradient drainage directing surface flow around the area: Same for 21-2
	34										
	35										
	36										
	37										
	38										
	39										
	40										
	41										



SOIL BORING LOG

MONTGOMERY WATSON

PROJECT NO.: 2198,0230
BORING NO.: 7-2
SHEET 1 OF 1

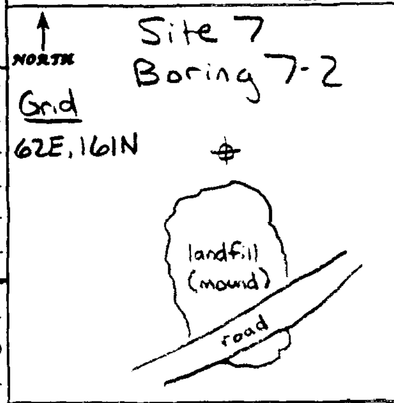
PROJECT: NE Cape SITE: 7 CLIENT: USACOE (AK) GEOLOGIST: John DeGeorge

DATE: 7-11-94 WEATHER: Sunny, Windy LOCATION COORDINATES: 100958.3393 (Northing) / 99246.6535 (Easting) ELEVATION DATUM: MSL (MSL/Other)

DRILLING METHOD: HSA BORING SIZE: 8" HAMMER DROP (IN/LBS): 30/340 RIG TYPE: CME 55 DRILL COMPANY: Denali Drilling

SAMPLES: 7 SAMPLE TYPE: discreet SAMPLER TYPE/DIAMETER: 3" split TOTAL DEPTH (FT): 26.0 DEPTH TO SWL (FT): NA TOP OF HOLE ELEVATION: 49.3874

WELL COMPLETED? YES ☐ NO ☒



LOCATION SKETCH

	DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SOIL DESCRIPTION (ASTM 2488)
	0									Tundra mat
			0	0	100	-	OL		0900	ORGANIC SOIL: dk brown, very moist, soft, rootlets
	2	5, 6, 12							0915	
07029 SB + QA/QC	3		5	5	90	.75	ML			SILT: olive green, slightly moist, stiff, fine subangular gravel, fine to coarse grained sand, natural iron staining (3-6'), no other apparent staining, 100% recovery at 2-4, 50% recovery at 4-6
	4	5, 12, 18							0945	
	7									cobbles causing drilling resistance
	8		15	65	20	3	SM			SILTY SAND WITH GRAVEL: green, moist, dense, fine to coarse subangular gravel, fine to coarse-grained sand, mostly fine-grained sand, no apparent staining, likely till
07147 SB 4.2oz	10	6, 12, 21							1030	40% recovery, no apparent staining — called Victor
	12									occassional cobbles causing drilling resistance
07148 SB 5 4oz	15	16, 38, 52							1130	70% recovery, no apparent staining
	20	5, 8, 10							1300	40% recovery, moisture on sample likely due to surface water, no apparent staining

JOB No. 0000.0000 File: user name/project/File Name ime: 00-XXX-00 00:00

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.: 2198.0230 | BORING NO.: 7-2 | SHEET 2 OF 2

PROJECT NE Cape SITE 7 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-11-94 WEATHER Cloudy, calm LOCATION COORDINATES 100958.3393/99246.6535 (Northing)/(Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 7 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 3" split TOTAL DEPTH (FT) 26.0 DEPTH TO SWL (FT) NA TOP OF HOLE ELEVATION 49.3874

WELL COMPLETED? YES ☐ NO ☒

DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
21										
22										
23										
24										
25	>50							1330	X	0% recovery, cobbles boulder? auger refusal
26										
27										Boring terminated at 26 fbg due to auger refusal. No groundwater encountered. Backfilled with Volclay grout with a bentonite plug and cap.
28										
29										
30										Note: Attempted to advance augers for 15-20 minutes
31										
32										
33										
34										
35										
36										
37										
38										
39										
40										
41										
42										

NORTH

See P. 1

LOCATION SKETCH

JOB No. 0000.000 Time: 00-XXX-00 00:00 File: user name/project/File Name

SOIL BORING LOG

MONTGOMERY WATSON

PROJECT NO.: 2198.0230 | BORING NO.: 7-3 | SHEET 1 OF 1

PROJECT: NE Cape SITE: 7 CLIENT: USACOE (AK) GEOLOGIST: John DeGeorge

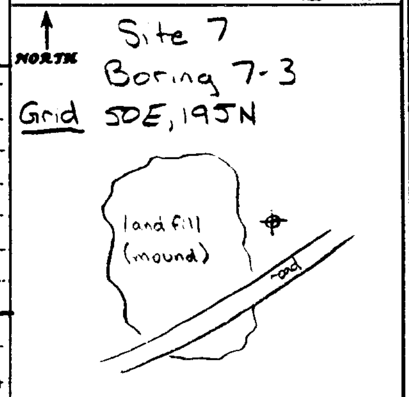
DATE: 7-11-94 WEATHER: Cloudy, breezy LOCATION COORDINATES: 100866.3732 (Northing) / 99562.9419 (Easting) ELEVATION DATUM: MSL (MSL/Other)

DRILLING METHOD: HSA BORING SIZE: 8" HAMMER DROP (IN/LBS): 30/340 RIG TYPE: CME 55 DRILL COMPANY: Denali Drilling

SAMPLES: 5 SAMPLE TYPE: discreet SAMPLER TYPE/DIAMETER: 3" split TOTAL DEPTH (FT): 17.0 DEPTH TO SWL (FT): NA TOP OF HOLE ELEVATION: 47.5736

WELL COMPLETED? YES ☐ NO ☒

Sample ID (margin)	DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SOIL DESCRIPTION (ASTM 2488)
	0		0	0	100	-	OL		1615	Tundra mat. ORGANIC SOIL: dark brown, very moist, soft, rootlets, no apparent staining, 50% recovery at 2-4
07030 SB - QA/QC	2–3.5	3, 6, 6							1630	
07149 SB 4,2oz 4,4oz	4–5.5	3, 6, 11	5	5	90	.75	ML		1645	SILT: olive green, very moist, firm, fine subangular gravel, fine to coarse-grained sand, 50% recovery at 4-6, slight putrid odor
	8		15	65	20	3	SM			SILTY SAND WITH GRAVEL: green, very moist, dense fine to coarse subangular gravel, fine to coarse grained sand, mostly fine-grained sand, no apparent staining, likely till, 50% recovery at 9.5-11.5, moisture likely due to surface water seepage
07150 SB 2,4oz	10–11	2, 4, 15							1700	
	12									allow hole to stand; check for groundwater; nothing
	15–16	12, 15, 17							1800	20% recovery, cobbles causing drilling resistance, rig slow to advance
	16.5									resistance to drilling, boulder?
	17–19									Boring terminated at 17 fbg due to auger refusal. No groundwater encountered. Backfilled with Volclay grout and given a bentonite plug and cap.
	20									Boring 7-3 situated approx. 5' lower than boring 7-2.



LOCATION SKETCH

File: user name/project/File Name JOB No. 0000.0000

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.: 2198.0230 | BORING NO.: 7-4 | SHEET 1 OF 1

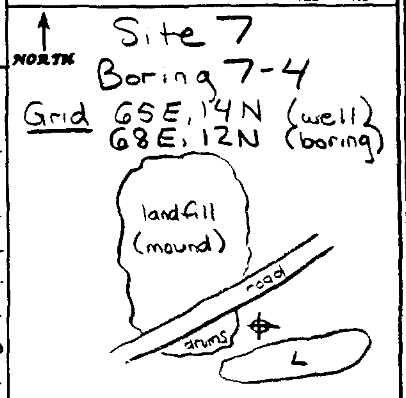
PROJECT NE Cape SITE 7 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-12-94 WEATHER Sunny, calm LOCATION COORDINATES 100382.6301 (Northing) / 99565.8237 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD 7-14-94 7-15 HSA-94 BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 5 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 3" split TOTAL DEPTH (FT) 15.0 DEPTH TO SWL (FT) NA TOP OF HOLE ELVEVATION 51.34

WELL COMPLETED? YES ☐ NO ☒



LOCATION SKETCH

Sample ID	DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SOIL DESCRIPTION (ASTM 2488)
	0									Grasses - 3" of topsoil - Organic
			5	15	80	75	ML		1030 7-12	SILT WITH SAND: gr., m., f., fine subangular gravel, fine to coarse grained sand, mostly fine grained sand, occassional lenses not exceeding 3" of increased sand fraction (40%), rootlets from 0-4, iron staining from 2-4, no other apparent staining, 100% recovery from 0-6, 5% clay
07031 SB + QA/QC	2–3	4, 4, 4						▽	1045 7-12	
	4–5	4, 6, 10							1055 7-12	occassional color change to brown not exceeding 6", with increased organic debris, & less moisture
07151 SB + Geo/Q + Geotech	10–11	5, 8, 12							1115 7-12; 1130 7-15 Geo. Geotech	100% recovery, moisture change to very moist no surface infiltration, may be freeze-thaw zone (liquified pore water previously frozen) hot drill bit, warm day, about 1' thick? does not appear saturated
	12		35	50	15	4	SM			SILTY SAND WITH GRAVEL: green, moist, dense, cobbles, fine to coarse subangular gravel, fine to coarse grained sand, mostly fine-grained sand, no apparent stains, transmission out on rig - hole blown through transmission casing new transmission flown out, resume drilling 7-14-94
	15	60, 17, 21							1620 7-14	0% recovery, attempt to drill through without progress

Boring terminated at 15 fbg due to auger refusal Backfilled with Volclay and given a bentonite plug and cap.

Reconsidered moisture encountered in boring and returned to location 7-15-94 (1100-1300) and installed a 2" groundwater monitoring well adjacent (see grid coordinates) to boring. Collected geotech sample of typical silt "the blues" during drilling 7-15, plus TOX, TOC, BTU and dup./split.

JOB No. 0000.000C ime: 00:XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.: 2198.0230 | BORING NO.: 9-1 | SHEET 1 OF 1

PROJECT NE Cape SITE 9 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-16-94 WEATHER Sunny, breezy LOCATION COORDINATES 98501.6918 / 97366.2958 (Northing) (Easting) ELEVATION DATUM MSL (MSL/Other)

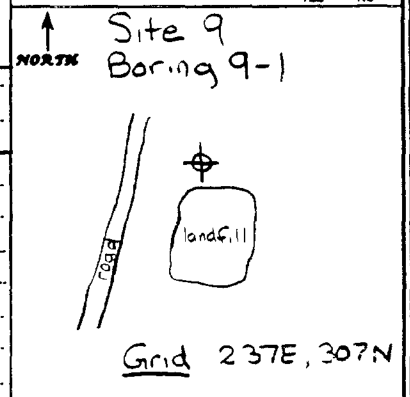
DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 2 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 2.5" split TOTAL DEPTH (FT) 7.5 DEPTH TO SWL (FT) 1.5 TOP OF HOLE ELEVATION 65.14

09155
255
355
SB

DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0										Tundra - Small Schrubs - Boulders
0–1		0	0	100	-	OL		1430		ORGANIC SOIL: dk brown, very moist, soft, rootlets
1–4		5	5	90	1	ML	▽	1530		SILT: brown, color change to green at 2 fbg, moist to very moist, firm, fine to coarse subangular gravel, fine-grained sand, no apparent stains

WELL COMPLETED? ☒ YES ☐ NO



LOCATION SKETCH

Boring terminated at 7.5 fbg.
Groundwater encountered at approx 1.5 fbg.
Installed 2" groundwater monitoring well.

Collected sample (0-2') from first boring. Groundwater seeped into hole during sample collection (1 hr). Decided to move well location (see above grid coordinates) 4 feet north, to avoid drilling through water in hole = muds.

JOB No. 0000.000X   ime: 00-XXX-00 00:00   File: user name/project/File Name

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.: 2198.0230 | BORING NO.: 9-2 | SHEET 1 OF 1

PROJECT NE Cape SITE 9 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

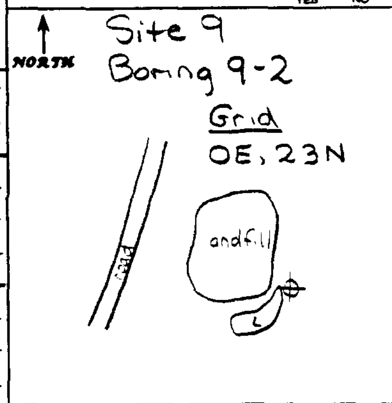
DATE 7-16-94 WEATHER Sunny, breezy LOCATION COORDINATES 98221.5475/97599.6948 (Northing) (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 3 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 2.5" split TOTAL DEPTH (FT) 9.5 DEPTH TO SWL (FT) 3.0 TOP OF HOLE ELEVATION 72.87

WELL COMPLETED? ☒ YES ☐ NO

DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0										Tundra-mat
09156 SB		0	0	100	-	OL		2015		ORGANIC SOIL: dk brown, very moist, soft, rootlets
1		5	5	90	1	ML		2040		SILT: brown, moist, firm, fine to coarse subangular gravel, fine grained sand, no apparent stains
3		0	30	70	-	ML	▽			SANDY SILT: brown, saturated, soft, fine to medium grained sand, no apparent staining
09034 SB								2050		
7		0	20	80	-	ML				SILT WITH SAND: (aqua) green, saturated, firm, fine to medium grained sand, 20% clay frozen - ice crystals in matrix - permafrost?
10										Boring terminated at 9.5 fbg Groundwater encountered at approx. 3 fbg Installed 2" groundwater monitoring well



LOCATION SKETCH

JOB No. 0000.000C Name: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON — SOIL BORING LOG

PROJECT NO.:	BORING NO.:	SHEET
2198.0230	9-3	1 OF 1

PROJECT NE Cape SITE 9 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-17-94 WEATHER Cloudy, calm LOCATION COORDINATES 98260.0772 (Northing) / 97177.3812 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8 HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

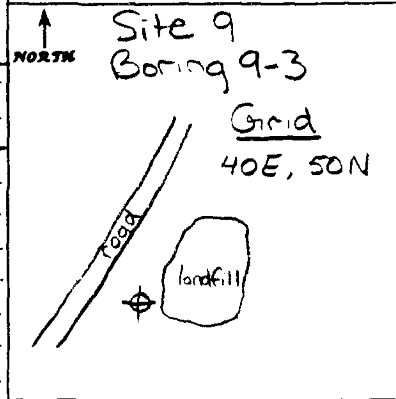
SAMPLES 2 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 2.5" split TOTAL DEPTH (FT) 9.5 DEPTH TO SWL (FT) 2.0 TOP OF HOLE ELEVATION 73.66

WELL COMPLETED? ☒ YES ☐ NO

DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0										Tundra - Mat
		0	0	100	-	OL		0900	■	ORGANIC SOIL: dk brown, very moist, soft, rootlets
1		5	5	90	1	ML			■	SILT: brown, moist, firm, fine
2							▽		■	to coarse subangular gravel,
								0915	■	fine grained sand, no apparent
3									■	staining.
4										
5										color change to green
6										
7										ice crystals in soil matrix
8										
9										
10										Boring terminated at 9.5 fbg.
11										Groundwater encountered at approx 2 fbg.
										Installed 2" groundwater monitoring well
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										

09157 SB

09035 SB



LOCATION SKETCH

JOB No. 0000.000C ime: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.:	BORING NO.:	SHEET
2198.0230	B-10-1	1 OF 1

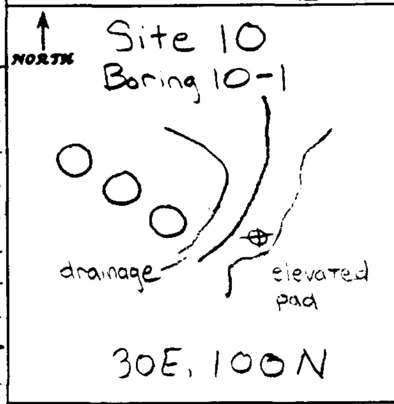
PROJECT NE Cape SITE 10 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 6-25-94 WEATHER Cloudy LOCATION COORDINATES 98219.0993 (Northing) / 96794.1917 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 6 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 2.5" split TOTAL DEPTH (FT) 20.0 DEPTH TO SWL (FT) 3.5 TOP OF HOLE ELEVATION 69.49

WELL COMPLETED? ☒ YES ☐ NO



LOCATION SKETCH

Sample ID	DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SOIL DESCRIPTION (ASTM 2488)
10100 SB	0		30	50	20	3	SM		1630	SILTY SAND WITH GRAVEL: orange-brown, moist, medium dense, fine to coarse angular gravel, fine-grained sand, rootlets to 3 fbg, stained black on surface, 50% recovery at 2-4', no apparent staining
10101 SB	2–3	5, 7, 9						▽ (3.5)	1648	
10102 SB	4–5	8, 7, 7	30	20	50	3	ML		1707	GRAVELLY SILT WITH SAND: orange-brown, moist, firm, fine to coarse angular gravel, fine grained sand, 5% clay, natural iron staining?, 75% recovery
	8		5	60	35	.75	SM			SILTY SAND: dark green, moist, medium dense, fine subangular gravel, very fine to fine grained sand, 5% clay,
	10–11	6, 8, 12							1745	no apparent staining, 100% recovery. occassional layers of SANDY SILT, dark green, moist, firm, fine subangular gravel, very fine to fine grained sand, 5% clay
	13		15	35	50	3	ML			SANDY SILT WITH GRAVEL: dark green, moist, stiff, fine to coarse subangular gravel, very fine to fine grained sand, 5% clay
	15	50							1810	no apparent staining, 10% recovery
	20								1830	no apparent staining, 100% recovery

Boring terminated at 20 fbg.
Backfilled with Volclay Grout to 10 fbg
Installed 2" groundwater monitoring well.

JOB No. 0000.000C File: user name/project/File Name ime: 00-XXX-00 00:00

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.:	BORING NO.:	SHEET
2198.0230	B-10-2	2 OF 2

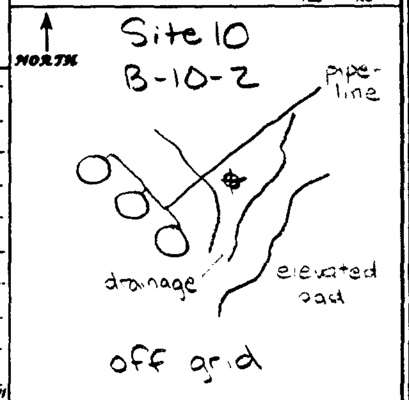
PROJECT NE Cape SITE 10 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 6-26-94 WEATHER Cloudy LOCATION COORDINATES 98288.1156/96709.8190 (Northing) (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD ~~HSA~~ Hand Auger BORING SIZE 3" HAMMER DROP (IN/LBS) N/A RIG TYPE N/A DRILL COMPANY Denali Drilling

SAMPLES 1 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER N/A TOTAL DEPTH (FT) 0.5 DEPTH TO SWL (FT) 0.5' TOP OF HOLE ELEVATION 63.7633

WELL COMPLETED? YES ☐ NO ☒



LOCATION SKETCH

DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
~~21~~										Stressed grasses, black and rust colored topsoil (stained), petroleum hydrocarbon odor, rust colored surface water approx 6' away, boring located 14' SE of pipeline
~~22~~	Surface →									
~~23~~										
~~24~~										
~~25~~		-	15	85	-	OL		1530	■	ORGANIC SOIL WITH SAND: black top 3", rust color 3-6", very moist, soft, fine to medium grained sand, rootlets and mossy debris, apparent staining, 100% recovery
~~26~~										
~~27~~										
~~28~~										Boring terminated at 0.5 fbg Groundwater encountered at 0.5 fbg Backfiled with soil cuttings
~~29~~										
30										
31										Sample ID
32										94NEC10103SB prim. 10203SB dup 10303SB split
33										
34										
35										
36										
37										
38										
39										
40										
41										
42										

JOB No. 0000.000' Time: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.: 2198.0230 | BORING NO.: B-10-3 | SHEET 2 OF 2

PROJECT NE Cape SITE 10 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 6-26-94 WEATHER Cloudy LOCATION COORDINATES 98308.7565 (Northing) / 96655.6116 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD ~~HSA~~ Hand Auger BORING SIZE 3" HAMMER DROP (IN/LBS) N/A RIG TYPE N/A DRILL COMPANY Denali Drilling

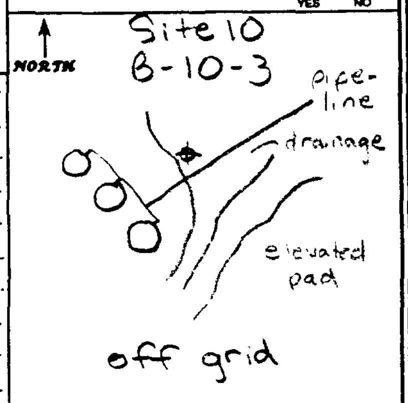
SAMPLES 1 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER N/A TOTAL DEPTH (FT) 0.5 DEPTH TO SWL (FT) 0.5 TOP OF HOLE ELEVATION 63.6739

WELL COMPLETED? YES ☐ NO ☒

DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
21										
22		Surface →								Stressed grasses, rust colored topsoil (stained), organic odor, surface water located approx. 12' away, boring located 44' NW of pipeline
23										
24										
25		-	15	85	-	OL		1615	■	ORGANIC SOIL WITH SAND: rust colored, very moist, soft, fine to medium grained sand, rootlets and mossy debris, apparent staining (FE?), 100% recovery, predominant subangular cobbles at 0.5 fbg
26										
27										
28										
29										Boring terminated at 0.5 fbg. Groundwater encountered at 0.5 fbg. Backfilled with soil cuttings
30										
31										
32										Sample ID
33										94 NEC 10 104 SB
34										
35										
36										
37										
38										
39										
40										
41										
42										

0

1



LOCATION SKETCH

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MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.: 2198.0230 | BORING NO.: B-10-4 | SHEET 1 OF 1

PROJECT NE Cape SITE 10 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

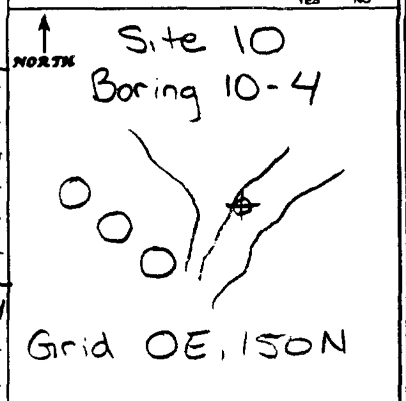
DATE 6-27-94 WEATHER Cloudy, calm LOCATION COORDINATES 98265.6203 (Northing) / 96767.7053 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 2 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 2.5" split TOTAL DEPTH (FT) 6.5 DEPTH TO SWL (FT) 0.5 TOP OF HOLE ELEVATION 68.33

WELL COMPLETED? ☒ YES ☐ NO

DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0										Stressed grasses
0.5 (10105 SB)		-	15	85	-	OL	▽	1000	■	ORGANIC SOIL WITH SAND: red brown, very moist to wet, soft, fine to medium grained sand, rootlets, apparent staining, 100% recovery cobbles at 2 fbg
3 (2106 SB Geotech)		35	15	50	6	MH		1020	■	COBBLEY ELASTIC SILT WITH SAND: olive green, saturated, firm, cobbles causing drilling resistance, very fine and medium to coarse grained sand, ~20% clay, no apparent staining, 100% rec.
7										Boring terminated at 6.5 fbg Groundwater encountered at approx. 0.5 fbg Installed 2" groundwater monitoring well



LOCATION SKETCH

JOB No. 0000.000C ime: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON Anchorage, Alaska

SOIL BORING LOG

PROJECT NO.: 2198.0230 | BORING NO.: B-11-1 | SHEET 1 OF 1

PROJECT NE CAPE SITE 11 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

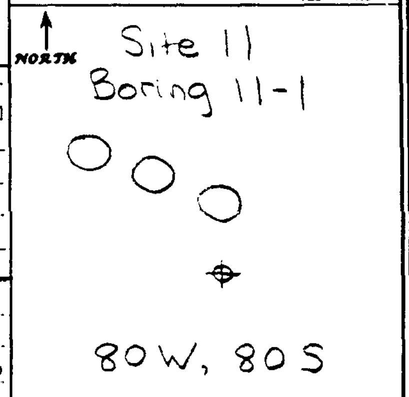
DATE 6-25-94 WEATHER Cloudy LOCATION COORDINATES 98044.9371 (Northing) / 96680.4553 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 4 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 3" split TOTAL DEPTH (FT) 10.5 DEPTH TO SWL (FT) NA TOP OF HOLE ELEVATION 83.347

WELL COMPLETED? YES ☐ NO ☒

Sample ID	DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	INTERVAL	SOIL DESCRIPTION (ASTM 2488)
	0		0	10	90	-	ML		1130		SILT: brown, moist, firm, medium to coarse grained sand, 10% clay, rootlets, no apparent staining
	2	4, 12							1145		
11001 SB	3	45	70	10	20	8	GM				SILTY GRAVEL: brown, moist, dense, subangular cobbles (fragmented by drill bit), fine to coarse subangular gravel, medium to coarse grained sand, drilling and sampling resistance, ~50% recovery at 2'-4' and 4'-6' intervals, no apparent staining
	4	27, 50							1200		
	8										continued resistance, suspect cobbles, rock fragments in drill cuttings
	9										difficult drilling
11002 SB	10	12, 50							1430		no apparent staining, ~25% recovery
	11										Boring terminated at 10.5 fbg due to auger refusal. No groundwater encountered. Backfilled with bentonite.
	14										Suspect boulders at 10.5 fbg prohibiting auger advancement. Attempted to advance auger for 10-15 minutes without success.
	16										See grab sample of rock fragment for description of cobble/gravel composition.
	18										☒ = this symbol means a field sample was collected but was not screened or submitted to any laboratory



LOCATION SKETCH

JOB No. 0000.0000 File: user name/project/File Name

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.: 2198.0230 | BORING NO.: 11-2 | SHEET 1 OF 1

PROJECT: NE Cape | SITE: 11 | CLIENT: USACOE (AK) | GEOLOGIST: John DeGeorge

DATE: 6-27-94 | WEATHER: Cloudy, calm | LOCATION COORDINATES: 98226.3982 (Northing) / 96564.7244 (Easting) | ELEVATION DATUM: MSL (MSL/Other)

DRILLING METHOD: HSA | BORING SIZE: 8" | HAMMER DROP (IN/LBS): 30/340 | RIG TYPE: CME 55 | DRILL COMPANY: Denali Drilling

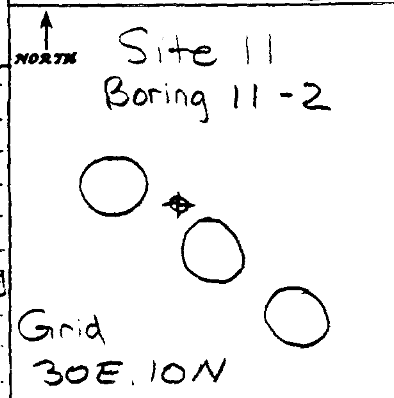
SAMPLES: 4 | SAMPLE TYPE: discreet | SAMPLER TYPE/DIAMETER: 3" split | TOTAL DEPTH (FT): 10.0 | DEPTH TO SWL (FT): 4.0 | TOP OF HOLE ELEVATION: 72.36

WELL COMPLETED? [X] YES [ ] NO

DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SOIL DESCRIPTION (ASTM 2488)
0									Surface Gravel & Cobbles
0–2 (11107 SB)		5	30	65	3	ML		1245	SANDY SILT: brown, moist, firm, fine to coarse gravel, fine to coarse-grained sand, no apparent staining, 100% recovery at 0-2, 2-4, fill
2–4 (11108 SB)	10, 25, 11							1300	natural(?) Fe-stained soil at 3 fbg cobbles at 3 fbg making drilling difficult, saturated soil at 4 fbg.
4–6	11, 26, 18							1415	occassional silt layers (ML) appear dry, contain frozen pore water, occassional layers of cobbles / coarse gravel, subangular, no apparent staining at 4-6 fbg
6–8									fill
8.5–10	11, 12, 15	5	30	65	.75	ML		1435	SANDY SILT: dark brown, saturated, soft, fine gravel, medium to coarse-grained sand, 10% clay, no apparent staining, appears native

Boring terminated at 10 fbg.
Groundwater encountered at approx. 4 fbg
Installed 2" groundwater monitoring well

LOCATION SKETCH



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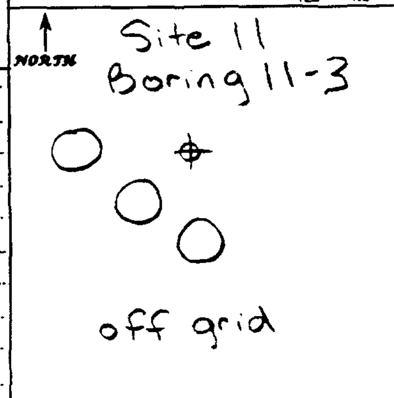
MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.: 2198.0230 | BORING NO.: 11-3 | SHEET 1 OF 1

- PROJECT: NE Cape
- SITE: 11
- CLIENT: USACOE (AK)
- GEOLOGIST: John DeGeorge
- DATE: 6-27-94
- WEATHER: Cloudy, Windy, Rain
- LOCATION COORDINATES: 98257.4154 / 96601.0635 (Northing) (Easting)
- ELEVATION DATUM: MSL (MSL/Other)
- DRILLING METHOD: 6-28-94 HSA
- BORING SIZE: 8"
- HAMMER DROP (IN/LBS): 30/340
- RIG TYPE: CME 55
- DRILL COMPANY: Denali Drilling
- # SAMPLES: 5
- SAMPLE TYPE: discrete
- SAMPLER TYPE/DIAMETER: 2.5" split
- TOTAL DEPTH (FT): 18.0
- DEPTH TO SWL (FT): 12.0
- TOP OF HOLE ELEVATION: 70.29

WELL COMPLETED? YES [X] NO [ ]



LOCATION SKETCH

Sample	DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SOIL DESCRIPTION (ASTM 2488)
	0									Surface Gravel/Cobbles/Grasses
11109 SB	0–2		10	35	55	5	ML		1645 6/27	SANDY SILT: brown, moist, stiff, subangular cobbles, fine to coarse gravel, fine to medium grained sand, trace clay, natural (?) Fe staining at 3 fbg, 100% recovery at 0-2, 2-4, 4-6, fill material
11110 SB	2–4	4, 10, 16							1710 6/27	
11111 SB	4–6	4, 18, 12							1720 6/27	
	6–8									fill
	9		–	80	20	–	SM			SILTY SAND: green, very moist, medium dense, very fine to medium grained sand, medium grained sand observed well sorted in 3" lens, finer grained sands predominant, 100% recovery at 9.5 to 11.5, apparent stained soil, exhibits petroleum hydrocarbon odor (strong)
11112 SB	9.5–11.5	4, 3, 3	–						1800 6/27	
	12									allow hole to sit overnight and observe groundwater. Hole observed dry 1100 6-28: continue drilling
	14									occassional layers of SANDY SILT (ML), green, very moist, stiff, fine grained sand, some woody organic debris, strong hydrocarbon odor, stained green 100% recovery at 14.5 to 16.5
11113 SB Geotech Geo	14.5–16.5								1117 6/28	

Boring terminated at 18 fbg
Groundwater encountered at approx. 12 fbg
Installed 2" groundwater monitoring well

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.: 2198.0230 | BORING NO.: 13-1 | SHEET 1 OF 1

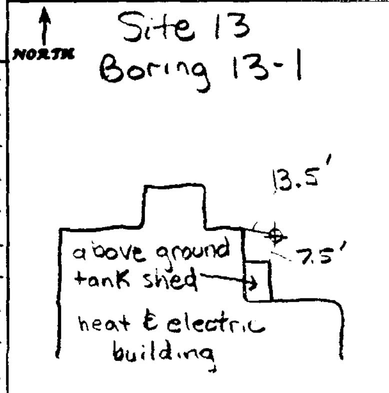
PROJECT NE Cape SITE 13 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 6-30-94 WEATHER Cloudy, calm LOCATION COORDINATES 98248.6674/96162.9761 (Northing)/(Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 5 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 3" split TOTAL DEPTH (FT) 15.5 DEPTH TO SWL (FT) 13.5 TOP OF HOLE ELEVATION 72.25

WELL COMPLETED? ☒ YES ☐ NO



LOCATION SKETCH

Sample ID	DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SOIL DESCRIPTION (ASTM 2488)
	0		15	70	15	3	SM		0945	SILTY SAND WITH GRAVEL: brown, slightly moist, medium dense, fine to coarse subangular gravel, fine to coarse-grained sand, mostly fine grained sand, 100% recovery at 0-2, 2-4, 4-6, no apparent staining from 0-6, apparent fill
13007 SB	2.5–3.5	7, 8, 9							1000	
	4									cobble - drill past
	5–6	10, 15, 16							1020	3" lens of very moist soil at 6' fbg., only slightly moist below and beyond
	7									cobbles increasing - causing drilling resistance
	8		25	60	15	5	SM			SILTY SAND WITH COBBLES: grey, slightly moist, dense, subangular cobbles, fine to coarse subangular gravel, fine to coarse grained sand, apparent fill, no apparent staining 25% recovery - hydrocarbon odor - rock fragments in sampler unable to collect sample, no apparent staining
3008 SB	10–11	13, 20, 42							1040	
	12									soil cuttings stained green, slightly moist
	14		15	70	15	3	SM	▽		SILTY SAND WITH GRAVEL: stained green, saturated, dense, fine to coarse subangular gravel, fine to medium grained sand, 50% recovery at 14.5-16.5, hydrocarbon odor
13009 SB	15–16	15, 20, 18							1100	

Boring terminated at 15.5 fbg.
Ground water encountered at approx 13.5 fbg.
Installed 2" groundwater monitoring well.

Camera dysfunctional at 0-2' sample
Continued drilling until new one arrived.

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.:	BORING NO.:	SHEET
2198.0230	13-2	1 OF 1

PROJECT NE Cape SITE 13 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

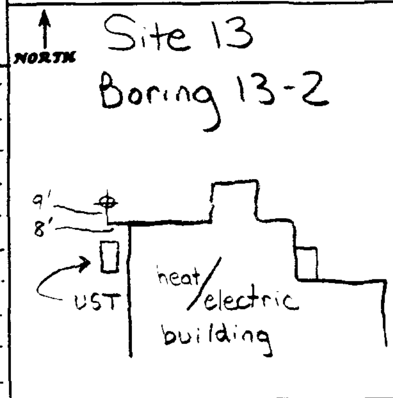
DATE 6-30-94 WEATHER Cloudy, windy LOCATION COORDINATES 98251.7823 / 96074.8027 (Northing) (Easting) ELEVATION DATUM MSL (MLLW/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 4 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 3" split TOTAL DEPTH (FT) 14.0 DEPTH TO SWL (FT) 9.5 TOP OF HOLE ELEVATION 71.33

WELL COMPLETED? ☒ YES ☐ NO

	DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
	0										Surface Gravel & dry grass
			20	60	20	3	SM		1400		SILTY SAND WITH GRAVEL: brown, slightly moist, medium dense, fine to coarse subangular gravel, fine to coarse grained sand, mostly fine - grained sand, no apparent staining from 0-5', 100% rec 0-2, 25% rec 2-4
	2	9							1425		
13010 SB	3	11									
		10									
13124 SB	4	14							1440		
	5	26									
		40									frozen pore water (lens) at 5' melts upon removal and causes soil to appear saturated, soil has more sand and less silt in this horizon, freeze-thaw zone? Same saturated layer in 13-1, soil stained olive green at 5 fbg, hydrocarbon odor, 50% rec at 4-6 encountered impassable boulder at 7 fbg, moved hole 3'N encountered impassable boulder at 7 fbg, moved hole 4'N third hole ok
	9.5							▽			
13011 SB	10	10							1600		soil still stained olive green, saturated, hydrocarbon odor, visible product sheen, 50% recovery, sand fraction is mostly fine to medium grained
		17									
	11	11									
	14										Boring terminated at 14.0 fbg. Groundwater encountered at approx. 9.5 fbg. Installed 2" groundwater monitoring well
	17										First two holes backfilled with Volclay and then bentonite top 2 feet.



LOCATION SKETCH

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MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.: 2198.0230 | BORING NO.: 13-3 | SHEET 1 OF 1

PROJECT: NE Cape | SITE: 13 | CLIENT: USACOE (AK) | GEOLOGIST: John DeGeorge

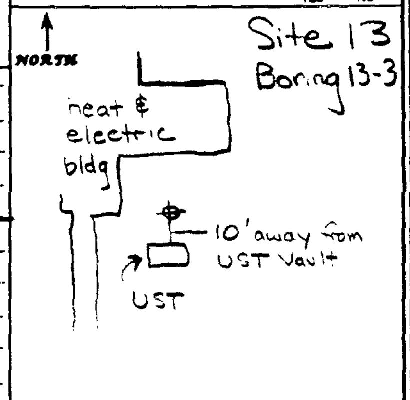
DATE: 6-30-94 | WEATHER: Cloudy, Windy | LOCATION COORDINATES: 98167.6807 (Northing) / 96186.5168 (Easting) | ELEVATION DATUM: MSL (MSL/Other)

DRILLING METHOD: HSA | BORING SIZE: 8" | HAMMER DROP (IN/LBS): 30/340 | RIG TYPE: CME 55 | DRILL COMPANY: Denali Drilling

SAMPLES: 4 | SAMPLE TYPE: discreet | SAMPLER TYPE/DIAMETER: 3" split | TOTAL DEPTH (FT): 9.5 | DEPTH TO SWL (FT): NA | TOP OF HOLE ELEVATION: 77.42

Sample ID	DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SOIL DESCRIPTION (ASTM 2488)
	0		-	90	10	-	SP		1745	Surface Gravel & Sand. POORLY GRADED SAND WITH SILT: brown, slightly moist, loose, fine to medium grained sand, no apparent stains
13012 SB	2	8, 20, 34	5	50	45	3	SM		1755	SILTY SAND: brown, slightly moist, fine to coarse subangular gravel, fine to medium grained sand, 100% rec, no apparent stains
13125 225 325 SB	4	9, 25, 15							1815	
	6.5		35	50	15	5				SILTY SAND WITH GRAVEL: brown, slightly moist, dense, subangular cobbles, fine to coarse subangular gravel, fine to medium grained sand. cobbles causing drilling resistance
13126 SB	9.5	26, 25, 32							1900	Boring terminated at 9.5 fbg (Drive sample to 11.5'). Moisture change to very moist at 10.5 fbg. Backfilled with bentonite from 8 to 11.5 fbg. Backfilled with Volclay grout from 2 to 8 fbg. Backfilled with bentonite from 0 to 2 fbg. Soil stained green in 9.5 to 11.5' sample with hydrocarbon odor, 50% recovery. Terminated boring at 9.5 fbg to avoid puncturing the water table. Expect 9.5 to 11.5 drive sample to be located just above water table

WELL COMPLETED? YES ☐ NO ☒



LOCATION SKETCH

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.: 2198.0230 | BORING NO.: 15-1 | SHEET 1 OF 1

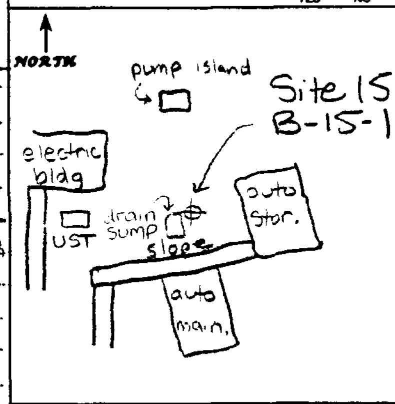
PROJECT NE Cape SITE 15 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-1-94 WEATHER Cloudy, calm, rain LOCATION COORDINATES 98166.3266 (Northing) / 96262.5740 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 5 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 3" Split TOTAL DEPTH (FT) 14.0 DEPTH TO SWL (FT) 12.0 TOP OF HOLE ELVEVATION 74.35

WELL COMPLETED? ☒ YES ☐ NO



LOCATION SKETCH

DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SOIL DESCRIPTION (ASTM 2488)
0		5	90	5	1	SP		0930	POORLY GRADED SAND: brown moist, loose, fine to coarse subangular gravel, fine to medium grained sand, no staining
2		15	20	65	3	ML		0945	SANDY SILT: brown, moist, firm, fine to coarse subangular gravel, fine to medium grained sand, 10% clay, 0% recovery at 2-4, 100% recovery at 4-6, no apparent staining, apparent fill
4–6 (15013 SB)	6, 11, 10							1000	
6									green discoloration in soil begins
8		-	10	90	-	ML	▼ 7-2 0900		SILT: stained green, moist, firm to stiff, fine to medium grained sand, 20% clay, appears native
10–11 (15127 SB Geo)	4, 6, 15							1030	100% recovery, stained, moist to very moist
12.5		5	80	15	1	SP	▽ 7-1 1100		POORLY GRADED SAND WITH SILT: stained green, saturated, dense, fine to coarse subangular gravel, fine to medium grained sand, visible product sheen, 50% recovery at 14.0 to 16.0
14–16 (15014 15128 SB Geotech)	29, 21, 22							1045	Boring terminated at 14 fbg. Groundwater encountered at approx. 12 fbg. Installed 2" groundwater monitoring well.

* Consider this boring to represent the local hydrogeologic condition. Confining silt/clay was outstanding in this boring. Likely to be located between 7 and 10 fbg in most of the borings nearby (missed by the sampler) or masked by fractions of sand/gravel/cobbles OR the silt is indeed saturated; difficult to determine in the field; takes much time to yield static level

JOB No. 0000.0000 ime: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.: 2198.0230 | BORING NO.: 16-1 | SHEET 1 OF 1

PROJECT NE Cape SITE 16 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-2-94 WEATHER Cloudy, calm LOCATION COORDINATES 98341.4278/95893.3928 (Northing) (Easting) ELEVATION DATUM MSL (MSL/Other)

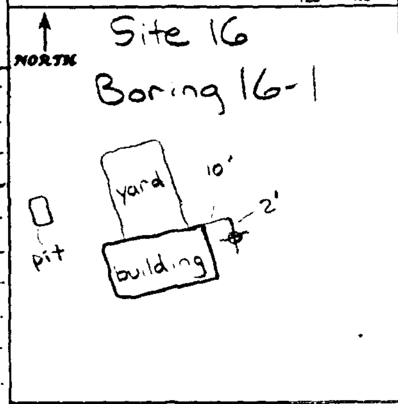
DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 4 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 3" split TOTAL DEPTH (FT) 14.5 DEPTH TO SWL (FT) 9.5 TOP OF HOLE ELEVATION 72.81

WELL COMPLETED? ☒ YES ☐ NO

Sample ID	DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SOIL DESCRIPTION (ASTM 2488)
16131 16231 16331 SB	0–1		30	60	10	3	SP/SM		1615	POORLY GRADED SAND WITH SILT and GRAVEL: brown, slightly moist, dense, fine to coarse subangular gravel, fine to coarse grained sand, mostly fine grained sand, 50% recovery at 2-4', 0% recovery at 4-6', cobbles up to 6" seen in cuttings beginning at 4 fbg, no apparent stained soil from 0-6'
16020 SB	2.5–3	21, 50							1635	
	4.5	50							1640	
16021 SB	10–10.5	30, 50						▽ (9.5)	1710	moisture change to saturated, mostly fine to medium grained sand, no apparent discoloration, 15% recovery

Boring terminated at 14.5 fbg
Groundwater encountered at approx. 9.5 fbg
Installed 2" groundwater monitoring well



LOCATION SKETCH

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MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.: 2198.0230 | BORING NO.: 16-2 | SHEET 1 OF 1

PROJECT: NE Cape | SITE: 16 | CLIENT: USACOE (AK) | GEOLOGIST: John DeGeorge

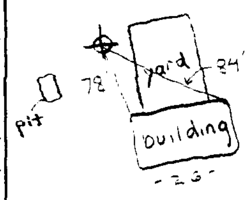
DATE: 7-3-94 | WEATHER: Cloudy, breezy | LOCATION COORDINATES: 98389.5754 (Northing) / 95816.9231 (Easting) | ELEVATION DATUM: MSL (MSL/Other)

DRILLING METHOD: HSA | BORING SIZE: 8" | HAMMER DROP (IN/LBS): 30/340 | RIG TYPE: CME 55 | DRILL COMPANY: Denali Drilling

SAMPLES: 4 | SAMPLE TYPE: discreet | SAMPLER TYPE/DIAMETER: 3" split | TOTAL DEPTH (FT): 14.0 | DEPTH TO SWL (FT): 8.5 | TOP OF HOLE ELEVATION: 72.16

WELL COMPLETED? [X] YES [ ] NO

Sample ID (margin)	DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	TIME	SOIL DESCRIPTION (ASTM 2488)
	0		10	15	75	2	ML		1045	SILT WITH SAND: brown, moist, stiff, fine to coarse subangular gravel, fine grained sand, no apparent staining from 0-2', some olive mottling from 2-6, 100% recovery at 2-4', 75% recovery at 4-6'
16022 SB	2–3	6, 17, 26							1100	
16132 SB Geo	4–5	8, 10, 22							1120	
16023 16133 SB Geotech	7–8	34, 25, 16							1135	
	9	3, 2	50	40	10	3	GP/GM	▽		POORLY GRADED GRAVEL WITH SILT AND SAND: brown, saturated, medium dense, fine to coarse subangular gravel, fine to coarse grained sand, mostly medium grained sand, no apparent staining, 50% recovery
	14									Boring terminated at 14.0 fbg. Groundwater encountered at approx 8.5 fbg. Installed 2" groundwater monitoring well



LOCATION SKETCH

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.:	BORING NO.:	SHEET
2198.0230	16-3	1 OF 1

PROJECT NE Cape SITE 16 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-3-94 WEATHER Cloudy, breezy LOCATION COORDINATES 98314.9116/95857.1580 (Northing) (Easting) ELEVATION DATUM MSL (MSL/Other)

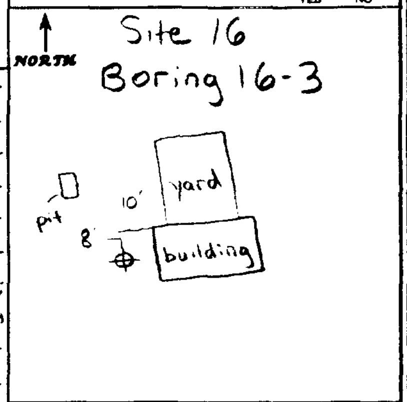
DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 4 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 3" split TOTAL DEPTH (FT) 14.5 DEPTH TO SWL (FT) 10.0 TOP OF HOLE ELEVATION 73.03

Sample ID	DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SOIL DESCRIPTION (ASTM 2488)
16134 SB	0–2		35	55	10	4	SP/SM		1500	POORLY GRADED SAND WITH SILT AND GRAVEL; brown, slightly moist, dense, cobbles, fine to coarse subangular gravel, fine to coarse-grained sand, mostly fine grained sand, no apparent staining from 0-6', 40% recovery from 2-4, 20% recovery from 4-6
16024 SB	2–4	11, 27, 50							1515	
	4–6	22, 50							1530	
16135 SB	8–10	10, 11, 15							1600	30% recovery, no apparent staining
	10							▽		moisture change to saturated, mostly fine to medium grained sand

Boring terminated at 14.5 fbg
Groundwater encountered at approx. 10 fbg
Installed 2" groundwater monitoring well

WELL COMPLETED? ☒ YES ☐ NO



LOCATION SKETCH

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SOIL BORING LOG

MONTGOMERY WATSON

PROJECT NO.:	BORING NO.:	SHEET
2198.0230	19-1	1 OF 1

PROJECT NE Cape SITE 19 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

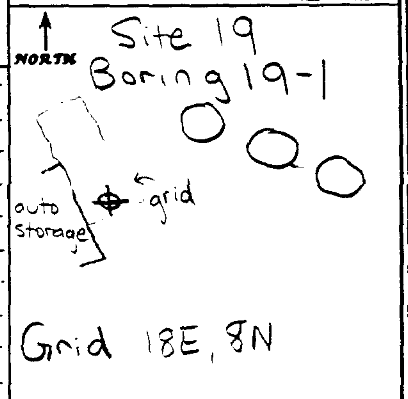
DATE 6-28-94 / 6-29-94 WEATHER Windy, Sunny LOCATION COORDINATES 98184.2553 (Northing) / 96376.8154 (Easting) ELEVATION DATUM MSL (MLLW/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 5 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 2.5" split TOTAL DEPTH (FT) 18.0 DEPTH TO SWL (FT) 11.0 TOP OF HOLE ELEVATION 75.25

WELL COMPLETED? ☒ YES ☐ NO

Sample ID	DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SOIL DESCRIPTION (ASTM 2488)
	0									Surface Gravel
19114 SB	0–1		30	50	20	4	SM		1700 6/28	SILTY SAND WITH GRAVEL: brown, slightly moist, dense, occassional cobbles, fine to coarse subangular gravel,
19003 SB	2–3	18, 27, 17							1715 6/28	fine to coarse grained sand, discolored black from 0-2 only, exhibits hydrocarbon odor at 2-4 and 4-6, 25% rec at 2-4,
19115 SB	4–5	10, 20, 15							1730 6/28	100% recovery at 4-6
	6									fill
	8									encountered impassable boulder, moved hole 3' N 1st hole backfilled with bentonite
19116 SB	10	11, 11, 19						▽ (11)	0945 6/29	100% recovery, strong odor, product sheen
	11									fill
	13		10	75	15	3	SM			SILTY SAND: brown, very moist to saturated, medium dense, fine to coarse subangular gravel, very fine to coarse-grained sand, mostly fine to medium grained sand, moderate hydrocarbon odor, 100%
19004 SB	15								1000 6/29	recovery at 14.5 to 16.5, appears to still be fill?
	18									
	19									Boring terminated at 18 fbg. Groundwater encountered at approx 11 fbg Installed 2" groundwater monitoring well



LOCATION SKETCH

MONTGOMERY WATSON Anchorage, Alaska

SOIL BORING LOG

PROJECT NO.:	BORING NO.:	SHEET
2198 0230	19-2	1 OF 1

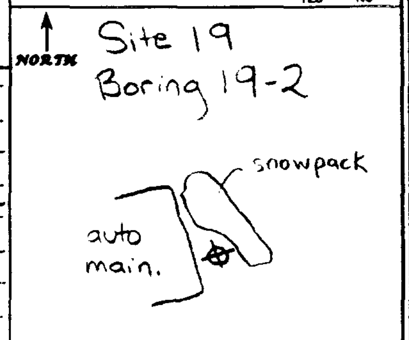
PROJECT: NE Cape SITE: 19 CLIENT: USACOE (AK) GEOLOGIST: John DeGeorge

DATE: 7-1-94 WEATHER: Cloudy, mosquitos LOCATION COORDINATES: 98042.2785 (Northing) / 96273.9184 (Easting) ELEVATION DATUM: MSL (MSL/Other)

DRILLING METHOD: HSA BORING SIZE: 8" HAMMER DROP (IN/LBS): 30/340 RIG TYPE: CME 55 DRILL COMPANY: Denali Drilling

SAMPLES: 6 SAMPLE TYPE: discreet SAMPLER TYPE/DIAMETER: 3" split TOTAL DEPTH (FT): 20.0 DEPTH TO SWL (FT): 17.0 TOP OF HOLE ELEVATION: 83.05

WELL COMPLETED? ☒ YES ☐ NO



located 12 feet in front of second bay (six bays)

LOCATION SKETCH

Sample	DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SOIL DESCRIPTION (ASTM 2488)
	0		20	60	20	3	SM		1400	SILTY SAND WITH GRAVEL: brown, very moist (top 3' due to nearby melting snowpack), dense, fine to coarse subangular gravel, fine to medium grained sand, 100% recovery at 2-4, 50% recovery at 4-6, no apparent staining from 0-6', gravel fraction increasing to cobbles at depth, causing drilling resistance, apparent fill
19015 SB	2–3.5	26, 32, 50							1420	
	4.5–6	17, 41, 50								
	7		5	80	15	1	SM			SILTY SAND: olive brown, moist, medium dense, fine to coarse subangular gravel, fine to medium grained sand, stained?, appears native
19016 SB	10–11	10, 7, 9							1500	15% recovery, olive brown, moist, stained? sand fraction includes coarse grained sand occasional cobbles cause drilling resistance and poor sample recovery
19129 SB	15–15.5	10, 50							1515	25% recovery, olive brown, moist, collected full suite of sample except 2, 2oz jars (BTEX), stained?
	17							▽		
	18		10	80	10	1	SP			POORLY GRADED SAND WITH SILT: stained green, saturated, dense, fine to coarse subangular gravel, fine to medium grained sand, hydrocarbon odor, 50% recovery at 19.5 to 21.5'
19017 SB	20–21	16, 20, 50							1530	Boring terminated at 20 fbg. Groundwater encountered at approx. 17 fbg. Installed 2" groundwater monitoring well

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.: 2198.0230 | BORING NO.: 21-1 | SHEET 1 OF 1

PROJECT NE Cape SITE 21 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

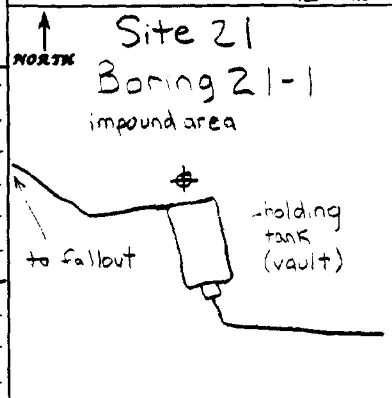
DATE 7-4-94 WEATHER Cloudy, Windy LOCATION COORDINATES 98036.9957 (Northing) / 95326.5984 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 3 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 3" split TOTAL DEPTH (FT) 7.0 DEPTH TO SWL (FT) 1.5 TOP OF HOLE ELEVATION 62.84

WELL COMPLETED? ☒ YES ☐ NO

	DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
	0										Stressed Grasses
21136 SB			-	-	100	-	OL		0930		ORGANIC SOIL: dark brown, very moist, soft, messy, grass roots
	1							▽			
	2	2							1000		
21025 SB		2									
	3	2	-	-	100	-	ML				SILT: green (native color?), saturated, firm, 1" lens of frozen pore water at 3', 80% recovery cobbles up to 4" at 4fbg
	4	1							1010		
	5	2									
		3									
	6		40	50	10	3	SP/SM				POORLY GRADED SAND WITH SILT AND GRAVEL: olive green, saturated, medium dense, fine to coarse subangular gravel, medium grained sand, 25% recovery
	7										
	8										Boring terminated at 7 fbg. Groundwater encountered at approx 1.5 fbg. Installed 2" groundwater monitoring well.
	9										
	10										
	11										
	12										
	13										
	14										
	15										
	16										
	17										
	18										
	19										
	20										
	21										



LOCATION SKETCH

SOIL BORING LOG

MONTGOMERY WATSON

PROJECT NO.:	BORING NO.:	SHEET
2198.0230	21-2	1 OF 1

PROJECT NE Cape SITE 22 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

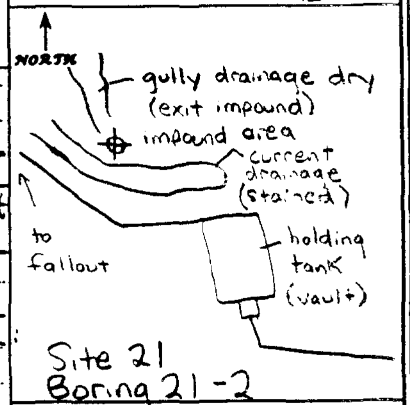
DATE 7-4-94 / 7-5-94 WEATHER Cloudy, breezy LOCATION COORDINATES 98038.8253 (Northing) / 95184.9053 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 4 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 3" split TOTAL DEPTH (FT) 14.0 DEPTH TO SWL (FT) 9.0 TOP OF HOLE ELEVATION 59.23

WELL COMPLETED? ☒ YES ☐ NO

Sample ID	DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	INTERVAL	SOIL DESCRIPTION (ASTM 2488)
	0										Stressed Grasses
21137 SB	0.5		-	-	100	-	OL		1400	■	ORGANIC Soil: dK brown, very moist, soft, mossy, grass roots
	1.5		-	-	100	-	ML			■	SILT: green, very moist, firm
	1.8		-	-	100	-	OL			■	ORGANIC Soil: dK brown, moist, hard, frozen soil, mossy
21026 SB	2.5	4 / 3 / 2	-	-	100	-	ML		1420	■	SILT: green, very moist, firm
21138 SB	4	10 / 9 / 11	20	75	5	3	SP		1450	■	POORLY GRADED SAND WITH GRAVEL: olive green, medium dense, slightly moist, fine to coarse subangular gravel, fine to coarse grained sand, mostly fine grained sand, appears to be stained, slight putrid odor
	7										drilling resistance due to cobbles
	9							▽ 7-5			
	10	50							1510	☒	0% recovery, cobbles
	13										drilling resistance continues, soil appears saturated (on rods) from 12 to 13.5 fbg, decide to leave auger in hole overnight and see where water equilibrates
	13.5							▽ 7-4			
	14.5										Boring terminated at 14.0 fbg. Groundwater encountered at approx 9 fbg. Installed 2" groundwater monitoring well
	17.5										Note: It rained overnight which may have contributed to groundwater rise. Also, it was not possible to advance augers any deeper than 14 fbg due to refusal (boulder?).



LOCATION SKETCH

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MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.: 2198.0230 | BORING NO.: 21-3 | SHEET 1 OF 1

21139
SB

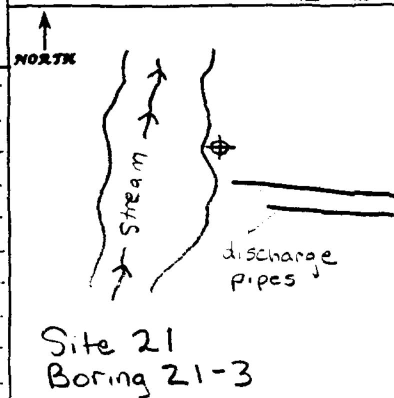
PROJECT NE Cape SITE 21 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-4-94 WEATHER Cloudy, Windy LOCATION COORDINATES 97825.3100/94885.9710 (Northing) (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 1 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 3" split TOTAL DEPTH (FT) 7.0 DEPTH TO SWL (FT) 0.5 TOP OF HOLE ELEVATION 49.68

WELL COMPLETED? ☒ YES ☐ NO



LOCATION SKETCH

DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0										Stressed Grasses
		-	-	100	-	OL	▽	1800	■	ORGANIC SOIL: red brown, saturated, soft, putrid odor, mottled black in places, grass roots, 2" lens of frozen pore water at 1 fbg
5										cobbles
7										

Boring terminated at 7 fbg
Groundwater encountered at approx. 0.5 fbg
Installed 2" groundwater monitoring well

JOB No. 0000.0000 Time: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.: 2198.0230 | BORING NO.: 22-1 | SHEET 2 OF 2

PROJECT NE Cape SITE 22 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-1-94 WEATHER Cloudy, LOCATION COORDINATES 97589.3351/96072.2808 (Northing) (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 8 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 3" split TOTAL DEPTH (FT) 33.0 DEPTH TO SWL (FT) 27.0 TOP OF HOLE ELVEVATION 94.33

WELL COMPLETED? YES [X] NO [ ]

Sample ID	DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
	21										
	22										
	23										
	24										
22130 SB	25	20, 50							1915	■	25% recovery, no apparent staining, collected sample for DRO & GRO only, not enough soil for BTEX or TRPH.
	26										
	27							▼ 7-2 0930			cobbles causing drilling resistance, parts of drill bit (teeth) found in cuttings.
	28										
	29										
22019 SB	30	20, 15, 25	10	80	10	1		▽ 7-1 2000	2000	■	POORLY GRADED SAND WITH SILT: brown, saturated, dense, fine to coarse subangular gravel, fine to medium grained sand, 60% recovery, no apparent stains, let hole sit overnight
	31										
	32										
	33										
	34										Boring terminated at 33 fbg. Groundwater encountered at approx 27 fbg. Installed 2" groundwater monitoring well.
	35–42										

NORTH

See P. 1

LOCATION SKETCH

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.:	BORING NO.:	SHEET
2198.0230	22-1	1 OF 1

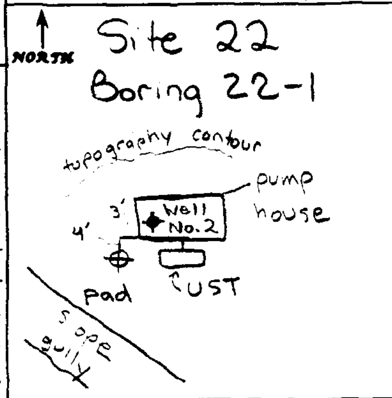
PROJECT NE Cape SITE 22 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-1-94 / 7-2-94 WEATHER Cloudy, calm LOCATION COORDINATES 97589.3331 (Northing) / 96072.2808 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 8 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 3" split TOTAL DEPTH (FT) 33.0 DEPTH TO SWL (FT) 27.0 TOP OF HOLE ELVEVATION 94.33

WELL COMPLETED? ☒ YES ☐ NO



LOCATION SKETCH

DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0–2		25	60	15	3	SM		1800	X	SILTY SAND WITH GRAVEL: brown, moist, dense, fine to coarse subangular gravel, fine to medium grained sand, 20% rec. at 2-4', 100% recovery at 4-6, no apparent staining from 0-6, occassional cobbles, apparent fill
2–4	15, 16, 11							1810	■	
4–6	20, 20, 24							1820	X	
7										cobbles causing drilling resistance
8		35	60	5	3	SP				POORLY GRADED SAND WITH GRAVEL: brown, moist, dense occassional cobbles, fine to coarse subangular gravel, fine to coarse grained sand, mostly fine grained sand, no apparent staining.
10–12	29, 26, 30							1830	X	100% recovery, no apparent staining
12–13										difficult to distinguish when fill ends/native soil begins, likely to be near 10 fbg judging by nearby slope, and built up foundational pad
15–17	19, 27, 26							1850	X	75% recovery, no apparent staining
20–22	50							1905	X	0% recovery due to cobbles

22018 SB

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SOIL BORING LOG

MONTGOMERY WATSON

PROJECT NO.: 2198.0230 | BORING NO.: 24-1 | SHEET 1 OF 1

PROJECT: NE Cape | SITE: 24 | CLIENT: USACOE (AK) | GEOLOGIST: John DeGeorge

DATE: 7-5-94 | WEATHER: Sunny, Windy | LOCATION COORDINATES: 99551.9774 (Northing) / 89221.2773 (Easting) | ELEVATION DATUM: MSL (MSL/Other)

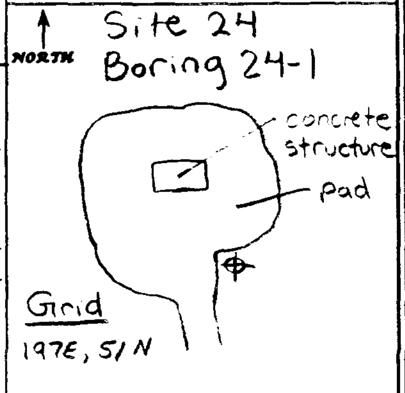
DRILLING METHOD: HSA | BORING SIZE: 8" | HAMMER DROP (IN/LBS): 30/340 | RIG TYPE: CME 55 | DRILL COMPANY: Denali Drilling

SAMPLES: 1 | SAMPLE TYPE: discreet | SAMPLER TYPE/DIAMETER: 3" split | TOTAL DEPTH (FT): 7.0 | DEPTH TO SWL (FT): 0.5 | TOP OF HOLE ELEVATION: 25.42

24140 SB

DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0										Stressed Grasses
0–4		-	20	80	-	OL	▽	1530	0–2	ORGANIC SOIL WITH SAND: orange-brown, very moist to saturated, firm to soft, medium grained sand, dark grey mottling
4–7		10	20	70	4	ML				SANDY SILT: grey, saturated, soft, cobbles, fine to medium grained sand, 15% clay
7										Boring terminated at 7fbg Groundwater encountered at approx 0.5 fbg Installed 2" groundwater monitoring well

WELL COMPLETED? ☒ YES ☐ NO



LOCATION SKETCH

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.:	BORING NO.:	SHEET
2198.0230	24-2	1 OF 1

PROJECT NE Cape SITE 24 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-5-94 WEATHER Sunny, Calm LOCATION COORDINATES 99589.5852/89018.7597 (Northing) (Easting) ELEVATION DATUM MSL (MSL/Other)

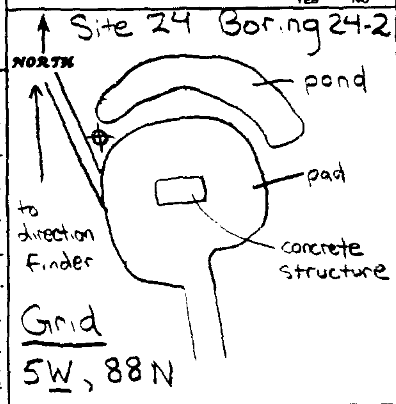
DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 2 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 3" split TOTAL DEPTH (FT) 7.0 DEPTH TO SWL (FT) 0.5 TOP OF HOLE ELVEVATION 25.29

24027
24141
SB
Geo
Geotech

DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0		15	30	55	3	OL	▽	1750		SANDY ORGANIC SOIL WITH GRAVEL: orange-brown, saturated, soft, fine to coarse subangular gravel, fine to coarse grained sand, mostly medium grained sand, grey mottling, 0% recovery at 0-2', 100% recovery at 2-4', fine gravel sized pieces of ice in soil cuttings from 3 fbg
2								1800		
5		10	20	70	4	ML				SANDY SILT: grey, saturated, soft, cobbles, fine to medium grained sand, 15% clay
7										Boring terminated at 7fbg Groundwater encountered at approx 0.5 fbg Installed 2" groundwater monitoring well

WELL COMPLETED? ☒ YES ☐ NO



LOCATION SKETCH

JOB No. 0000.000C time: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.:	BORING NO.:	SHEET
2198.0230	24-3	1 OF 1

PROJECT NE Cape SITE 24 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-6-94 WEATHER Cloudy, Windy LOCATION COORDINATES 99771.6856/89149.1960 (Northing) (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

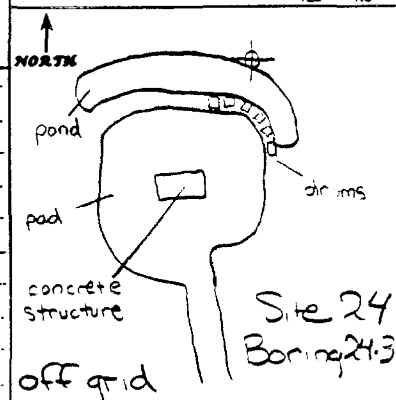
SAMPLES 1 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 3" split TOTAL DEPTH (FT) 7.0 DEPTH TO SWL (FT) 1.5 TOP OF HOLE ELVEVATION 25.12

24142 SB

DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0										Stressed Grasses
			-	100	-	OL		10:45	■	ORGANIC SOIL: orange-brown, very moist to saturated, soft, frozen from 2-4 fbg, no apparent staining
1.5							▽			
5										
			20	80	-	ML				SILT WITH SAND: grey, very moist with frozen pore water, firm, fine to medium grained sand, 15% clay
7										

Boring terminated at 7 fbg
Groundwater encountered at approx. 1.5 fbg
Installed 2" groundwater monitoring well

WELL COMPLETED? ☒ YES ☐ NO



LOCATION SKETCH

File: user name/project/File Name
Time: 00-XXX-00 00:00
JOB No. 0000.000C

SOIL BORING LOG

MONTGOMERY WATSON

PROJECT NO.:	BORING NO.:	SHEET
2198.0230	27-1	1 OF 1

PROJECT: NE Cape SITE: 27 CLIENT: USACOE (AK) GEOLOGIST: John DeGeorge

DATE: 6-29-94 WEATHER: Cloudy, Windy LOCATION COORDINATES: 98294.9374 (Northing) / 96271.7246 (Easting) ELEVATION DATUM: MSL (MLL/Other)

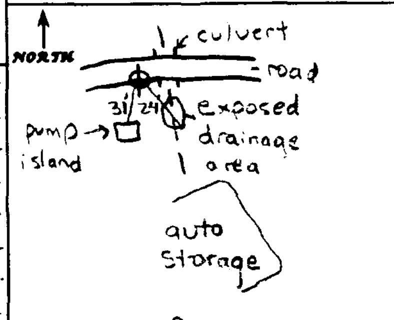
DRILLING METHOD: HSA BORING SIZE: 8" HAMMER DROP (IN/LBS): 30/340 RIG TYPE: CME 55 DRILL COMPANY: Denali Drilling

SAMPLES: 5 SAMPLE TYPE: discreet SAMPLER TYPE/DIAMETER: 3" split TOTAL DEPTH (FT): 18.5 DEPTH TO SWL (FT): 12.5 TOP OF HOLE ELEVATION: 67.51

WELL COMPLETED? ☒ YES ☐ NO

Sample ID	DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SOIL DESCRIPTION (ASTM 2488)
27117 SB	0		5	55	40	2	SM		1345	SILTY SAND: stained black from 2-4, normally brown, slightly moist at 0-2, moist below 2', medium dense, fine to coarse subrounded gravel, fine to coarse-grained sand, mostly fine grained sand, apparent fill (road base). 100% rec.
27118 218 318 SB	2								1400	
27119 SB	4	4, 3, 3							1430	
	5		-	20	80	-	ML			SILT WITH SAND: dark green, moist, firm, fine-grained sand which tends to form layers not exceeding 3", 100% rec. at 4-6, appears native and appears to be stained (may be natural green?) weak odor
27120 SB	10	3, 4, 5							1450	100% recovery, weak odor, natural green color? stained?
	12.5							▽		
	13		15	65	20	4	SM			SILTY SAND WITH GRAVEL: olive green, saturated, medium dense, subangular cobbles causing drilling resistance, fine to coarse gravel, fine to coarse-grained sand, mostly medium grained sand, weak hydrocarbon odor, 100% rec. at 14.5 to 16.5
27005 SB	15								1500	

Boring terminated at 18.5 fbg
Groundwater encountered at approx 12.5 fbg
Installed 2" groundwater monitoring well



Site 27 Boring 27-1
Off Grid - See Notebook

LOCATION SKETCH

JOB No. 0000.000 Time: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.: 2198.0230 | BORING NO.: 27-2 | SHEET 1 OF 1

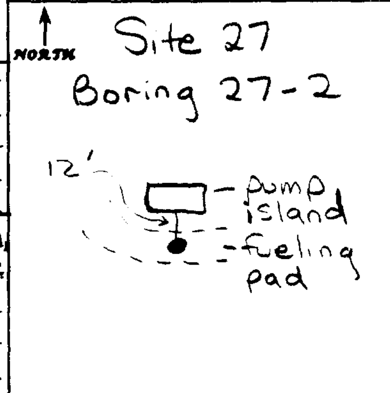
PROJECT NE Cape SITE 27 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 6-29-94 WEATHER Sunny, Windy LOCATION COORDINATES 98250.2696/96268.5807 (Northing) (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 4 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 3" Split TOTAL DEPTH (FT) 9.5 DEPTH TO SWL (FT) NA TOP OF HOLE ELEVATION 70.6717

WELL COMPLETED? YES ☐ NO ☒



LOCATION SKETCH

Sample	DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SOIL DESCRIPTION (ASTM 2488)
27121 SB	0–2		5	80	15	2	SM		1800	SILTY SAND: stained black, slightly moist, medium dense, fine to coarse subangular gravel, fine-grained sand
27006 SB	2–6	10, 9, 11	-	15	85	-	ML		1815	SILT WITH SAND: olive brown, moist, very stiff, medium to coarse grained sand, frozen from 3 to 5 fbg, collect screen at 3' and lab sample at 5', 100% recovery at 2-4, 50% recovery at 4-6, apparent stained soil
27122 SB		15, 10, 11							1830	
	8–9.5		-	5	95	-	ML			SILT: dk green, very moist, stiff, trace fine-grained sand, appears native, apparent staining, 100% rec. at 9.5 to 11.5
27123 SB	10	4, 5, 5							1845	

Boring terminated at 9.5 fbg (Drive Sample to 11.5)
No groundwater encountered
Backfilled with bentonite from 8 to 11.5 fbg.
Backfilled with Volclay grout from 2 to 8 fbg.
Backfilled with bentonite from 0 to 2 fbg.

Terminated boring at 9.5 fbg to avoid puncturing the water table. Expect 9.5 to 11.5 drive sample to be located just above water table.

JOB No. 0000.000X ime: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.: 2198.0230 | BORING NO.: BW-1 | SHEET 1 OF 1

PROJECT NE Cape SITE BW CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-17-94 WEATHER Cloudy, calm LOCATION COORDINATES Not Surveyed (Northing) (Easting) ELEVATION DATUM — (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 1 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 2.5" split TOTAL DEPTH (FT) 5.0 DEPTH TO SWL (FT) 0.5 TOP OF HOLE ELEVATION —

BW'58 SB

DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0										Grasses
		0	0	100	-	OL		2100		ORGANIC SOIL: dk brown, very moist, soft mottles
1		0	15	85	-	OL				ORGANIC SOIL WITH SAND: dark brown, saturated, firm no apparent staining
5										

WELL COMPLETED? ☒ YES ☐ NO

NORTH

See BW-00

Located 85' S of access road

LOCATION SKETCH

Boring terminated at 5 fbg
Groundwater encountered at approx. 0.5 fbg
Installed 2" groundwater monitoring well

JOB No. 0000.000C ime: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.: 2198.0230 | BORING NO.: BW-0 | SHEET 1 OF 1

PROJECT: NE Cape | SITE: BW | CLIENT: USACOE (AK) | GEOLOGIST: John De George

DATE: 7-17-94 | WEATHER: Cloudy, calm | LOCATION COORDINATES: 97394.7039 (Northing) / 96242.4912 (Easting) | ELEVATION DATUM: MSL (MSL/Other)

DRILLING METHOD: HSA | BORING SIZE: 8" | HAMMER DROP (IN/LBS): 30/340 | RIG TYPE: CME 55 | DRILL COMPANY: Denali Drilling

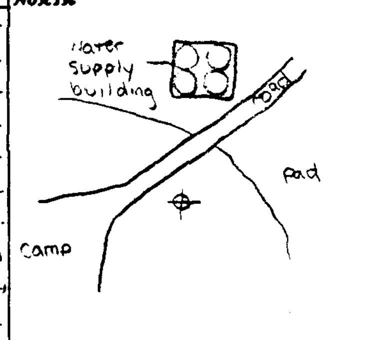
SAMPLES: 3 | SAMPLE TYPE: discreet | SAMPLER TYPE/DIAMETER: 2.5 split | TOTAL DEPTH (FT): 8.0 | DEPTH TO SWL (FT): NA | TOP OF HOLE ELEVATION: 94.860

WELL COMPLETED? YES ☐ NO ☒

DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0										Grasses - Boulders
		20	65	15	4			1115	X	SILTY SAND WITH GRAVEL: brown, moist, dense, fine to coarse subangular gravel, fine to coarse grained sand, mostly fine grained sand, silt fraction increases in lenses not exceeding 4", no apparent staining from 0-6, 70% recovery at 2-4, 50% at 4-6, poor recovery due to cobbles, difficult drilling
2	3							1130	X	
3	9									
	15									
4	>50							1145	X	
7										cobbles, boulders causing drilling resistance
										Attempt to advance for 1 hour
8										
9										Boring terminated at 8 fbg due to auger refusal. No groundwater encountered. Backfilled with Volclay and given a bentonite plug and cap.
12–14										Drill rig running hot. Clutch needed to be cooled = delay. Right angle drive running rough = replaced. Decide to move background well and reduce risk of mechanical failure (more delay) on rig.
15										See BW-1 boring log for notes regarding new background well location

Depth scale: 0–21 feet

↑ NORTH Background Well-0



LOCATION SKETCH

JOB No. 0000.000C | Time: 00-XXX-00 00:00 | File: user name/project/File Name

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.:	BORING NO.:	SHEET
2198.0230	BW-00	1 OF 1

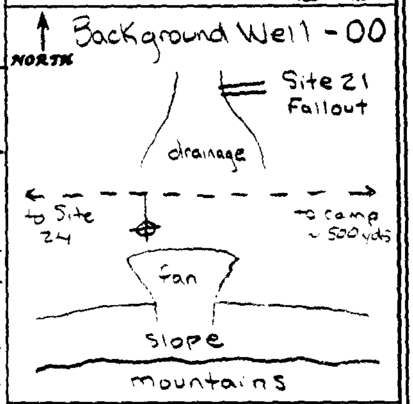
PROJECT NE Cape SITE BW CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-17-94 WEATHER Sunny, breezy LOCATION COORDINATES Not Surveyed (Northing) (Easting) ELEVATION DATUM — (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 3 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 2.5" split TOTAL DEPTH (FT) 8.5 DEPTH TO SWL (FT) NA TOP OF HOLE ELVEVATION —

WELL COMPLETED? YES ☐ NO ☒



LOCATION SKETCH

DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0										Tundra - Mat
0–1		0	0	100	-	OL		1720	X	ORGANIC SOIL: dk brown, very moist, soft, rootlets
1–2		0	15	85	-	OL			X	ORGANIC SOIL WITH SAND: dark brown, frozen pore water, (permafrost?), hard, no
2–4	8, 13, 18							1745	X	apparent staining, 100% recovery from 2-4, 4-6 permafrost
4–6	6, 12, 15							1810	X	
8.5										

Boring terminated at 8.5 fbg
Permafrost encountered at 1 fbg
Backfilled with Volclay and given a bentonite plug and cap

This background well location sits at the base of an alluvial fan. The toe of this fan is located within 100 feet south. Water emerges through the toe of the fan in this low-lying area, marked by green grasses, shallow streams, and higher areas with tundra mat. BW-00 was placed on a higher area and we encountered permafrost. BW-1 is placed in a low lying area approx 40 ft N from BW-00.

JOB No. 0000.000X File: user name/project/File Name Time: 00-XXX-00 00:00

Well Construction Logs

MONTGOMERY WATSON

WELL CONSTRUCTION LOG

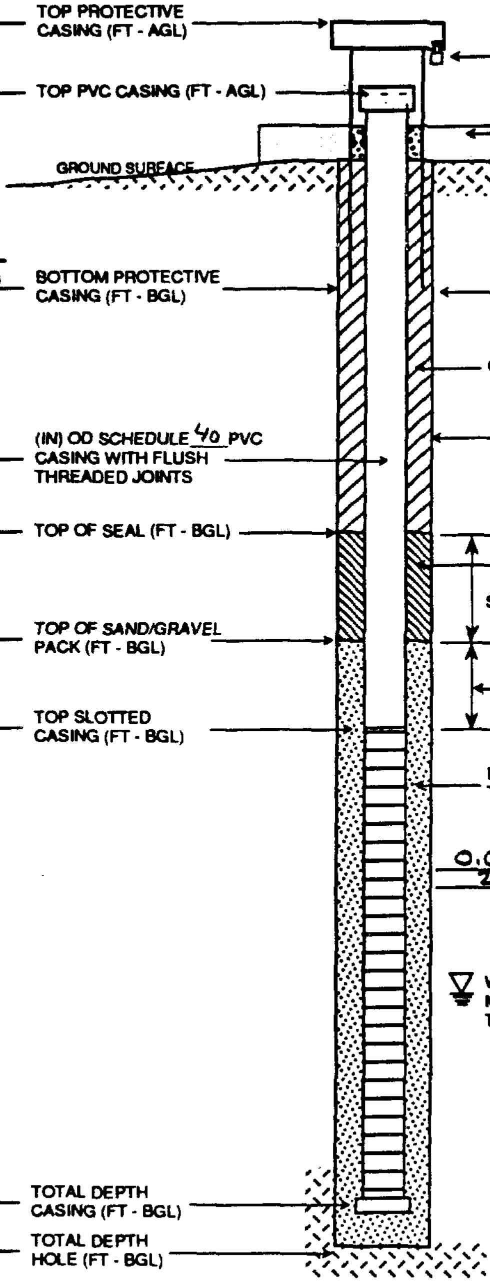
PROJECT NO.:	WELL NO.:	SHEET
2198.0230	G-1	1 OF 1

PROJECT NE Cape SITE G CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-15-94 WEATHER Foggy LOCATION COORDINATES 101078.3376 (Northing) / 99712.6878 (Easting) ELEVATION DATUM MSL (MLLW/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 3.2 (AGL) GROUND SURFACE 46.96 TOP OF PROTECTIVE CASING 50.46 TOP OF PVC CASING 50.1600



3.5 TOP PROTECTIVE CASING (FT - AGL)

3.2 TOP PVC CASING (FT - AGL)

1.5 BOTTOM PROTECTIVE CASING (FT - BGL)

2 (IN) OD SCHEDULE 40 PVC CASING WITH FLUSH THREADED JOINTS

0 TOP OF SEAL (FT - BGL)

2 TOP OF SAND/GRAVEL PACK (FT - BGL)

3 TOP SLOTTED CASING (FT - BGL)

9.5 TOTAL DEPTH CASING (FT - BGL)

9.5 TOTAL DEPTH HOLE (FT - BGL)

COMBINATION OF LOCK 0911

PAD TYPE Concrete

DIMENSIONS 2' diameter

(IN) OD PROTECTIVE CASING 4.5

GROUT TYPE N/A

(IN) BOREHOLE 8

(FT) THICK SEAL 2

SEAL TYPE bentonite

(FT) ABOVE SLOTTED CASING 1

FILTER PACK TYPE/GRADATION 20-40 Sand

0.01 (IN) SLOTS CUT INTO

2 (IN) OD SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION 9.25 (FT)
DATE/TIME 7/16/94 - 1306

AFTER DEVELOPMENT 9.25 (FT)
DATE/TIME 7/16/94 - 1306

WELL SAMPLED? [X] YES [ ] NO

QUANTITY MATERIALS USED:

Bentonite (lbs)	
Sand (lbs)	
Grout (lbs)	
Screen (ft)	
Blank Casing (ft)	
Bottom Cap (ea)	
Top Cap (ea)	
Flush Mount	
Protective Casing (ft)	
Lock	
MISC.:	

NOTES

JOB No. 0000.00 Time: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON

WELL CONSTRUCTION LOG

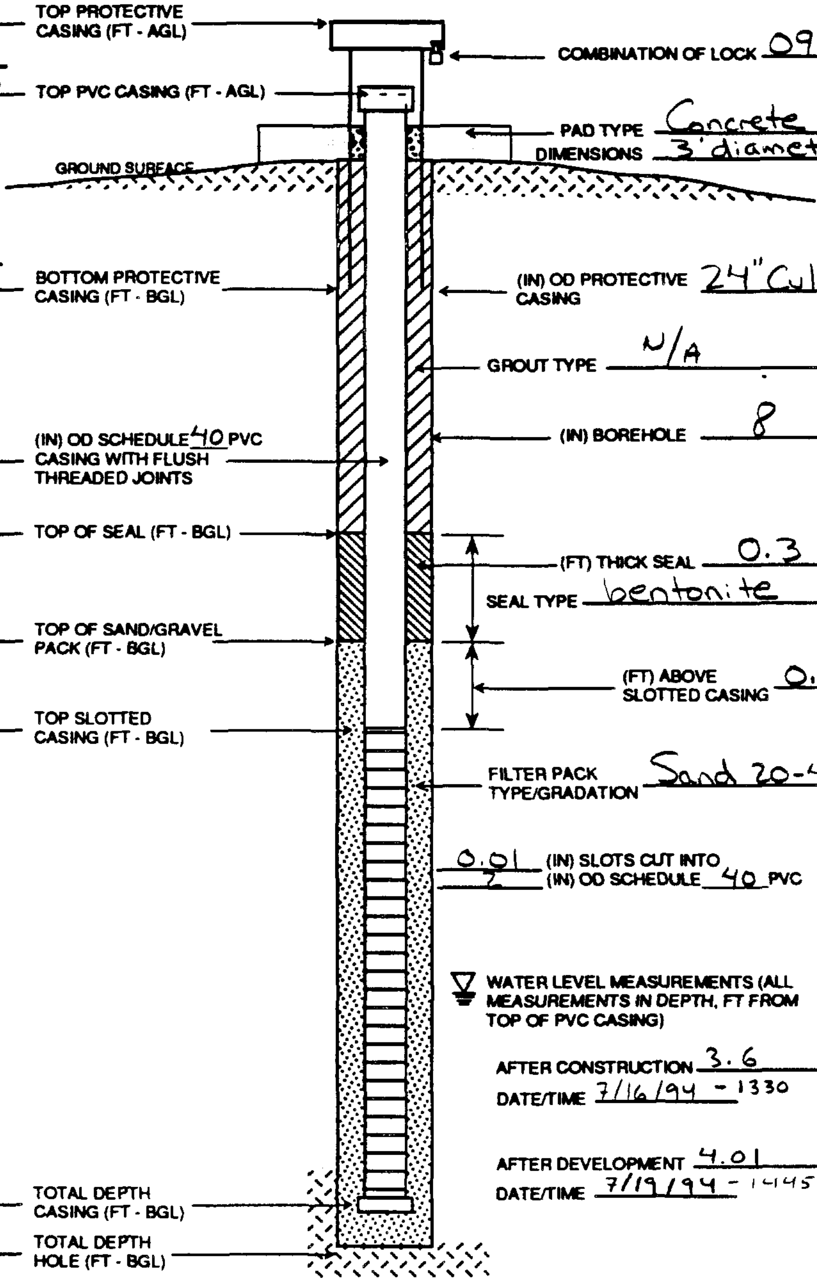
PROJECT NO.:	WELL NO.:	SHEET
2198.0230	6-2	1 OF 1

PROJECT NE Cape SITE 6 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-15-94 WEATHER Cloudy, calm LOCATION COORDINATES 101219.4170 / 99613.6931 (Northing) (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 1.75 (AGL) GROUND SURFACE 47.57 TOP OF PROTECTIVE CASING 49.57 TOP OF PVC CASING 49.3200



2 TOP PROTECTIVE CASING (FT - AGL)

COMBINATION OF LOCK 0911

1.75 TOP PVC CASING (FT - AGL)

PAD TYPE Concrete

DIMENSIONS 3' diameter

GROUND SURFACE

0.5 BOTTOM PROTECTIVE CASING (FT - BGL)

(IN) OD PROTECTIVE CASING 24" Culvert

GROUT TYPE N/A

2 (IN) OD SCHEDULE 40 PVC CASING WITH FLUSH THREADED JOINTS

(IN) BOREHOLE 8

0 TOP OF SEAL (FT - BGL)

(FT) THICK SEAL 0.3

SEAL TYPE bentonite

0.3 TOP OF SAND/GRAVEL PACK (FT - BGL)

(FT) ABOVE SLOTTED CASING 0.2

0.5 TOP SLOTTED CASING (FT - BGL)

FILTER PACK TYPE/GRADATION Sand 20-40

0.01 (IN) SLOTS CUT INTO
2 (IN) OD SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION 3.6 (FT)
DATE/TIME 7/16/94 - 1330

AFTER DEVELOPMENT 4.01 (FT)
DATE/TIME 7/19/94 - 1445

5.5 TOTAL DEPTH CASING (FT - BGL)

5.5 TOTAL DEPTH HOLE (FT - BGL)

WELL SAMPLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

Bentonite (lbs)	
Sand (lbs)	
Grout (lbs)	
Screen (ft)	
Blank Casing (ft)	
Bottom Cap (ea)	
Top Cap (ea)	
Flush Mount	
Protective Casing (ft)	
Lock	
MISC.:	

NOTES

JOB No. 0000.00 Time: 00-XXX-00 00:00 File: user name/project/File Name

WELL CONSTRUCTION LOG

MONTGOMERY WATSON

PROJECT NO.:	WELL NO.:	SHEET
2198.0230	7-4	1 OF 1

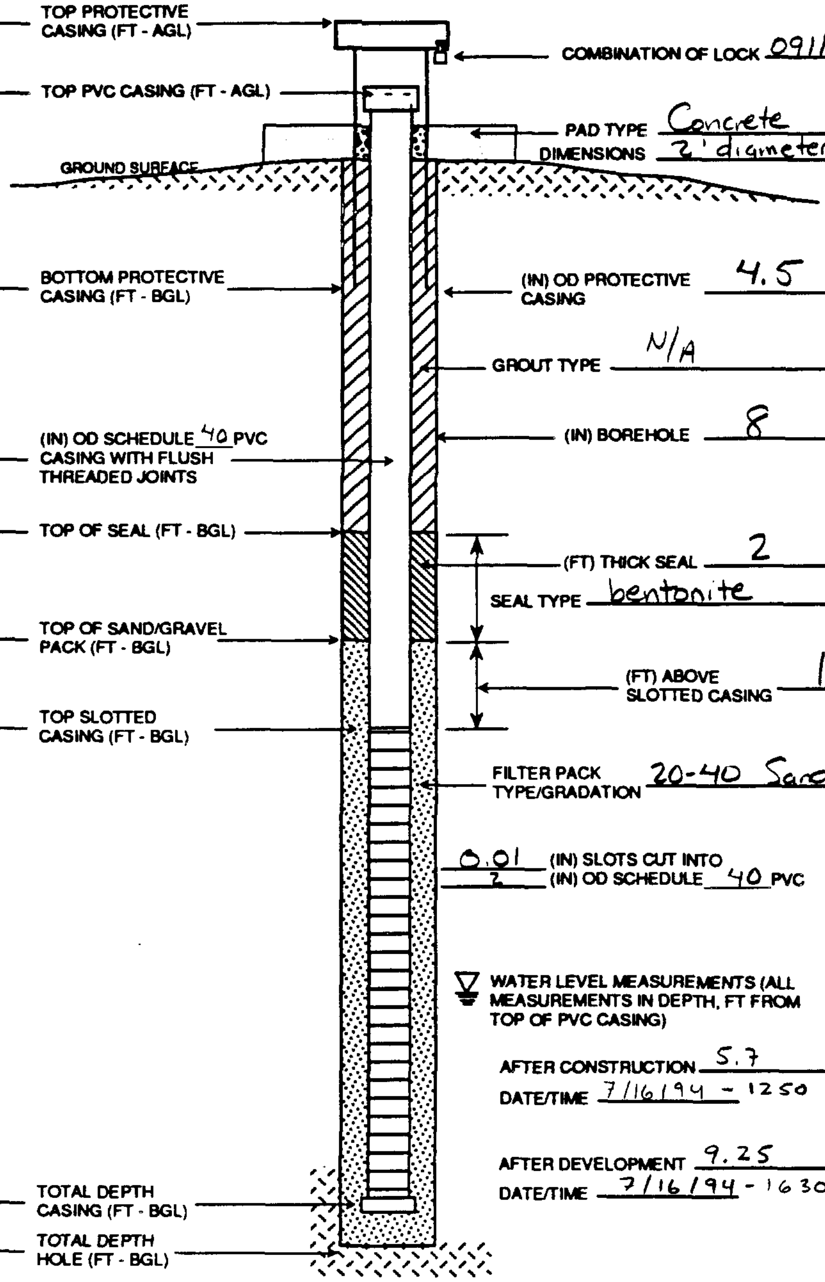
PROJECT NE Cape SITE 7 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-15-94 WEATHER Sunny, breezy LOCATION COORDINATES 100382.6301 / 99565.8237 (Northing) (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 3.2 (AGL) GROUND SURFACE 51.34 TOP OF PROTECTIVE CASING 54.84 TOP OF PVC CASING 54.100

WELL SAMPLED? ☒ YES ☐ NO



3.5 TOP PROTECTIVE CASING (FT - AGL)

COMBINATION OF LOCK 0911

3.2 TOP PVC CASING (FT - AGL)

PAD TYPE Concrete

DIMENSIONS 2' diameter

GROUND SURFACE

1.5 BOTTOM PROTECTIVE CASING (FT - BGL)

(IN) OD PROTECTIVE CASING 4.5

GROUT TYPE N/A

2 (IN) OD SCHEDULE 40 PVC CASING WITH FLUSH THREADED JOINTS

(IN) BOREHOLE 8

0 TOP OF SEAL (FT - BGL)

(FT) THICK SEAL 2

SEAL TYPE bentonite

2 TOP OF SAND/GRAVEL PACK (FT - BGL)

(FT) ABOVE SLOTTED CASING 1

3 TOP SLOTTED CASING (FT - BGL)

FILTER PACK TYPE/GRADATION 20-40 Sand

0.01 (IN) SLOTS CUT INTO
2 (IN) OD SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION 5.7 (FT)
DATE/TIME 7/16/94 - 1250

AFTER DEVELOPMENT 9.25 (FT)
DATE/TIME 7/16/94 - 1630

10 TOTAL DEPTH CASING (FT - BGL)

10 TOTAL DEPTH HOLE (FT - BGL)

QUANTITY MATERIALS USED:

Bentonite (lbs)	
Sand (lbs)	
Grout (lbs)	
Screen (ft)	
Blank Casing (ft)	
Bottom Cap (ea)	
Top Cap (ea)	
Flush Mount	
Protective Casing (ft)	
Lock	
MISC.:	

NOTES

WELL CONSTRUCTION LOG

MONTGOMERY WATSON

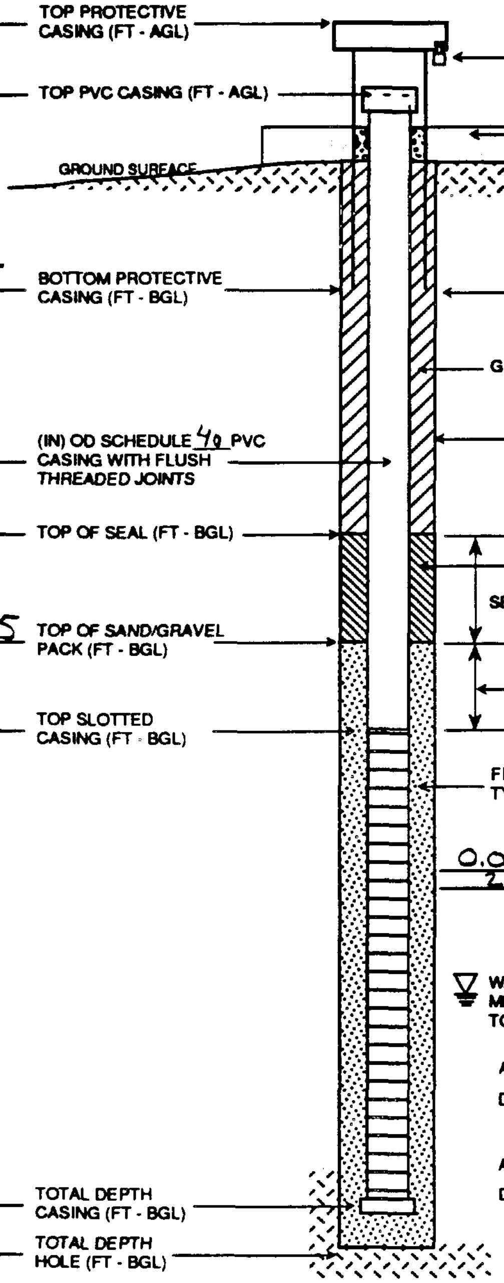
PROJECT NO.:	WELL NO.:	SHEET
2198.0230	9-1	1 OF 1

PROJECT NE Cape SITE 9 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-16-94 WEATHER Sunny - breezy LOCATION COORDINATES 98501.6918 (Northing) / 97366.2958 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 3.2 (AGL) GROUND SURFACE 65.1400 TOP OF PROTECTIVE CASING 68.64 TOP OF PVC CASING 68.3400



3.5 TOP PROTECTIVE CASING (FT - AGL)

COMBINATION OF LOCK 0911

3.2 TOP PVC CASING (FT - AGL)

PAD TYPE Concrete

DIMENSIONS 2' diameter

0.5 BOTTOM PROTECTIVE CASING (FT - BGL)

(IN) OD PROTECTIVE CASING 4.5

GROUT TYPE N/A

2 (IN) OD SCHEDULE 40 PVC CASING WITH FLUSH THREADED JOINTS

(IN) BOREHOLE 8

0 TOP OF SEAL (FT - BGL)

(FT) THICK SEAL 0.75

SEAL TYPE bentonite

0.75 TOP OF SAND/GRAVEL PACK (FT - BGL)

(FT) ABOVE SLOTTED CASING 0.25

1 TOP SLOTTED CASING (FT - BGL)

FILTER PACK TYPE/GRADATION 20-40 Sand

0.01 (IN) SLOTS CUT INTO
2 (IN) OD SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION 7.2 (FT)
DATE/TIME 7/17/94 - 0900

AFTER DEVELOPMENT 7.2 (FT)
DATE/TIME 7/17/94 - 0900

7.5 TOTAL DEPTH CASING (FT - BGL)

7.5 TOTAL DEPTH HOLE (FT - BGL)

WELL SAMPLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

Bentonite (lbs)	
Sand (lbs)	
Grout (lbs)	
Screen (ft)	
Blank Casing (ft)	
Bottom Cap (ea)	
Top Cap (ea)	
Flush Mount	
Protective Casing (ft)	
Lock	
MISC.:	

NOTES

MONTGOMERY WATSON

WELL CONSTRUCTION LOG

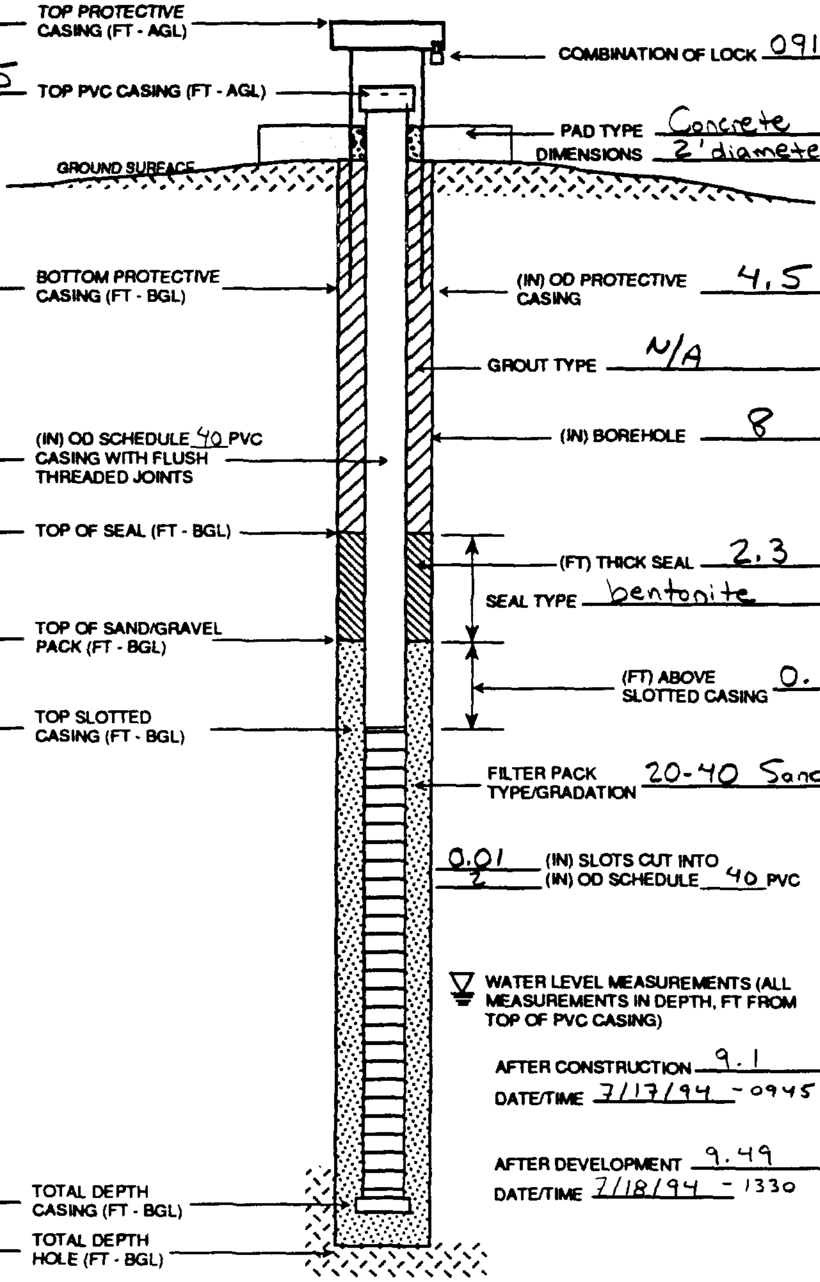
PROJECT NO.: 2198.0230 | WELL NO.: 9-2 | SHEET 1 OF 1

PROJECT NE Cape SITE 9 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-16-94 WEATHER Cloudy - breezy LOCATION COORDINATES 98221.5475 (Northing) / 97599.6948 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 2.75 (AGL) GROUND SURFACE 72.8700 TOP OF PROTECTIVE CASING 75.87 TOP OF PVC CASING 75.6200



3 TOP PROTECTIVE CASING (FT - AGL)

2.75 TOP PVC CASING (FT - AGL)

2 BOTTOM PROTECTIVE CASING (FT - BGL)

2 (IN) OD SCHEDULE 40 PVC CASING WITH FLUSH THREADED JOINTS

0 TOP OF SEAL (FT - BGL)

2.3 TOP OF SAND/GRAVEL PACK (FT - BGL)

2.5 TOP SLOTTED CASING (FT - BGL)

9.5 TOTAL DEPTH CASING (FT - BGL)

9.5 TOTAL DEPTH HOLE (FT - BGL)

COMBINATION OF LOCK 0911

PAD TYPE Concrete

DIMENSIONS 2' diameter

(IN) OD PROTECTIVE CASING 4.5

GROUT TYPE N/A

(IN) BOREHOLE 8

(FT) THICK SEAL 2.3

SEAL TYPE bentonite

(FT) ABOVE SLOTTED CASING 0.2

FILTER PACK TYPE/GRADATION 20-40 Sand

0.01 (IN) SLOTS CUT INTO
2 (IN) OD SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION 9.1 (FT)
DATE/TIME 7/17/94 - 0945

AFTER DEVELOPMENT 9.49 (FT)
DATE/TIME 7/18/94 - 1330

WELL SAMPLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

Bentonite (lbs) ____
Sand (lbs) ____
Grout (lbs) ____
Screen (ft) ____
Blank Casing (ft) ____
Bottom Cap (ea) ____
Top Cap (ea) ____
Flush Mount ____
Protective Casing (ft) ____
Lock ____
MISC.: ____

NOTES

JOB No. 0000.00 Time: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON

WELL CONSTRUCTION LOG

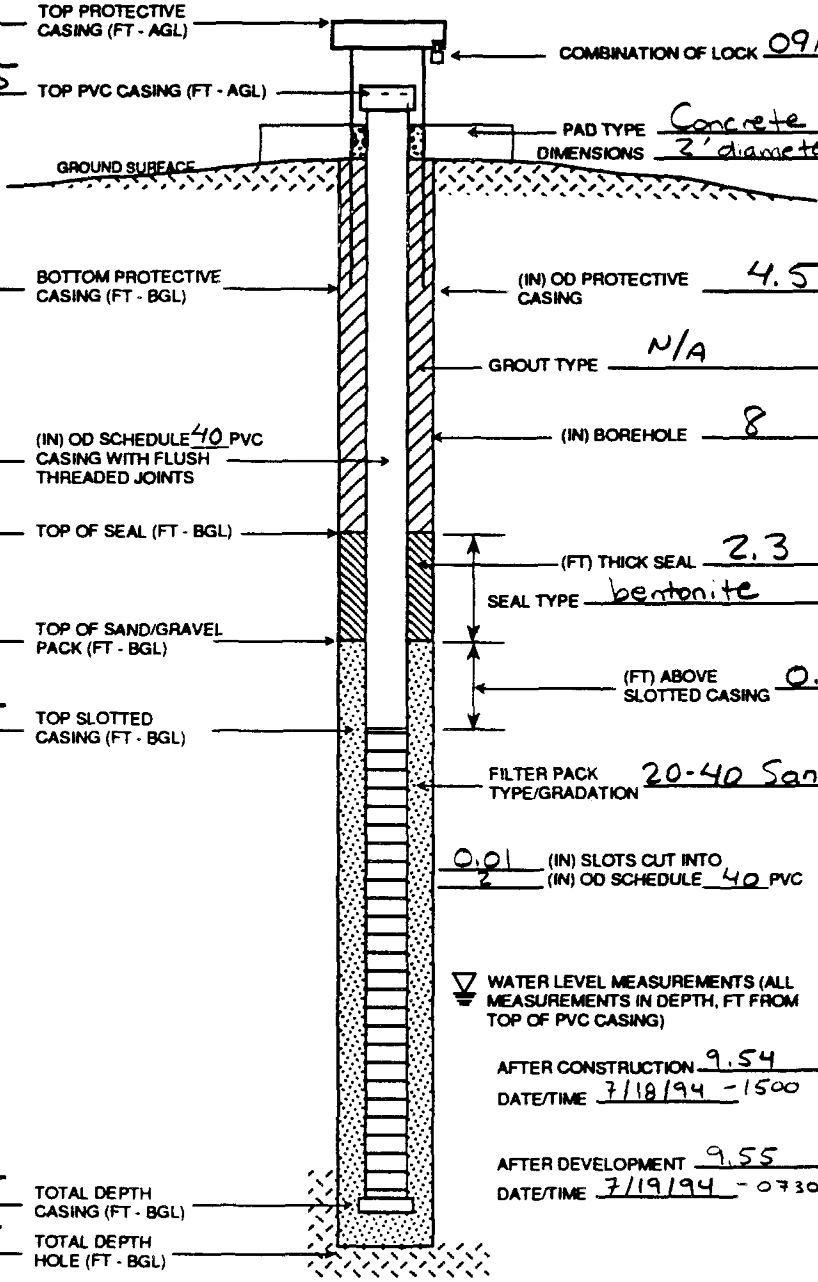
PROJECT NO.:	WELL NO.:	SHEET
2198.0230	9-3	1 OF 1

PROJECT NE Cape SITE 9 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-17-94 WEATHER Cloudy, calm LOCATION COORDINATES 98260.0772 (Northing) / 97177.3812 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 2.75 (AGL) GROUND SURFACE 73.66 TOP OF PROTECTIVE CASING 76.6600 TOP OF PVC CASING 76.4100



3 TOP PROTECTIVE CASING (FT - AGL)

2.75 TOP PVC CASING (FT - AGL)

COMBINATION OF LOCK 0911

PAD TYPE Concrete

DIMENSIONS 3' diameter

GROUND SURFACE

2 BOTTOM PROTECTIVE CASING (FT - BGL)

(IN) OD PROTECTIVE CASING 4.5

GROUT TYPE N/A

2 (IN) OD SCHEDULE 40 PVC CASING WITH FLUSH THREADED JOINTS

(IN) BOREHOLE 8

0 TOP OF SEAL (FT - BGL)

(FT) THICK SEAL 2.3

SEAL TYPE bentonite

2.3 TOP OF SAND/GRAVEL PACK (FT - BGL)

(FT) ABOVE SLOTTED CASING 0.2

2.5 TOP SLOTTED CASING (FT - BGL)

FILTER PACK TYPE/GRADATION 20-40 Sand

0.01 (IN) SLOTS CUT INTO 2 (IN) OD SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION 9.54 (FT)
DATE/TIME 7/18/94 -1500

AFTER DEVELOPMENT 9.55 (FT)
DATE/TIME 7/19/94 - 0730

9.5 TOTAL DEPTH CASING (FT - BGL)

9.5 TOTAL DEPTH HOLE (FT - BGL)

WELL SAMPLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

Bentonite (lbs)	
Sand (lbs)	
Grout (lbs)	
Screen (ft)	
Blank Casing (ft)	
Bottom Cap (ea)	
Top Cap (ea)	
Flush Mount	
Protective Casing (ft)	
Lock	
MISC.:	

NOTES

JOB No. 0000.00 Time: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON

WELL CONSTRUCTION LOG

PROJECT NO.: 2198.0230

WELL NO.: 10-1

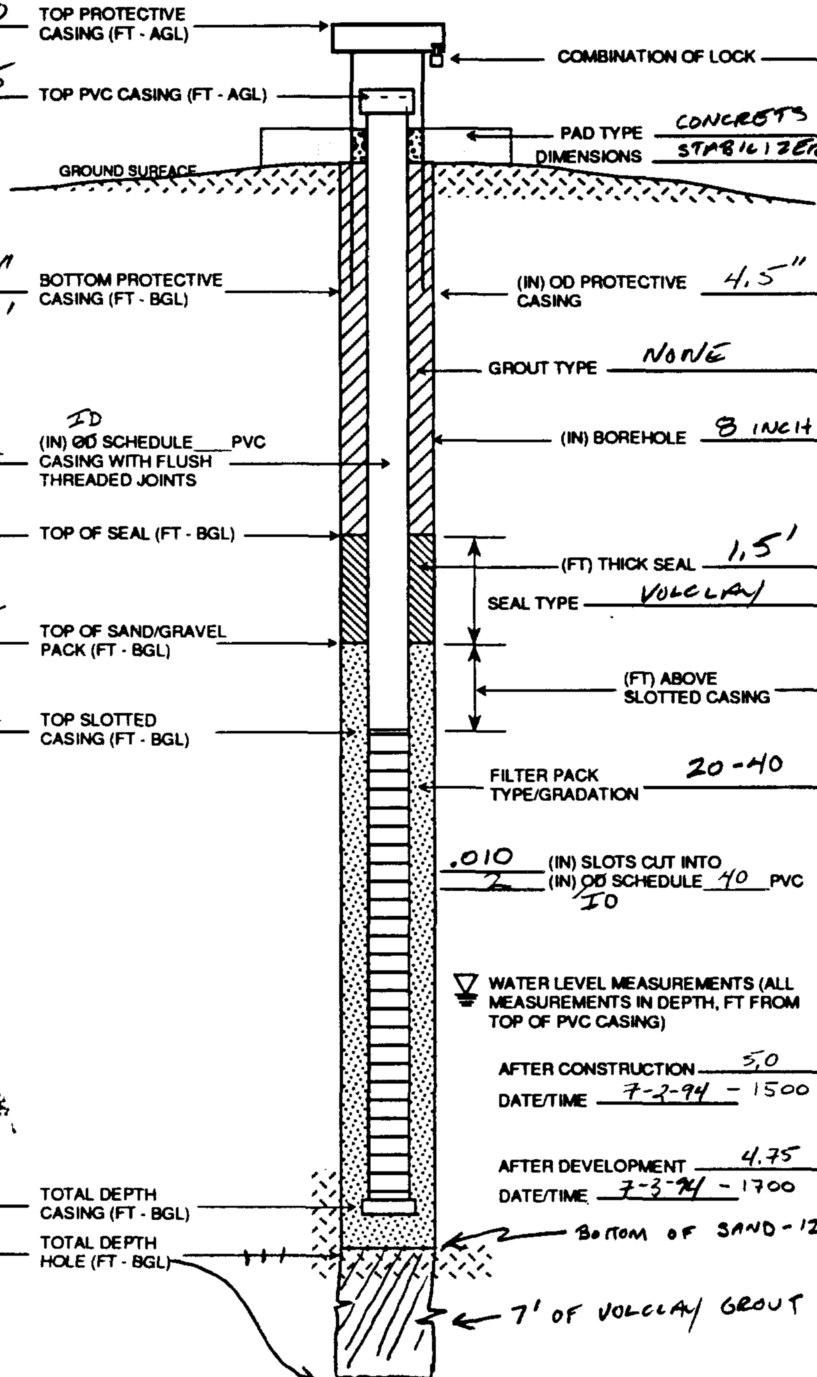
SHEET 1 OF 1

PROJECT NE CAPE SITE 10 CLIENT USACOE (AK) GEOLOGIST Victor Harris

DATE 6-26-94 WEATHER HI CLDS, 10MPH WIND 40° F LOCATION COORDINATES 98219.0993 (Northing) / 96794.1917 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8 INCH RIG TYPE CME-55/NODWELL DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 1.75 (AGL) GROUND SURFACE 69.49 TOP OF PROTECTIVE CASING 71.49 TOP OF PVC CASING 71.24



2.0 TOP PROTECTIVE CASING (FT - AGL)

COMBINATION OF LOCK

1.75 TOP PVC CASING (FT - AGL)

PAD TYPE CONCRETE

DIMENSIONS STABILIZER

GROUND SURFACE

~~14"~~ 1.2' BOTTOM PROTECTIVE CASING (FT - BGL)

(IN) OD PROTECTIVE CASING 4.5"

GROUT TYPE NONE

2 (IN) ~~OD~~ ID SCHEDULE ___ PVC CASING WITH FLUSH THREADED JOINTS

(IN) BOREHOLE 8 INCH

0 TOP OF SEAL (FT - BGL)

(FT) THICK SEAL 1.5'

SEAL TYPE VOLCLAY

1.5 TOP OF SAND/GRAVEL PACK (FT - BGL)

(FT) ABOVE SLOTTED CASING

2 TOP SLOTTED CASING (FT - BGL)

FILTER PACK TYPE/GRADATION 20-40

.010 (IN) SLOTS CUT INTO 2 (IN) ~~OD~~ ID SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION 5.0 (FT)
DATE/TIME 7-2-94 - 1500

AFTER DEVELOPMENT 4.75 (FT)
DATE/TIME 7-3-94 - 1700

10 TOTAL DEPTH CASING (FT - BGL)

20 TOTAL DEPTH HOLE (FT - BGL)

BOTTOM OF SAND - 12' BGL

7' OF VOLCLAY GROUT

7 13 14

WELL SAMPLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

Bentonite (lbs)	50
Sand (lbs)	450 ~~300~~
Grout (lbs)	40
Screen (ft)	8
Blank Casing (ft)	5
Bottom Cap (ea)	1
Top Cap (ea)	1
Flush Mount	N/A
Protective Casing (ft)	1
Lock	1

MISC.: CASING MANUF BY TIMCO

NOTES

SAND TYPE: COLORADO SILICA SAND

GROUT: CETCO VOLCLAY

SEAL: PERMA PLUG GRANULAR BENTONITE 3/8"

NOTE: HOLE WAS DRILLED TO 20' (EXPLORATORY), AND ALLOWED TO STABILIZE OVERNIGHT. SWL MEAS AM 6/26 @ 3.5' BGL. HOLE SEALED WITH BENTONITE FROM 13' BGL TO 20' BGL (TD) TO PREVENT DOWNWARD MIGRATION OF CONTAMINANTS.

JOB No. 0000.000 Time: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON

WELL CONSTRUCTION LOG

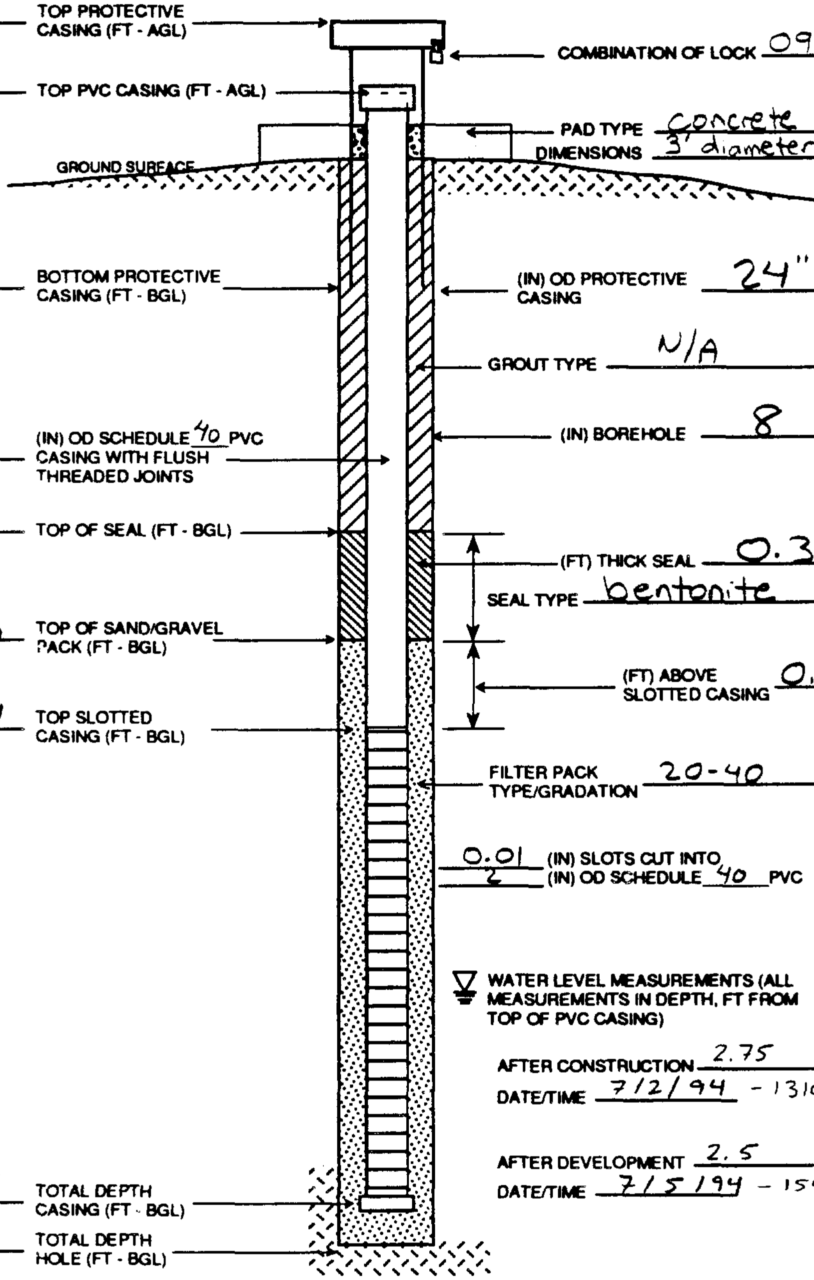
PROJECT NO.: 2198.0230 | WELL NO.: 10-4 | SHEET 1 OF 1

PROJECT NE Cape SITE 10 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 6-27-94 WEATHER Cloudy LOCATION COORDINATES 98265.6203 (Northing) / 96767.7053 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 1.5 (AGL) GROUND SURFACE 68.33 TOP OF PROTECTIVE CASING 71.83 TOP OF PVC CASING 69.8300



3.5 TOP PROTECTIVE CASING (FT - AGL)

1.5 TOP PVC CASING (FT - AGL)

GROUND SURFACE

3.2 BOTTOM PROTECTIVE CASING (FT - BGL)

2 (IN) OD SCHEDULE 40 PVC CASING WITH FLUSH THREADED JOINTS

0 TOP OF SEAL (FT - BGL)

0.3 TOP OF SAND/GRAVEL PACK (FT - BGL)

0.4 TOP SLOTTED CASING (FT - BGL)

6.5 TOTAL DEPTH CASING (FT - BGL)

6.5 TOTAL DEPTH HOLE (FT - BGL)

COMBINATION OF LOCK 0911

PAD TYPE Concrete

DIMENSIONS 3' diameter

(IN) OD PROTECTIVE CASING 24" Culvert

GROUT TYPE N/A

(IN) BOREHOLE 8

(FT) THICK SEAL 0.3

SEAL TYPE bentonite

(FT) ABOVE SLOTTED CASING 0.1

FILTER PACK TYPE/GRADATION 20-40

0.01 (IN) SLOTS CUT INTO 2 (IN) OD SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION 2.75 (FT)
DATE/TIME 7/2/94 - 1310

AFTER DEVELOPMENT 2.5 (FT)
DATE/TIME 7/5/94 - 1540

WELL SAMPLED? YES [X] NO [ ]

QUANTITY MATERIALS USED:

Bentonite (lbs) ______
Sand (lbs) ______
Grout (lbs) ______
Screen (ft) ______
Blank Casing (ft) ______
Bottom Cap (ea) ______
Top Cap (ea) ______
Flush Mount ______
Protective Casing (ft) ______
Lock ______
MISC.: ______

NOTES

JOB No. 0000.00 Time: 00-XXX-00 00:00 File: user name/project/File Name

WELL CONSTRUCTION LOG

MONTGOMERY WATSON Anchorage, Alaska

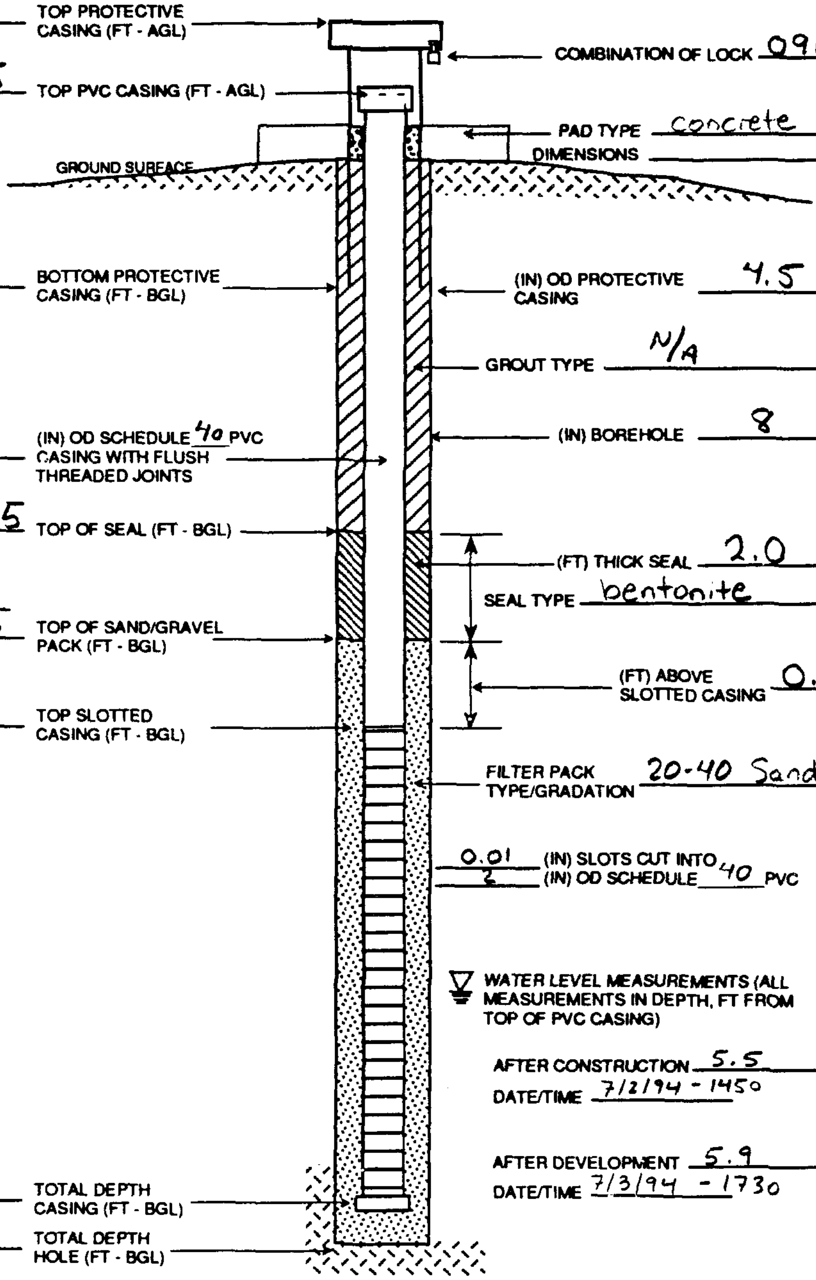
PROJECT NO.:	WELL NO.:	SHEET
2198.0230	11-2	1 OF 1

PROJECT NE Cape SITE 11 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 6-27-94 WEATHER Cloudy, Windy LOCATION COORDINATES 98226.3982 / 96564.7244 (Northing) (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 2.75 (AGL) GROUND SURFACE 72.3600 TOP OF PROTECTIVE CASING 75.3600 TOP OF PVC CASING 7[illegible].1100



3 TOP PROTECTIVE CASING (FT - AGL)

2.75 TOP PVC CASING (FT - AGL)

2 BOTTOM PROTECTIVE CASING (FT - BGL)

2 (IN) OD SCHEDULE 40 PVC CASING WITH FLUSH THREADED JOINTS

0.5 TOP OF SEAL (FT - BGL)

2.5 TOP OF SAND/GRAVEL PACK (FT - BGL)

3 TOP SLOTTED CASING (FT - BGL)

10 TOTAL DEPTH CASING (FT - BGL)

10 TOTAL DEPTH HOLE (FT - BGL)

COMBINATION OF LOCK 0911

PAD TYPE concrete

DIMENSIONS

(IN) OD PROTECTIVE CASING 4.5

GROUT TYPE N/A

(IN) BOREHOLE 8

(FT) THICK SEAL 2.0

SEAL TYPE bentonite

(FT) ABOVE SLOTTED CASING 0.5

FILTER PACK TYPE/GRADATION 20-40 Sand

0.01 (IN) SLOTS CUT INTO
2 (IN) OD SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION 5.5 (FT)
DATE/TIME 7/2/94 - 1450

AFTER DEVELOPMENT 5.9 (FT)
DATE/TIME 7/3/94 - 1730

WELL SAMPLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

Bentonite (lbs)	
Sand (lbs)	
Grout (lbs)	
Screen (ft)	
Blank Casing (ft)	
Bottom Cap (ea)	
Top Cap (ea)	
Flush Mount	
Protective Casing (ft)	
Lock	
MISC.:	

NOTES

MONTGOMERY WATSON

WELL CONSTRUCTION LOG

PROJECT NO.: 2198.0230 | WELL NO.: 11-3 | SHEET 1 OF 1

PROJECT NE Cape SITE 11 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 6-28-94 WEATHER Cloudy Windy LOCATION COORDINATES 98257.4154 (Northing) / 96601.0635 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

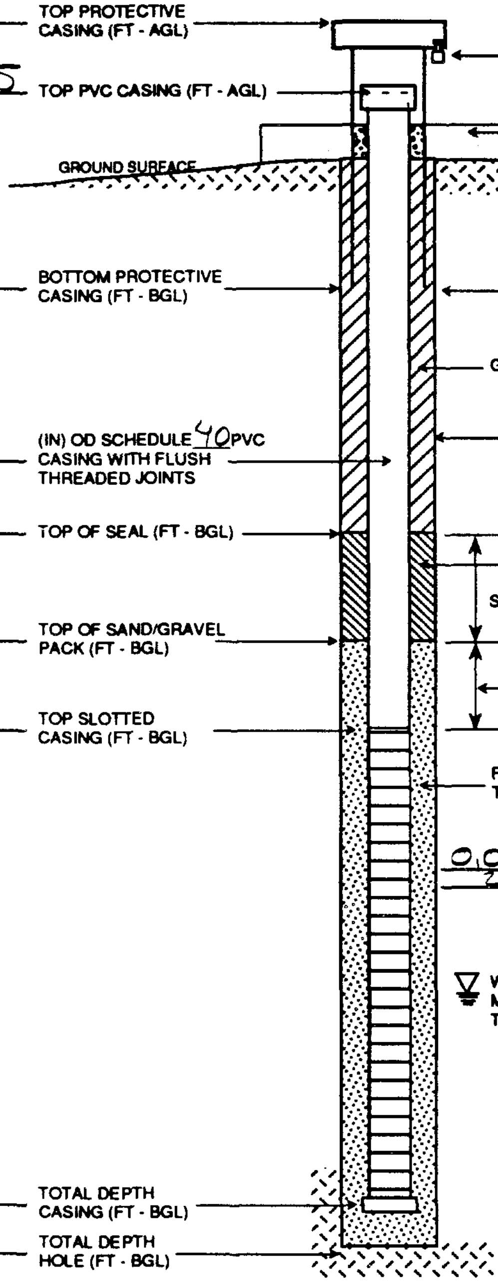
SURVEYED ELEVATIONS 2.75 (AGL) GROUND SURFACE 70.2900 TOP OF PROTECTIVE CASING 73.2900 TOP OF PVC CASING 73.0400

WELL SAMPLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

Bentonite (lbs) ____
Sand (lbs) ____
Grout (lbs) ____
Screen (ft) ____
Blank Casing (ft) ____
Bottom Cap (ea) ____
Top Cap (ea) ____
Flush Mount ____
Protective Casing (ft) ____
Lock ____
MISC.: ____

NOTES



3 TOP PROTECTIVE CASING (FT - AGL)

2.75 TOP PVC CASING (FT - AGL)

COMBINATION OF LOCK 0911

PAD TYPE Concrete
DIMENSIONS 2' diameter

GROUND SURFACE

2 BOTTOM PROTECTIVE CASING (FT - BGL)

(IN) OD PROTECTIVE CASING 4.5

GROUT TYPE N/A

2 (IN) OD SCHEDULE 40 PVC CASING WITH FLUSH THREADED JOINTS

(IN) BOREHOLE 8

2 TOP OF SEAL (FT - BGL)

(FT) THICK SEAL 4
SEAL TYPE bentonite

6 TOP OF SAND/GRAVEL PACK (FT - BGL)

(FT) ABOVE SLOTTED CASING 2

8 TOP SLOTTED CASING (FT - BGL)

FILTER PACK TYPE/GRADATION 20-40 Sand

0.01 (IN) SLOTS CUT INTO
2 (IN) OD SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION ____ (FT)
DATE/TIME ____

AFTER DEVELOPMENT ____ (FT)
DATE/TIME ____

18 TOTAL DEPTH CASING (FT - BGL)

18 TOTAL DEPTH HOLE (FT - BGL)

JOB No. 0000.000 Time: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON

WELL CONSTRUCTION LOG

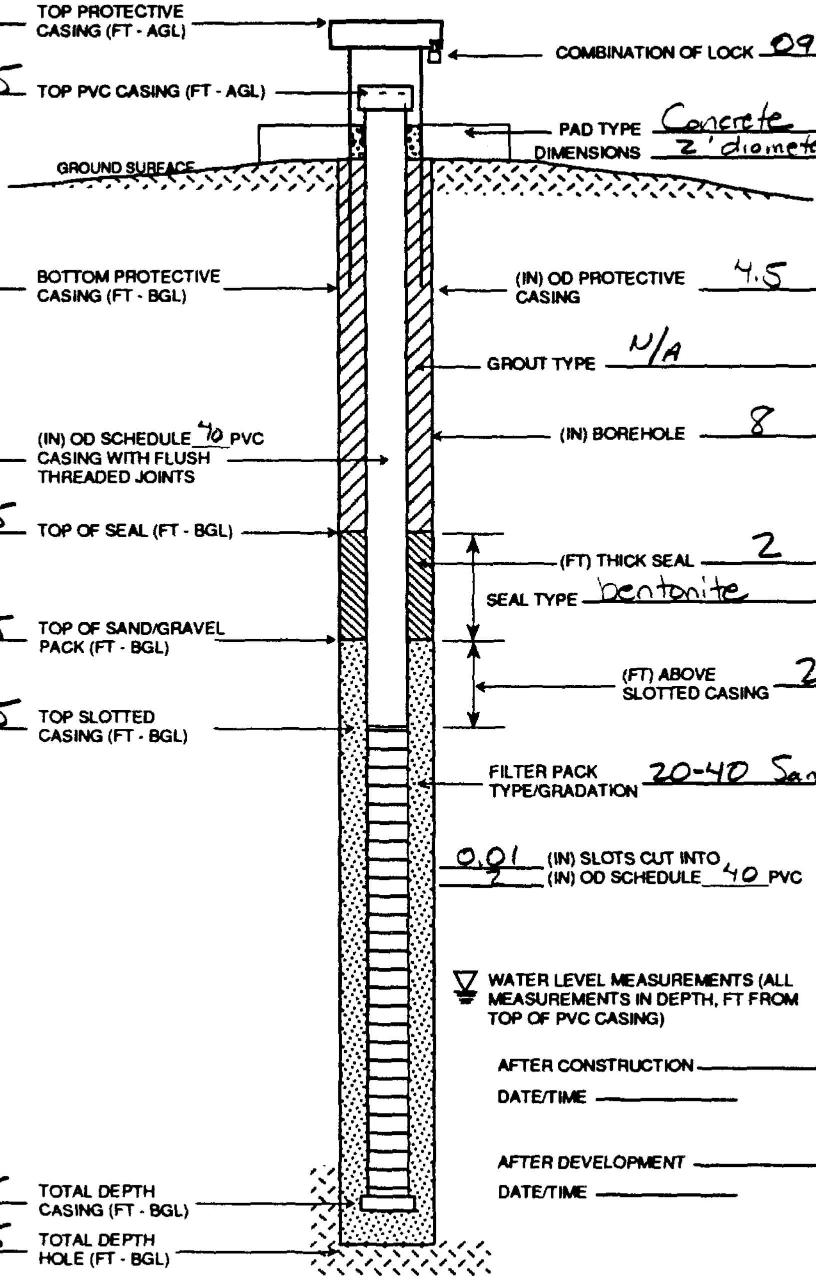
PROJECT NO.:	WELL NO.:	SHEET
2198.0230	13-1	1 OF 1

PROJECT NE Cape SITE 13 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 6-30-94 WEATHER Cloudy, windy LOCATION COORDINATES 98248.6674 (Northing) / 96162.9761 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 2.75 (AGL) GROUND SURFACE 72.2500 TOP OF PROTECTIVE CASING 75.2500 TOP OF PVC CASING 75.000



3 TOP PROTECTIVE CASING (FT - AGL)

COMBINATION OF LOCK 0911

2.75 TOP PVC CASING (FT - AGL)

PAD TYPE Concrete
DIMENSIONS 2' diameter

GROUND SURFACE

2 BOTTOM PROTECTIVE CASING (FT - BGL)

(IN) OD PROTECTIVE CASING 4.5

GROUT TYPE N/A

2 (IN) OD SCHEDULE 40 PVC CASING WITH FLUSH THREADED JOINTS

(IN) BOREHOLE 8

1.5 TOP OF SEAL (FT - BGL)

(FT) THICK SEAL 2

SEAL TYPE bentonite

3.5 TOP OF SAND/GRAVEL PACK (FT - BGL)

(FT) ABOVE SLOTTED CASING 2

5.5 TOP SLOTTED CASING (FT - BGL)

FILTER PACK TYPE/GRADATION 20-40 Sand

0.01 (IN) SLOTS CUT INTO
2 (IN) OD SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION ______ (FT)
DATE/TIME ______

AFTER DEVELOPMENT ______ (FT)
DATE/TIME ______

15.5 TOTAL DEPTH CASING (FT - BGL)

15.5 TOTAL DEPTH HOLE (FT - BGL)

WELL SAPLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

Bentonite (lbs)	
Sand (lbs)	
Grout (lbs)	
Screen (ft)	
Blank Casing (ft)	
Bottom Cap (ea)	
Top Cap (ea)	
Flush Mount	
Protective Casing (ft)	
Lock	
MISC.:	

NOTES

JOB No. 0000.000 Time: 00-XXX-00 00:00 File: user name/project/File Name

WELL CONSTRUCTION LOG

MONTGOMERY WATSON

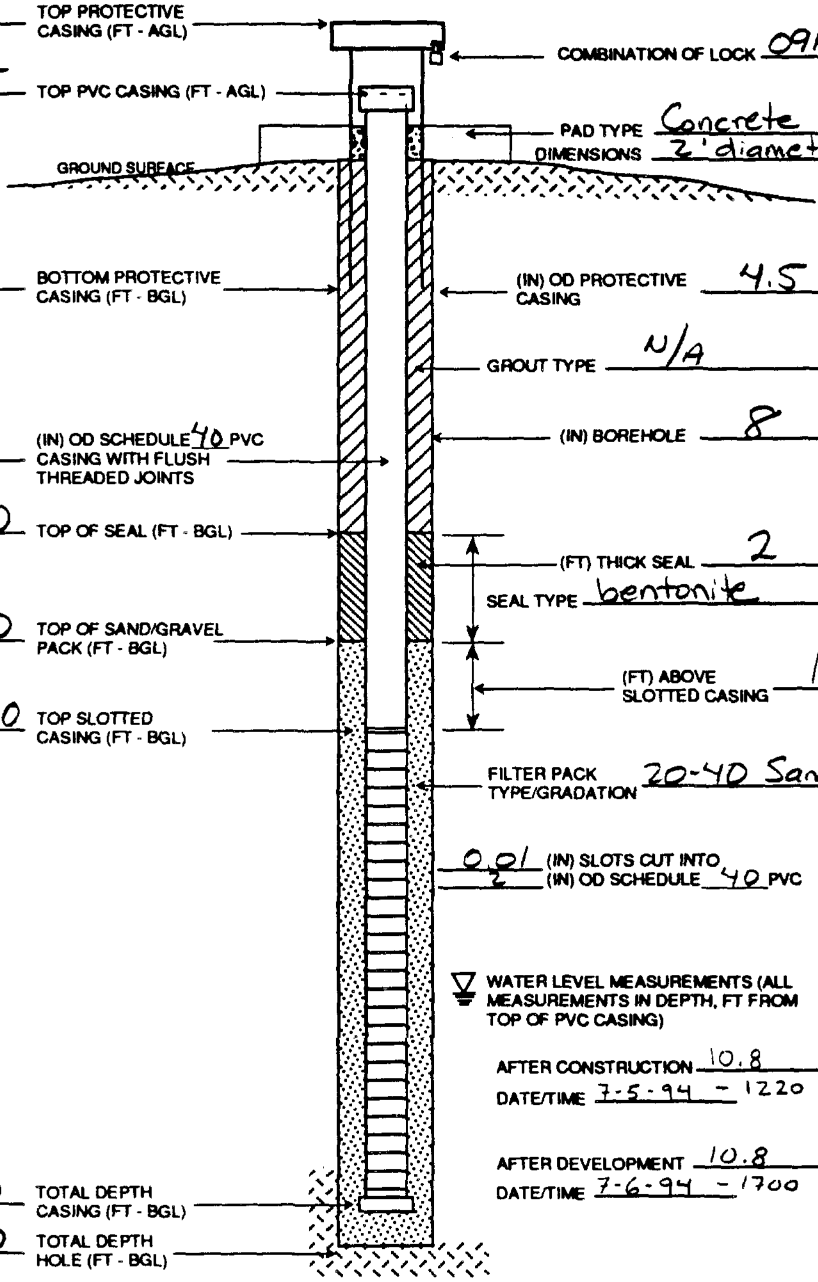
PROJECT NO.:	WELL NO.:	SHEET
2198 0230	13-2	1 OF 1

PROJECT: NE Cape — SITE: 13 — CLIENT: USACOE (AK) — GEOLOGIST: John DeGeorge

DATE: 6-30-94 — WEATHER: Cloudy, breezy — LOCATION COORDINATES: 98251.7823 / 96074.8027 (Northing) (Easting) — ELEVATION DATUM: MSL (MSL/Other)

DRILLING METHOD: HSA — BORING SIZE: 8'' — RIG TYPE: CME 55 — DRILL COMPANY: Denali Drilling

SURVEYED ELEVATIONS: 2.75 (AGL) — GROUND SURFACE: 71.3300 — TOP OF PROTECTIVE CASING: 74.3300 — TOP OF PVC CASING: 74.08



3 TOP PROTECTIVE CASING (FT - AGL)

2.75 TOP PVC CASING (FT - AGL)

COMBINATION OF LOCK: 0911

PAD TYPE: Concrete

DIMENSIONS: 2' diameter

2 BOTTOM PROTECTIVE CASING (FT - BGL)

(IN) OD PROTECTIVE CASING: 4.5

GROUT TYPE: N/A

2 (IN) OD SCHEDULE 40 PVC CASING WITH FLUSH THREADED JOINTS

(IN) BOREHOLE: 8

1.0 TOP OF SEAL (FT - BGL)

(FT) THICK SEAL: 2

SEAL TYPE: bentonite

3.0 TOP OF SAND/GRAVEL PACK (FT - BGL)

(FT) ABOVE SLOTTED CASING: 1

4.0 TOP SLOTTED CASING (FT - BGL)

FILTER PACK TYPE/GRADATION: 20-40 Sand

0.01 (IN) SLOTS CUT INTO 2 (IN) OD SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION: 10.8 (FT)
DATE/TIME: 7-5-94 - 1220

AFTER DEVELOPMENT: 10.8 (FT)
DATE/TIME: 7-6-94 - 1700

14.0 TOTAL DEPTH CASING (FT - BGL)

14.0 TOTAL DEPTH HOLE (FT - BGL)

WELL SAMPLED? [X] YES [ ] NO

QUANTITY MATERIALS USED:

Bentonite (lbs)	
Sand (lbs)	
Grout (lbs)	
Screen (ft)	
Blank Casing (ft)	
Bottom Cap (ea)	
Top Cap (ea)	
Flush Mount	
Protective Casing (ft)	
Lock	
MISC.:	

NOTES

JOB No. 0000.000 — Time: 00-XXX-00 00:00 — File: user name/project/File Name

WELL CONSTRUCTION LOG

MONTGOMERY WATSON

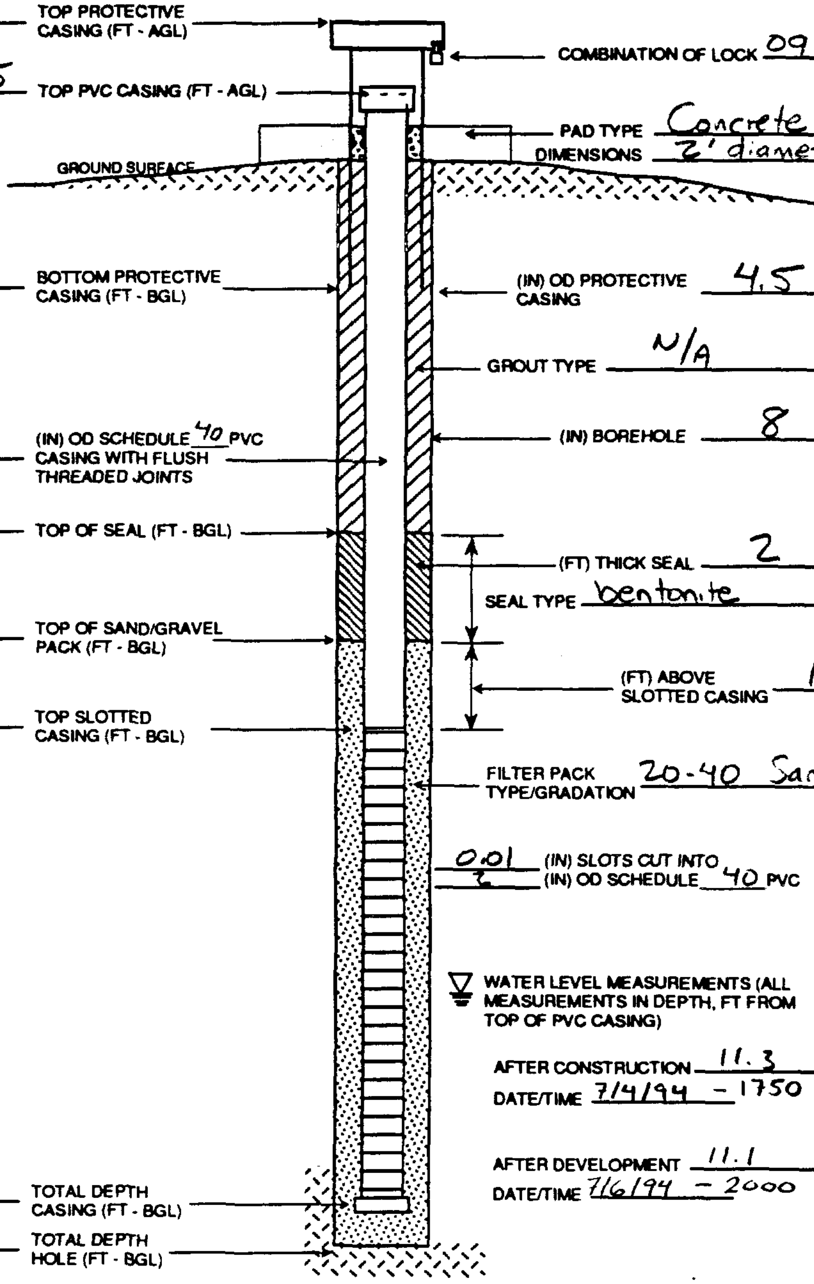
PROJECT NO.:	WELL NO.:	SHEET
2198 0230	15-1	1 OF 1

PROJECT NE Cape SITE 15 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-1-94 WEATHER Cloudy, calm LOCATION COORDINATES 98166.3266/96262.5740 (Northing) (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 2.75 (AGL) GROUND SURFACE 74.35 TOP OF PROTECTIVE CASING 77.35 TOP OF PVC CASING 77.1000



3 TOP PROTECTIVE CASING (FT - AGL)

COMBINATION OF LOCK 0911

2.75 TOP PVC CASING (FT - AGL)

PAD TYPE Concrete
DIMENSIONS 2' diameter

2 BOTTOM PROTECTIVE CASING (FT - BGL)

(IN) OD PROTECTIVE CASING 4.5

GROUT TYPE N/A

2 (IN) OD SCHEDULE 40 PVC CASING WITH FLUSH THREADED JOINTS

(IN) BOREHOLE 8

1 TOP OF SEAL (FT - BGL)

(FT) THICK SEAL 2

SEAL TYPE bentonite

3 TOP OF SAND/GRAVEL PACK (FT - BGL)

(FT) ABOVE SLOTTED CASING 1

4 TOP SLOTTED CASING (FT - BGL)

FILTER PACK TYPE/GRADATION 20-40 Sand

0.01 (IN) SLOTS CUT INTO
2 (IN) OD SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION 11.3 (FT)
DATE/TIME 7/4/94 - 1750

AFTER DEVELOPMENT 11.1 (FT)
DATE/TIME 7/6/94 - 2000

14 TOTAL DEPTH CASING (FT - BGL)

14 TOTAL DEPTH HOLE (FT - BGL)

WELL SAMPLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

Bentonite (lbs)	
Sand (lbs)	
Grout (lbs)	
Screen (ft)	
Blank Casing (ft)	
Bottom Cap (ea)	
Top Cap (ea)	
Flush Mount	
Protective Casing (ft)	
Lock	
MISC.:	

NOTES

JOB No. 0000.00 Time: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON

WELL CONSTRUCTION LOG

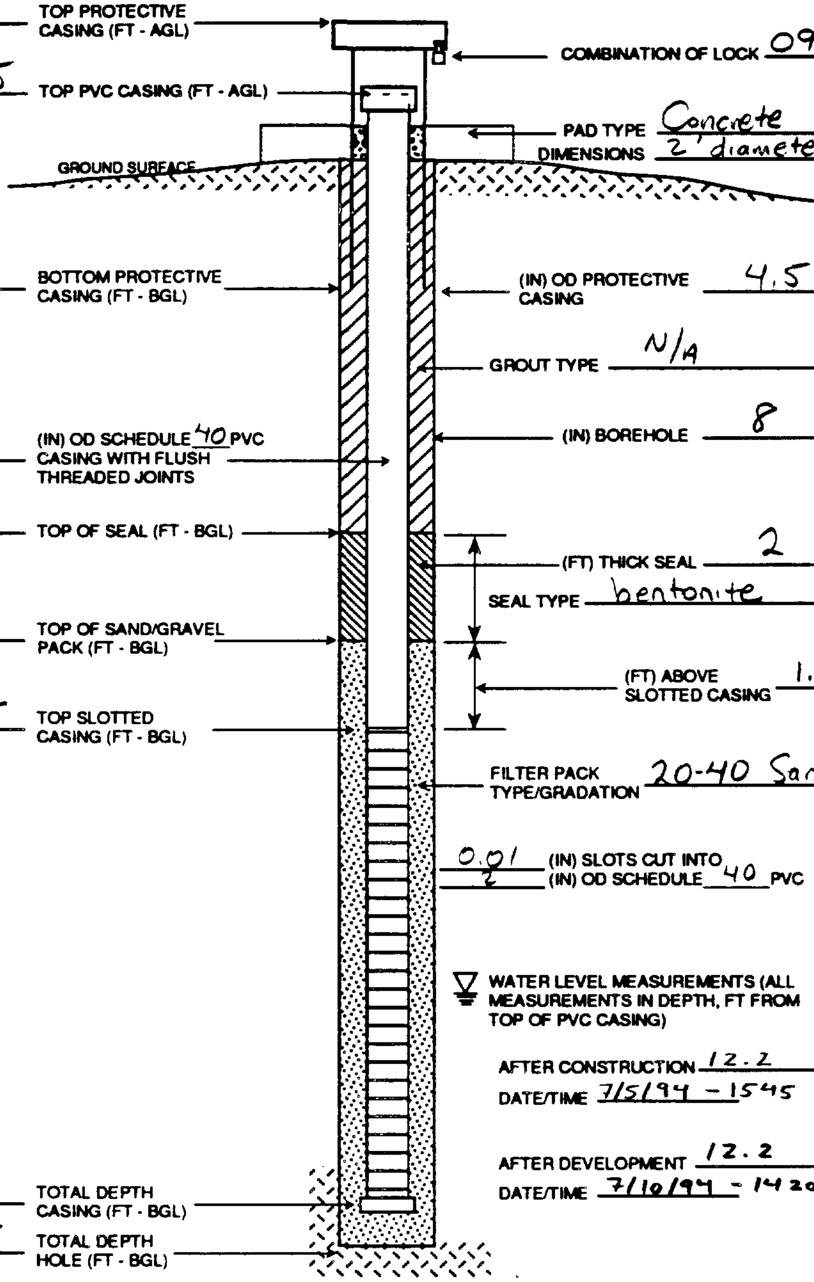
PROJECT NO.:	WELL NO.:	SHEET
2198.0230	16-1	1 OF 1

PROJECT NE Cape SITE 16 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-2-94 WEATHER Cloudy, windy LOCATION COORDINATES 98341.4278 (Northing) / 95893.3928 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 2.75 (AGL) GROUND SURFACE 72.8100 TOP OF PROTECTIVE CASING 75.81 TOP OF PVC CASING 75.5600



3 TOP PROTECTIVE CASING (FT - AGL)

COMBINATION OF LOCK 0911

2.75 TOP PVC CASING (FT - AGL)

PAD TYPE Concrete
DIMENSIONS 2' diameter

2 BOTTOM PROTECTIVE CASING (FT - BGL)

(IN) OD PROTECTIVE CASING 4.5

GROUT TYPE N/A

2 (IN) OD SCHEDULE 40 PVC CASING WITH FLUSH THREADED JOINTS

(IN) BOREHOLE 8

1 TOP OF SEAL (FT - BGL)

(FT) THICK SEAL 2

SEAL TYPE bentonite

3 TOP OF SAND/GRAVEL PACK (FT - BGL)

(FT) ABOVE SLOTTED CASING 1.5

4.5 TOP SLOTTED CASING (FT - BGL)

FILTER PACK TYPE/GRADATION 20-40 Sand

0.01 (IN) SLOTS CUT INTO
2 (IN) OD SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION 12.2 (FT)
DATE/TIME 7/5/94 - 1545

AFTER DEVELOPMENT 12.2 (FT)
DATE/TIME 7/10/94 - 1420

14.5 TOTAL DEPTH CASING (FT - BGL)

14.5 TOTAL DEPTH HOLE (FT - BGL)

WELL SAPMLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

- Bentonite (lbs) ____
- Sand (lbs) ____
- Grout (lbs) ____
- Screen (ft) ____
- Blank Casing (ft) ____
- Bottom Cap (ea) ____
- Top Cap (ea) ____
- Flush Mount ____
- Protective Casing (ft) ____
- Lock ____
- MISC.: ____

NOTES

JOB No. 0000.00 Time: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON

WELL CONSTRUCTION LOG

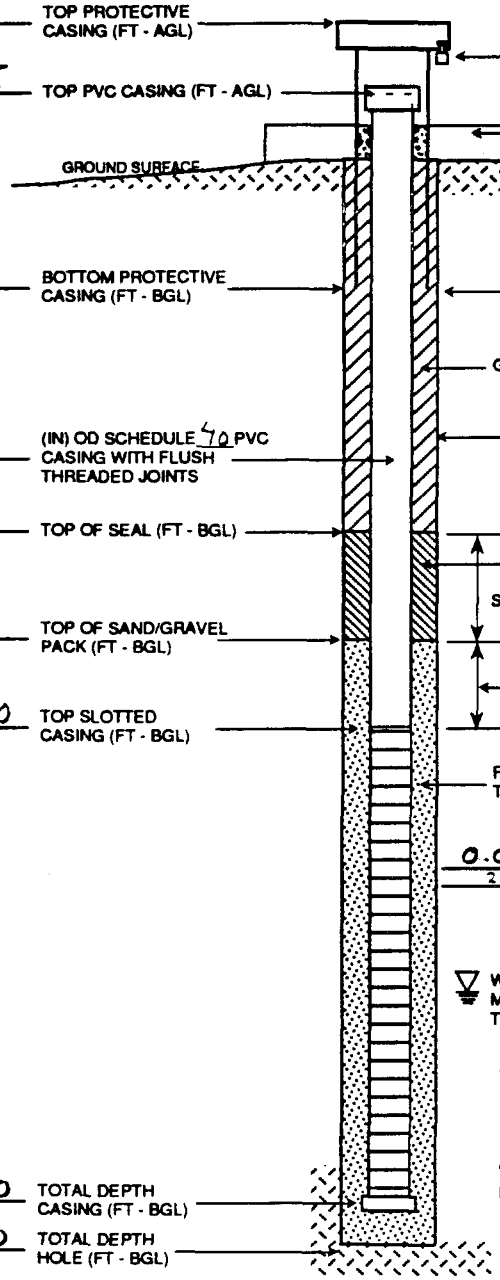
PROJECT NO.: 2198.0230 | WELL NO.: 16-2 | SHEET 1 OF 1

PROJECT NE Cape SITE 16 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-3-94 WEATHER Cloudy, breezy LOCATION COORDINATES 98389.5754 (Northing) / 95816.9231 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 2.75 (AGL) GROUND SURFACE 72.1600 TOP OF PROTECTIVE CASING 75.1600 TOP OF PVC CASING 74.9100



3 TOP PROTECTIVE CASING (FT - AGL)

COMBINATION OF LOCK 0911

2.75 TOP PVC CASING (FT - AGL)

PAD TYPE Concrete

DIMENSIONS 2' diameter

GROUND SURFACE

2 BOTTOM PROTECTIVE CASING (FT - BGL)

(IN) OD PROTECTIVE CASING 4.5

GROUT TYPE N/A

2 (IN) OD SCHEDULE 40 PVC CASING WITH FLUSH THREADED JOINTS

(IN) BOREHOLE 8

1 TOP OF SEAL (FT - BGL)

(FT) THICK SEAL 2

SEAL TYPE bentonite

3 TOP OF SAND/GRAVEL PACK (FT - BGL)

(FT) ABOVE SLOTTED CASING 1

4.0 TOP SLOTTED CASING (FT - BGL)

FILTER PACK TYPE/GRADATION 20-40 Sand

0.01 (IN) SLOTS CUT INTO
2 (IN) OD SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION 11.9 (FT)
DATE/TIME 7/5/94 - 1540

AFTER DEVELOPMENT 11.7 (FT)
DATE/TIME 7/10/94 - 1550

14.0 TOTAL DEPTH CASING (FT - BGL)

14.0 TOTAL DEPTH HOLE (FT - BGL)

WELL SAMPLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

Bentonite (lbs)	
Sand (lbs)	
Grout (lbs)	
Screen (ft)	
Blank Casing (ft)	
Bottom Cap (ea)	
Top Cap (ea)	
Flush Mount	
Protective Casing (ft)	
Lock	
MISC.:	

NOTES

Time: 00-XXX-00 00:00 File: user name/project/File Name JOB No. 0000.00

MONTGOMERY WATSON

WELL CONSTRUCTION LOG

PROJECT NO.:	WELL NO.:	SHEET
2198.0230	16-3	1 OF 1

PROJECT NE Cape SITE 16 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-3-94 WEATHER Cloudy, breezy LOCATION COORDINATES 98314.9116 (Northing) / 95857.1580 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

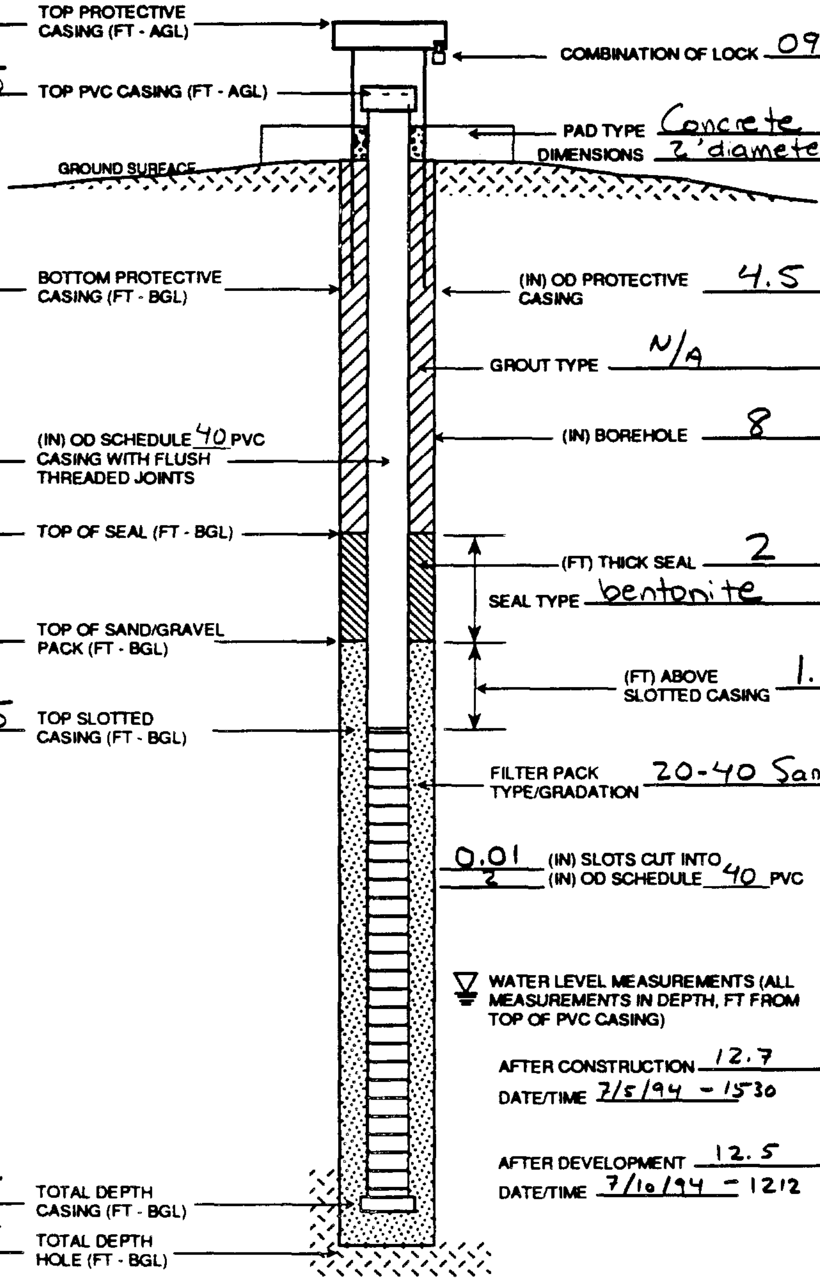
SURVEYED ELEVATIONS 2.75 (AGL) GROUND SURFACE 73.03 TOP OF PROTECTIVE CASING 76.03 TOP OF PVC CASING 75.78

WELL SAMPLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

Bentonite (lbs) ______
Sand (lbs) ______
Grout (lbs) ______
Screen (ft) ______
Blank Casing (ft) ______
Bottom Cap (ea) ______
Top Cap (ea) ______
Flush Mount ______
Protective Casing (ft) ______
Lock ______
MISC.: ______

NOTES



3 TOP PROTECTIVE CASING (FT - AGL)

2.75 TOP PVC CASING (FT - AGL)

COMBINATION OF LOCK 0911

PAD TYPE Concrete
DIMENSIONS 2' diameter

2 BOTTOM PROTECTIVE CASING (FT - BGL)

4.5 (IN) OD PROTECTIVE CASING

GROUT TYPE N/A

2 (IN) OD SCHEDULE 40 PVC CASING WITH FLUSH THREADED JOINTS

8 (IN) BOREHOLE

1 TOP OF SEAL (FT - BGL)

2 (FT) THICK SEAL
SEAL TYPE bentonite

3 TOP OF SAND/GRAVEL PACK (FT - BGL)

1.5 (FT) ABOVE SLOTTED CASING

4.5 TOP SLOTTED CASING (FT - BGL)

FILTER PACK TYPE/GRADATION 20-40 Sand

0.01 (IN) SLOTS CUT INTO
2 (IN) OD SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION 12.7 (FT)
DATE/TIME 7/5/94 - 1530

AFTER DEVELOPMENT 12.5 (FT)
DATE/TIME 7/10/94 - 1212

14.5 TOTAL DEPTH CASING (FT - BGL)

14.5 TOTAL DEPTH HOLE (FT - BGL)

JOB No. 0000.00 Time: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON Anchorage, Alaska

WELL CONSTRUCTION LOG

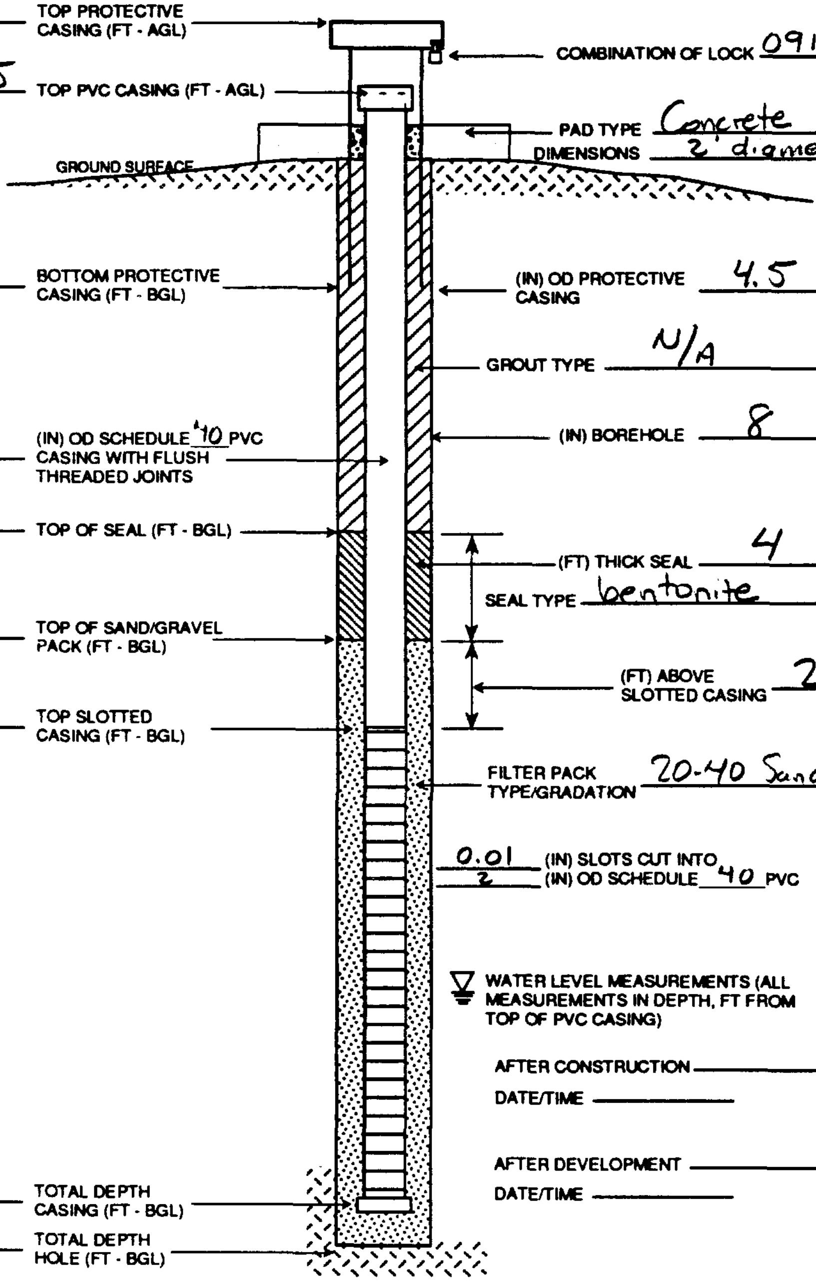
PROJECT NO.:	WELL NO.:	SHEET
2198.0230	19-1	1 OF 1

PROJECT NE Cape SITE 19 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 6-29-94 WEATHER Cloudy, rain LOCATION COORDINATES 98184.2553 (Northing) / 96376.8154 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 2.75 (AGL) GROUND SURFACE 75.25 TOP OF PROTECTIVE CASING 78.25 TOP OF PVC CASING 78.000



3 TOP PROTECTIVE CASING (FT - AGL)

COMBINATION OF LOCK 0911

2.75 TOP PVC CASING (FT - AGL)

PAD TYPE Concrete

DIMENSIONS 2' diameter

GROUND SURFACE

2 BOTTOM PROTECTIVE CASING (FT - BGL)

(IN) OD PROTECTIVE CASING 4.5

GROUT TYPE N/A

2 (IN) OD SCHEDULE 40 PVC CASING WITH FLUSH THREADED JOINTS

(IN) BOREHOLE 8

1 TOP OF SEAL (FT - BGL)

(FT) THICK SEAL 4

SEAL TYPE bentonite

6 TOP OF SAND/GRAVEL PACK (FT - BGL)

(FT) ABOVE SLOTTED CASING 2

8 TOP SLOTTED CASING (FT - BGL)

FILTER PACK TYPE/GRADATION 20-40 Sand

0.01 (IN) SLOTS CUT INTO

2 (IN) OD SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION ________ (FT)

DATE/TIME ________

AFTER DEVELOPMENT ________ (FT)

DATE/TIME ________

18 TOTAL DEPTH CASING (FT - BGL)

18 TOTAL DEPTH HOLE (FT - BGL)

WELL SAMPLED? [X] YES [ ] NO

QUANTITY MATERIALS USED:

Bentonite (lbs) ________

Sand (lbs) ________

Grout (lbs) ________

Screen (ft) ________

Blank Casing (ft) ________

Bottom Cap (ea) ________

Top Cap (ea) ________

Flush Mount ________

Protective Casing (ft) ________

Lock ________

MISC.: ________

NOTES

JOB No. 0000.00 Time: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON

WELL CONSTRUCTION LOG

PROJECT NO.:	WELL NO.:	SHEET
2198.0230	19-2	1 OF 1

PROJECT NE Cape SITE 19 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-1-94 WEATHER Cloudy, calm LOCATION COORDINATES 98042.2785/96273.9184 (Northing) (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

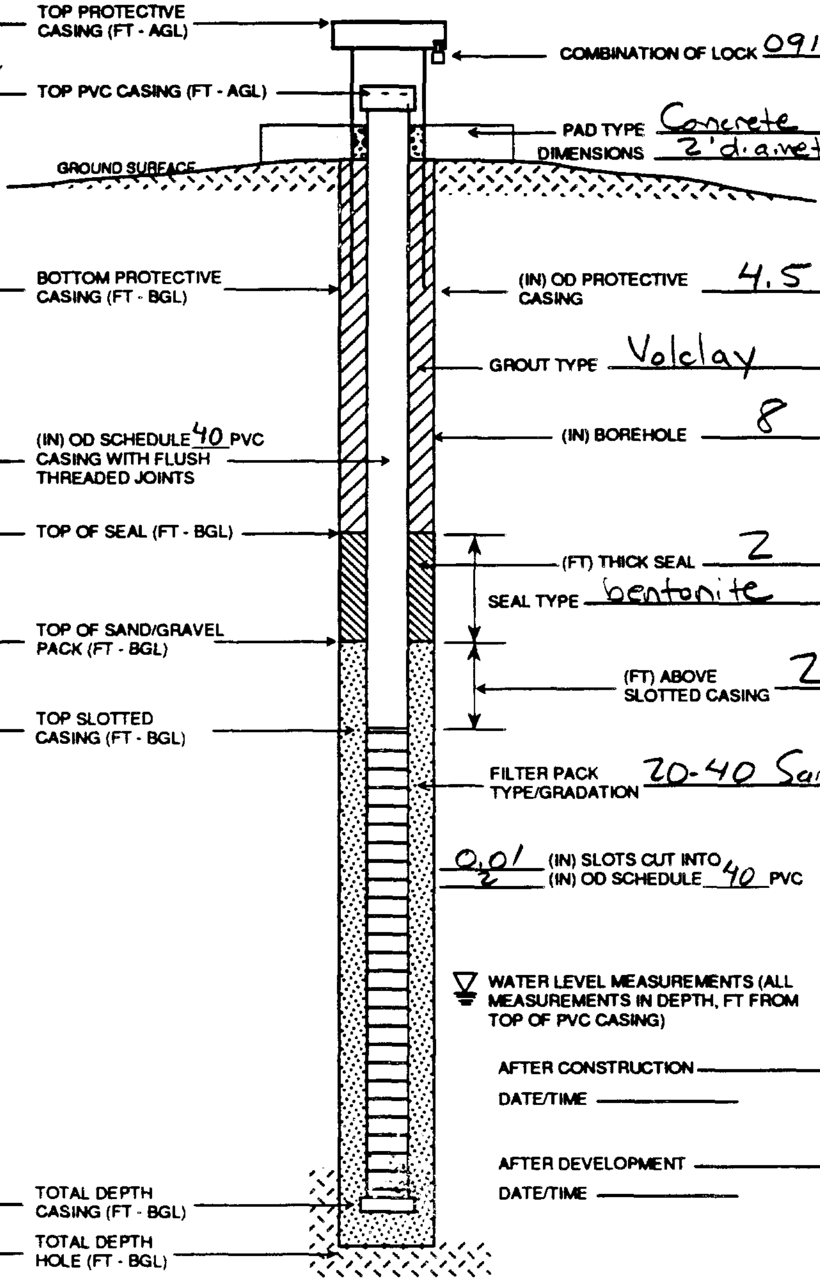
SURVEYED ELEVATIONS 2.75 (AGL) GROUND SURFACE 83.05 TOP OF PROTECTIVE CASING 86.05 TOP OF PVC CASING 85.80

WELL SAMPLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

- Bentonite (lbs) ______
- Sand (lbs) ______
- Grout (lbs) ______
- Screen (ft) ______
- Blank Casing (ft) ______
- Bottom Cap (ea) ______
- Top Cap (ea) ______
- Flush Mount ______
- Protective Casing (ft) ______
- Lock ______
- MISC.: ______

NOTES



3 TOP PROTECTIVE CASING (FT - AGL)

COMBINATION OF LOCK 0911

2.75 TOP PVC CASING (FT - AGL)

PAD TYPE Concrete
DIMENSIONS 2' diameter

2 BOTTOM PROTECTIVE CASING (FT - BGL)

(IN) OD PROTECTIVE CASING 4.5

GROUT TYPE Volclay

2 (IN) OD SCHEDULE 40 PVC CASING WITH FLUSH THREADED JOINTS

(IN) BOREHOLE 8

6 TOP OF SEAL (FT - BGL)

(FT) THICK SEAL 2
SEAL TYPE bentonite

8 TOP OF SAND/GRAVEL PACK (FT - BGL)

(FT) ABOVE SLOTTED CASING 2

10 TOP SLOTTED CASING (FT - BGL)

FILTER PACK TYPE/GRADATION 20-40 Sand

0.01 (IN) SLOTS CUT INTO
2 (IN) OD SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION ______ (FT)
DATE/TIME ______

AFTER DEVELOPMENT ______ (FT)
DATE/TIME ______

20 TOTAL DEPTH CASING (FT - BGL)

20 TOTAL DEPTH HOLE (FT - BGL)

JOB No. 0000.00 Time: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON WELL CONSTRUCTION LOG

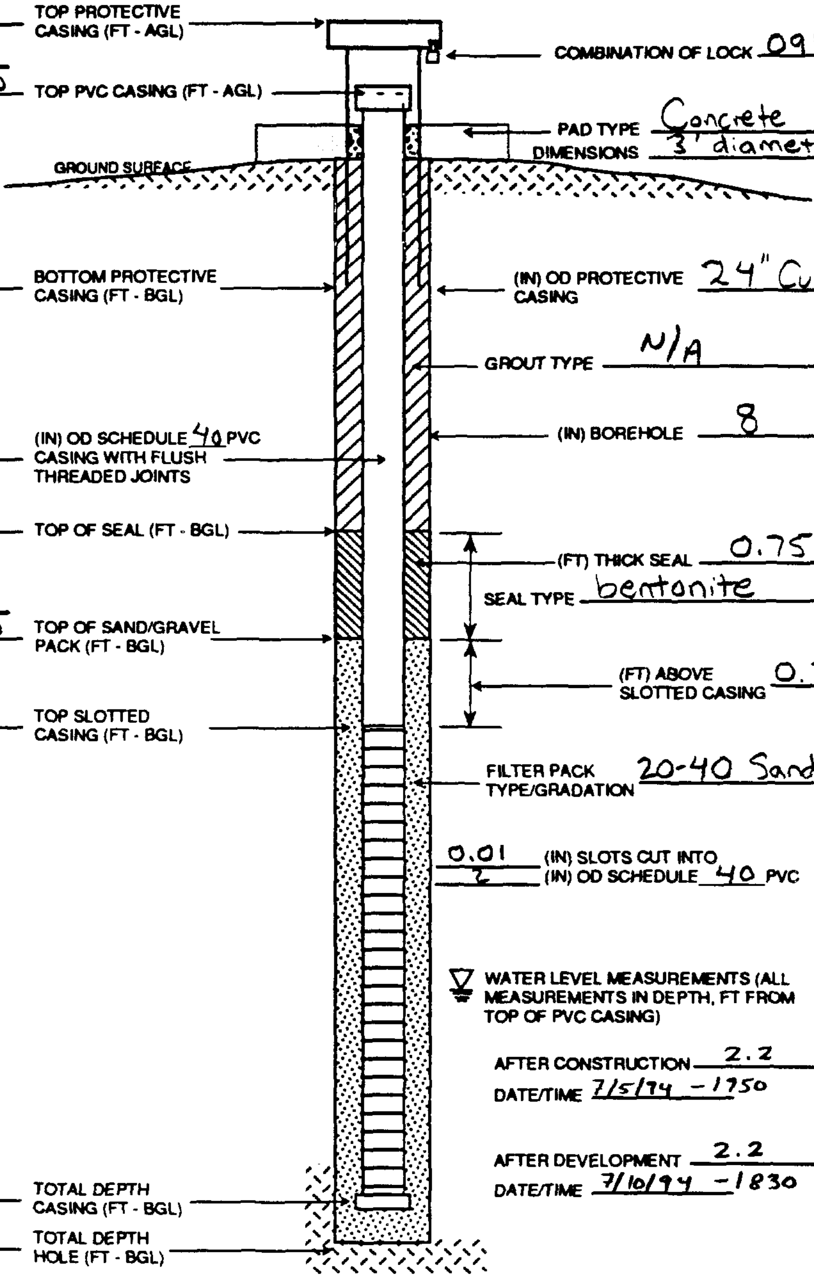
PROJECT NO.:	WELL NO.:	SHEET
2198.0230	21-1	1 OF 1

PROJECT NE Cape SITE 22 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-4-94 WEATHER Cloudy, breezy LOCATION COORDINATES 98036.9957 (Northing) / 95326.5984 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 1.75 (AGL) GROUND SURFACE 62.8400 TOP OF PROTECTIVE CASING 64.8400 TOP OF PVC CASING 64.5900



2 TOP PROTECTIVE CASING (FT - AGL)

COMBINATION OF LOCK 0911

1.75 TOP PVC CASING (FT - AGL)

PAD TYPE Concrete

DIMENSIONS 3' diameter

GROUND SURFACE

0.5 BOTTOM PROTECTIVE CASING (FT - BGL)

(IN) OD PROTECTIVE CASING 24" Culvert

GROUT TYPE N/A

2 (IN) OD SCHEDULE 40 PVC CASING WITH FLUSH THREADED JOINTS

(IN) BOREHOLE 8

0 TOP OF SEAL (FT - BGL)

(FT) THICK SEAL 0.75

SEAL TYPE bentonite

0.75 TOP OF SAND/GRAVEL PACK (FT - BGL)

(FT) ABOVE SLOTTED CASING 0.25

1 TOP SLOTTED CASING (FT - BGL)

FILTER PACK TYPE/GRADATION 20-40 Sand

0.01 (IN) SLOTS CUT INTO 2 (IN) OD SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION 2.2 (FT)
DATE/TIME 7/5/94 - 1750

AFTER DEVELOPMENT 2.2 (FT)
DATE/TIME 7/10/94 - 1830

7 TOTAL DEPTH CASING (FT - BGL)

7 TOTAL DEPTH HOLE (FT - BGL)

WELL SAMPLED? [X] YES [ ] NO

QUANTITY MATERIALS USED:

Bentonite (lbs)	
Sand (lbs)	
Grout (lbs)	
Screen (ft)	
Blank Casing (ft)	
Bottom Cap (ea)	
Top Cap (ea)	
Flush Mount	
Protective Casing (ft)	
Lock	
MISC.:	

NOTES

MONTGOMERY WATSON

WELL CONSTRUCTION LOG

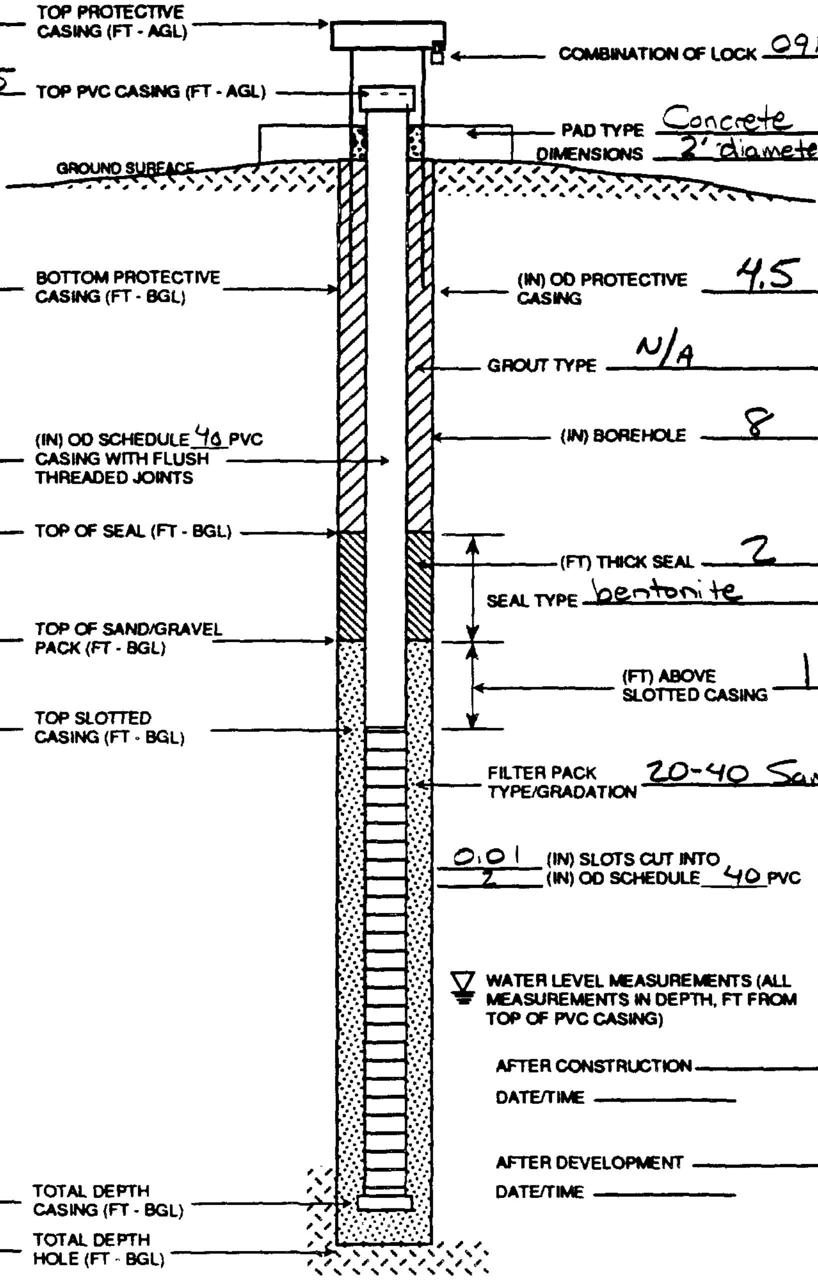
PROJECT NO.:	WELL NO.:	SHEET
2198.0230	21-2	1 OF 1

PROJECT NE Cape SITE 21 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-5-94 WEATHER Cloudy, Fog, Drizzle LOCATION COORDINATES 98038.8253 (Northing) / 95184.9053 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 2.75 (AGL) GROUND SURFACE 59.2300 TOP OF PROTECTIVE CASING 62.2300 TOP OF PVC CASING 61.9800



3 TOP PROTECTIVE CASING (FT - AGL)

2.75 TOP PVC CASING (FT - AGL)

COMBINATION OF LOCK 0911

PAD TYPE Concrete

DIMENSIONS 2' diameter

2 BOTTOM PROTECTIVE CASING (FT - BGL)

(IN) OD PROTECTIVE CASING 4.5

GROUT TYPE N/A

2 (IN) OD SCHEDULE 40 PVC CASING WITH FLUSH THREADED JOINTS

(IN) BOREHOLE 8

1 TOP OF SEAL (FT - BGL)

(FT) THICK SEAL 2

SEAL TYPE bentonite

3 TOP OF SAND/GRAVEL PACK (FT - BGL)

(FT) ABOVE SLOTTED CASING 1

4 TOP SLOTTED CASING (FT - BGL)

FILTER PACK TYPE/GRADATION 20-40 Sand

0.01 (IN) SLOTS CUT INTO
2 (IN) OD SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION ________ (FT)
DATE/TIME ________

AFTER DEVELOPMENT ________ (FT)
DATE/TIME ________

14.0 TOTAL DEPTH CASING (FT - BGL)

14 TOTAL DEPTH HOLE (FT - BGL)

WELL SAMPLED? ☐ YES ☒ NO

QUANTITY MATERIALS USED:

- Bentonite (lbs) ________
- Sand (lbs) ________
- Grout (lbs) ________
- Screen (ft) ________
- Blank Casing (ft) ________
- Bottom Cap (ea) ________
- Top Cap (ea) ________
- Flush Mount ________
- Protective Casing (ft) ________
- Lock ________
- MISC.: ________

NOTES

File: user name/project/File Name Time: 00:XX:00 00:00 JOB No. 0000.00

WELL CONSTRUCTION LOG

MONTGOMERY WATSON

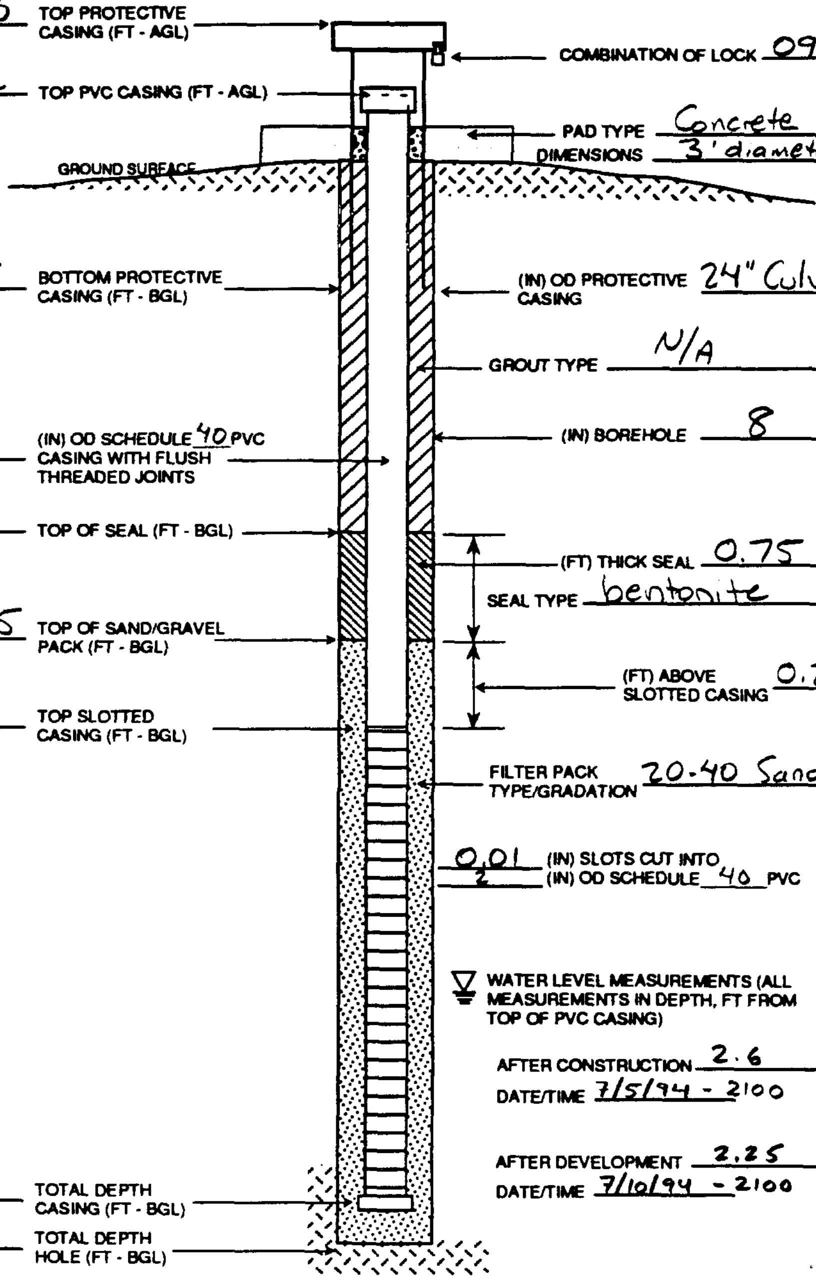
PROJECT NO.: 2198.0230	WELL NO.: 21-3	SHEET 1 OF 1

PROJECT NE Cape SITE 21 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-4-94 WEATHER Cloudy, Windy LOCATION COORDINATES 97825.3100/94885.9710 (Northing) (Easting) ELEVATION DATUM MSL (MLLW/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 2.2 (AGL) GROUND SURFACE 49.68 TOP OF PROTECTIVE CASING 52.1800 TOP OF PVC CASING 51.88



2.5 TOP PROTECTIVE CASING (FT - AGL)

2.2 TOP PVC CASING (FT - AGL)

GROUND SURFACE

0.5 BOTTOM PROTECTIVE CASING (FT - BGL)

2 (IN) OD SCHEDULE 40 PVC CASING WITH FLUSH THREADED JOINTS

0 TOP OF SEAL (FT - BGL)

0.75 TOP OF SAND/GRAVEL PACK (FT - BGL)

1 TOP SLOTTED CASING (FT - BGL)

7 TOTAL DEPTH CASING (FT - BGL)

7 TOTAL DEPTH HOLE (FT - BGL)

COMBINATION OF LOCK 0911

PAD TYPE Concrete
DIMENSIONS 3' diameter

(IN) OD PROTECTIVE CASING 24" Culvert

GROUT TYPE N/A

(IN) BOREHOLE 8

(FT) THICK SEAL 0.75

SEAL TYPE bentonite

(FT) ABOVE SLOTTED CASING 0.25

FILTER PACK TYPE/GRADATION 20-40 Sand

0.01 (IN) SLOTS CUT INTO
2 (IN) OD SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION 2.6 (FT)
DATE/TIME 7/5/94 - 2100

AFTER DEVELOPMENT 2.25 (FT)
DATE/TIME 7/10/94 - 2100

WELL SAMPLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

Bentonite (lbs)	
Sand (lbs)	
Grout (lbs)	
Screen (ft)	
Blank Casing (ft)	
Bottom Cap (ea)	
Top Cap (ea)	
Flush Mount	
Protective Casing (ft)	
Lock	
MISC.:	

NOTES

JOB No. 0000.00 Time: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON Anchorage, Alaska

WELL CONSTRUCTION LOG

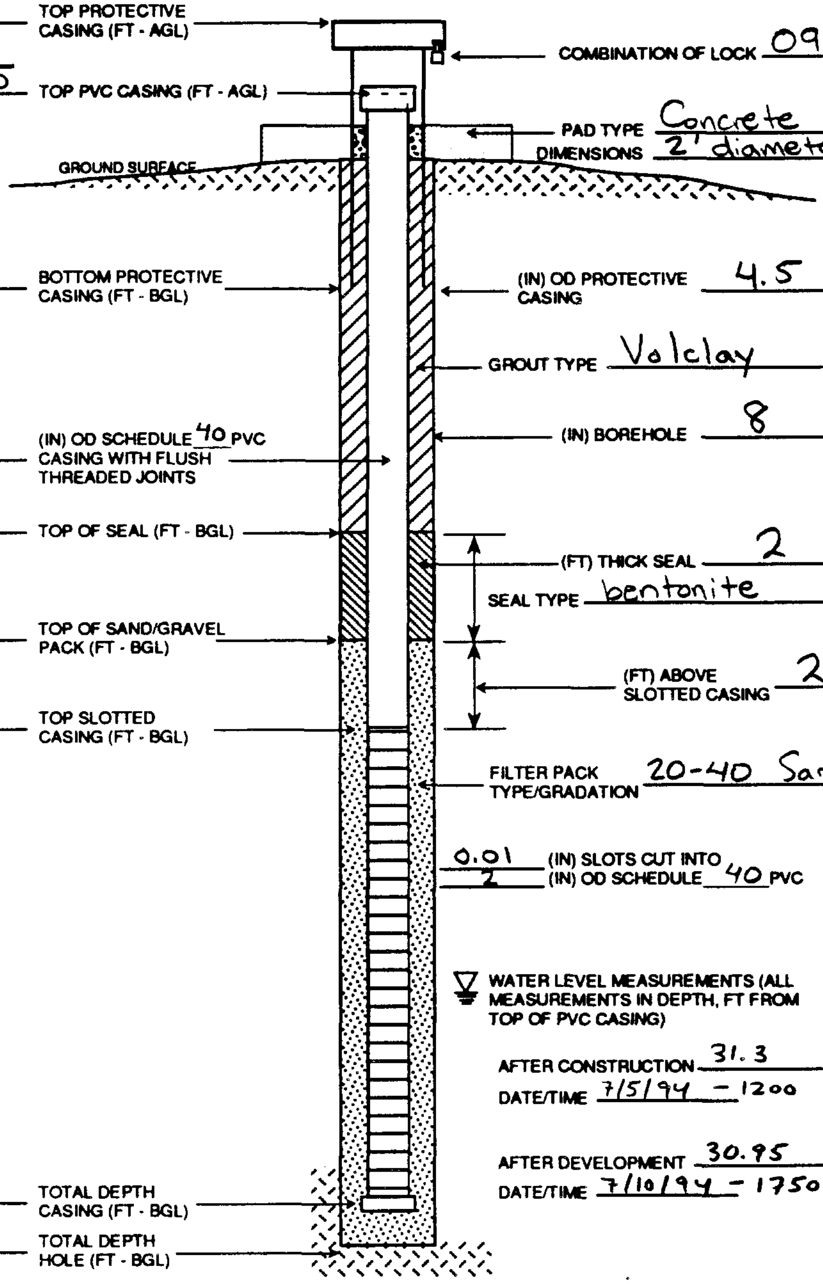
PROJECT NO.:	WELL NO.:	SHEET
2198.0230	22-1	1 OF 1

PROJECT NE Cape SITE 22 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-2-94 WEATHER Foggy, calm LOCATION COORDINATES 97589.3331 (Northing) / 96072.2808 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 2.75 (AGL) GROUND SURFACE 94.33 TOP OF PROTECTIVE CASING 97.33 TOP OF PVC CASING 97.0800



3 TOP PROTECTIVE CASING (FT - AGL)

2.75 TOP PVC CASING (FT - AGL)

GROUND SURFACE

2 BOTTOM PROTECTIVE CASING (FT - BGL)

2 (IN) OD SCHEDULE 40 PVC CASING WITH FLUSH THREADED JOINTS

19 TOP OF SEAL (FT - BGL)

21 TOP OF SAND/GRAVEL PACK (FT - BGL)

23 TOP SLOTTED CASING (FT - BGL)

33 TOTAL DEPTH CASING (FT - BGL)

33 TOTAL DEPTH HOLE (FT - BGL)

COMBINATION OF LOCK 0911

PAD TYPE Concrete

DIMENSIONS 2' diameter

(IN) OD PROTECTIVE CASING 4.5

GROUT TYPE Volclay

(IN) BOREHOLE 8

(FT) THICK SEAL 2

SEAL TYPE bentonite

(FT) ABOVE SLOTTED CASING 2

FILTER PACK TYPE/GRADATION 20-40 Sand

0.01 (IN) SLOTS CUT INTO 2 (IN) OD SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION 31.3 (FT)
DATE/TIME 7/5/94 - 1200

AFTER DEVELOPMENT 30.95 (FT)
DATE/TIME 7/10/94 - 1750

WELL SAMPLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

Bentonite (lbs) ____
Sand (lbs) ____
Grout (lbs) ____
Screen (ft) ____
Blank Casing (ft) ____
Bottom Cap (ea) ____
Top Cap (ea) ____
Flush Mount ____
Protective Casing (ft) ____
Lock ____
MISC.: ____

NOTES

JOB No. 0000.00 Time: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON

WELL CONSTRUCTION LOG

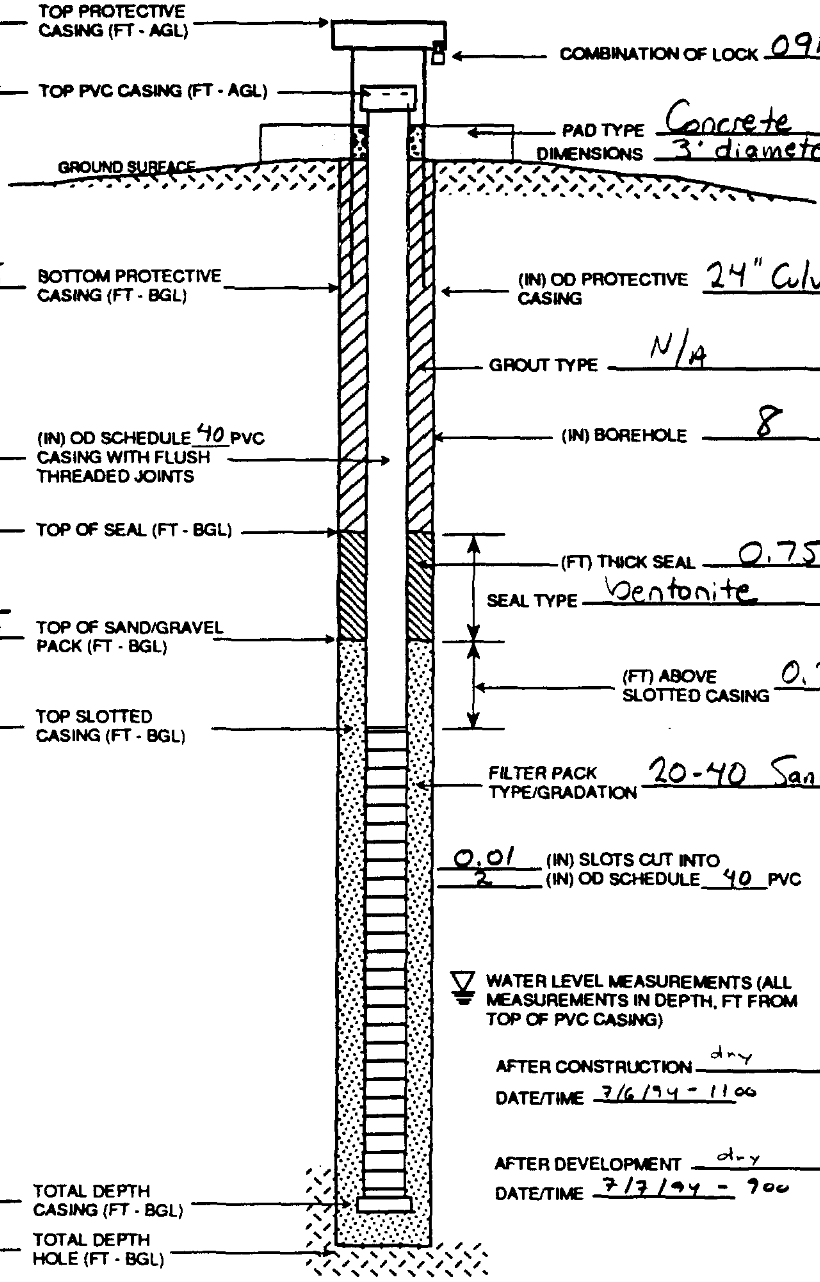
PROJECT NO.:	WELL NO.:	SHEET
2198.0230	24-1	1 OF 1

PROJECT NE Cape SITE 24 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-5-94 WEATHER Sunny, Windy LOCATION COORDINATES 99551.9774 / 89221.2773 (Northing) (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 2.2 (AGL) GROUND SURFACE 25.42 TOP OF PROTECTIVE CASING 27.92 TOP OF PVC CASING 27.6200



2.5 TOP PROTECTIVE CASING (FT - AGL)

2.2 TOP PVC CASING (FT - AGL)

COMBINATION OF LOCK 0911

PAD TYPE Concrete

DIMENSIONS 3' diameter

0.5 BOTTOM PROTECTIVE CASING (FT - BGL)

(IN) OD PROTECTIVE CASING 24" Culvert

GROUT TYPE N/A

2 (IN) OD SCHEDULE 40 PVC CASING WITH FLUSH THREADED JOINTS

(IN) BOREHOLE 8

0 TOP OF SEAL (FT - BGL)

(FT) THICK SEAL 0.75

SEAL TYPE Bentonite

0.75 TOP OF SAND/GRAVEL PACK (FT - BGL)

(FT) ABOVE SLOTTED CASING 0.25

1 TOP SLOTTED CASING (FT - BGL)

FILTER PACK TYPE/GRADATION 20-40 Sand

0.01 (IN) SLOTS CUT INTO 2 (IN) OD SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION dry (FT)
DATE/TIME 7/6/94 - 1100

AFTER DEVELOPMENT dry (FT)
DATE/TIME 7/7/94 - 900

7 TOTAL DEPTH CASING (FT - BGL)

7 TOTAL DEPTH HOLE (FT - BGL)

WELL SAMPLED? YES ☐ NO ☒

QUANTITY MATERIALS USED:

Bentonite (lbs)	
Sand (lbs)	
Grout (lbs)	
Screen (ft)	
Blank Casing (ft)	
Bottom Cap (ea)	
Top Cap (ea)	
Flush Mount	
Protective Casing (ft)	
Lock	
MISC.:	

NOTES

MONTGOMERY WATSON

WELL CONSTRUCTION LOG

PROJECT NO.:	WELL NO.:	SHEET
2198.0230	24-2	1 OF 1

PROJECT NE Cape SITE 24 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-5-94 WEATHER Sunny, calm LOCATION COORDINATES 99589.5852/89018.7597 (Northing) (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

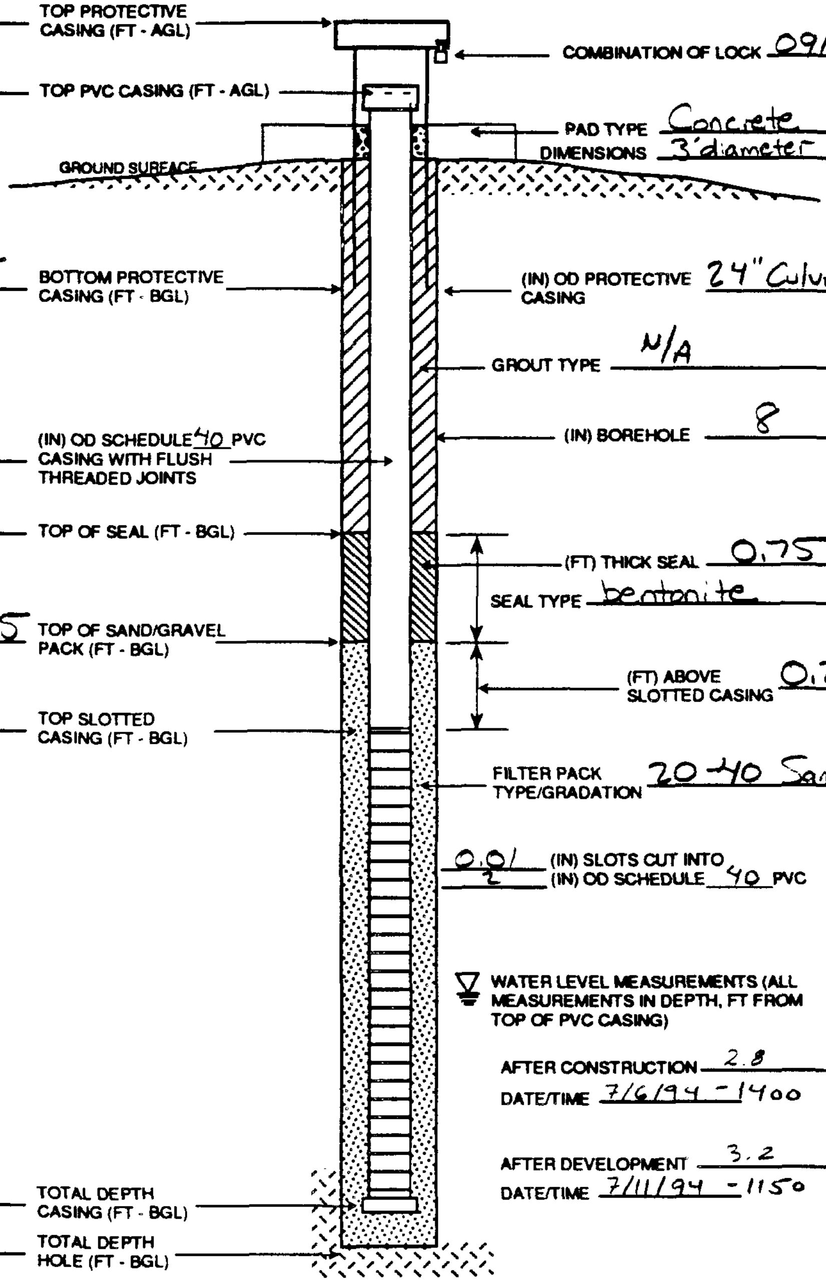
SURVEYED ELEVATIONS 2.2 (AGL) GROUND SURFACE 25.29 TOP OF PROTECTIVE CASING 27.79 TOP OF PVC CASING 27.4900

WELL SAMPLED? [X] YES [ ] NO

QUANTITY MATERIALS USED:

- Bentonite (lbs) ____
- Sand (lbs) ____
- Grout (lbs) ____
- Screen (ft) ____
- Blank Casing (ft) ____
- Bottom Cap (ea) ____
- Top Cap (ea) ____
- Flush Mount ____
- Protective Casing (ft) ____
- Lock ____
- MISC.: ____

NOTES



2.5 TOP PROTECTIVE CASING (FT - AGL)

COMBINATION OF LOCK 0911

2.2 TOP PVC CASING (FT - AGL)

PAD TYPE Concrete

DIMENSIONS 3' diameter

GROUND SURFACE

0.5 BOTTOM PROTECTIVE CASING (FT - BGL)

(IN) OD PROTECTIVE CASING 24" Culvert

GROUT TYPE N/A

2 (IN) OD SCHEDULE 40 PVC CASING WITH FLUSH THREADED JOINTS

(IN) BOREHOLE 8

0 TOP OF SEAL (FT - BGL)

(FT) THICK SEAL 0.75

SEAL TYPE bentonite

0.75 TOP OF SAND/GRAVEL PACK (FT - BGL)

(FT) ABOVE SLOTTED CASING 0.25

1 TOP SLOTTED CASING (FT - BGL)

FILTER PACK TYPE/GRADATION 20-40 Sand

0.01 (IN) SLOTS CUT INTO
2 (IN) OD SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION 2.8 (FT)
DATE/TIME 7/6/94 - 1400

AFTER DEVELOPMENT 3.2 (FT)
DATE/TIME 7/11/94 - 1150

7 TOTAL DEPTH CASING (FT - BGL)

7 TOTAL DEPTH HOLE (FT - BGL)

File: user name/project/File Name Time: 00-XXX-00 00:00 JOB No. 0000.00

MONTGOMERY WATSON

WELL CONSTRUCTION LOG

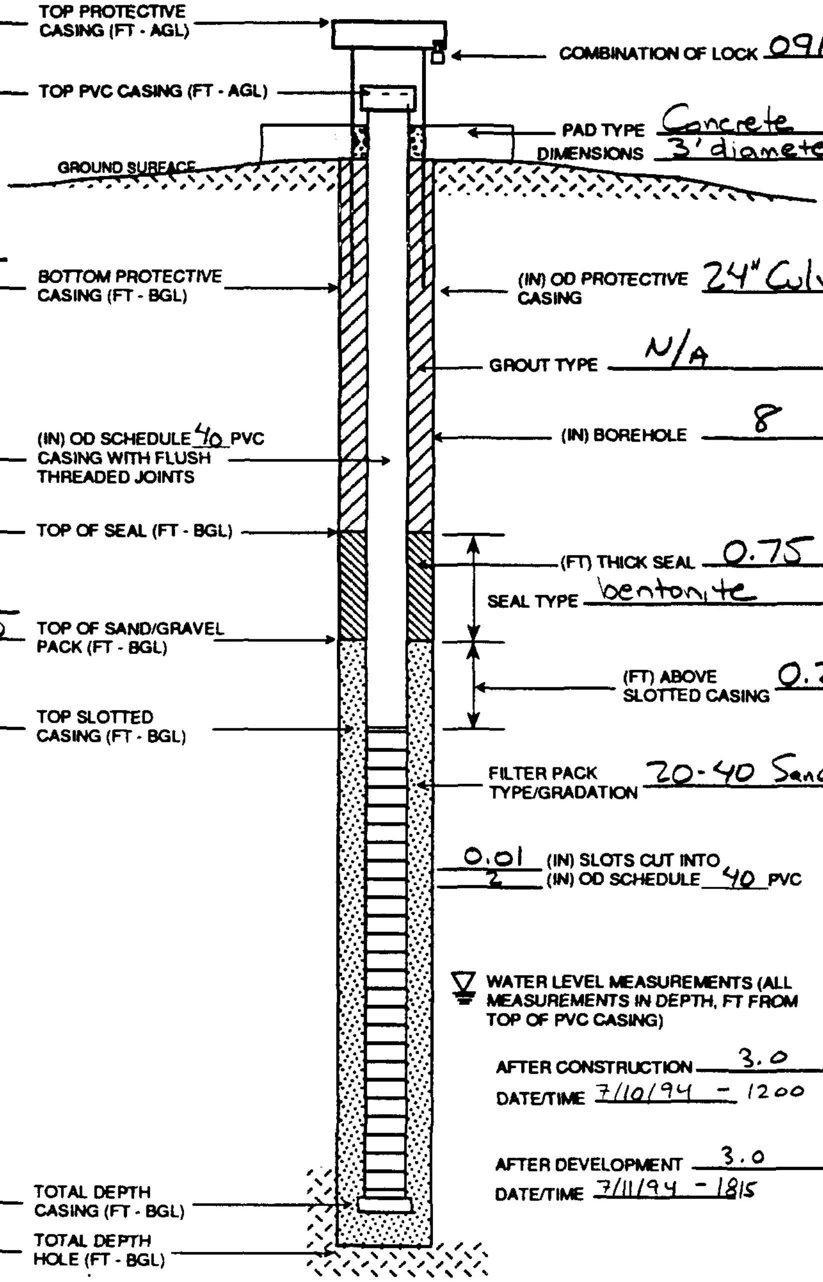
PROJECT NO.:	WELL NO.:	SHEET
2198.0230	24-3	1 OF 1

PROJECT NE Cape SITE 24 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-6-94 WEATHER Cloudy, Windy LOCATION COORDINATES 99771.6856/89149.1960 (Northing) (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS 2.2 (AGL) GROUND SURFACE 25.12 TOP OF PROTECTIVE CASING 27.62 TOP OF PVC CASING 27.3200



2.5 TOP PROTECTIVE CASING (FT - AGL)

2.2 TOP PVC CASING (FT - AGL)

0.5 BOTTOM PROTECTIVE CASING (FT - BGL)

2 (IN) OD SCHEDULE 40 PVC CASING WITH FLUSH THREADED JOINTS

0 TOP OF SEAL (FT - BGL)

0.75 TOP OF SAND/GRAVEL PACK (FT - BGL)

1 TOP SLOTTED CASING (FT - BGL)

7.7 TOTAL DEPTH CASING (FT - BGL)

7.7 TOTAL DEPTH HOLE (FT - BGL)

COMBINATION OF LOCK 0911

PAD TYPE Concrete

DIMENSIONS 3' diameter

(IN) OD PROTECTIVE CASING 24" Culvert

GROUT TYPE N/A

(IN) BOREHOLE 8

(FT) THICK SEAL 0.75

SEAL TYPE bentonite

(FT) ABOVE SLOTTED CASING 0.25

FILTER PACK TYPE/GRADATION 20-40 Sand

0.01 (IN) SLOTS CUT INTO 2 (IN) OD SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION 3.0 (FT)
DATE/TIME 7/10/94 - 1200

AFTER DEVELOPMENT 3.0 (FT)
DATE/TIME 7/11/94 - 1815

WELL SAMPLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

Bentonite (lbs)	
Sand (lbs)	
Grout (lbs)	
Screen (ft)	
Blank Casing (ft)	
Bottom Cap (ea)	
Top Cap (ea)	
Flush Mount	
Protective Casing (ft)	
Lock	
MISC.:	

NOTES

JOB No. 0000.00 Time: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON

WELL CONSTRUCTION LOG

PROJECT NO.: 2198.0230
WELL NO.: 27-1
SHEET 1 OF 1

PROJECT NE Cape SITE 27 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 6-29-94 WEATHER Cloudy, Windy LOCATION COORDINATES 98294.9374 / 96271.7246 (Northing) (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

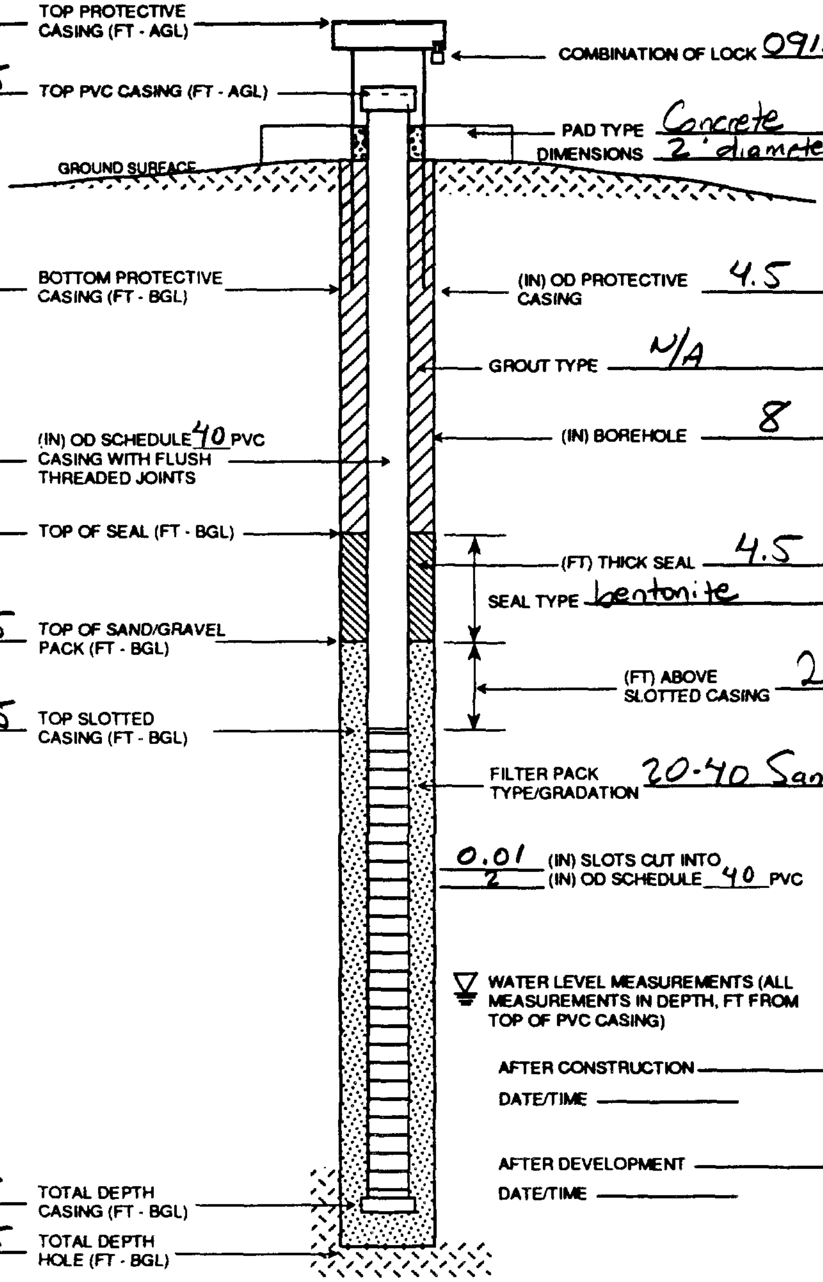
SURVEYED ELEVATIONS 2.75 (AGL) GROUND SURFACE 67.51 TOP OF PROTECTIVE CASING 70.51 TOP OF PVC CASING 70.2600

WELL SAMPLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

- Bentonite (lbs) ______
- Sand (lbs) ______
- Grout (lbs) ______
- Screen (ft) ______
- Blank Casing (ft) ______
- Bottom Cap (ea) ______
- Top Cap (ea) ______
- Flush Mount ______
- Protective Casing (ft) ______
- Lock ______
- MISC.: ______

NOTES



- 3 TOP PROTECTIVE CASING (FT - AGL)
- 2.75 TOP PVC CASING (FT - AGL)
- 2 BOTTOM PROTECTIVE CASING (FT - BGL)
- 2 (IN) OD SCHEDULE 40 PVC CASING WITH FLUSH THREADED JOINTS
- 2 TOP OF SEAL (FT - BGL)
- 6.5 TOP OF SAND/GRAVEL PACK (FT - BGL)
- 8.5 TOP SLOTTED CASING (FT - BGL)
- 18.5 TOTAL DEPTH CASING (FT - BGL)
- 18.5 TOTAL DEPTH HOLE (FT - BGL)

- COMBINATION OF LOCK 0911
- PAD TYPE Concrete
- DIMENSIONS 2' diameter
- (IN) OD PROTECTIVE CASING 4.5
- GROUT TYPE N/A
- (IN) BOREHOLE 8
- (FT) THICK SEAL 4.5
- SEAL TYPE bentonite
- (FT) ABOVE SLOTTED CASING 2
- FILTER PACK TYPE/GRADATION 20-40 Sand
- 0.01 (IN) SLOTS CUT INTO 2 (IN) OD SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION ______ (FT)
DATE/TIME ______

AFTER DEVELOPMENT ______ (FT)
DATE/TIME ______

JOB No. 0000.00 Time: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON

WELL CONSTRUCTION LOG

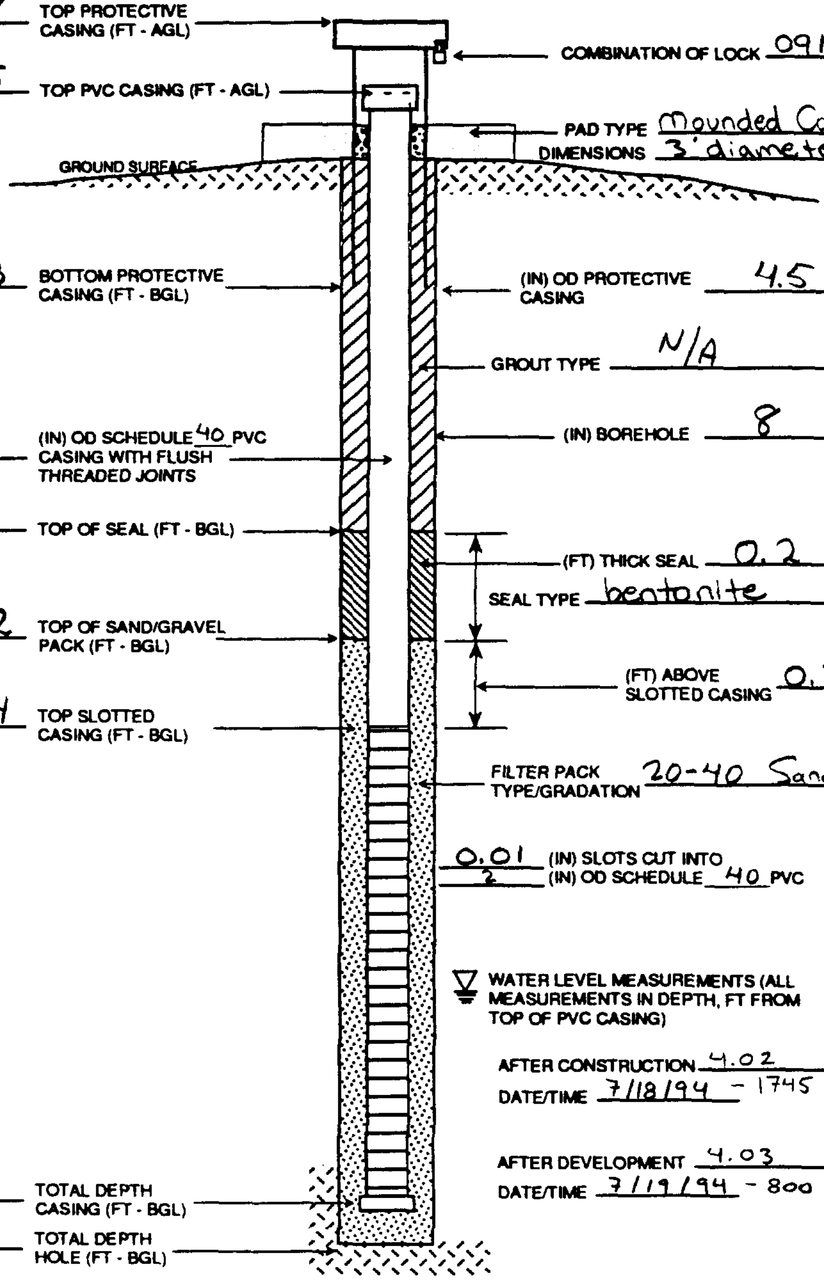
PROJECT NO.: 2198.0230 | WELL NO.: BW-1 | SHEET 1 OF 1

PROJECT NE Cape SITE BW CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-17-94 WEATHER Cloudy, breezy LOCATION COORDINATES Not Surveyed (Northing) (Easting) ELEVATION DATUM — (MLLW/Other)

DRILLING METHOD HSA BORING SIZE 8" RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SURVEYED ELEVATIONS — GROUND SURFACE — TOP OF PROTECTIVE CASING — TOP OF PVC CASING —



4.7 TOP PROTECTIVE CASING (FT - AGL)

COMBINATION OF LOCK 0911

4.5 TOP PVC CASING (FT - AGL)

PAD TYPE Mounded Concrete
DIMENSIONS 3' diameter

0.3 BOTTOM PROTECTIVE CASING (FT - BGL)

(IN) OD PROTECTIVE CASING 4.5

GROUT TYPE N/A

2 (IN) OD SCHEDULE 40 PVC CASING WITH FLUSH THREADED JOINTS

(IN) BOREHOLE 8

0 TOP OF SEAL (FT - BGL)

(FT) THICK SEAL 0.2

SEAL TYPE bentonite

0.2 TOP OF SAND/GRAVEL PACK (FT - BGL)

(FT) ABOVE SLOTTED CASING 0.2

0.4 TOP SLOTTED CASING (FT - BGL)

FILTER PACK TYPE/GRADATION 20-40 Sand

0.01 (IN) SLOTS CUT INTO
2 (IN) OD SCHEDULE 40 PVC

WATER LEVEL MEASUREMENTS (ALL MEASUREMENTS IN DEPTH, FT FROM TOP OF PVC CASING)

AFTER CONSTRUCTION 4.02 (FT)
DATE/TIME 7/18/94 - 1745

AFTER DEVELOPMENT 4.03 (FT)
DATE/TIME 7/19/94 - 800

5 TOTAL DEPTH CASING (FT - BGL)

5 TOTAL DEPTH HOLE (FT - BGL)

WELL SAMPLED? ☒ YES ☐ NO

QUANTITY MATERIALS USED:

Bentonite (lbs) ______
Sand (lbs) ______
Grout (lbs) ______
Screen (ft) ______
Blank Casing (ft) ______
Bottom Cap (ea) ______
Top Cap (ea) ______
Flush Mount ______
Protective Casing (ft) ______
Lock ______
MISC.: ______

NOTES

JOB No. 0000.00 Time: 00-XXX-00 00:00 File: user name/project/File Name

Particle Size Analyses

DEPARTMENT OF THE ARMY
NORTH PACIFIC DIVISION LABORATORY
CORPS OF ENGINEERS
1491 N.W. GRAHAM AVENUE
TROUTDALE, OREGON 97060-9503

September 26, 1994

Victor Harris
Montgomery Watson
4000 Credit Union Drive, Suite 600
Anchorage, Alaska 99503

Mr. Harris:

1. Following are results for 6 soil samples from the St. Lawrence Island - Northeast Cape project sampled by Montgomery Watson from June 27 through July 15, 1994. Soil Classifications on contaminated soils were performed by Solea Testing Group, Concord, California; and Ash Content tests were performed by Columbia Analytical Services, Inc., Kelso, Washington. Also Included are enclosures 1 through 6, Report of Particle Size Analysis and Classification Tests, one for each sample submitted.

2. Summary of Water Content, Ash Content and Soil Classification:

Sample Id.		Water		Soil Classification	
Location	Number	Content,%	Ash, %	ASTM-D2487	TM 5-818-2
94-NE	07151-SB	15.9	95.4	CL	F4
94-NE	10106-SB	41.0	94.8	ML	F4
94-NE	16133-SB	7.0	99.1	GP-GM	S1
94-NE	24141-SB	54.9	86.9	SM	F2
94-NE	11113-SB	21.33	97.8	SM	F4
94-NE	15128-SB	6.1	99.0	GM	F1

3. This completes all physical analysis requested to date for this project.

Sincerely,

Timothy J. Seeman

TIMOTHY J. SEEMAN
Director, North Pacific Division Laboratory

Enclosures

* * * CORPS OF ENGINEERS - NORTH PACIFIC DIVISION LABORATORY * * *

NORTHEAST CAPE, ST. LAWRENCE ISLAND (94-376)

Boring: **94NE** Sample: **07151 SB** Depth: -- Lab No.: 37601

------ Sieve Analysis ------

Sieve	Cumulative Grams Retained	Percent Passing
3 In.	0.00	100.0
2 In.	0.00	100.0
1.5 In.	0.00	100.0
1 In.	0.00	100.0
3/4 In.	0.00	100.0
1/2 In.	28.89	99.0
3/8 In.	75.25	97.3
No. 4	155.00	94.5
No. 10	399.42	85.8
Pan	2813.21	0.0
No. 16	0.00	85.8
No. 30	2.50	83.4
No. 50	7.20	78.9
No. 100	18.00	68.5
No. 200	23.10	63.6
Pan	89.18	0.0

----------- Hydrometer Analysis -----------

Sample Weight:89.18 gr. Start Time:0000

Time	Temp (C)	Hydrometer Reading	Diameter in mm	Percent Finer
1	20.0	55.9	0.0358	53.7
3	20.0	45.9	0.0229	44.2
10	20.0	34.9	0.0138	33.7
100	20.0	22.9	0.0061	22.3
200	20.0	18.9	0.0044	18.5

D85: 0.86 D60: .054 D50: .030 D30: .011 mm

Liquid Limit: 31 Plasticity Index: 12

Fines Type Used for Classification: CL, Lean CLAY

Gravel: 5.5% Sand: 30.9% Fines: 63.6%

------------------------ ASTM D 2487 Classification ------------------------

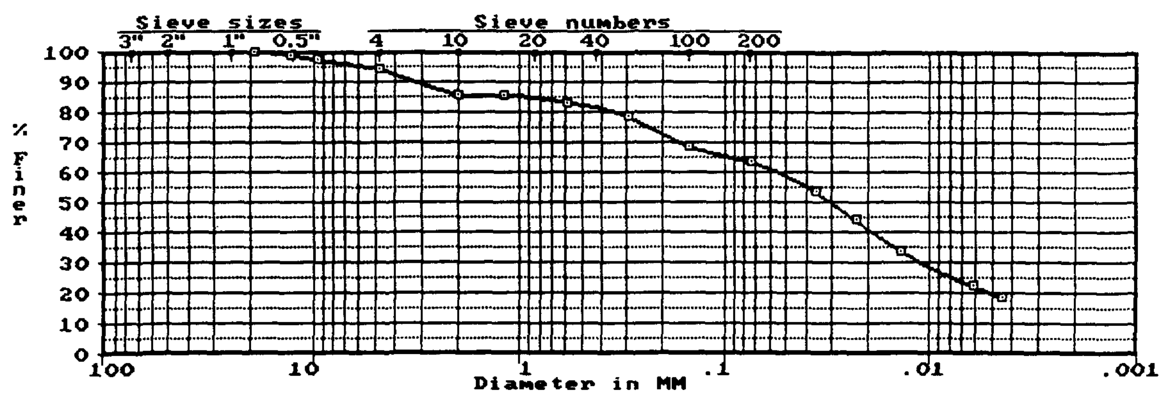
CL Sandy Lean CLAY

---------------------- TM 5-818-2 Frost Classification ----------------------

Percent finer than 0.02 mm: 41.2 Frost Classification: **F4**

---------------------------------- Comments ----------------------------------

- WATER CONTENT = 15.9%
- TIME: 1130 HRS



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NORTHEAST CAPE, ST. LAWRENCE ISLAND (94-376)

Boring: **94NE** Sample: **10106 SB** Depth: **--** Lab No.: 37602

------ Sieve Analysis ------

Sieve	Cumulative Grams Retained	Percent Passing
3 In.	0.00	100.0
2 In.	0.00	100.0
1.5 In.	0.00	100.0
1 In.	201.31	89.4
3/4 In.	250.47	86.8
1/2 In.	350.65	81.5
3/8 In.	425.79	77.5
No. 4	503.45	73.4
No. 10	591.84	68.7
Pan	1890.73	0.0
No. 16	3.20	66.3
No. 30	8.50	62.3
No. 50	14.50	57.8
No. 100	19.50	54.0
No. 200	23.60	50.9
Pan	91.00	0.0

----------- Hydrometer Analysis -----------

Sample Weight:91. gr. Start Time:0000

Time	Temp (C)	Hydrometer Reading	Diameter in mm	Percent Finer
1	20.0	53.9	0.0366	40.7
3	20.0	44.9	0.0231	33.9
10	20.0	34.9	0.0138	26.5
100	20.0	22.4	0.0061	17.1
200	20.0	17.9	0.0045	13.8

D85: 16.5 D60: 0.42 D50: .069 D30: .018 D15: .0050 mm

Liquid Limit: 39 Plasticity Index: 12

Fines Type Used for Classification: ML, SILT

Gravel: 26.6% Sand: 22.5% Fines: 50.9%

------------------------- ASTM D 2487 Classification -------------------------

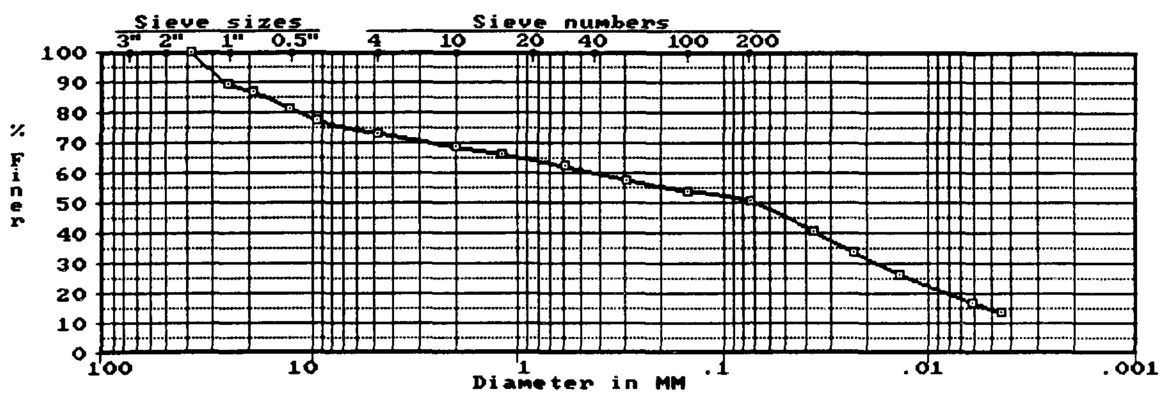
ML Gravelly SILT with sand

---------------------- TM 5-818-2 Frost Classification ----------------------

Percent finer than 0.02 mm: 31.8 Frost Classification: **F4**

---------------------------------- Comments ----------------------------------

- WATER CONTENT = 41.0%
- TIME: 1020 HRS



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NORTHEAST CAPE, ST. LAWRENCE ISLAND (94-376)

Boring: **94NE** Sample: **16133 SB** Depth: **--** Lab No.: 37603

------ Sieve Analysis ------

Sieve	Cumulative Grams Retained	Percent Passing
3 In.	0.00	100.0
2 In.	0.00	100.0
1.5 In.	236.50	68.4
1 In.	318.60	57.5
3/4 In.	344.00	54.1
1/2 In.	405.20	45.9
3/8 In.	442.40	41.0
No. 4	508.40	32.2
No. 10	571.10	23.8
Pan	749.30	0.0
No. 16	9.00	21.2
No. 30	22.10	17.4
No. 50	36.00	13.4
No. 100	45.00	10.9
No. 200	51.50	9.0
Pan	82.81	0.0

----------- Hydrometer Analysis -----------

Sample Weight:82.81 gr. Start Time:0000

Time	Temp (C)	Hydrometer Reading	Diameter in mm	Percent Finer
1	20.0	26.9	0.0462	7.8
3	20.0	22.9	0.0274	6.7
10	20.0	16.4	0.0156	4.8
100	20.0	9.4	0.0066	2.8
200	20.0	7.9	0.0047	2.4

D85: 44.6 D60: 27.9 D50: 15.5 D30: 3.93 D15: 0.40 D10: 0.11 mm

Cu: 100+ Cc: 5.09

Liquid Limit: NP Plasticity Index: NP

Fines Type Used for Classification: ML, SILT

Gravel: 67.8% Sand: 23.2% Fines: 9.0%

------------------------ ASTM D 2487 Classification ------------------------

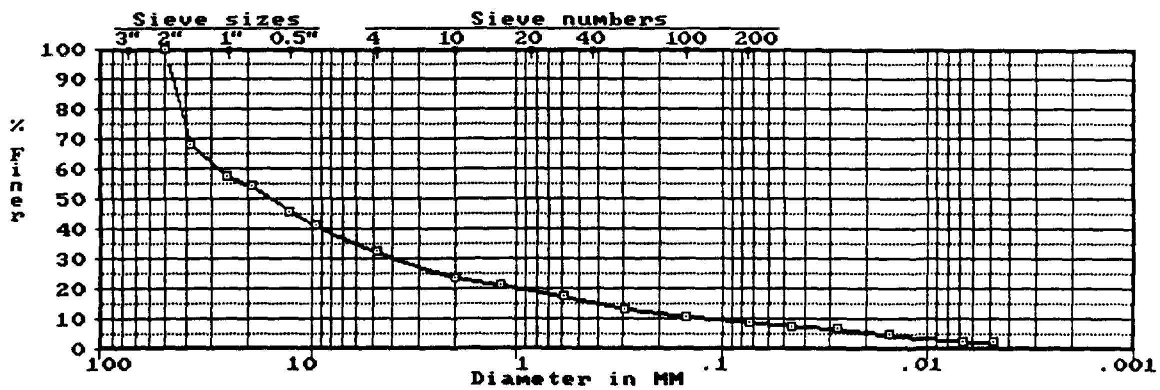
GP-GM Poorly graded GRAVEL with silt and sand

---------------------- TM 5-818-2 Frost Classification ----------------------

Percent finer than 0.02 mm: 5.7 Frost Classification: **S1**

---------------------------------- Comments ----------------------------------

- WATER CONTENT = 7.0%
- TIME: 1135 HRS



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NORTHEAST CAPE, ST. LAWRENCE ISLAND (94-376)

Boring: **94NE** Sample: **24141 SB** Depth: -- Lab No.: 37604

------ Sieve Analysis ------

Sieve	Cumulative Grams Retained	Percent Passing
3 In.	0.00	100.0
2 In.	0.00	100.0
1.5 In.	0.00	100.0
1 In.	94.70	89.2
3/4 In.	111.20	87.3
1/2 In.	172.90	80.2
3/8 In.	210.70	75.9
No. 4	325.70	62.7
No. 10	476.50	45.4
Pan	873.03	0.0
No. 16	7.10	41.2
No. 30	15.30	36.4
No. 50	25.40	30.4
No. 100	36.10	24.1
No. 200	44.90	18.9
Pan	77.00	0.0

----------- Hydrometer Analysis -----------

Sample Weight:77. gr. Start Time:0000

Time	Temp (C)	Hydrometer Reading	Diameter in mm	Percent Finer
1	20.0	25.7	0.0466	15.3
3	20.0	19.2	0.0281	11.5
10	20.0	12.7	0.0160	7.7
100	20.0	6.4	0.0068	4.0
200	20.0	4.4	0.0048	2.9

D85: 16.5 D60: 4.23 D50: 2.60 D30: 0.28 D15: .045 D10: .023 mm

Cu: 100+ Cc: 0.84

Liquid Limit: NP Plasticity Index: NP

Fines Type Used for Classification: ML, SILT

Gravel: 37.3% Sand: 43.8% Fines: 18.9%

------------------------ ASTM D 2487 Classification ------------------------

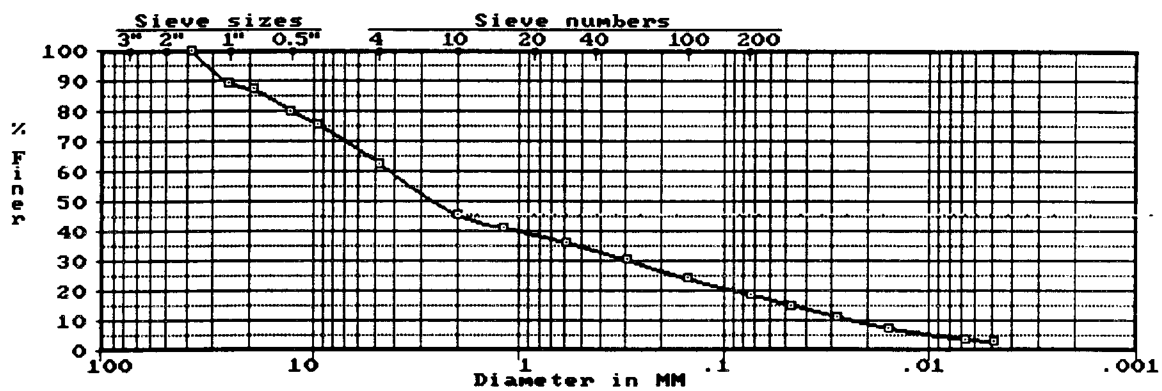
SM Silty SAND with gravel

---------------------- TM 5-818-2 Frost Classification ----------------------

Percent finer than 0.02 mm: 9.1 Frost Classification: **F2**

---------------------------------- Comments ----------------------------------

- WATER CONTENT = 54.9%
- TIME: 1800 HRS



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NORTHEAST CAPE, ST. LAWRENCE ISLAND 94-376

Boring: **94NE** Sample: **11113-SB** Depth: Lab No.: 37605

------ Sieve Analysis ------

Sieve	Cumulative Grams Retained	Percent Passing
3 In.	0.00	100.0
2 In.	0.00	100.0
1.5 In.	0.00	100.0
1 In.	0.00	100.0
3/4 In.	0.00	100.0
1/2 In.	0.00	100.0
3/8 In.	0.00	100.0
No. 4	1.40	99.7
No. 10	29.90	93.1
Pan	432.30	0.0
No. 16	6.48	87.0
No. 30	14.39	79.5
No. 50	26.42	68.2
No. 100	46.85	48.9
No. 200	61.98	34.7
Pan	98.80	0.0

----------- Hydrometer Analysis -----------

Sample Weight:98.8 gr. Start Time:0000

Time	Temp (C)	Hydrometer Reading	Diameter in mm	Percent Finer
1	20.0	35.1	0.0435	33.2
3	20.0	31.5	0.0258	29.8
10	20.0	26.1	0.0147	24.8
100	20.0	20.0	0.0062	19.1
200	20.0	18.5	0.0045	17.7

D85: 0.97 D60: 0.22 D50: 0.15 D30: .026 mm

Liquid Limit: 22 Plasticity Index: 2

Fines Type Used for Classification: ML, SILT

Gravel: 0.3% Sand: 65.0% Fines: 34.7%

------------------------ ASTM D 2487 Classification ------------------------

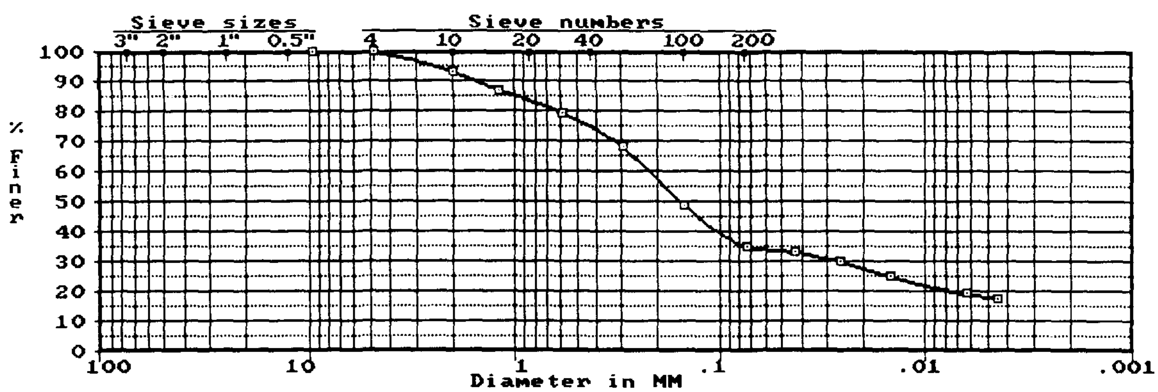
SM Silty SAND

---------------------- TM 5-818-2 Frost Classification ----------------------

Percent finer than 0.02 mm: 27.6 Frost Classification: **F4**

---------------------------------- Comments ----------------------------------

\- WATER CONTENT = 21.3%



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NORTHEAST CAPE, ST. LAWRENCE ISLAND 94-376

Boring: **94NE** Sample: **15128-SB** Depth: -- Lab No.: 37606

------ Sieve Analysis ------

Sieve	Cumulative Grams Retained	Percent Passing
3 In.	0.00	100.0
2 In.	0.00	100.0
1.5 In.	121.92	85.1
1 In.	233.90	71.4
3/4 In.	273.30	66.6
1/2 In.	343.50	58.0
3/8 In.	386.60	52.7
No. 4	472.30	42.2
No. 10	560.70	31.4
Pan	817.05	0.0
No. 16	4.86	29.8
No. 30	9.52	28.2
No. 50	13.61	26.9
No. 100	16.92	25.8
No. 200	19.09	25.1
Pan	95.30	0.0

----------- Hydrometer Analysis -----------

Sample Weight:98.8 gr. Start Time:0000

Time	Temp (C)	Hydrometer Reading	Diameter in mm	Percent Finer
1	20.0	33.8	0.0440	10.8
3	20.0	30.4	0.0260	9.7
10	20.0	25.1	0.0148	8.0
100	20.0	19.0	0.0063	6.1
200	20.0	18.5	0.0045	6.0

D85: 38.0 D60: 13.9 D50: 8.06 D30: 1.34 D15: .051 D10: .030 mm

Cu: 100+ Cc: 4.30

Liquid Limit: NP Plasticity Index: NP

Fines Type Used for Classification: ML, SILT

Gravel: 57.8% Sand: 17.1% Fines: 25.1%

------------------------- ASTM D 2487 Classification -------------------------

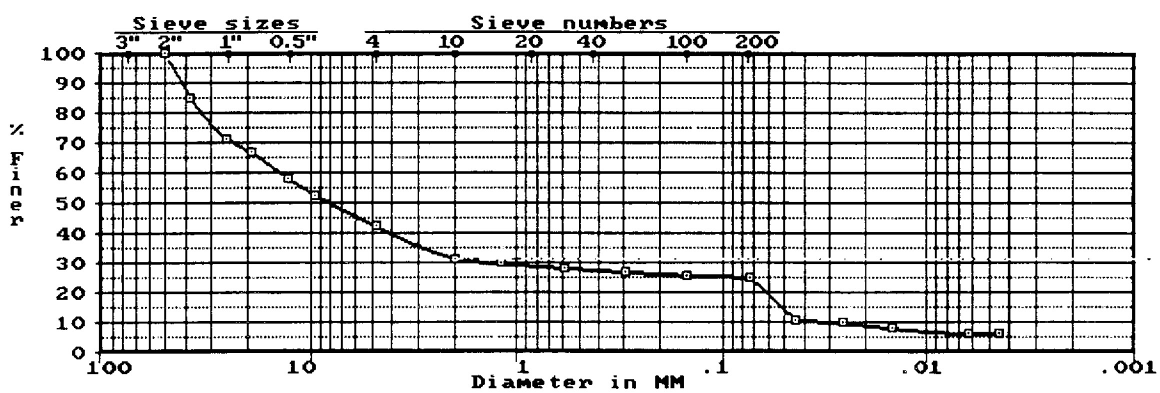
GM Silty GRAVEL with sand

---------------------- TM 5-818-2 Frost Classification ----------------------

Percent finer than 0.02 mm: 8.9 Frost Classification: **F1**

---------------------------------- Comments ----------------------------------

- WATER CONTENT = 6.1%

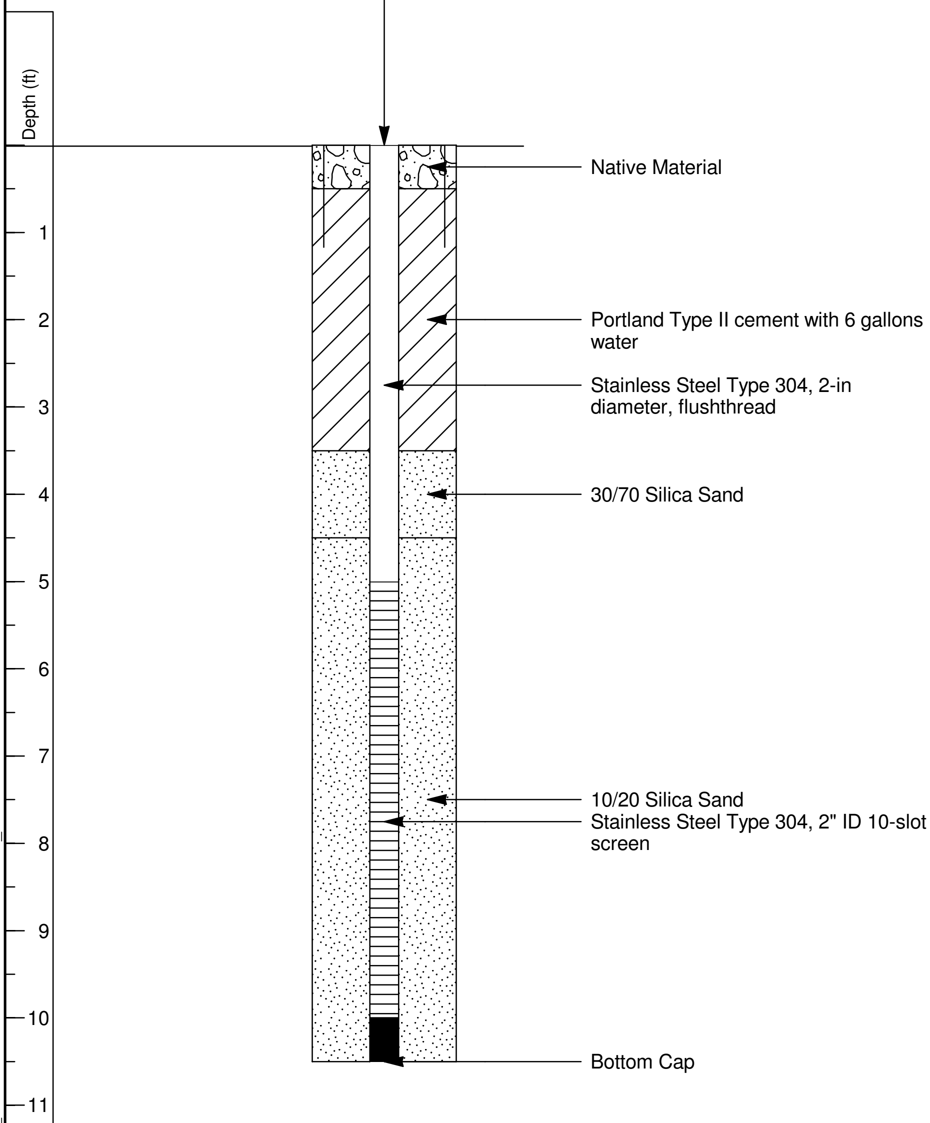


AECOM MONITORING WELL LOG	Project: ***Main Operations Complex Area Phase I ISCO*** ***North East Cape, St. Lawrence Island, Alaska***	Page 1 of 1 Date: ***2 Aug 2009***
	Drilling Agency: ☐ Alaska District ☒ Other ***Denali Drilling***	Elevation Datum: ☒ MSL ☐ other
	Location: Northing: ***3,403,925 ft*** Easting: ***1,810,739 ft***	Top of Hole Elevation: **

Hole Number, Field:	Permanent:	Driller:	Inspector:
ICOIW01	***ICOIW01***	***R. Roberson***	***R. Schlosser***

Type of Hole: ☒ other ***Injection Well*** ☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer	Depth to Groundwater: ***9.80 ft WD***	Depth Drilled: ***10.5 ft***	Total Depth: ***10.5 ft***

Hammer Weight:	Split Spoon I.D:	Size and Type of Bit:	Type of Equipment:	Type of Samples:
340 lbs	***2.5 in***	***8.3 in Hollow Stem Auger***	***Mobile B-61 Auger Rig***	***Driven Split Spoon***



NOTE:

1) Top of PVC Casing Elevation: 69.5372'
Flushmount with cement apron.
** Top of hole elevation not measured; see top of PVC casing elevation.
BTIC - Below Top of Inner Casing

SUMMARY OF MATERIALS USED

5 feet - 2-in stainless steel Type 304 riser casing
5 feet - 2-in stainless steel Type 304 0.01-in slot wire wrap screen
3.5 cubic feet - 10/20 Sand Filter Pack Material

Bottom of Exploration 10.5 ft
Groundwater Encountered While Drilling (WD): at depth 9.80 ft on 8/2/2009

MONITORING WELL LOG

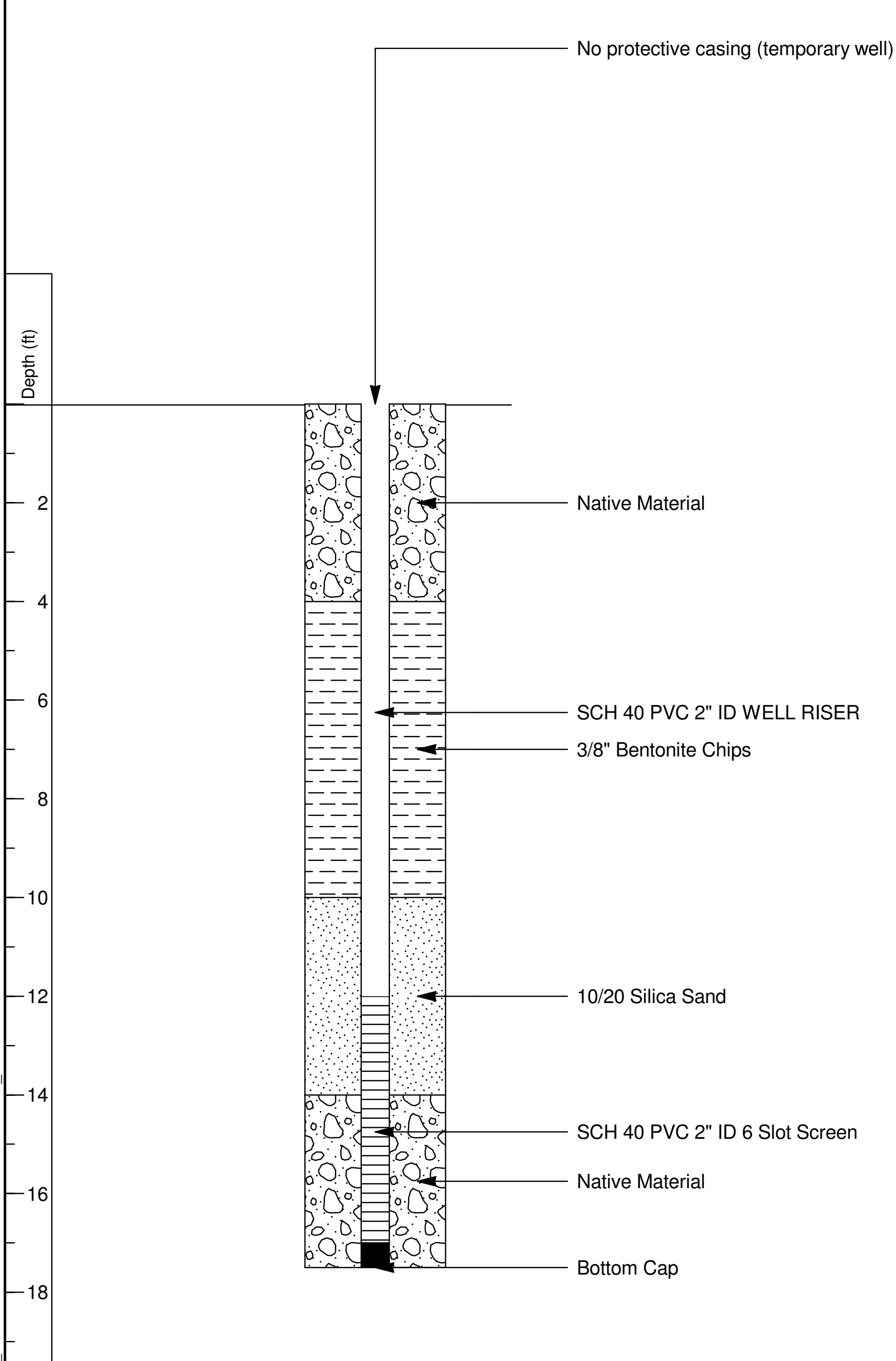
AECOM

Project: *Main Operations Complex Area Phase I ISCO, North East Cape, St. Lawrence Island, Alaska*	Page 1 of 1
	Date: *20 Jul 2009*
Drilling Agency: ☐ Alaska District ☒ Other *Denali Drilling*	Elevation Datum: ☒ MSL ☐ other
Location: Northing: *3,403,903 ft* Easting: *1,810,726 ft*	Top of Hole Elevation: **

Hole Number, Field:	Permanent:	Driller:	Inspector:
ICOMW01	*ICOMW01*	*R. Roberson*	*R. Schlosser*

Type of Hole:	Depth to Groundwater:	Depth Drilled:	Total Depth:
☒ other *Monitoring Well (Temporary)* ☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer	*13.20 ft WD*	*17.5 ft*	*17.5 ft*

Hammer Weight:	Split Spoon I.D:	Size and Type of Bit:	Type of Equipment:	Type of Samples:
340 lbs	*2.5 in*	*8.3 in Hollow Stem Auger*	*Mobile B-61 Auger Rig*	*Driven Split Spoon*



NOTE:

1) Top of PVC Casing Elevation: 70.661'
Temporary well; No surface completion
** Top of hole elevation not measured; see top of PVC casing elevation.
BTIC - Below Top of Inner Casing

SUMMARY OF MATERIALS USED

12 feet - 2-inch SCH 40 PVC Riser Casing
5 feet - 2-inch SCH 40 PVC Screen with 0.006-inch Slots
3 cubic feet - 10/20 Sand Filter Pack Material
4 cubic feet - 3/8-inch Bentonite Chips

Bottom of Exploration 17.5 ft
Groundwater Encountered While Drilling (WD): at depth 13.20 ft on 7/20/2009

MONITORING WELL LOG

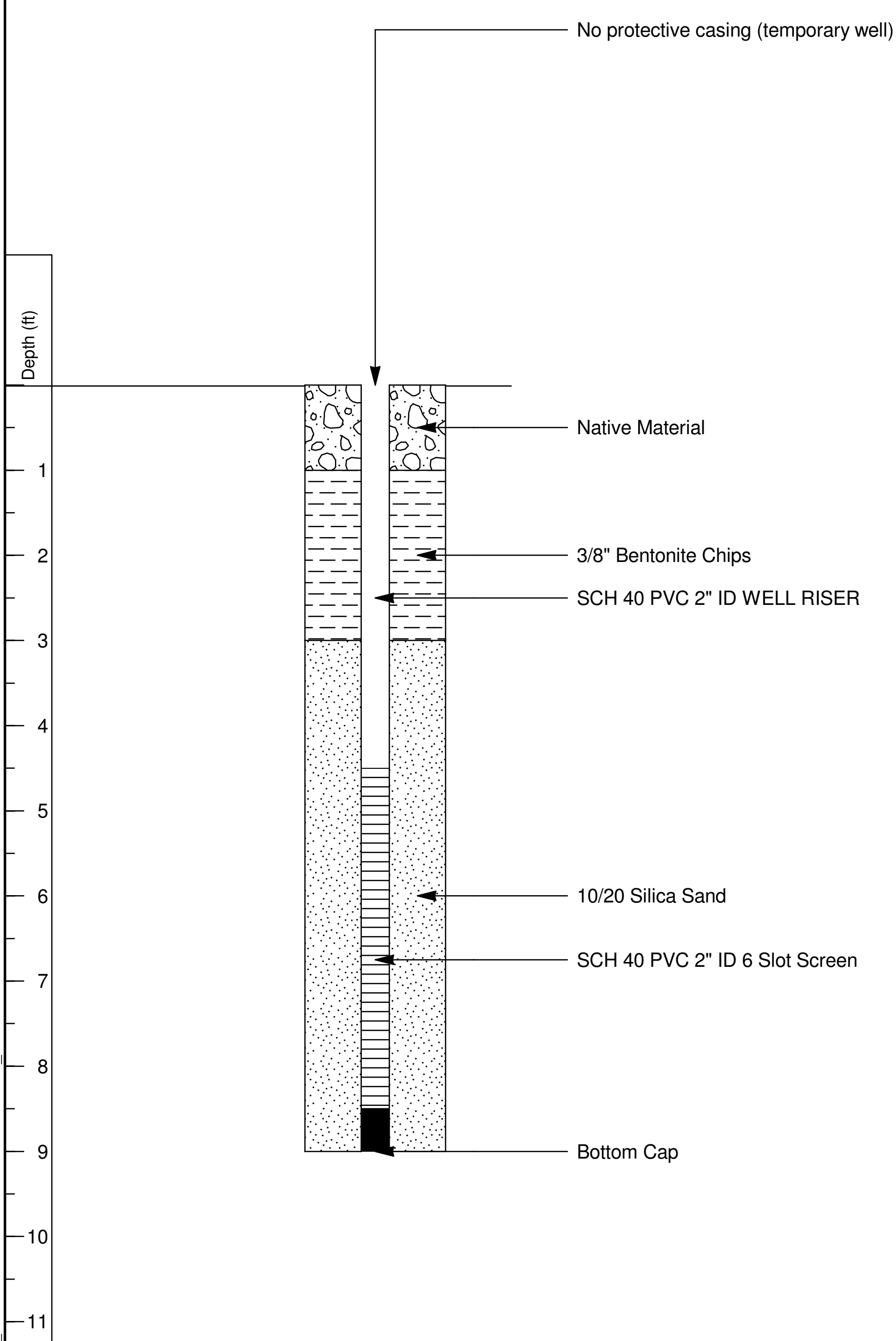
AECOM

Project: **Main Operations Complex Area Phase I ISCO** North East Cape, St. Lawrence Island, Alaska	Page 1 of 1
	Date: **21 Jul 2009**
Drilling Agency: ☐ Alaska District ☒ Other **Denali Drilling**	Elevation Datum: ☒ MSL ☐ other
Location: Northing: **3,403,946 ft** Easting: **1,810,741 ft**	Top of Hole Elevation: **

Hole Number, Field:	Permanent:	Driller:	Inspector:
ICOMW02	ICOMW02	R. Roberson	R. Schlosser

Type of Hole: ☒ other **Monitoring Well (Temporary)** ☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer	Depth to Groundwater:	Depth Drilled:	Total Depth:
	4.50 ft WD	9.0 ft	9.0 ft

Hammer Weight:	Split Spoon I.D:	Size and Type of Bit:	Type of Equipment:	Type of Samples:
340 lbs	2.5 in	8.3 in Hollow Stem Auger	Mobile B-61 Auger Rig	Driven Split Spoon



NOTE:

1) Top of PVC Casing Elevation: 67.2682'
Temporary well; No surface completion
** Top of hole elevation not measured; see top of PVC casing elevation.
BTIC - Below Top of Inner Casing

SUMMARY OF MATERIALS USED

4.5 feet - 2-inch SCH 40 PVC Riser Casing
4 feet - 2-inch SCH 40 PVC Pre-Packed Screen with 0.006-inch Slots and 10/20 Silica Sand
5 cubic feet - 10/20 Sand Filter Pack Material
2 cubic feet - 3/8-inch Bentonite Chips

Bottom of Exploration 9.0 ft
Groundwater Encountered While Drilling (WD): at depth 4.50 ft on 7/21/2009

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AECOM

MONITORING WELL LOG

Project: *Main Operations Complex Area Phase I ISCO* *North East Cape, St. Lawrence Island, Alaska*	Page 1 of 1 / Date: *28 Jul 2009*
Drilling Agency: ☐ Alaska District ☒ Other *Denali Drilling*	Elevation Datum: ☒ MSL ☐ other
Location: Northing: *3,403,928 ft* Easting: *1,810,746 ft*	Top of Hole Elevation: **

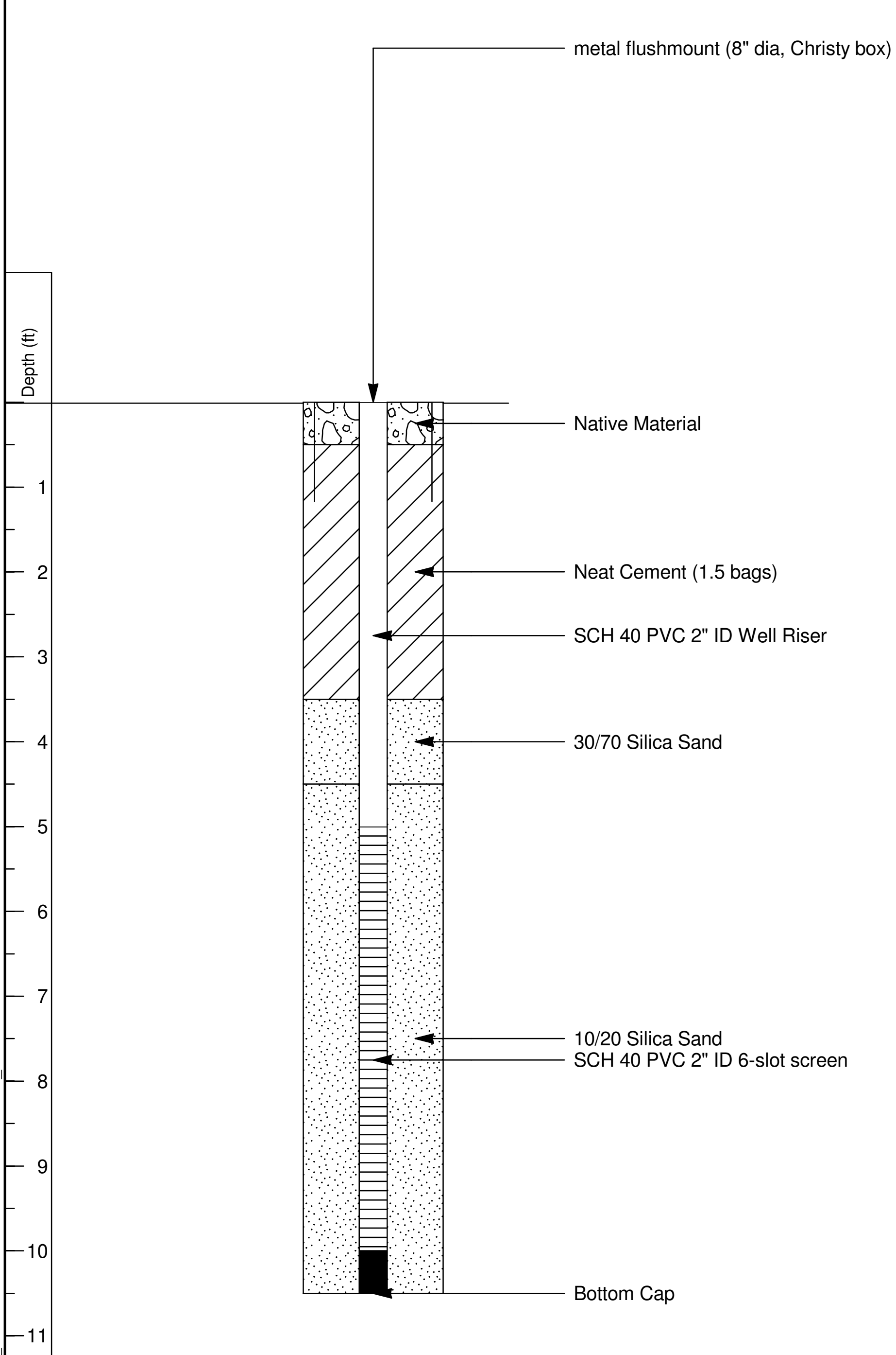
Hole Number, Field:	Permanent:	Driller:	Inspector:
ICOMW03	*ICOMW03*	*R. Roberson*	*R. Schlosser*

Type of Hole: ☒ other *Monitoring Well* ☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer	Depth to Groundwater:	Depth Drilled:	Total Depth:
	6.00 ft WD	*10.5 ft*	*10.5 ft*

Hammer Weight:	Split Spoon I.D:	Size and Type of Bit:	Type of Equipment:	Type of Samples:
340 lbs	*2.5 in*	*8.3 in Hollow Stem Auger*	*Mobile B-61 Auger Rig*	*Driven Split Spoon*

NOTE:

1) Top of PVC Casing Elevation: 69.3095'
Flushmount with cement apron.
** Top of hole elevation not measured; see top of PVC casing elevation.
BTIC - Below Top of Inner Casing



SUMMARY OF MATERIALS USED

5 feet - 2-in SCH 40 PVC riser casing
5 feet - 2-in SCH 40 PVC 0.006-in slot screen
3 cubic feet - 10/20 Sand Filter Pack Material

Bottom of Exploration 10.5 ft
Groundwater Encountered While Drilling (WD): at depth 6.00 ft on 7/28/2009

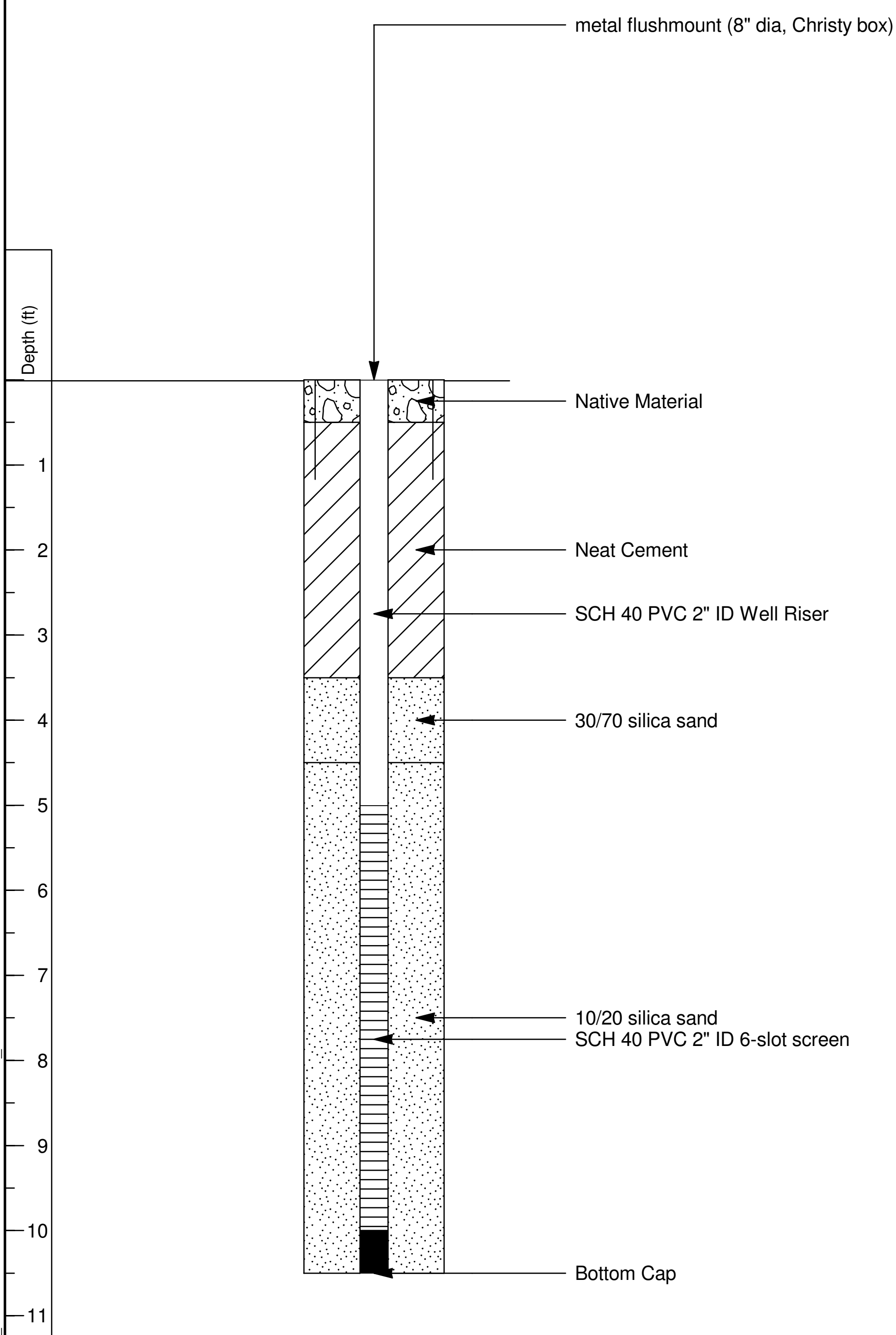
MONITORING WELL LOG

AECOM	Project: *Main Operations Complex Area Phase I ISCO* *North East Cape, St. Lawrence Island, Alaska*	Page 1 of 1
		Date: *28 Jul 2009*
	Drilling Agency: ☐ Alaska District ☒ Other *Denali Drilling*	Elevation Datum: ☒ MSL ☐ other
	Location: Northing: *3,403,929 ft* Easting: *1,810,736 ft*	Top of Hole Elevation: **

Hole Number, Field:	Permanent:	Driller:	Inspector:
ICOMW04	*ICOMW04*	*R. Roberson*	*R. Schlosser*

Type of Hole: ☒ other *Monitoring Well* ☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer	Depth to Groundwater:	Depth Drilled:	Total Depth:
	6.00 ft WD	*10.5 ft*	*10.5 ft*

Hammer Weight:	Split Spoon I.D:	Size and Type of Bit:	Type of Equipment:	Type of Samples:
340 lbs	*2.5 in*	*8.3 in Hollow Stem Auger*	*Mobile B-61 Auger Rig*	*Driven Split Spoon*



NOTE:

1) Top of PVC Casing Elevation: 69.3055'
Flushmount with cement apron.
** Top of hole elevation not measured; see top of PVC casing elevation.
BTIC - Below Top of Inner Casing

SUMMARY OF MATERIALS USED

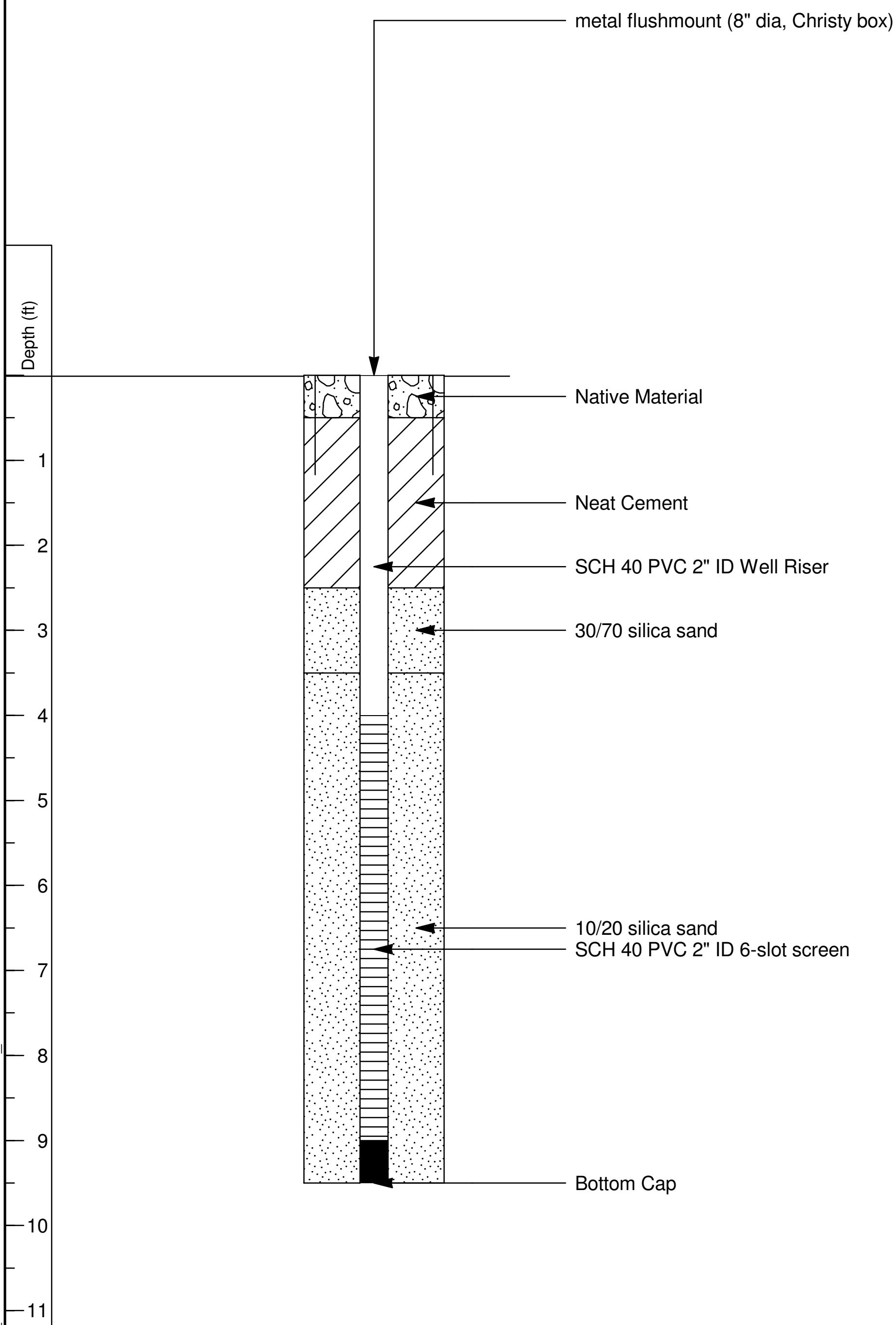
5 feet - 2-in SCH 40 PVC riser casing
5 feet - 2-in SCH 40 PVC 0.006-in slot screen
4 cubic feet - 10/20 Sand Filter Pack Material

Bottom of Exploration 10.5 ft
Groundwater Encountered While Drilling (WD): at depth 6.00 ft on 7/28/2009

MONITORING WELL LOG

AECOM

Project:	**Main Operations Complex Area Phase I ISCO** North East Cape, St. Lawrence Island, Alaska
Page	1 of 1
Date:	29 Jul 2009
Drilling Agency:	☐ Alaska District ☒ Other Denali Drilling
Elevation Datum:	☒ MSL ☐ other
Location:	Northing: 3,403,921 ft Easting: 1,810,742 ft
Top of Hole Elevation:	**
Hole Number, Field:	ICOMW05
Permanent:	ICOMW05
Driller:	R. Roberson
Inspector:	R. Schlosser
Type of Hole:	☒ other Monitoring Well; ☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer
Depth to Groundwater:	7.00 ft WD
Depth Drilled:	9.0 ft
Total Depth:	9.0 ft
Hammer Weight:	340 lbs
Split Spoon I.D:	2.5 in
Size and Type of Bit:	8.3 in Hollow Stem Auger
Type of Equipment:	Mobile B-61 Auger Rig
Type of Samples:	Driven Split Spoon



NOTE:

1) Top of PVC Casing Elevation: 69.3523'
Flushmount with cement apron.
** Top of hole elevation not measured; see top of PVC casing elevation.
BTIC - Below Top of Inner Casing

SUMMARY OF MATERIALS USED

4 feet - 2-in SCH 40 PVC riser casing
5 feet - 2-in SCH 40 PVC 0.006-in slot screen
3.5 cubic feet - 10/20 Sand Filter Pack Material

Bottom of Exploration 9.0 ft
Groundwater Encountered While Drilling (WD): at depth 7.00 ft on 7/29/2009

MONITORING WELL LOG

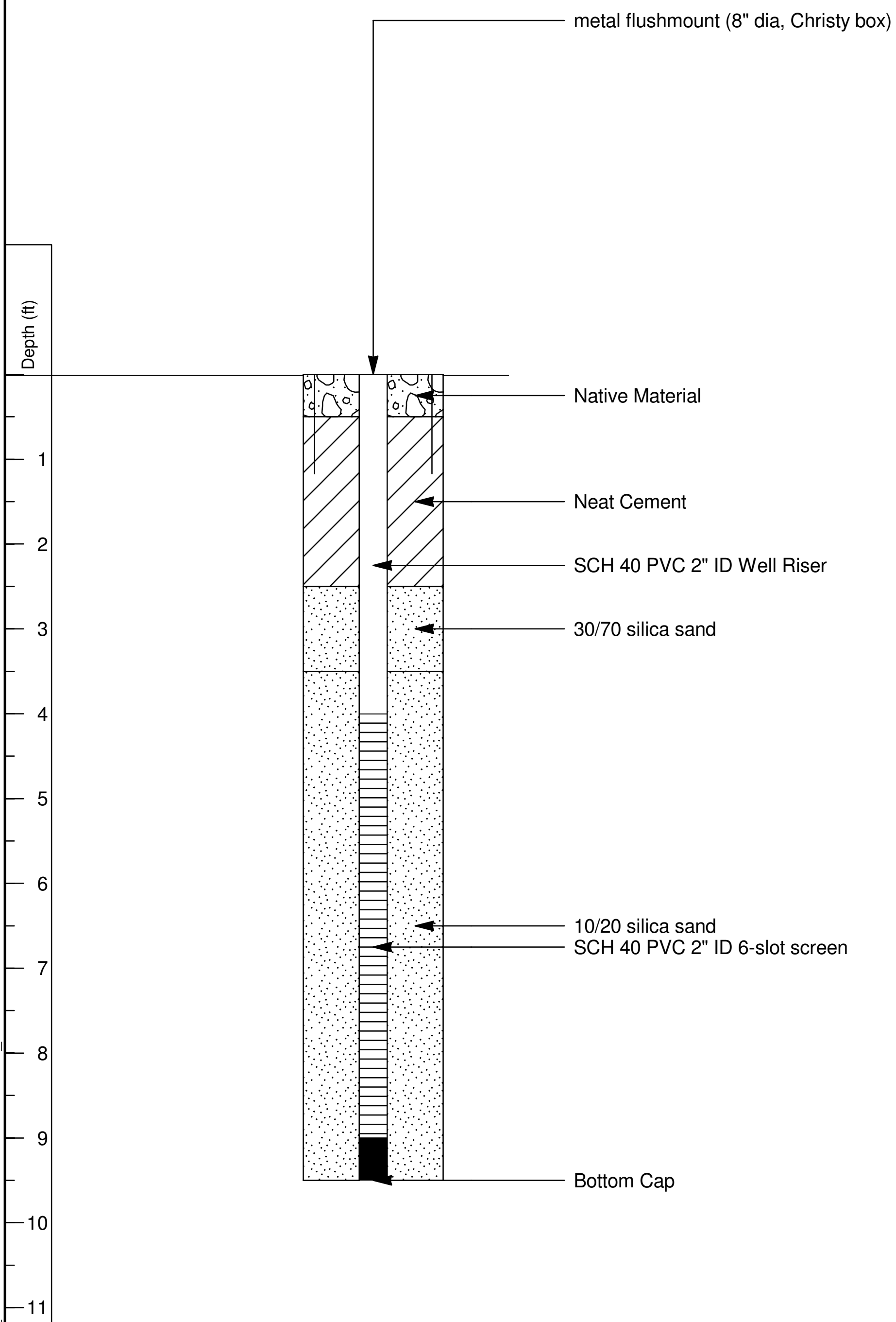
AECOM

Project:	*Main Operations Complex Area Phase I ISCO* *North East Cape, St. Lawrence Island, Alaska*
Page 1 of 1	Date: *30 Jul 2009*
Drilling Agency: ☐ Alaska District ☒ Other *Denali Drilling*	Elevation Datum: ☒ MSL ☐ other
Location: Northing: *3,403,938 ft* Easting: *1,810,741 ft*	Top of Hole Elevation: **
Hole Number, Field: *ICOMW06* Permanent: *ICOMW06*	Driller: *R. Roberson* Inspector: *R. Schlosser*

Type of Hole: ☒ other *Monitoring Well*
☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer

Depth to Groundwater:	Depth Drilled:	Total Depth:
5.00 ft WD	*9.5 ft*	*9.5 ft*

Hammer Weight:	Split Spoon I.D:	Size and Type of Bit:	Type of Equipment:	Type of Samples:
340 lbs	*2.5 in*	*8.3 in Hollow Stem Auger*	*Mobile B-61 Auger Rig*	*Driven Split Spoon*



NOTE:

1) Top of PVC Casing Elevation: 68.4904'
** Top of hole elevation not measured; see top of PVC casing elevation.
BTIC - Below Top of Inner Casing

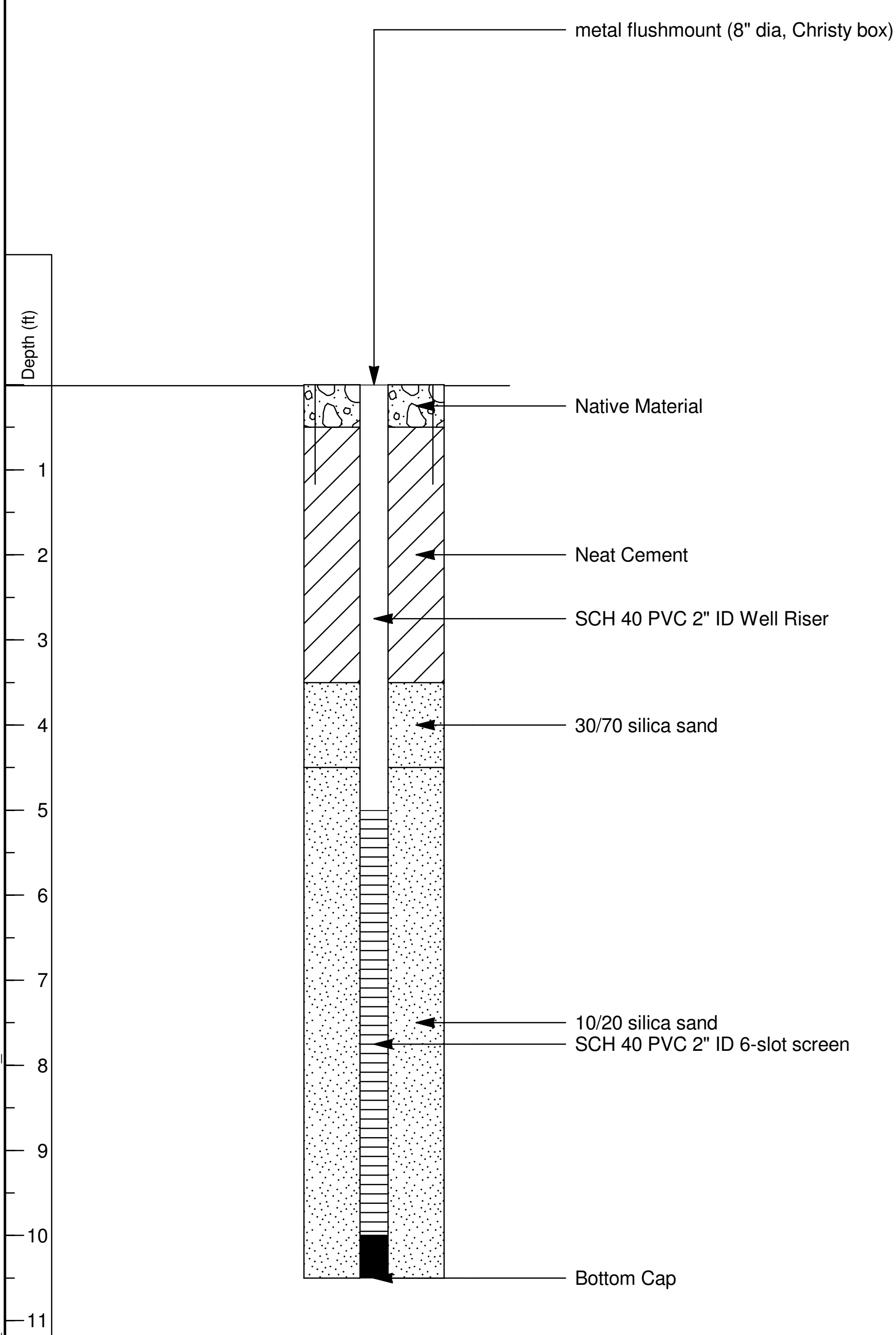
SUMMARY OF MATERIALS USED

4 feet - 2-in SCH 40 PVC riser casing
5 feet - 2-in SCH 40 PVC 0.006-in slot screen
3 cubic feet - 10/20 Sand Filter Pack Material

Bottom of Exploration 9.5 ft
Groundwater Encountered While Drilling (WD): at depth 5.00 ft on 7/30/2009

MONITORING WELL LOG

Project:	*Main Operations Complex Area Phase I ISCO* *North East Cape, St. Lawrence Island, Alaska*
Page 1 of 1	Date: *30 Jul 2009*
Drilling Agency: ☐ Alaska District ☒ Other *Denali Drilling*	Elevation Datum: ☒ MSL ☐ other
Location: Northing: *3,403,938 ft* Easting: *1,810,733 ft*	Top of Hole Elevation: **
Hole Number, Field: *ICOMW07* Permanent: *ICOMW07*	Driller: *R. Roberson*
Inspector: *R. Schlosser*	
Type of Hole: ☒ other *Monitoring Well* ☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer	Depth to Groundwater: *6.00 ft AD*
Depth Drilled: *10.0 ft*	Total Depth: *10.0 ft*
Hammer Weight: *340 lbs*	Split Spoon I.D: *2.5 in*
Size and Type of Bit: *8.3 in Hollow Stem Auger*	Type of Equipment: *Mobile B-61 Auger Rig*
Type of Samples: *Driven Split Spoon*	



NOTE:

1) Top of PVC Casing Elevation: 68.0299'
Flushmount with cement apron.
** Top of hole elevation not measured; see top of PVC casing elevation.
BTIC - Below Top of Inner Casing

SUMMARY OF MATERIALS USED

5 feet - 2-in SCH 40 PVC riser casing
5 feet - 2-in SCH 40 PVC 0.006-in slot screen
3 cubic feet - 10/20 Sand Filter Pack Material

Bottom of Exploration 10.0 ft
Groundwater Encountered After Drilling (AD): at depth 6.00 ft on 7/30/2009

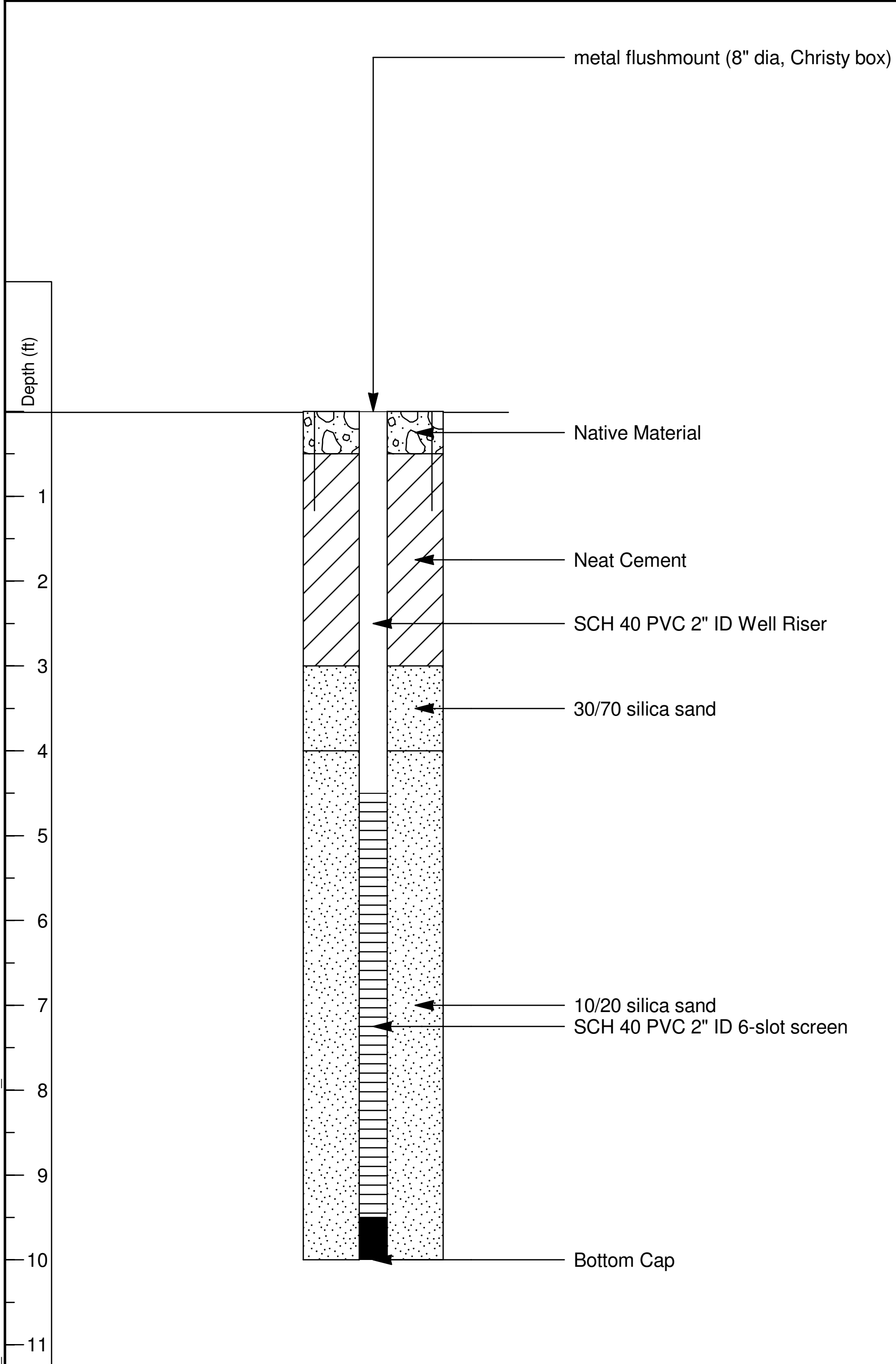
MONITORING WELL LOG

Project: ***Main Operations Complex Area Phase I ISCO*** ***North East Cape, St. Lawrence Island, Alaska***	Page 1 of 1	Date: ***31 Jul 2009***
Drilling Agency: ☐ Alaska District ☒ Other ***Denali Drilling***	Elevation Datum: ☒ MSL ☐ other	
Location: Northing: ***3,403,930 ft*** Easting: ***1,810,729 ft***	Top of Hole Elevation: **	

Hole Number, Field:	Permanent:	Driller:	Inspector:
ICOMW08	***ICOMW08***	***R. Roberson***	***R. Schlosser***

Type of Hole: ☒ other ***Monitoring Well*** ☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer	Depth to Groundwater:	Depth Drilled:	Total Depth:
	5.50 ft WD	***10.0 ft***	***10.0 ft***

Hammer Weight:	Split Spoon I.D:	Size and Type of Bit:	Type of Equipment:	Type of Samples:
340 lbs	***2.5 in***	***8.3 in Hollow Stem Auger***	***Mobile B-61 Auger Rig***	***Driven Split Spoon***



NOTE:

1) Top of PVC Casing Elevation: 69.4053'
Flushmount with cement apron.
** Top of hole elevation not measured; see top of PVC casing elevation.
BTIC - Below Top of Inner Casing

SUMMARY OF MATERIALS USED

4.5 feet - 2-in SCH 40 PVC riser casing
5 feet - 2-in SCH 40 PVC 0.006-in slot screen
3 cubic feet - 10/20 Sand Filter Pack Material

Bottom of Exploration 10.0 ft
Groundwater Encountered While Drilling (WD): at depth 5.50 ft on 7/31/2009

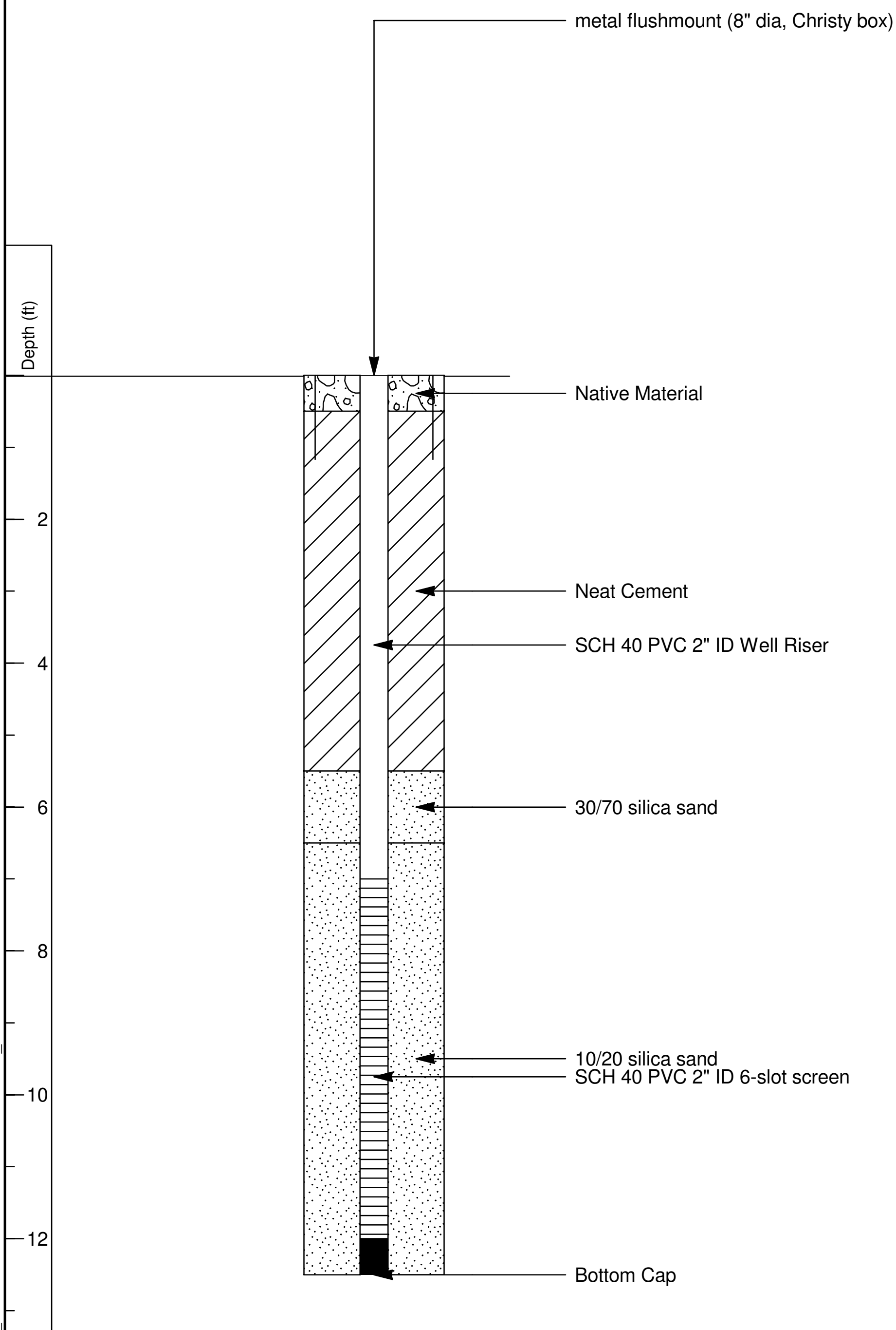
MONITORING WELL LOG

Project: ***Main Operations Complex Area Phase I ISCO*** ***North East Cape, St. Lawrence Island, Alaska***		
		Date: ***1 Aug 2009***
Drilling Agency: ☐ Alaska District ☒ Other ***Denali Drilling***		Elevation Datum: ☒ MSL ☐ other
Location: Northing: ***3,403,919 ft*** Easting: ***1,810,731 ft***		Top of Hole Elevation: **

Hole Number, Field:	Permanent:	Driller:	Inspector:
ICOMW09	***ICOMW09***	***R. Roberson***	***R. Schlosser***

Type of Hole: ☒ other ***Monitoring Well*** ☐ Test Pit ☒ Auger Hole ☐ Monitoring Well ☐ Piezometer	Depth to Groundwater: ***9.50 ft WD***	Depth Drilled: ***12.5 ft***	Total Depth: ***12.5 ft***

Hammer Weight:	Split Spoon I.D:	Size and Type of Bit:	Type of Equipment:	Type of Samples:
340 lbs	***2.5 in***	***8.3 in Hollow Stem Auger***	***Mobile B-61 Auger Rig***	***Driven Split Spoon***



NOTE:

1) Top of PVC Casing Elevation: 69.8701'
Flushmount with cement apron.
** Top of hole elevation not measured; see top of PVC casing elevation.
BTIC - Below Top of Inner Casing

SUMMARY OF MATERIALS USED

7 feet - 2-in SCH 40 PVC riser casing
5 feet - 2-in SCH 40 PVC 0.006-in slot screen
3 cubic feet - 10/20 Sand Filter Pack Material

Bottom of Exploration 12.5 ft
Groundwater Encountered While Drilling (WD): at depth 9.50 ft on 8/1/2009

Appendix H
List of Tables and Figures

TABLE H-1
Summary of Soil Boring and Monitoring Well Data
Northeast Cape
St. Lawrence Island, Alaska
(all measurements in feet unless otherwise noted)

Boring or Monitoring Well*	Depth to Static Water Level**	Date of Water Level Measurement	Top of PVC casing above ground level	Static Water Level	Top of Casing Elevation	Total depth of hole	Ground Surface Elevation	Perforated Interval (depth below ground level)	Groundwater Elevation	Specific Capacity (gpm/ft)
6-1	9.25	7/16/94	3.2	6.05	50.16	9.5	46.96	3.0 to 9.5	40.91	1.25
	8.22	7/20/94							41.94	
6-2	3.6	7/16/94	1.75	1.85	49.32	5.5	47.57	0.5 to 5.5	45.72	
	7.27	7/20/94							42.05	
6-3	dry		--	--	--	6	43.37	--	dry	
7-1	dry		--	--	--	31	56.36	--	dry	
7-2	dry		--	--	--	26.5	49.39	--	dry	
7-3	dry		--	--	--	17	47.57	--	dry	
7-4	5.7	7/16/94	3.2	2.5	54.54	16.5	51.34	3.0 to 10.0	48.84	
	6.14	7/20/94								
9-1	7.2	7/17/94	3.2	4	68.34	7.5	65.14	1.0 to 7.5	61.14	1.67
	4.51	7/20/94							63.83	
	4.41	719/94							63.93	
9-2	9.1	7/17/94	2.75	6.35	75.62	9.5	72.87	2.5 to 9.5	66.52	
	9.73	7/20/94							65.89	
9-3	9.55	7/19/94	2.75	6.8	76.41	9.5	73.66	2.5 to 9.5	66.86	
	8.52	7/20/94							67.89	
10-1	4.45	7/13/94	1.75	2.7	71.24	20	69.49	2.0 to 10.0	66.79	
10-2	0.5		--	0.5	--	0.5	63.76	--	63.26	
10-3	0.5		--	0.5	--	0.5	63.67	--	63.17	

TABLE H-1
Summary of Soil Boring and Monitoring Well Data
Northeast Cape
St. Lawrence Island, Alaska
(all measurements in feet unless otherwise noted)

Boring or Monitoring Well*	Depth to Static Water Level**	Date of Water Level Measurement	Top of PVC casing above ground level	Static Water Level	Top of Casing Elevation	Total depth of hole	Ground Surface Elevation	Perforated Interval (depth below ground level)	Groundwater Elevation	Specific Capacity (gpm/ft)
10-4	3.27	7/13/94	1.5	1.77	69.83	6.5	68.33	0.4 to 6.5	66.56	0.33
	4.97	7/18/94							64.86	
11-1	dry		--	--	--	10.5	83.35	--	dry	
11-2	5.42	7/13/94	2.75	2.67	75.11	11	72.36	3.0 to 10.0	69.69	
	5.58	7/18/94							69.53	0.13
11-3	13.09	7/13/94	2.75	10.34	73.04	18	70.29	8.0 to 18.0	59.95	
13-1	11.76	7/13/94	2.75	9.01	75	16.5	72.25	5.5 to 15.5	63.24	
13-2	10.51	7/13/94	2.75	7.76	74.08	14	71.33	4.0 to 14.0	63.57	0.95
	10.42	7/19/94							63.66	
13-3	dry		--	dry	--	11.5	77.43	--	dry	
15-1	10.72	7/13/94	2.75	7.97	77.1	16	74.35	4.0 to 14.0	66.38	
16-1	12.14	7/13/94	2.75	9.39	75.56	14.5	72.81	4.5 to 14.5	63.42	
16-2	11.58	7/13/94	2.75	8.83	74.91	14	72.16	4.0 to 14.0	63.33	1.79
	11.47	7/19/94							63.44	
16-3	12.43	7/13/94	2.75	9.68	75.78	14.5	73.03	4.5 to 14.5	63.35	
19-1	10.93	7/13/94	2.75	8.18	78	18	75.25	8.0 to 18.0	67.07	
19-2	18.51	7/13/94	2.75	15.76	85.8	21.5	83.05	10.0 to 20.0	67.29	10
	18.42	7/18/94							67.38	
21-1	2.24	7/13/94	1.75	0.49	64.59	7	62.84	1.0 to 7.0	62.35	0.83
	2.27	7/19/94							62.32	

TABLE H-1
Summary of Soil Boring and Monitoring Well Data
Northeast Cape
St. Lawrence Island, Alaska
(all measurements in feet unless otherwise noted)

Boring or Monitoring Well*	Depth to Static Water Level**	Date of Water Level Measurement	Top of PVC casing above ground level	Static Water Level	Top of Casing Elevation	Total depth of hole	Ground Surface Elevation	Perforated Interval (depth below ground level)	Groundwater Elevation	Specific Capacity (gpm/ft)
21-2	12.32	7/13/94	2.75	9.57	61.98	14	59.23	4.0 to 14.0	49.66	
21-3	2.22	7/13/94	2.2	0.02	51.88	7	49.68	1.0 to 7.0	49.66	
22-1	30.74	7/13/94	2.75	27.99	97.08	33	94.33	23.0 to 33.0	66.34	0.42
	30.78	7/19/94							66.30	
24-1	dry	7/13/94	2.2	--	27.62	7	25.42	1.0 to 7.0	dry	
24-2	2.95	7/13/94	2.2	0.75	27.49	7	25.29	1.0 to 7.0	24.54	10.94
	3.02	7/19/94							24.47	
24-3	3.08	7/13/94	2.2	0.88	27.32	7	25.12	1.0 to 7.0	24.24	
27-1	6.61	7/13/94	2.75	3.86	70.26	18.5	67.51	8.0 to 18.5	63.65	0.04
	6.03	7/18/94							64.23	
27-2	dry		--	--	--	11.5	70.67	--	dry	
BW-1	4.02	7/18/94	--	--	--	5	Not Surveyed	0.4 to 5.0	--	
BW-00	dry		--	--	--	8.5	Not Surveyed	--	dry	
BW-0	dry		--	--	--	8	94.86	--	dry	

* Bold indicates boring was converted to a monitoring well
** *From top of PVC casing in monitoring well. From ground surface in boring.*

BW -
gpm/ft - gallons per minute per foot

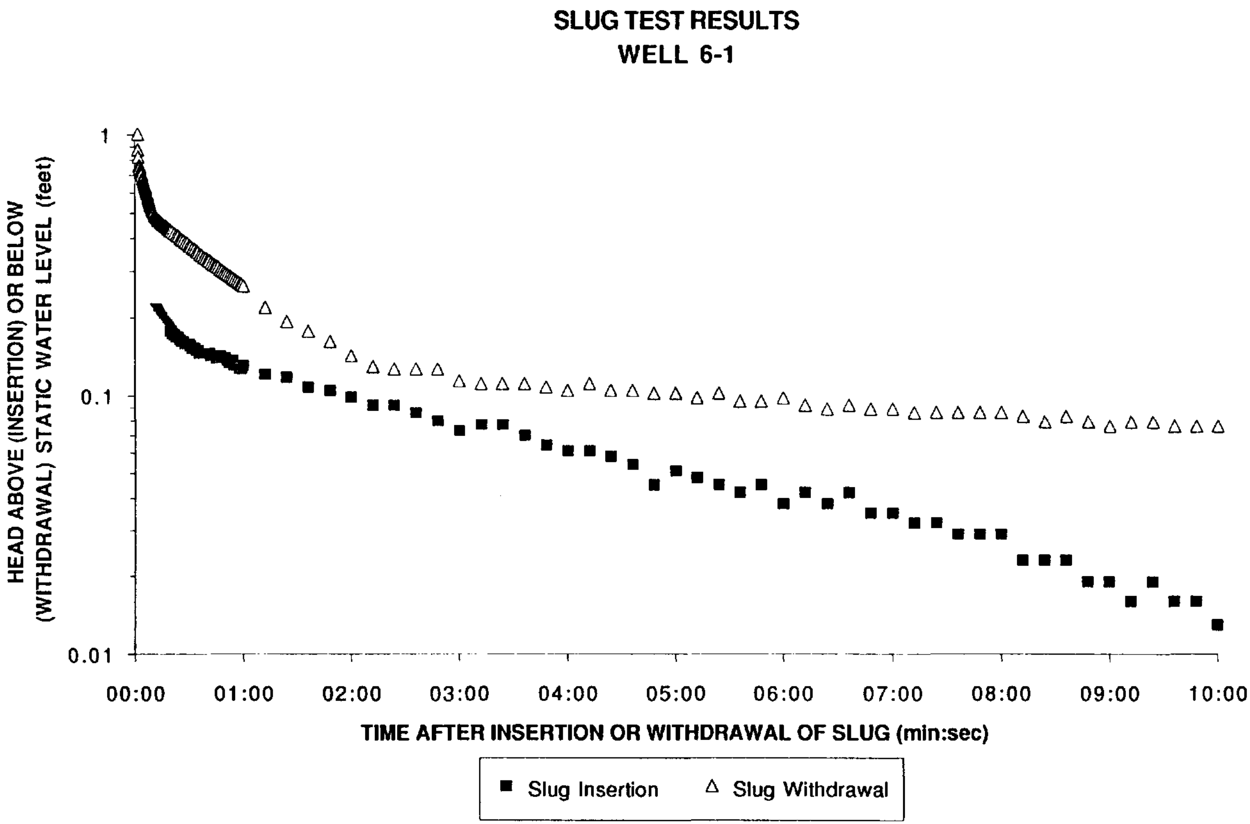
Table H-2
Summary of Parameters Used for Calculation of Permeability From Slug Test Results
Northeast Cape
St Lawrence Island, Alaska

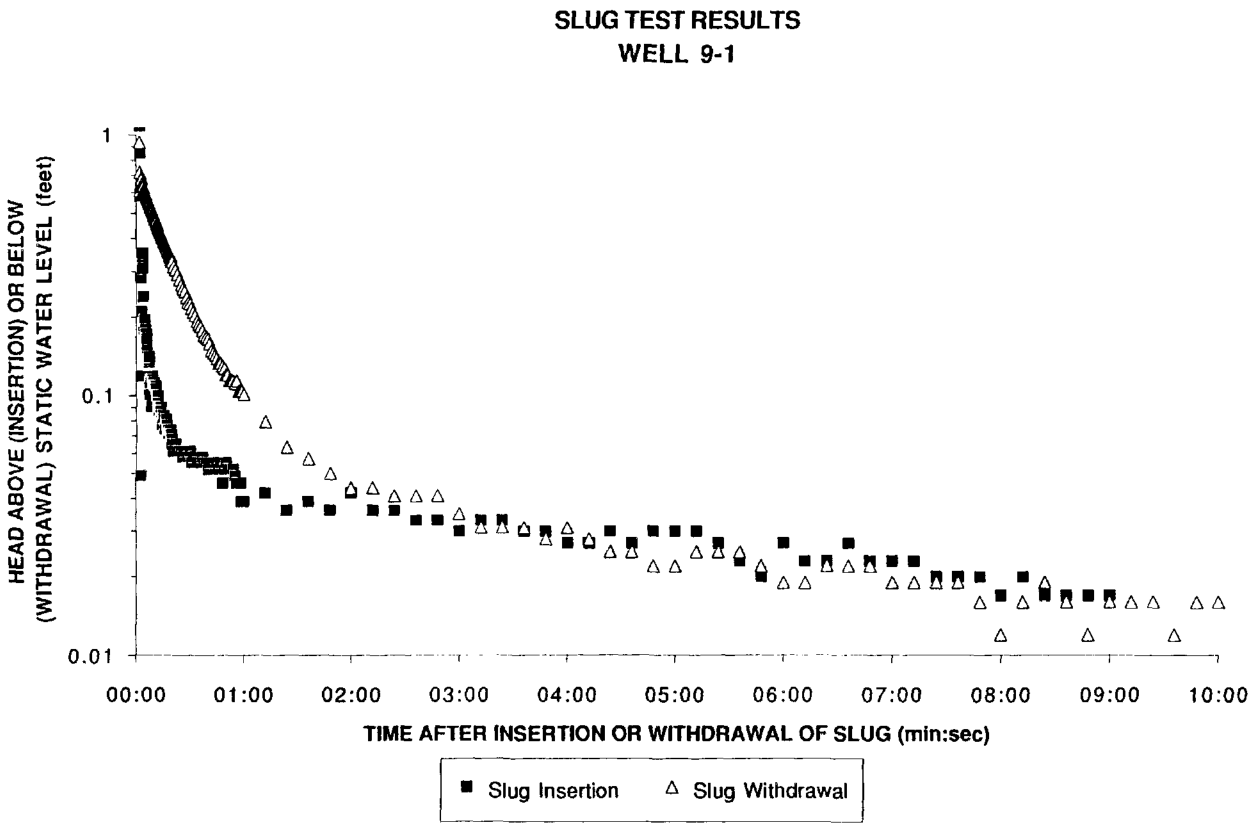
(Bouwer and Rice, 1976 and Bouwer, 1989)

Symbol	Explanation	MW 6-1 IN	MW 6-1 OUT	MW 9-1 IN	MW 9-1 OUT	MW 10-4 IN	MW 10-4 OUT	MW 11-2 IN	MW 11-2 OUT	MW 13-2 IN	MW 13-2 OUT	MW 16-2 IN	MW 16-2 OUT
D	Distance (feet) from static water level to impermeable boundary (assumed to be the bottom of the well)	4.4	4.4	6.2	6.2	3.1	3.1	7.1	7.1	6.3	6.3	5.2	5.2
H	Distance from static water level to bottom of well (feet)	4.4	4.4	6.2	6.2	3.1	3.1	7.1	7.1	6.3	6.3	5.2	5.2
L	Length (feet) of saturated perforated interval	4.4	4.4	6.2	6.2	3.1	3.1	7	7	6.3	6.3	5.2	5.2
rw	Radius (feet) of borehole	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
phi	Assumed porosity of sand pack	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
rcas	Radius (feet) of well casing	0.0833	0.0833	0.0833	0.0833	0.0833	0.0833	0.0833	0.0833	0.0833	0.0833	0.0833	0.0833
rc	Calculated sand-pack adjusted radius of well	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**	**0.20**
Yo	Y intercept value (feet) from graph (t=0)	0.13	0.17	0.05	0.05	0.73	1.07	0.22	0.24	0.11	0.09	0.05	1.48
t	arbitrary time (minutes)	6.00	6.30	3.00	4.00	4.00	4.00	5.00	5.00	5.00	5.00	1.00	0.67
Y	Y at t (feet)	0.04	0.08	0.03	0.03	0.70	1.03	0.14	0.20	0.06	0.03	0.02	0.20
(1/t)lnYo/Yt	Calculated value	**0.1897**	**0.1196**	**0.1635**	**0.1595**	**0.0098**	**0.0090**	**0.0853**	**0.0350**	**0.1041**	**0.2154**	**1.0986**	**2.9557**
L/rw	Calculated value	**13.21**	**13.21**	**18.62**	**18.62**	**9.31**	**9.31**	**21.02**	**21.02**	**18.92**	**18.92**	**15.62**	**15.62**
C	Constant from nomograph C	2	2	2.2	2.2	2	2	2.2	2.2	2.2	2.2	2.1	2.1
ln Re/rw	Calculated value	**1.7315**	**1.7315**	**2.0229**	**2.0229**	**1.4127**	**1.4127**	**2.1544**	**2.1544**	**2.0391**	**2.0391**	**1.8701**	**1.8701**
K=	Calculated permeability in feet/minute	**0.0014**	**0.0009**	**0.0010**	**0.0010**	**0.0001**	**0.0001**	**0.0005**	**0.0002**	**0.0006**	**0.0013**	**0.0075**	**0.0203**
K=	Calculated permeability in feet/day	**2.05**	**1.29**	**1.46**	**1.43**	**0.12**	**0.11**	**0.72**	**0.30**	**0.92**	**1.91**	**10.85**	**29.18**

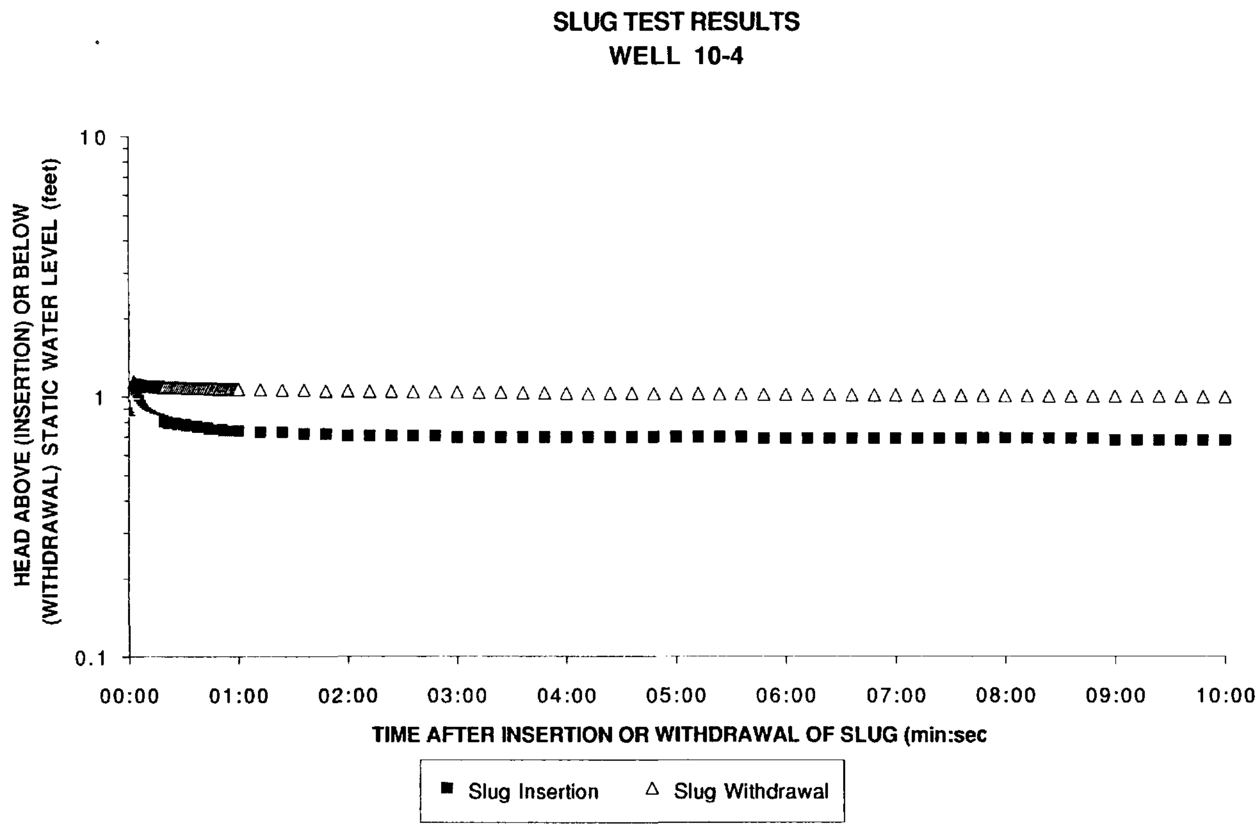
Symbol	Explanation	MW 19-2 IN	MW 19-2 OUT	MW 21-1 IN	MW 21-1 OUT	MW 22-1 IN	MW 22-1 OUT	MW 24-2 IN	MW 24-2 OUT	MW 27-1 IN	MW 27-1 OUT
D	Distance (feet) from static water level to impermeable boundary (assumed to be the bottom of the well)	4.2	4.2	6.5	6.5	5	5	6.2	6.2	15	15
H	Distance from static water level to bottom of well (feet)	4.2	4.2	6.5	6.5	5	5	6.2	6.2	15	15
L	Length (feet) of saturated perforated interval	4.2	4.2	6	6	5	5	6	6	10	10
rw	Radius (feet) of borehole	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
phi	Assumed porosity of sand pack	0.30	0.30	0.00	0.00	0.30	0.30	0.30	0.30	0.00	0.00
rcas	Radius (feet) of well casing	0.0833	0.0833	0.0833	0.0833	0.0833	0.0833	0.0833	0.0833	0.0833	0.0833
rc	Calculated sand-pack adjusted radius of well	**0.20**	**0.20**	**0.08**	**0.08**	**0.20**	**0.20**	**0.20**	**0.20**	**0.08**	**0.08**
Yo	Y intercept value (feet) from graph (t=0)	1.77	1.67	0.66	0.85	0.16	0.90	0.60	0.56	0.59	0.58
t	arbitrary time (minutes)	0.10	0.10	6.00	5.00	0.75	1.00	0.17	1.00	6.00	6.00
Y	Y at t (feet)	0.12	0.10	0.18	0.26	0.05	0.04	0.01	0.19	0.41	0.41
(1/t)lnYo/Yt	Calculated value	**27.0187**	**28.6550**	**0.2129**	**0.2399**	**1.7161**	**3.1179**	**24.7335**	**1.0932**	**0.0623**	**0.0571**
L/rw	Calculated value	**12.61**	**12.61**	**18.02**	**18.02**	**15.02**	**15.02**	**18.02**	**18.02**	**30.03**	**30.03**
C	Constant from nomograph C	2	2	2.2	2.2	2.1	2.1	2.2	2.2	2.2	2.2
ln Re/rw	Calculated value	**1.6876**	**1.6876**	**2.0313**	**2.0313**	**1.8318**	**1.8318**	**2.0069**	**2.0069**	**2.7613**	**2.7613**
K=	Calculated permeability in feet/minute	**0.2069**	**0.2195**	**0.0003**	**0.0003**	**0.0120**	**0.0218**	**0.1577**	**0.0070**	**0.0001**	**0.0001**
K=	Calculated permeability in feet/day	**298.00**	**316.05**	**0.36**	**0.41**	**17.26**	**31.36**	**227.09**	**10.04**	**0.09**	**0.08**

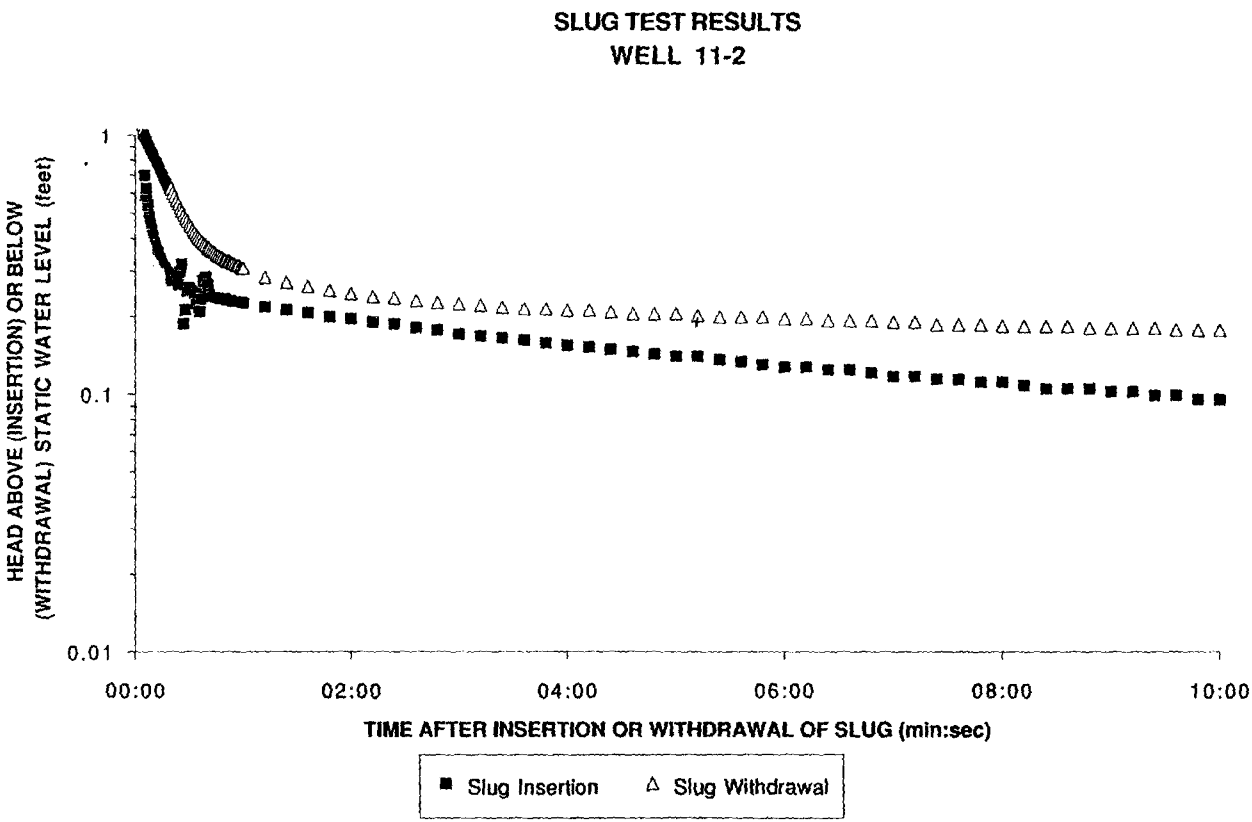
MW - Monitoring well

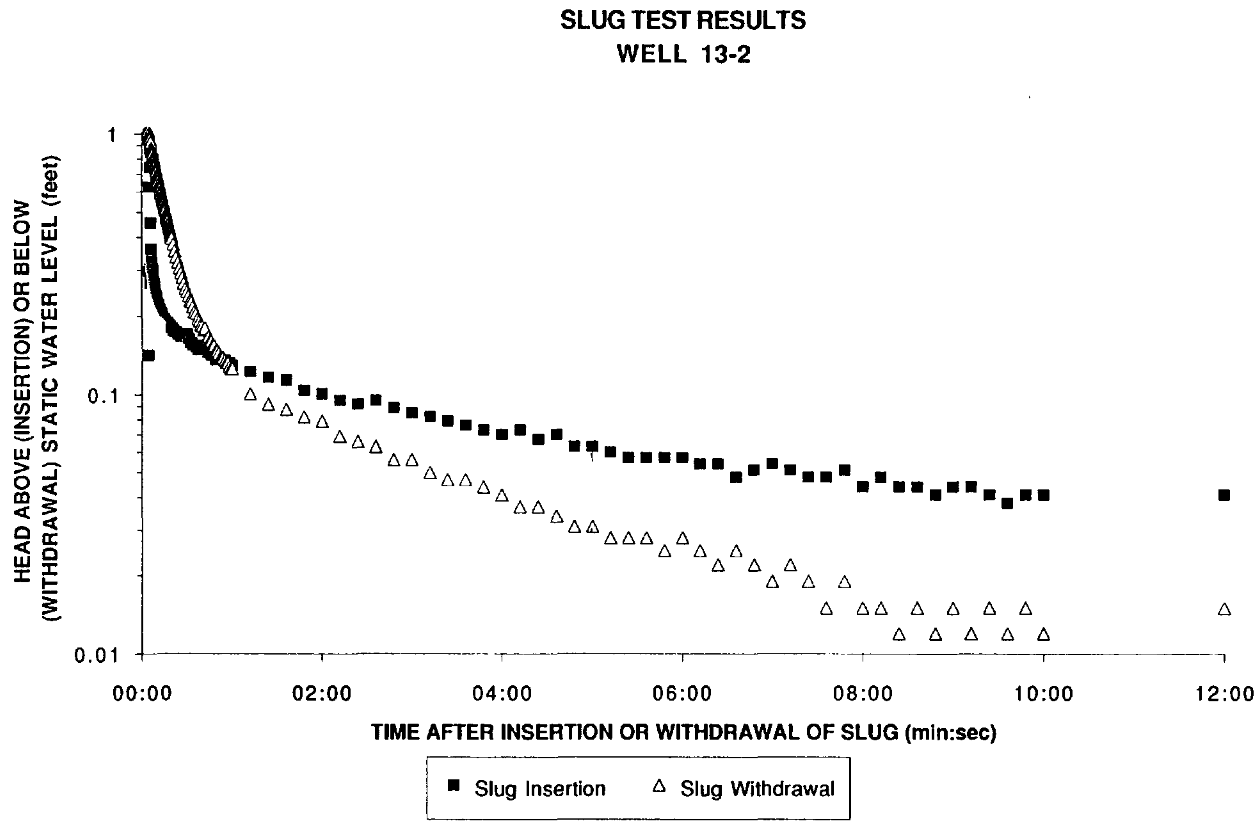

SLUG TEST RESULTS
WELL 6-1
HEAD ABOVE (INSERTION) OR BELOW (WITHDRAWAL) STATIC WATER LEVEL (feet)
1
0.1
0.01
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
TIME AFTER INSERTION OR WITHDRAWAL OF SLUG (min:sec)
Slug Insertion
Slug Withdrawal

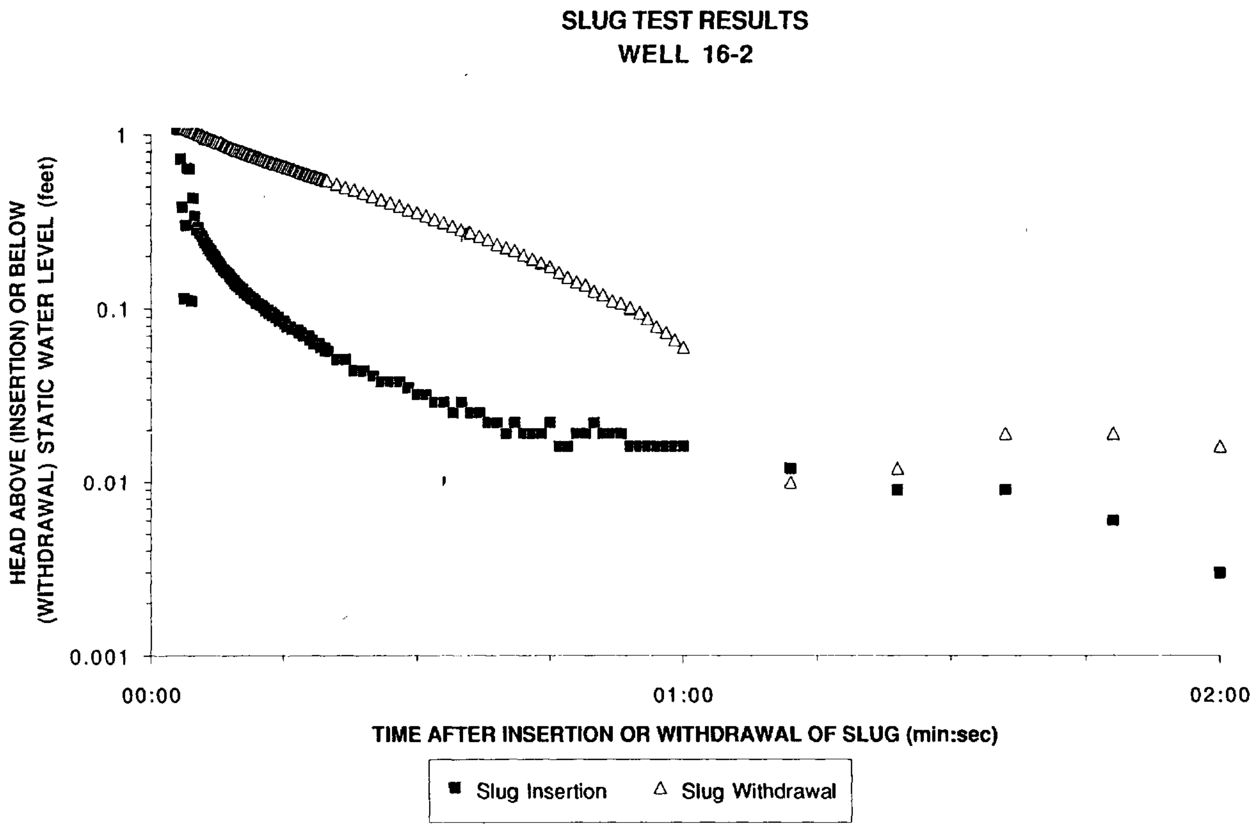


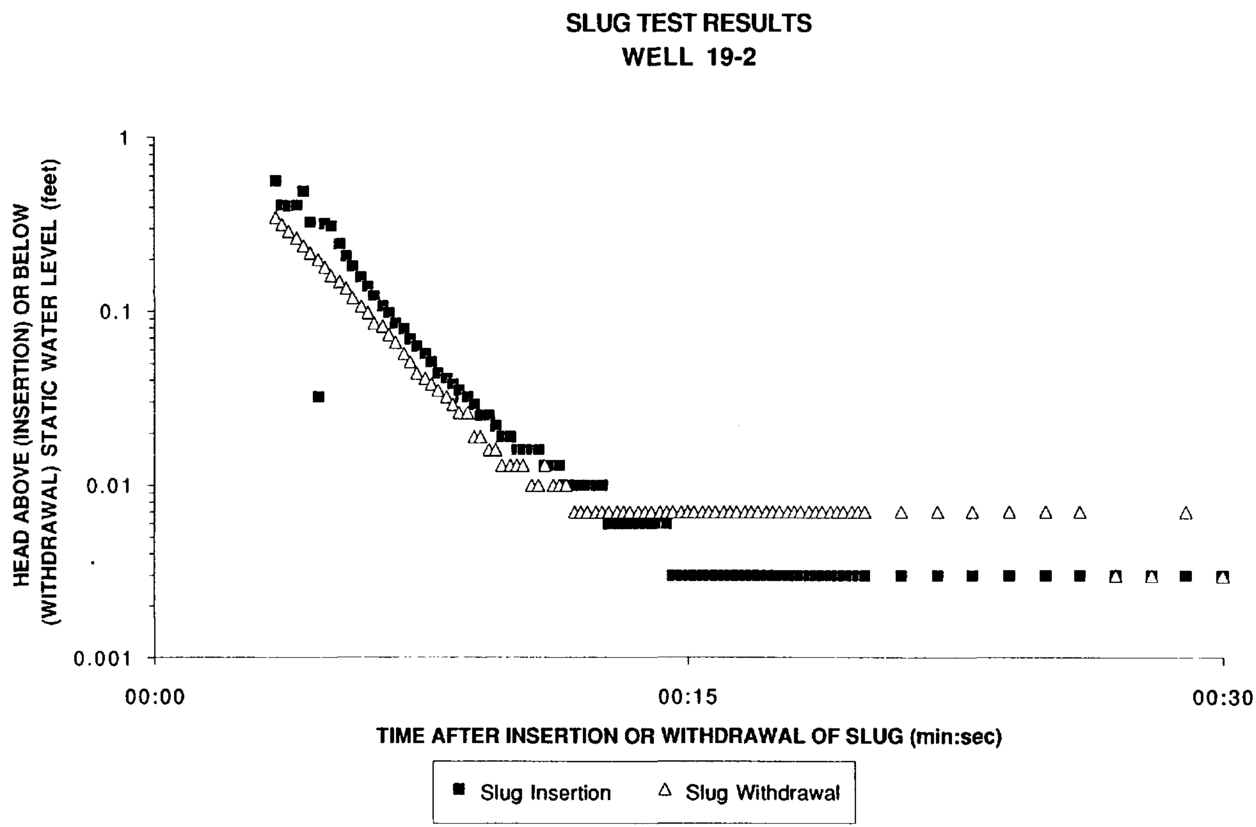
SLUG TEST RESULTS
WELL 9-1
HEAD ABOVE (INSERTION) OR BELOW (WITHDRAWAL) STATIC WATER LEVEL (feet)
1
0.1
0.01
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
TIME AFTER INSERTION OR WITHDRAWAL OF SLUG (min:sec)
Slug Insertion
Slug Withdrawal


SLUG TEST RESULTS
WELL 10-4
HEAD ABOVE (INSERTION) OR BELOW (WITHDRAWAL) STATIC WATER LEVEL (feet)
10
1
0.1
00:00
01:00
02:00
03:00
04:00
05:00
06:00
07:00
08:00
09:00
10:00
TIME AFTER INSERTION OR WITHDRAWAL OF SLUG (min:sec
Slug Insertion
Slug Withdrawal

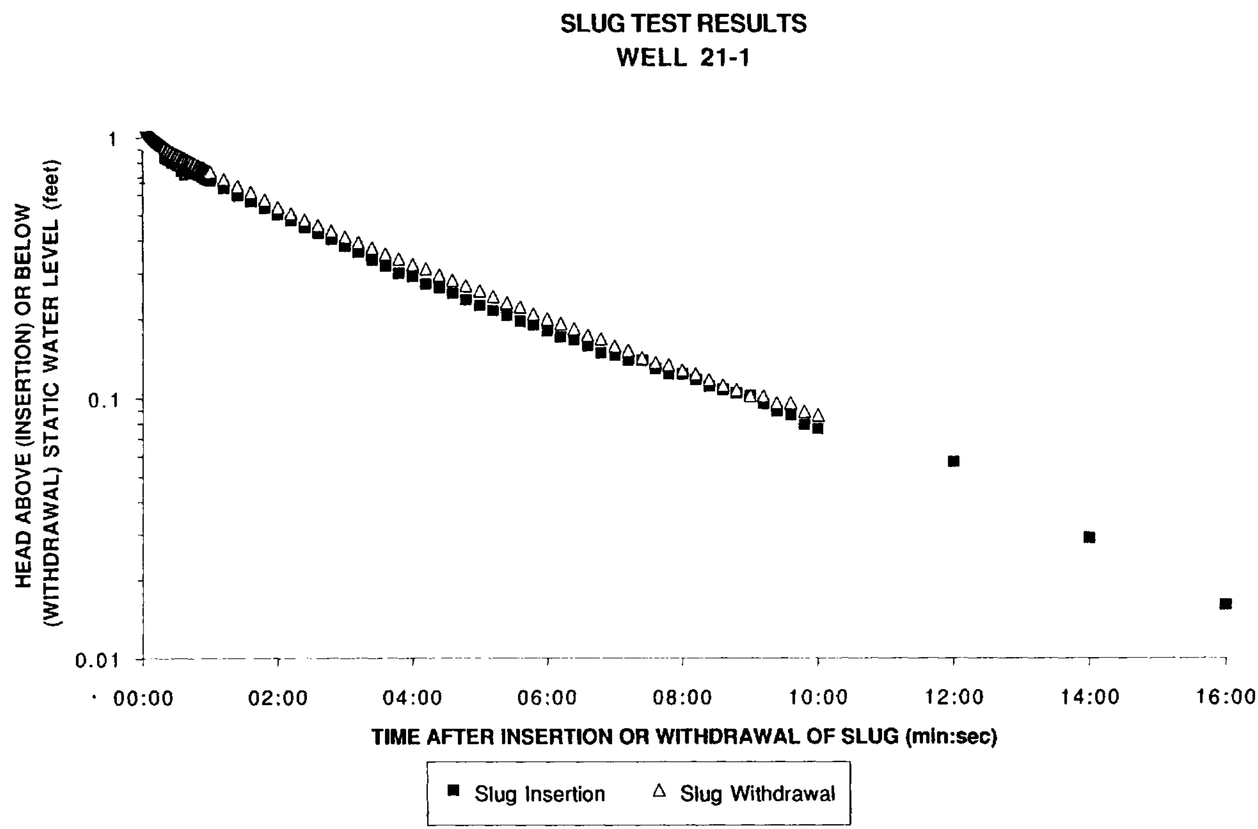

SLUG TEST RESULTS
WELL 11-2
HEAD ABOVE (INSERTION) OR BELOW (WITHDRAWAL) STATIC WATER LEVEL (feet)
1
0.1
0.01
00:00
02:00
04:00
06:00
08:00
10:00
TIME AFTER INSERTION OR WITHDRAWAL OF SLUG (min:sec)
Slug Insertion
Slug Withdrawal

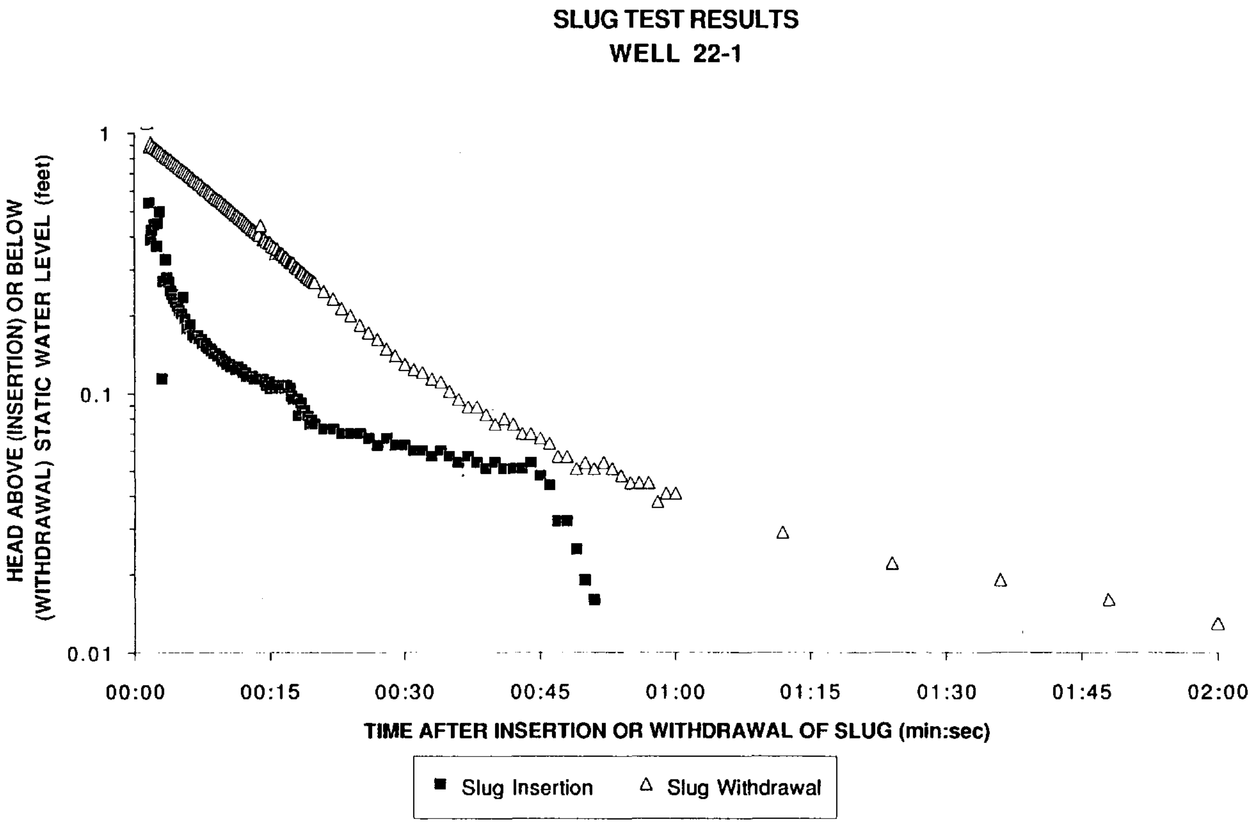

SLUG TEST RESULTS
WELL 13-2
HEAD ABOVE (INSERTION) OR BELOW (WITHDRAWAL) STATIC WATER LEVEL (feet)
1
0.1
0.01
00:00
02:00
04:00
06:00
08:00
10:00
12:00
TIME AFTER INSERTION OR WITHDRAWAL OF SLUG (min:sec)
Slug Insertion
Slug Withdrawal

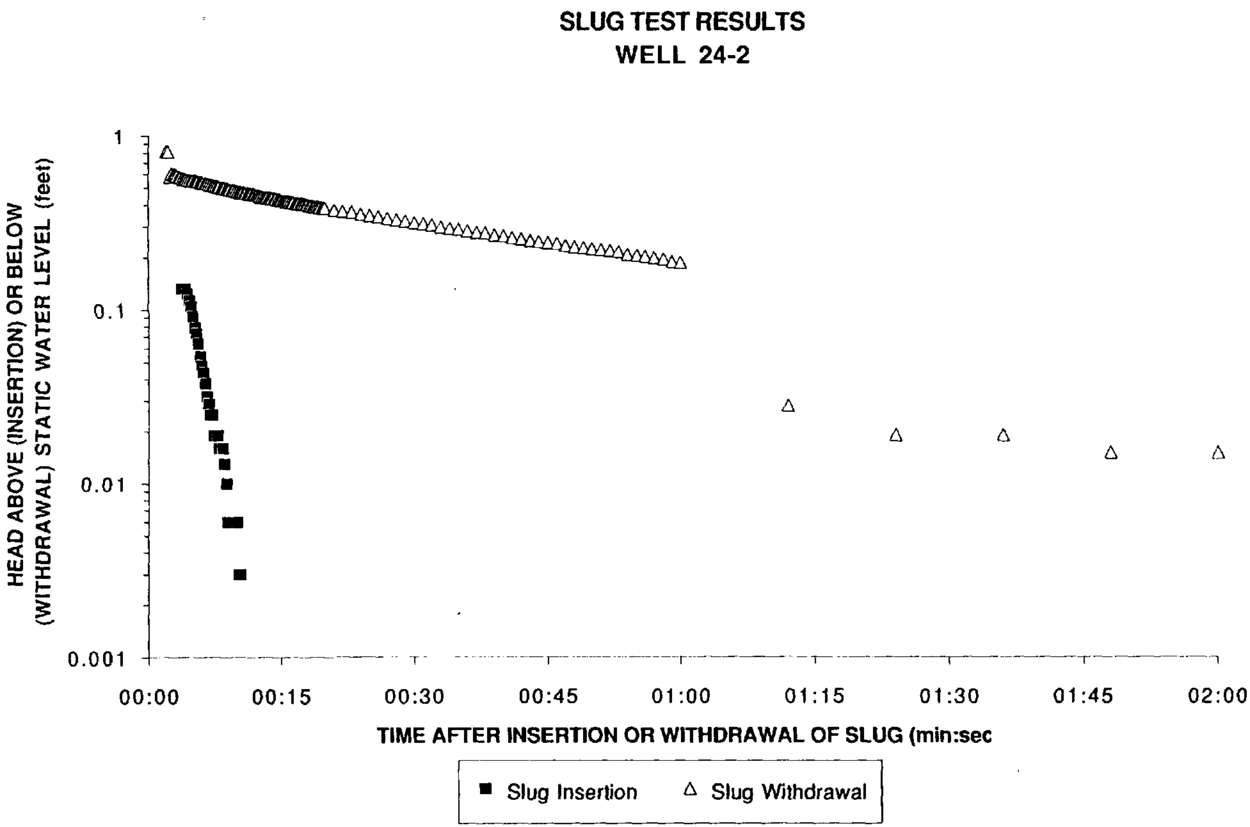

SLUG TEST RESULTS
WELL 16-2
HEAD ABOVE (INSERTION) OR BELOW (WITHDRAWAL) STATIC WATER LEVEL (feet)
1
0.1
0.01
0.001
00:00
01:00
02:00
TIME AFTER INSERTION OR WITHDRAWAL OF SLUG (min:sec)
Slug Insertion
Slug Withdrawal



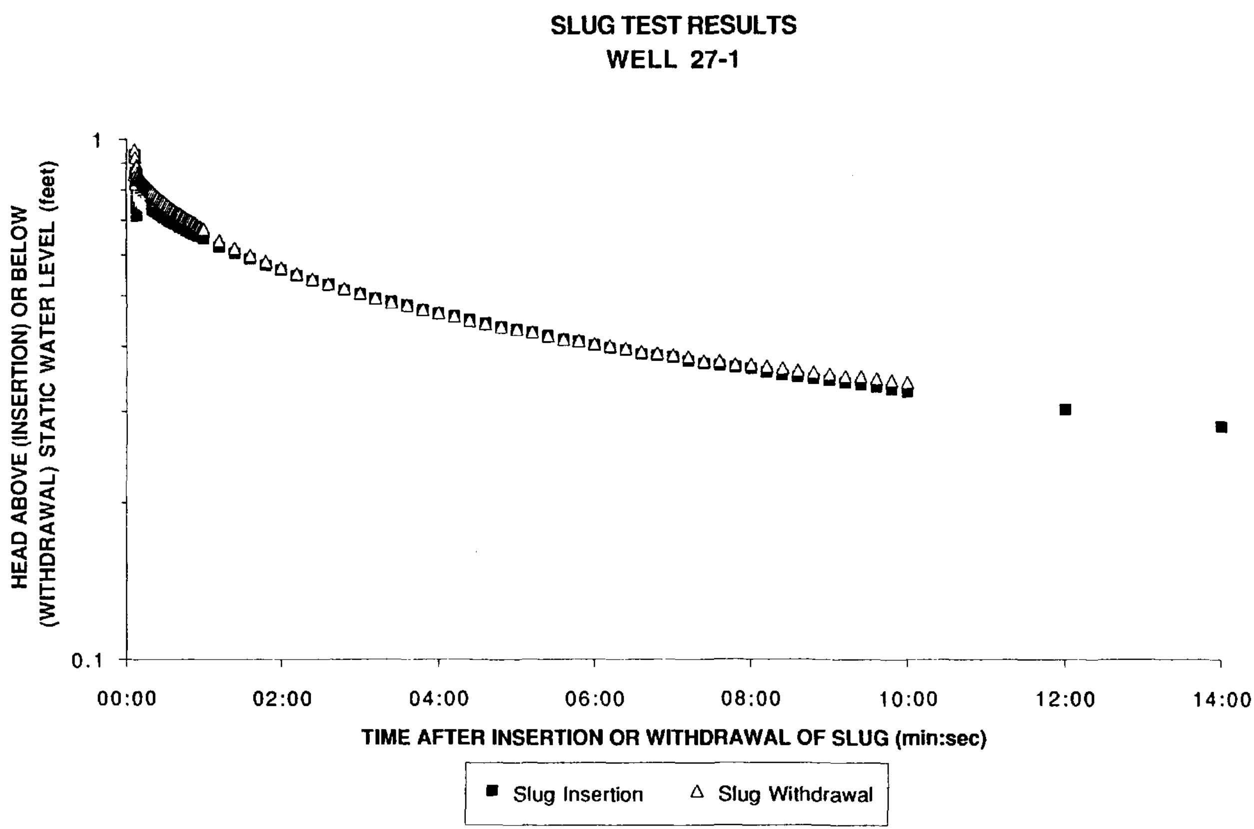
SLUG TEST RESULTS
WELL 19-2
HEAD ABOVE (INSERTION) OR BELOW (WITHDRAWAL) STATIC WATER LEVEL (feet)
1
0.1
0.01
0.001
00:00
00:15
00:30
TIME AFTER INSERTION OR WITHDRAWAL OF SLUG (min:sec)
Slug Insertion
Slug Withdrawal


SLUG TEST RESULTS
WELL 21-1
HEAD ABOVE (INSERTION) OR BELOW (WITHDRAWAL) STATIC WATER LEVEL (feet)
1
0.1
0.01
00:00
02:00
04:00
06:00
08:00
10:00
12:00
14:00
16:00
TIME AFTER INSERTION OR WITHDRAWAL OF SLUG (min:sec)
Slug Insertion
Slug Withdrawal


SLUG TEST RESULTS
WELL 22-1
HEAD ABOVE (INSERTION) OR BELOW (WITHDRAWAL) STATIC WATER LEVEL (feet)
1
0.1
0.01
00:00
00:15
00:30
00:45
01:00
01:15
01:30
01:45
02:00
TIME AFTER INSERTION OR WITHDRAWAL OF SLUG (min:sec)
Slug Insertion
Slug Withdrawal



SLUG TEST RESULTS
WELL 24-2
HEAD ABOVE (INSERTION) OR BELOW (WITHDRAWAL) STATIC WATER LEVEL (feet)
1
0.1
0.01
0.001
00:00
00:15
00:30
00:45
01:00
01:15
01:30
01:45
02:00
TIME AFTER INSERTION OR WITHDRAWAL OF SLUG (min:sec
Slug Insertion
Slug Withdrawal



SLUG TEST RESULTS
WELL 27-1
HEAD ABOVE (INSERTION) OR BELOW (WITHDRAWAL) STATIC WATER LEVEL (feet)
1
0.1
00:00
02:00
04:00
06:00
08:00
10:00
12:00
14:00
TIME AFTER INSERTION OR WITHDRAWAL OF SLUG (min:sec)
Slug Insertion
Slug Withdrawal

APPENDIX B TABLE OF CONTENTS

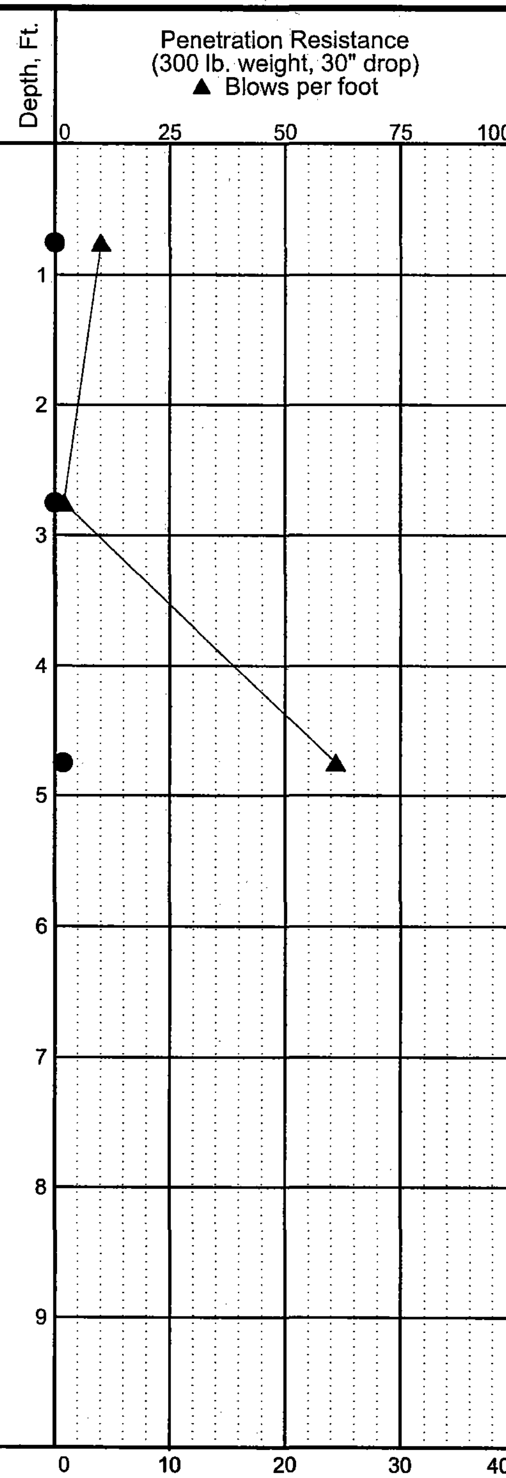
Borings and Monitoring Wells

APPENDIX B TABLE OF CONTENTS (continued)

Grain Size Classification

MATERIAL DESCRIPTION Coordinates: N: 103,997 E: 101,497 Elevation: 16.7 Ft.	Depth, Ft.	Symbol	Samples	Ground Water
Loose, dark brown, coarse gravelly, silty SAND; moist [Fill]			S1	
Soft, dark brown, silty PEAT; wet; organic (sewage) odor	1.0			
Soft, brown, sandy SILT; trace organics; moist	2.8		03SB103	Groundwater Not Encountered During Drilling on 08/18/04
Brown, ice rich SILT; with organics; frozen	3.0			
ICE	4.7		03SB104	
Bottom of Boring Boring Completed 08/18/04	5.5			

Boring advanced with 8-inch auger



LEGEND

- * Sample Not Recovered
- 3" O.D. Split Spoon Sample
- B Auger Cuttings
- Frozen
- Ground Water Level At Time Of Drilling

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.

Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

LOG OF BORING 03B1

June 2005 32-1-16821

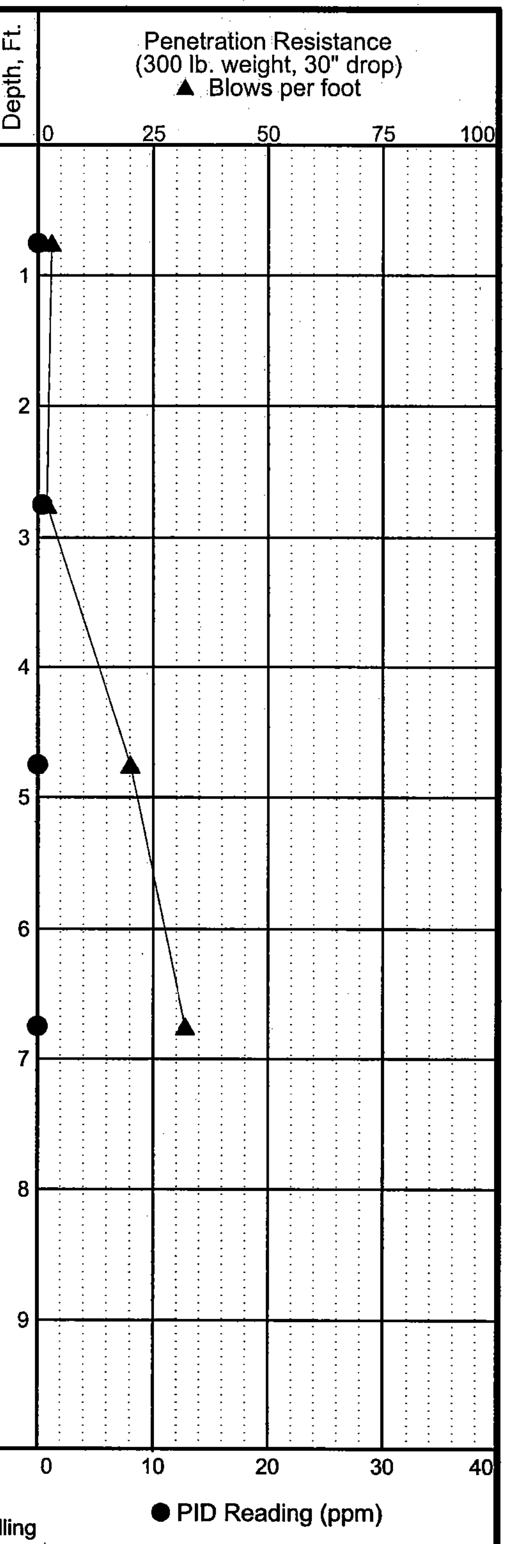
SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-1a

MATERIAL DESCRIPTION Coordinates: N: 103,948 E: 101,500 Elevation: 16.5 Ft.	Depth, Ft.	Symbol	Samples	Ground Water
Loose, brown, gravelly medium SAND; moist to wet; slight weathered hydrocarbon odor [Fill]	0.5		S1	⊻
Soft, dark brown silty PEAT; wet	2.9		03SB101	
Soft, brown to stiff dark grey SILT; wet to frozen and ice rich	3.2 3.5			
Gray SILT; frozen; with lenses of water ice 1/2 inch thick at 5' bgs, decreasing lense thickness with depth	7.5 7.5		03SB102 S4	

Bottom of Boring
Boring Completed 08/18/04

Boring advanced with Tubex air/rotary



LEGEND

- * Sample Not Recovered
- Ⅲ 3" O.D. Split Spoon Sample
- B Auger Cuttings
- ▮ Frozen
- ⊻ Ground Water Level At Time Of Drilling

NOTES

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2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
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Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

LOG OF BORING 03B2

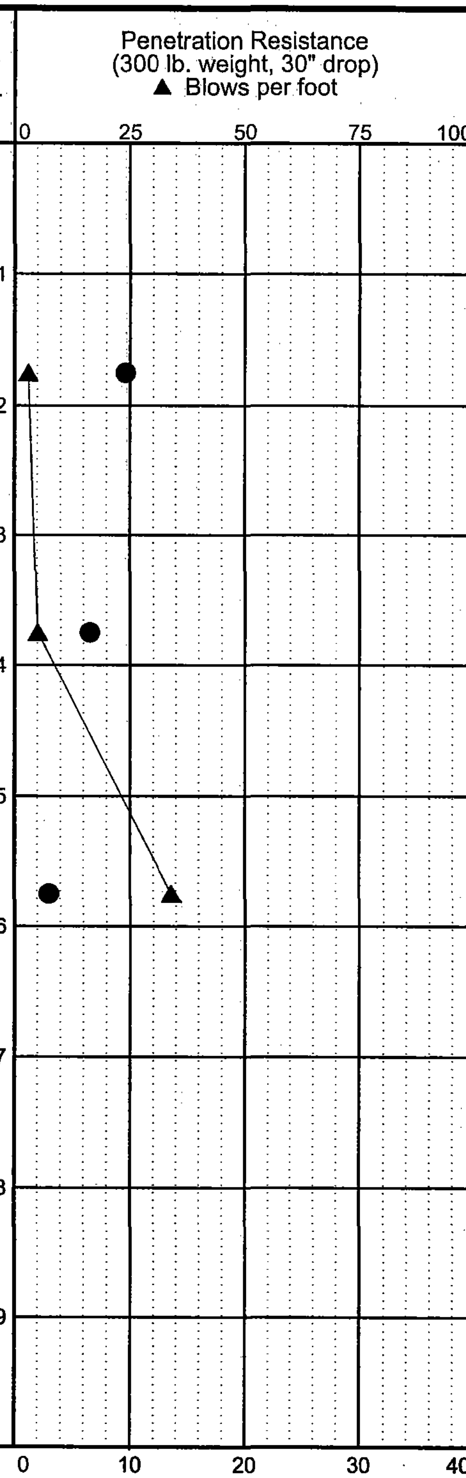
June 2005 32-1-16821

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-2a

ENVIRONMENTAL LOG 16821DRILLF.GPJ S&W GEO1.GDT 6/22/05

MATERIAL DESCRIPTION Coordinates: N: 104,003 E: 101,484 Elevation: 15.9 Ft.	Depth, Ft.	Samples	Ground Water
Loose, brown, gravelly medium SAND; moist to wet; weathered diesel odor [Fill]			
Soft, dark brown alternating layers of SILT and PEAT; wet; mild hydrocarbon and sewage odors	1.0	03SB105	∇
Soft, dark brown, silty PEAT; wet	2.5	03SB106	
ICE and brown, sandy PEAT; frozen; in approximately 3-inch lenses	4.2 4.2		
ICE	5.2	S3	
Bottom of Boring Boring Completed 08/18/04 Boring advanced with 8-inch auger	6.5 6.5		



LEGEND

- * Sample Not Recovered
- Ⅲ 3" O.D. Split Spoon Sample
- B Auger Cuttings
- ▮ Frozen
- ∇ Ground Water Level At Time Of Drilling

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.

Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

LOG OF BORING 03B3

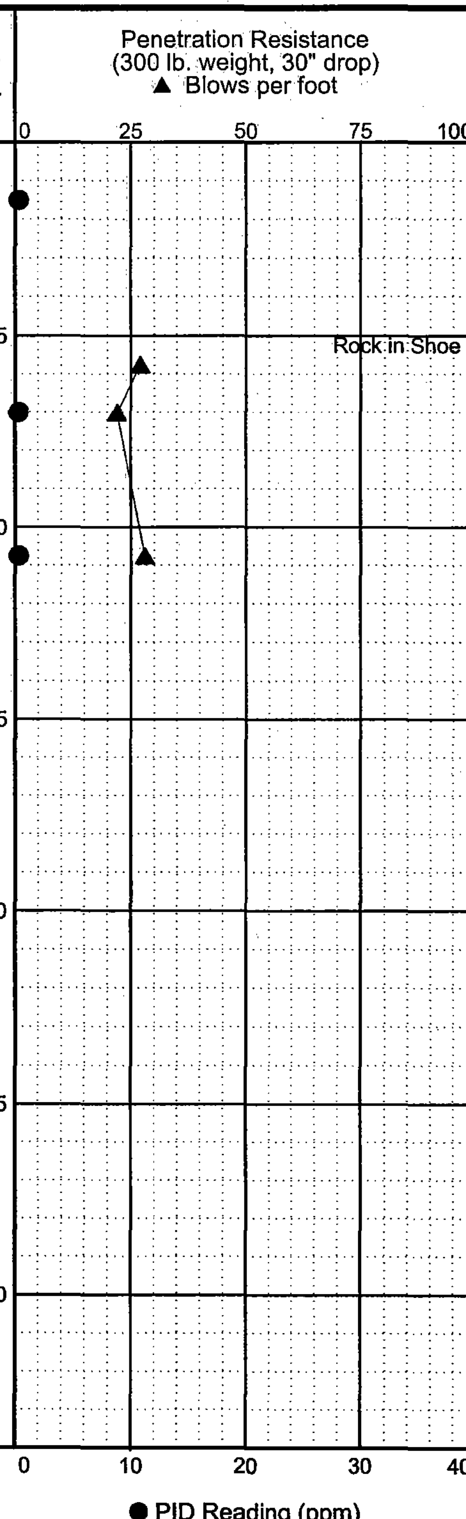
June 2005 32-1-16821

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-3a

ENVIRONMENTAL LOG 16821DRILLF.GPJ S&W GEO1.GDT 6/22/05

MATERIAL DESCRIPTION Coordinates: N: 101,278 E: 99,703 Elevation: 47.1 Ft.	Depth, Ft.	Symbol	Samples	Ground Water	Depth, Ft.
Lichen, stunted woody plants	0.1				
Medium dense, lt. brown, silty, sandy coarse GRAVEL and cobbles; moist to wet			S1 B		
				8/21/04 ∇	5
			06SB111		
Medium dense, silty SAND; wet	10.0		06SB112		10
	11.5				
Bottom of Boring Boring Completed 8/21/04 Boring advanced with 8-inch auger / air hammer					15
					20
					25
					30



LEGEND

- * Sample Not Recovered
- Ⅲ 3" O.D. Split Spoon Sample
- B Auger Cuttings
- ∇ Ground Water Level At Time Of Drilling

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.

Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

LOG OF BORING 06B1

June 2005 32-1-16821

SHANNON & WILSON, INC.
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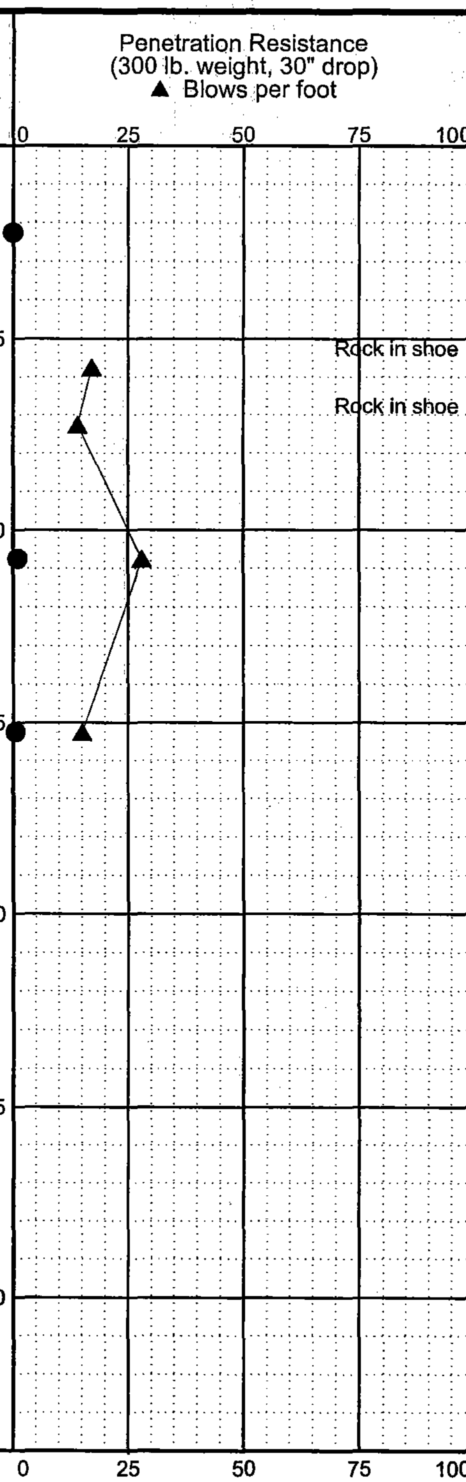
Fig. B-4a

ENVIRONMENTAL LOG 16821DRILLF.GPJ S&W GEO1.GDT 6/22/05

MATERIAL DESCRIPTION	Depth, Ft.	Symbol	Samples	Ground Water	Depth, Ft.
Coordinates: N: 101,128 E: 99,758 Elevation: 46.6 Ft.					
Medium dense, brown coarse SAND and cobbles / boulders; moist to wet			S1 B S2 * S3 *	8/19/04 ⊻	5
Medium dense, lt. gray, slightly silty fine to medium SAND and cobbles; wet	9.0		06SB101 06SB012		10 15
Bottom of Boring Boring Completed 8/19/04 Boring advanced with Tubex air/rotary	16.0				20 25 30



LEGEND

- * Sample Not Recovered
- ⌶ 3" O.D. Split Spoon Sample
- B Auger Cuttings
- ⊻ Ground Water Level At Time Of Drilling

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.

Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

LOG OF BORING 06B2

June 2005 | 32-1-16821

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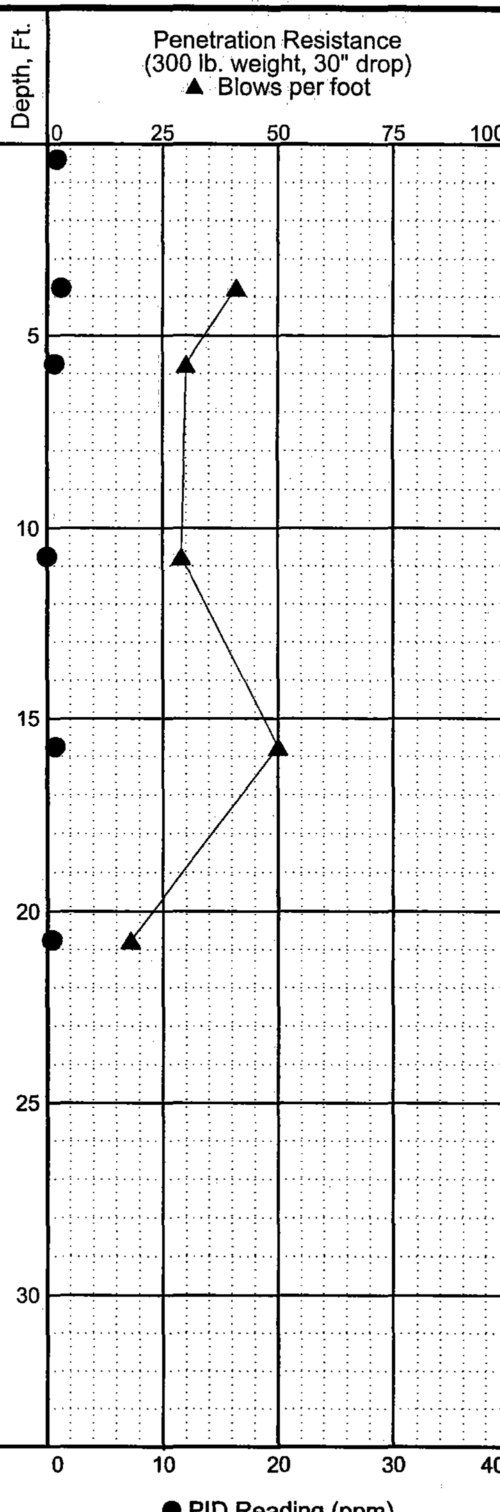
Fig. B-5a

MATERIAL DESCRIPTION Coordinates: N: 101,105 E: 99,712 Elevation: 46.1 Ft.	Depth, Ft.	Samples	Ground Water
Brown, sandy SILT; moist	0.5	S1 B	
Boulders and Cobbles	3.0		
Dense, brown, sub-angular gravelly, fine sandy SILT; with cobbles; moist	4.5	06SB103	8/20/04 ⊻
Dense, lt. gray, silty, sandy GRAVEL; wet	6.5	06SB104	
Dense, lt. gray, angular SAND and cobbles; wet; varying trace to slight silt and gravel contents 3.5 hours to advance boring	21.5	S3 S4 S5	

Bottom of Boring
Boring Completed 8/20/04

Boring advanced with 8-inch auger / air hammer



LEGEND

- * Sample Not Recovered
- Ⅲ 3" O.D. Split Spoon Sample
- B Auger Cuttings
- ⊻ Ground Water Level At Time Of Drilling

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.

Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

LOG OF BORING 06B3

June 2005 32-1-16821

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-6a

MATERIAL DESCRIPTION

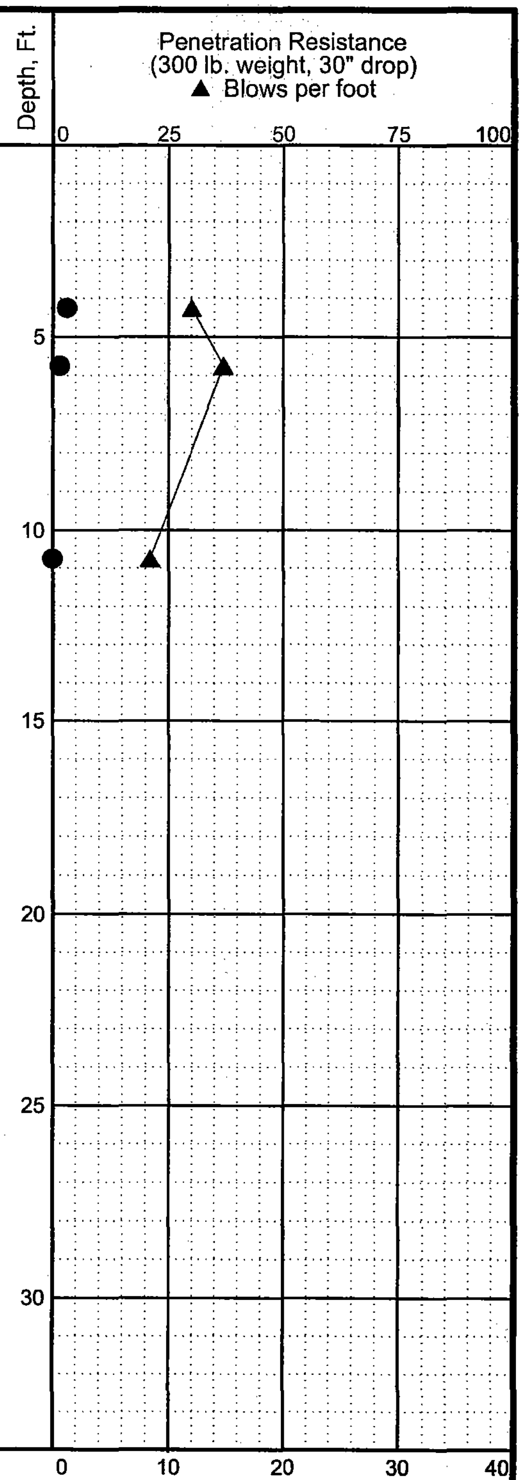
Coordinates: N: 101,126 E: 99,645

Elevation: 47.3 Ft.

MATERIAL DESCRIPTION	Depth, Ft.	Samples	Ground Water
Tundra vegetation and SILT	0.5		
Dense, brown, silty GRAVEL and cobbles; moist	4.5	06SB105	
Dense, brown, silty, gravelly SAND and cobbles; moist to wet	9.0	S2	8/21/04 ⊽
Medium dense to dense, lt. brown, slightly silty, angular gravelly SAND; wet	11.5	06SB106	

Bottom of Boring
Boring Completed 8/20/04

Boring advanced with 8-inch auger / air hammer



LEGEND

* Sample Not Recovered
Ⅲ 3" O.D. Split Spoon Sample
B Auger Cuttings
⊽ Ground Water Level At Time Of Drilling

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
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Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

LOG OF BORING 06B4

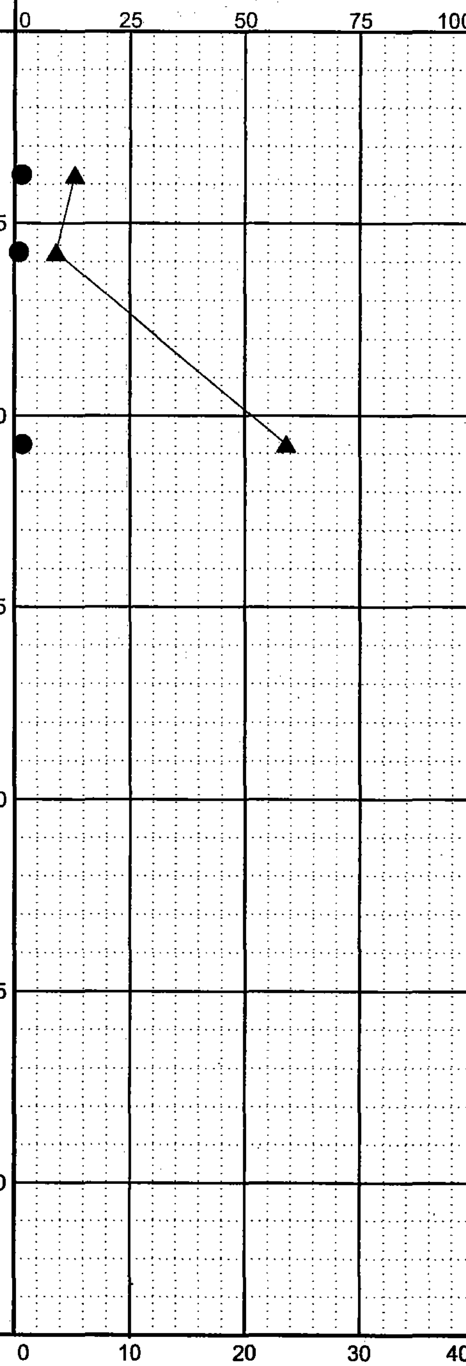
June 2005 32-1-16821

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-7a

MATERIAL DESCRIPTION Coordinates: N: 101,205 E: 99,607 Elevation: 46 Ft.	Depth, Ft.	Symbol	Samples	Ground Water
Thin tundra vegetation on Boulders and Cobbles				
Medium dense, brown, silty GRAVEL and cobbles; moist	3.0		S1	
Stiff, lt brown to reddish brown, sandy SILT; trace gravel; moist	5.0		06SB107	
Dense, lt brown, silty GRAVEL and cobbles; wet	8.0		06SB108	8/21/04 ∇
Bottom of Boring Boring Completed 8/21/04 Boring advanced with 8-inch auger / air hammer	11.5			

Penetration Resistance
(300 lb. weight, 30" drop)
▲ Blows per foot



● PID Reading (ppm)

LEGEND

* Sample Not Recovered
Ⅲ 3" O.D. Split Spoon Sample
B Auger Cuttings
∇ Ground Water Level At Time Of Drilling

NOTES

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Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

LOG OF BORING 06B5

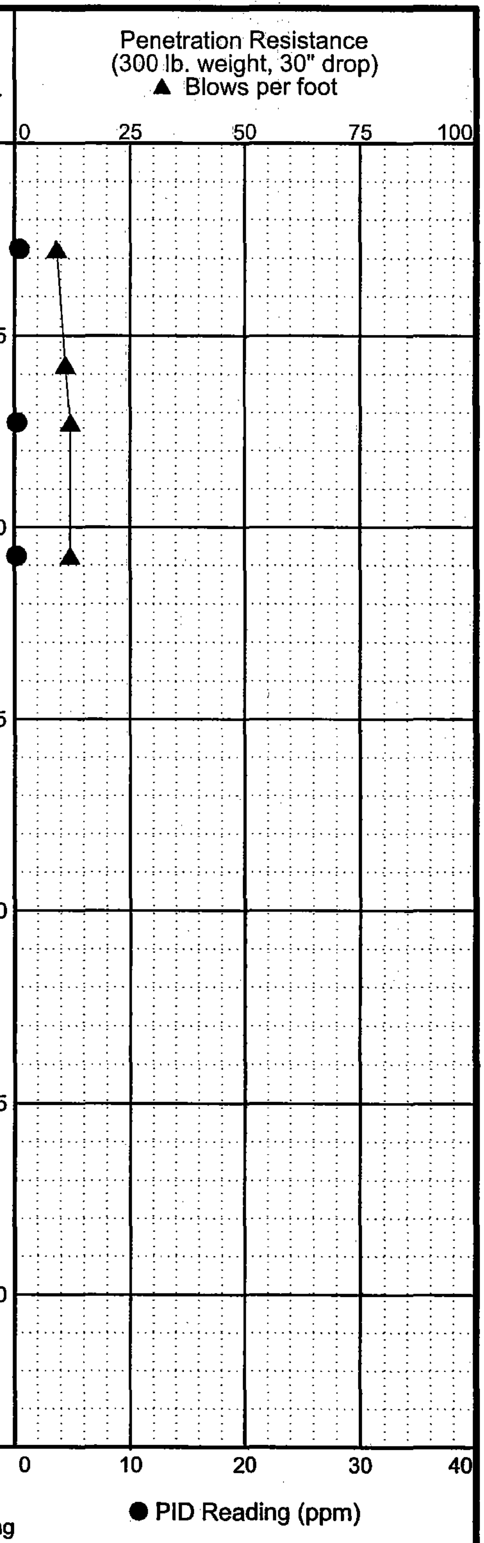
June 2005 32-1-16821

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-8a

ENVIRONMENTAL LOG 16821DRILLF.GPJ S&W GEO1.GDT 6/22/05

MATERIAL DESCRIPTION Coordinates: N: 101,263 E: 99,638 Elevation: 47.2 Ft.	Depth, Ft.	Symbol	Samples	Ground Water	Depth, Ft.
Tundra vegetation and topsoil on boulders. Topsoil would fall between gaps in rocks to while advancing auger to 5.5 ft.	0.8				
Stiff, brown and gray, slightly gravelly SILT and boulders; moist to wet			06SB109	8/21/04 ∇	5
Stiff, brown, gray, and rusty orange, slightly gravelly SILT; moist to wet; thin lenses of dark gray, fine SAND from 6.5 to 8 ft.	5.5		S2 * 06SB110 S3		10
Bottom of Boring Boring Completed 8/21/04 Boring advanced with 8-inch auger / air hammer	11.5				15 20 25 30



LEGEND

- * Sample Not Recovered
- 3" O.D. Split Spoon Sample
- B Auger Cuttings
- ∇ Ground Water Level At Time Of Drilling

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
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Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

LOG OF BORING 06B6

June 2005 32-1-16821

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-9a

ENVIRONMENTAL LOG 16821DRILLF.GPJ S&W GEO1.GDT 6/22/05

MATERIAL DESCRIPTION

Coordinates: N: 98,303 E: 96,866

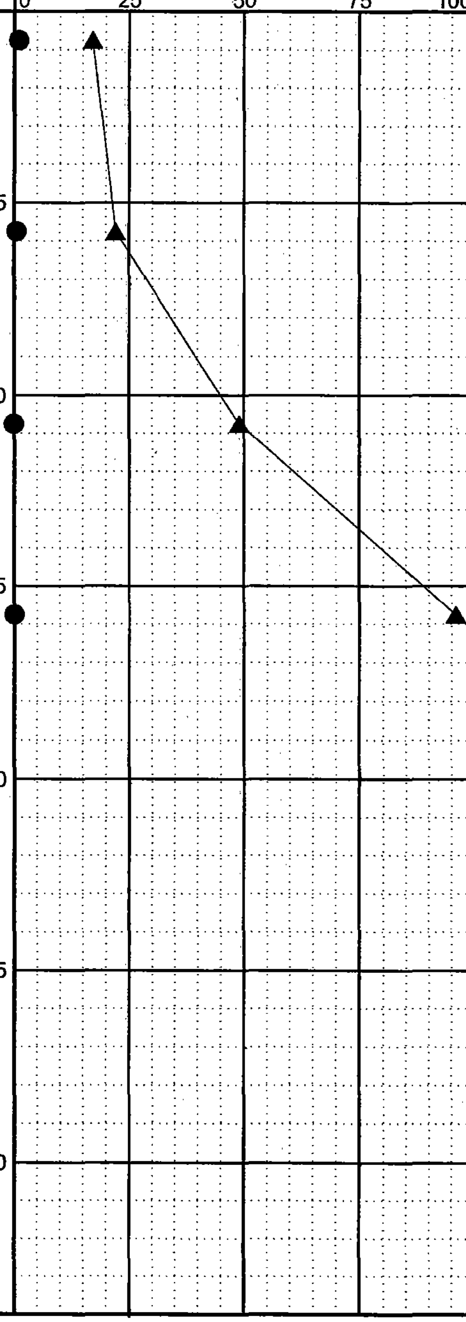
Elevation: 73.2 Ft.

Material Description	Depth, Ft.	Samples	Ground Water
Medium dense, brown, slightly silty, gravelly SAND; trace organics (roots); moist [Fill] Hydrocarbon (used motor oil?) odor	1.5	S1	
Medium dense, dark brown to orange-brown, slightly silty, gravelly SAND; trace organics (roots); moist	10.0	10SB104	
Dense, dark brown to gray, silty, gravelly SAND; moist; with cobbles Some sand described as crumbly rock, and wet silt on outside of sampler suggest frozen ground Groundwater suspected at 7.5 ft. based on 10MW1	16.5	10SB105 10SB106	8/23/04

Bottom of Boring
Boring Completed 8/23/04

Boring advanced with 8-inch auger

Penetration Resistance
(300 lb. weight, 30" drop)
▲ Blows per foot



● PID Reading (ppm)

LEGEND

* Sample Not Recovered

3" O.D. Split Spoon Sample

B Auger Cuttings

Ground Water Level At Time Of Drilling

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
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Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

LOG OF BORING 10B1

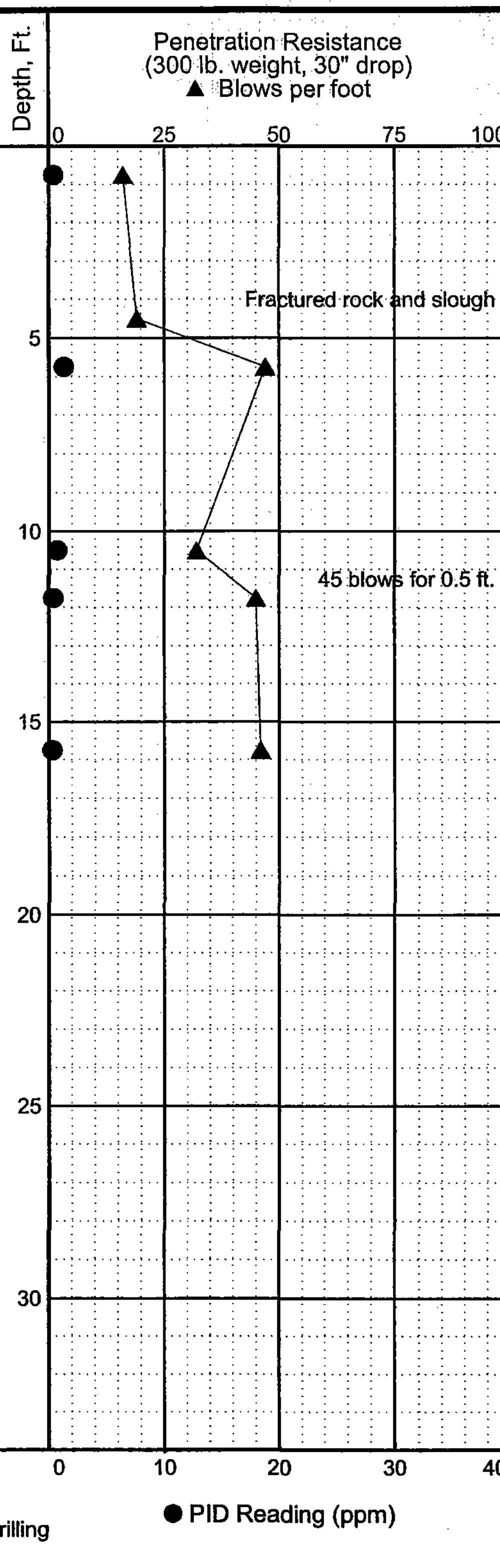
June 2005 32-1-16821

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-10a

ENVIRONMENTAL LOG 16821DRILLF.GPJ S&W GEO1.GDT 6/22/05

MATERIAL DESCRIPTION Coordinates: N: 98,175 E: 96,814 Elevation: 77.8 Ft.	Depth, Ft.	Symbol	Samples	Ground Water
Medium dense, brown, silty SAND and cobbles; scattered organics, roots; moist [Fill]			FS1 S2 *	
Stiff, brown, sandy or gravelly SILT and cobbles; moist	5.0		10SB101 10SB102	
Brown, sandy SILT; wet High blowcounts and "runny" recovered soil suggest frozen ground.	11.0 12.0		S3	8/23/04
Dense, brown, silty, gravelly SAND and cobbles; wet - frozen likely	13.0		10SB103	
Bottom of Boring Boring Completed 8/23/04 Boring advanced with 8-inch auger	16.5 16.5			



LEGEND

- * Sample Not Recovered
- Ⅲ 3" O.D. Split Spoon Sample
- B Auger Cuttings
- ▮ Frozen
- ⊻ Ground Water Level At Time Of Drilling

NOTES

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Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

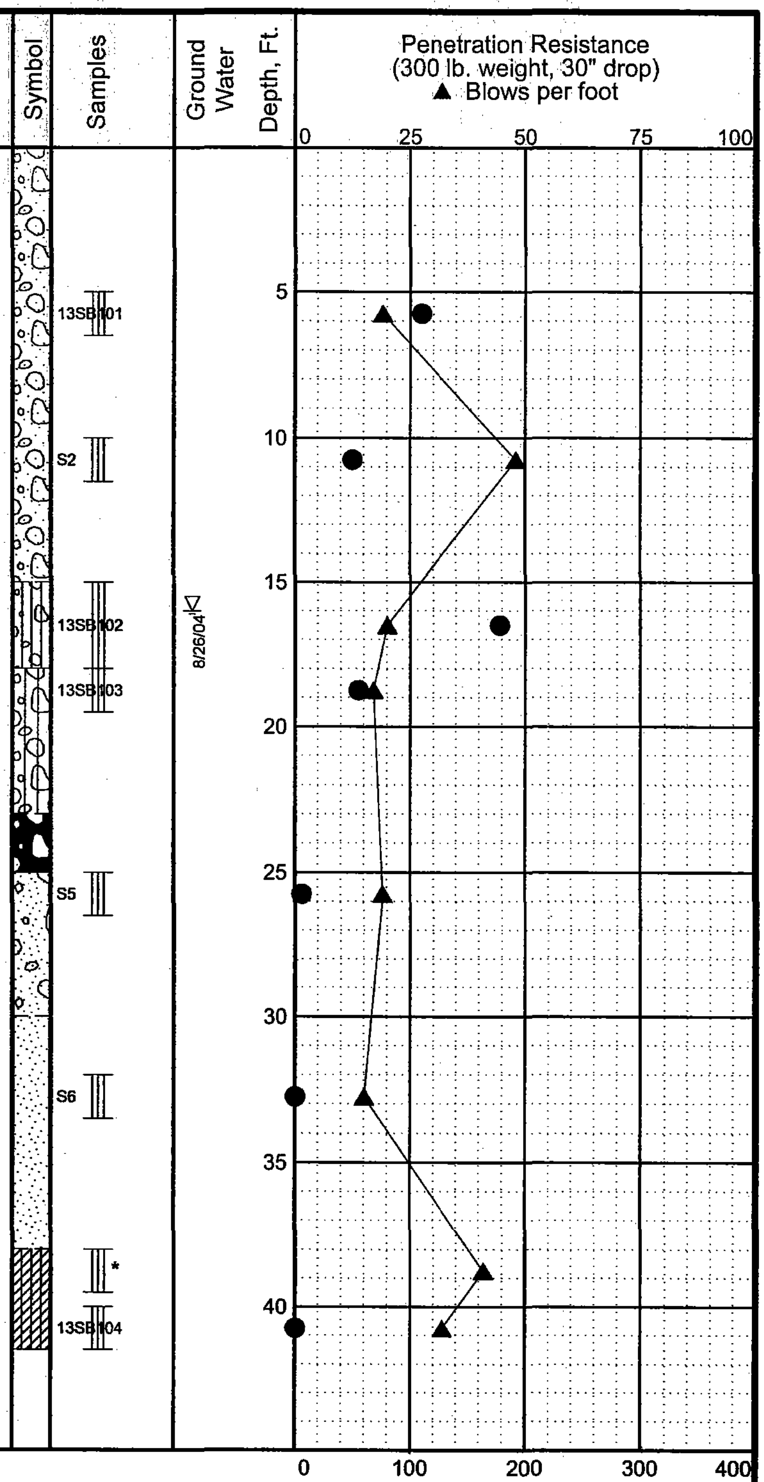
LOG OF BORING 10B2

June 2005 32-1-16821

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-11a

MATERIAL DESCRIPTION Coordinates: N: 98,259 E: 95,998 Elevation: 73.5 Ft.	Depth, Ft.
Medium dense, brown, slightly silty, sandy GRAVEL and cobbles; moist; strong weathered diesel odor	
Stiff, dk. gray, sandy, gravelly SILT and cobbles; moist to wet; strong weathered diesel odor	15.0
13SB103: 45% Gravel, 33% Sand, 21% Fines Medium dense, gray, silty, sandy GRAVEL and cobbles; wet, weathered diesel odor	18.0
Boulder or possible frozen ground	23.0
Medium dense, brown, gravelly SAND and cobbles; wet; 4-inch lens of medium sand at 26.5 ft.	25.0
Medium dense, olive/brown clean medium SAND and cobbles; wet High water yield.	30.0
Hard, olive gray/green gravelly, clayey SILT and cobbles; wet [Till]	38.0
Bottom of Boring Boring Completed 8/26/04 Boring advanced with Tubex air/rotary	41.5



LEGEND

- * Sample Not Recovered
- Ⅲ 3" O.D. Split Spoon Sample
- B Auger Cuttings
- ⊻ Ground Water Level At Time Of Drilling

NOTES

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Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

LOG OF BORING 13B1

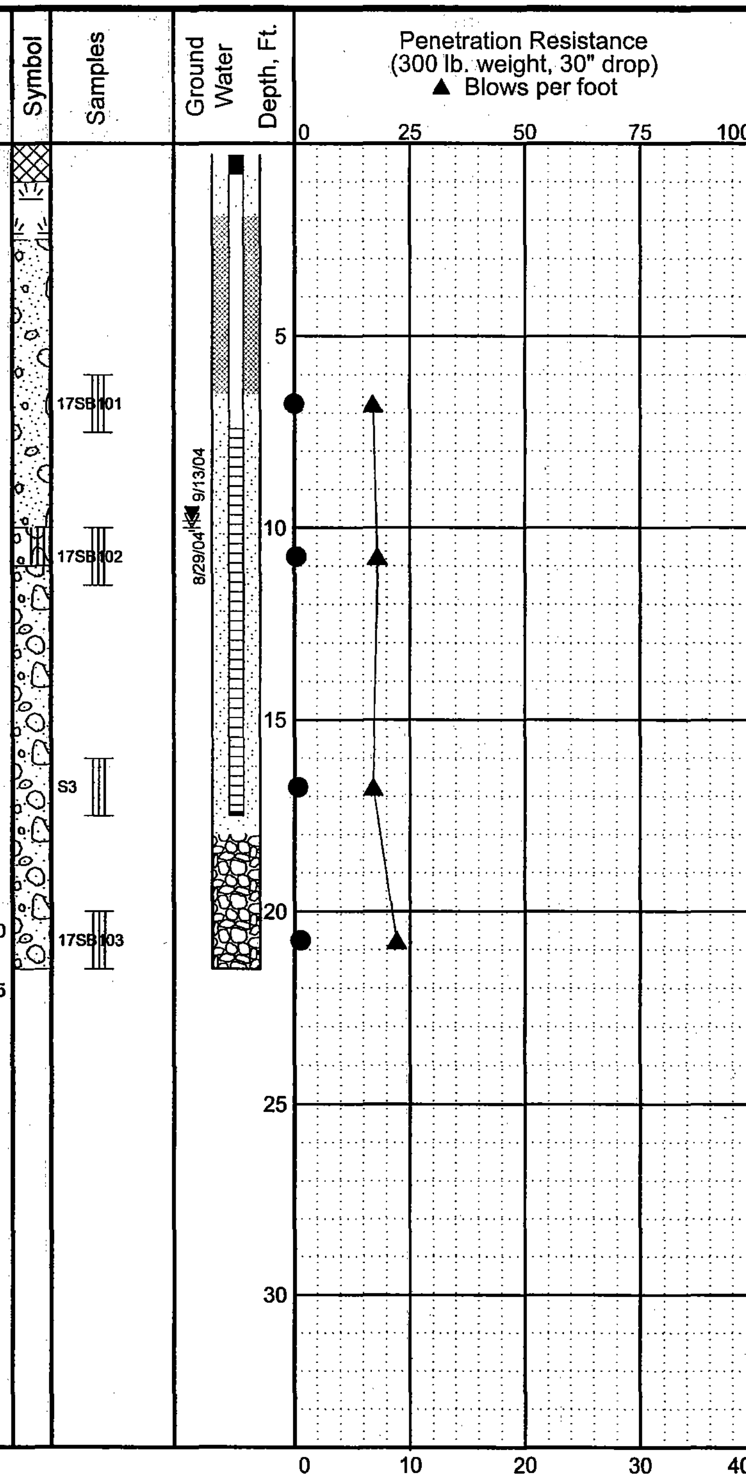
June 2005 32-1-16821

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-12a

ENVIRONMENTAL LOG 16821DRILLF.GPJ S&W GEO1.GDT 6/22/05

MATERIAL DESCRIPTION	Depth, Ft.
Coordinates: N: 98,153 E: 95,666 Elevation: 71.5 Ft.	
Loose, brown, gravelly COBBLES; moist [Fill]	1.0
Soft, brown, silty PEAT; moist	2.5
Medium dense, redish brown, slightly silty, gravelly SAND; with cobbles; moist	10.0
Medium dense, gray, silty, sandy GRAVEL; wet	11.0
Medium dense, brown, sandy GRAVEL; with cobbles; wet - suspected frozen at 20 ft.	20.0 / 21.5
Bottom of Boring Boring Completed 8/29/04 Boring advanced with Tubex air/rotary	21.5



LEGEND

- * Sample Not Recovered
- 3" O.D. Split Spoon Sample
- B Auger Cuttings
- Frozen
- Surface Seal
- Solid Casing and Annular Seal
- Well Casing and Filter Sand
- Cuttings Backfill
- Ground Water Level At Time Of Drilling
- Static Water Level

NOTES

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Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

LOG OF BORING 17MW1

June 2005 32-1-16821

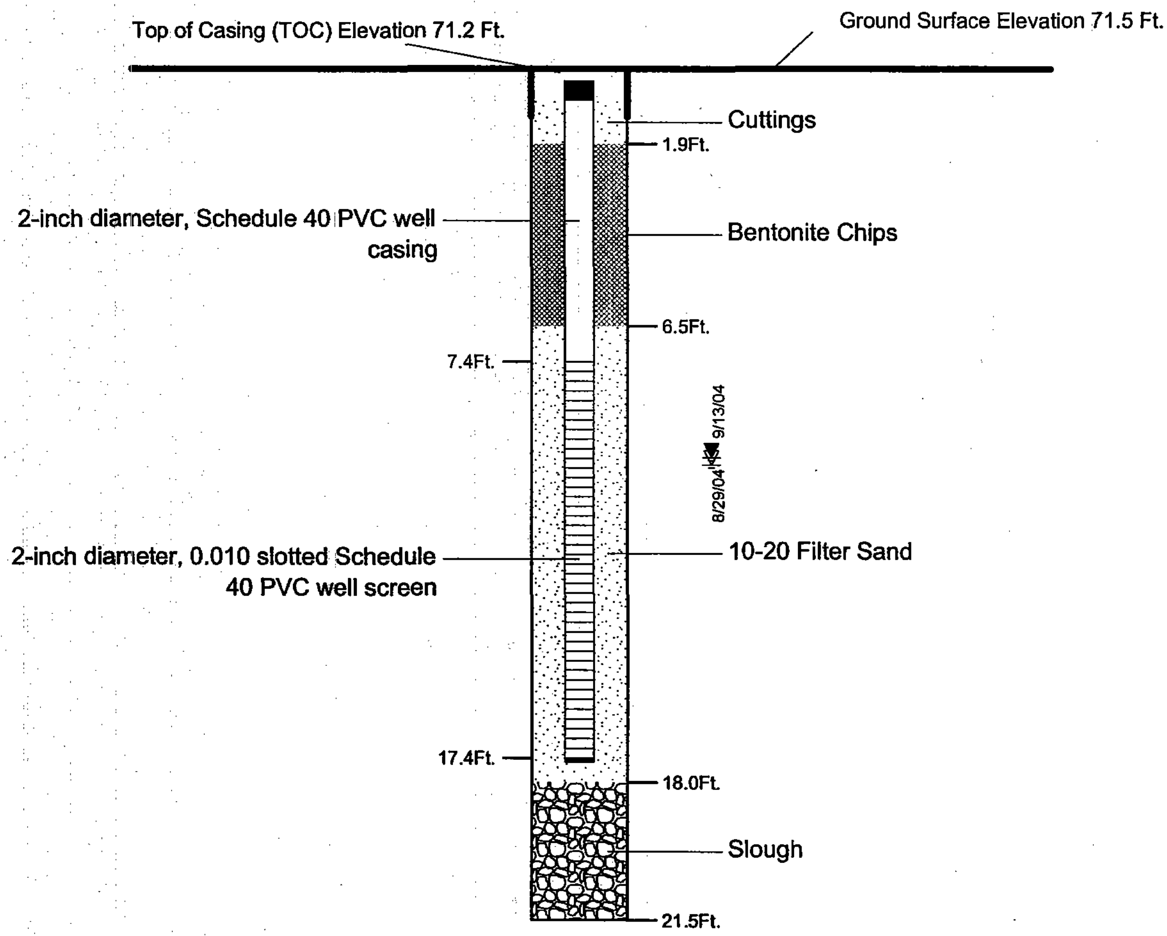
SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-13a

ENVIRONMENTAL LOG 16821DRILLF.GPJ S&W GEO1.GDT 6/22/05

Coordinates: N: 98,153 E: 95,666

Casing Description **Backfill Description**



LEGEND

- ∇ Ground Water Level ATD
- ▼ Static Ground Water Level

NOTES: Cover is cast iron set in concrete
Top cap is locking expansion plug with padlock
Joints are machine threaded
Botton cap is friction fit

Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

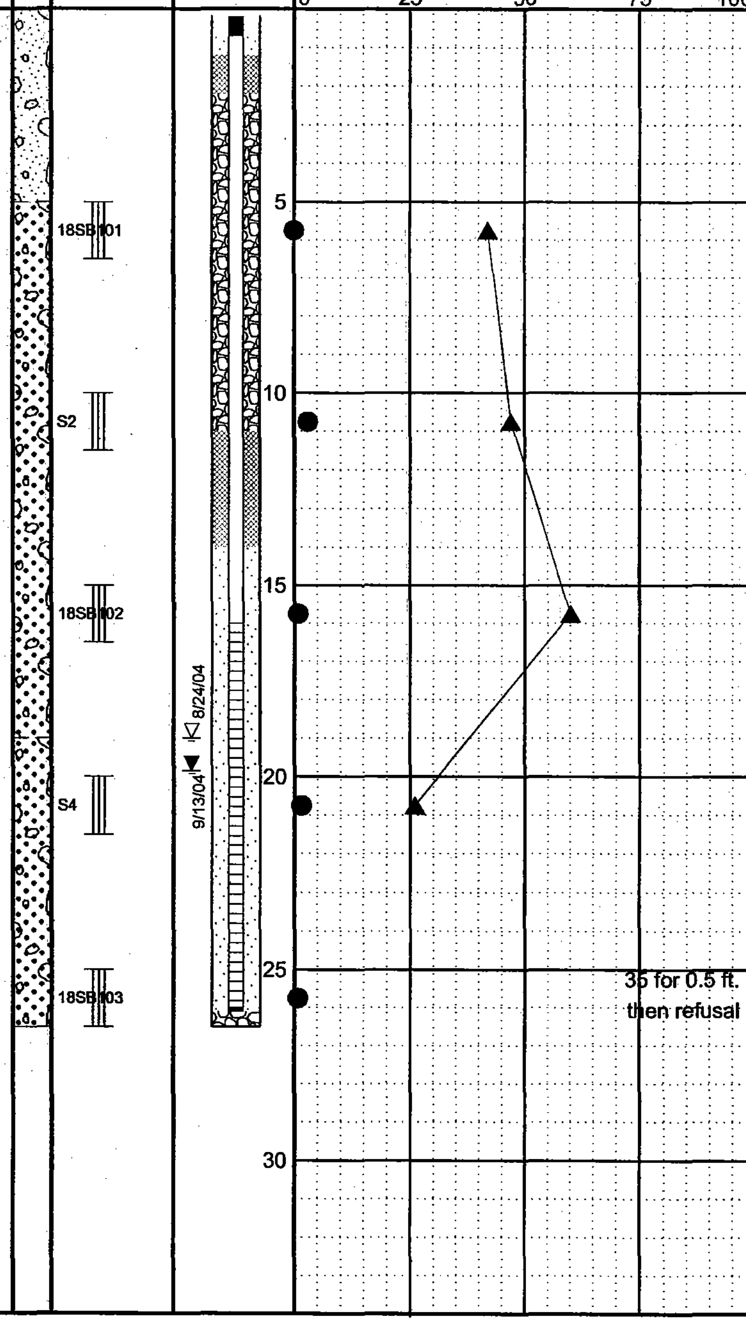
MONITORING WELL 17MW1
CONSTRUCTION DETAIL

June 2005 32-1-16821

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-13b

MATERIAL DESCRIPTION Coordinates: N: 97,784 E: 95,838 Elevation: 83.29 Ft.	Depth, Ft.
Brown, silty, gravelly SAND and cobbles; moist [Fill]	
Dense, lt. brown, silty, gravelly SAND to silty GRAVEL and cobbles; moist	5.0
Dense, brown, silty, gravelly SAND to silty GRAVEL and cobbles; wet	19.0
Bottom of Boring Boring Completed 8/24/04 Boring advanced with Tubex air/rotary	26.5



LEGEND

* Sample Not Recovered
3" O.D. Split Spoon Sample
B Auger Cuttings

Surface Seal
Solid Casing and Annular Seal
Well Casing and Filter Sand
Cuttings Backfill
Ground Water Level At Time Of Drilling
Static Water Level

NOTES

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Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

LOG OF BORING 18MW1

June 2005 32-1-16821

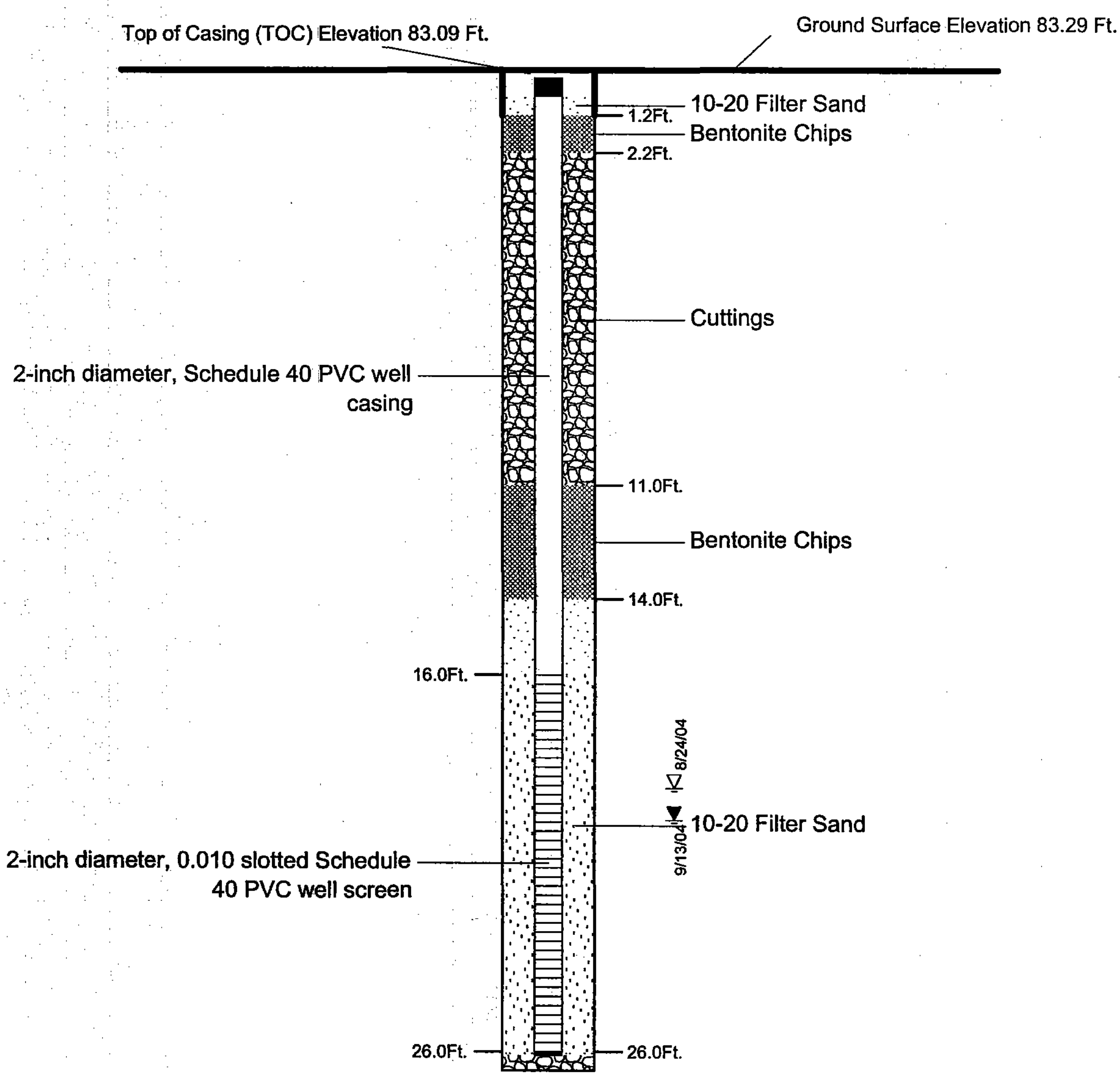
SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-14a

ENVIRONMENTAL LOG 16821DRILLF.GPJ S&W GEO1.GDT 6/22/05

Coordinates: N: 97,784 E: 95,838

Casing Description **Backfill Description**



LEGEND

- ∇ Ground Water Level ATD
- ▼ Static Ground Water Level

NOTES: Cover is cast iron set in concrete
Top cap is locking expansion plug with padlock
Joints are machine threaded
Botton cap is friction fit

Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

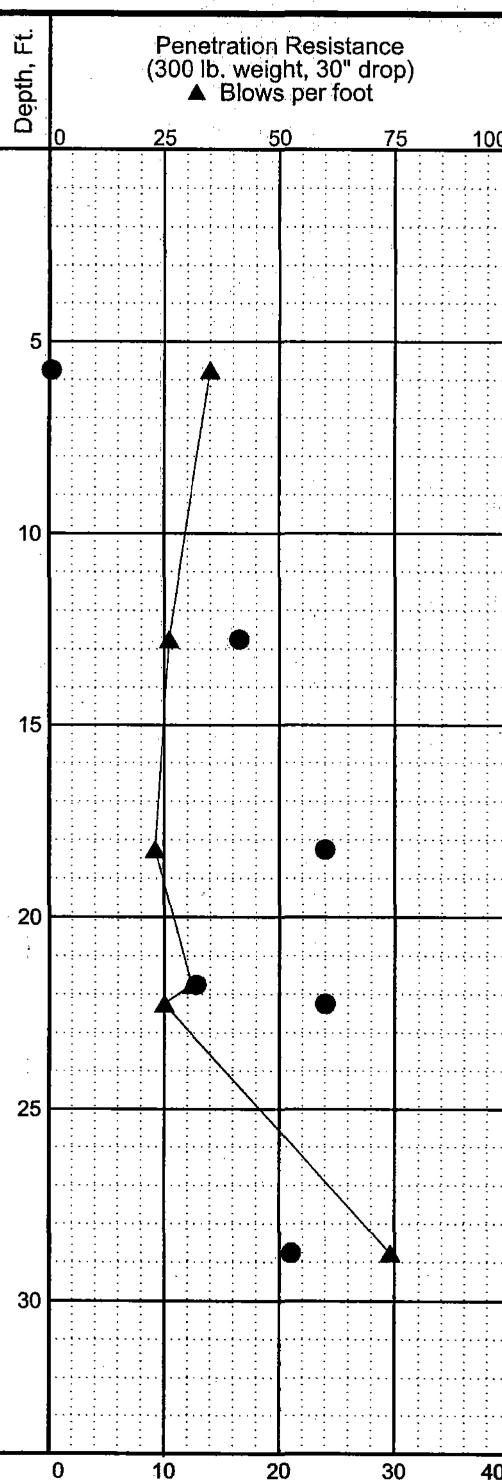
MONITORING WELL 18MW1
CONSTRUCTION DETAIL

June 2005 32-1-16821

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-14b

MATERIAL DESCRIPTION Coordinates: N: 98,068 E: 96,317 Elevation: 82.5 Ft.	Depth, Ft.	Samples	Ground Water
Brown, silty, sandy GRAVEL and cobbles; moist			
Stiff, gray, slightly gravelly, sandy SILT; moist	5.3		
Medium dense, gray/brown, gravelly, silty SAND; moist	5.7	19SB101	
Medium dense, silty, gravelly SAND and cobbles; dry to moist; moderate hydrocarbon odor	10.0	19SB102	
Medium dense, silty, sandy GRAVEL; wet; Strong weathered diesel odor, slight hydrocarbon sheen on water	17.0	19SB103	8/25/04 ∇
Fractured granite cuttings, 0.5 ft. of fractured rock in each of 3 split spoons. Moderate driving resistance for first two suggest depositional material. High driving resistance at 28.5 ft. suggests bedrock or frozen material.	21.0	S4 S5 S6	
Bottom of Boring Boring Completed 8/25/04 Boring advanced with Tubex air/rotary	29.5		



LEGEND

- * Sample Not Recovered
- Ⅲ 3" O.D. Split Spoon Sample
- B Auger Cuttings
- ∇ Ground Water Level At Time Of Drilling

NOTES

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Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

LOG OF BORING 19B1

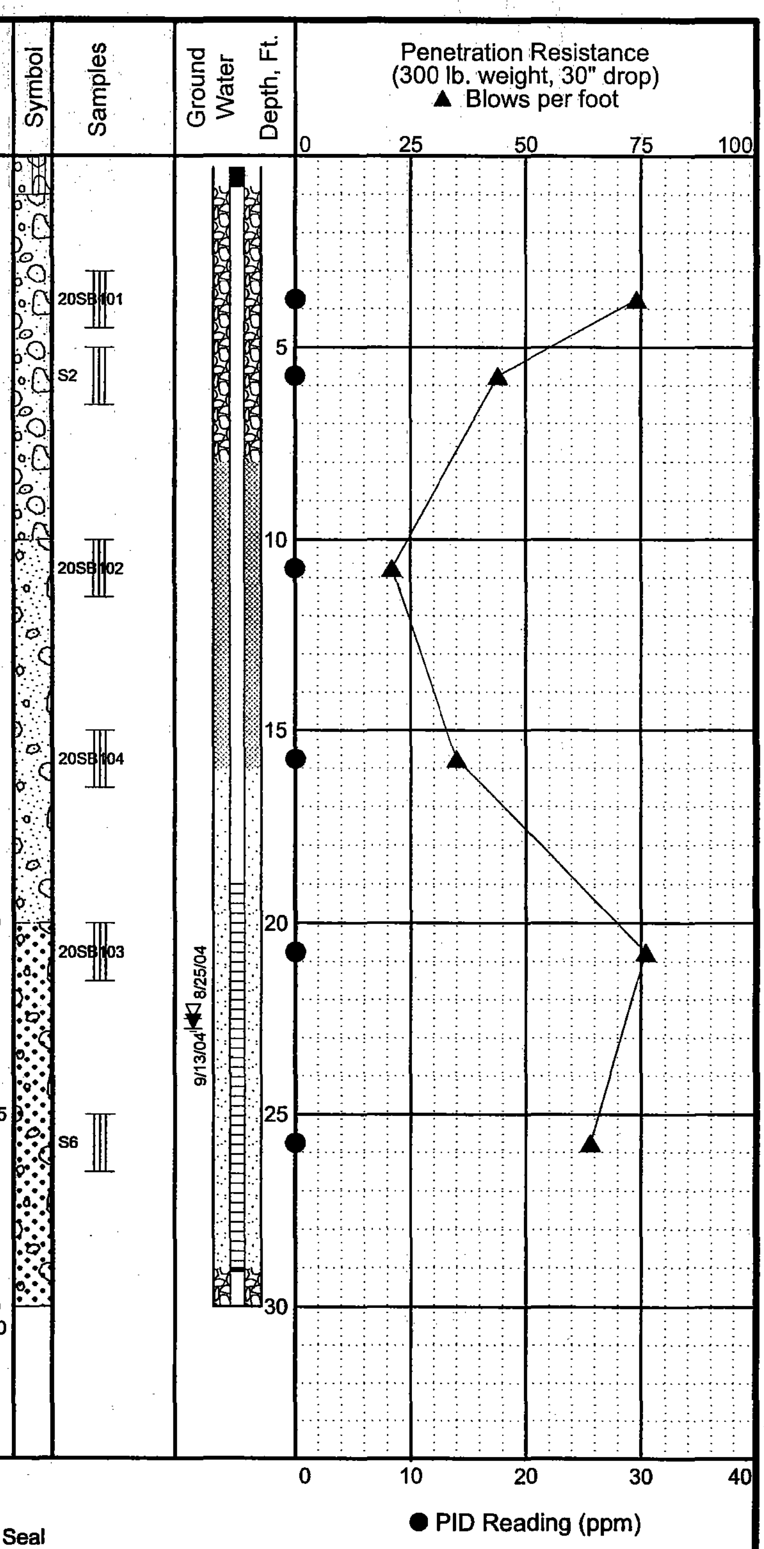
June 2005 32-1-16821

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-15a

ENVIRONMENTAL LOG 16821DRILLF.GPJ S&W GEO1.GDT 6/22/05

MATERIAL DESCRIPTION	Depth, Ft.
Coordinates: N: 97,854 E: 96,208 Elevation: 89.36 Ft.	
Brown, silty coarse GRAVEL and cobbles; moist	1.0
Dense to very dense, brown, slightly silty, sandy angular GRAVEL and cobbles; moist	10.0
Medium dense to dense, brown/redish brown, silty, gravelly SAND to gravelly, silty SAND and cobbles; moist 20SB104: 19% Gravel, 55% Sand, 25% Fines	20.0
Very dense, brown, silty, gravelly SAND and cobbles; moist wet at 22.5 ft. frozen suspected at 24.5 ft. 1-inch lense of gray sandy silt between angular gravel/fractured rock at 26.3 ft.	24.5 30.0
Bottom of Boring Boring Completed 8/25/04 Boring advanced with Tubex air/rotary	30.0



LEGEND

- * Sample Not Recovered
- 3" O.D. Split Spoon Sample
- B Auger Cuttings
- Frozen
- Surface Seal
- Solid Casing and Annular Seal
- Well Casing and Filter Sand
- Cuttings Backfill
- Ground Water Level At Time Of Drilling
- Static Water Level

NOTES

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Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

LOG OF BORING 20MW1

June 2005 32-1-16821

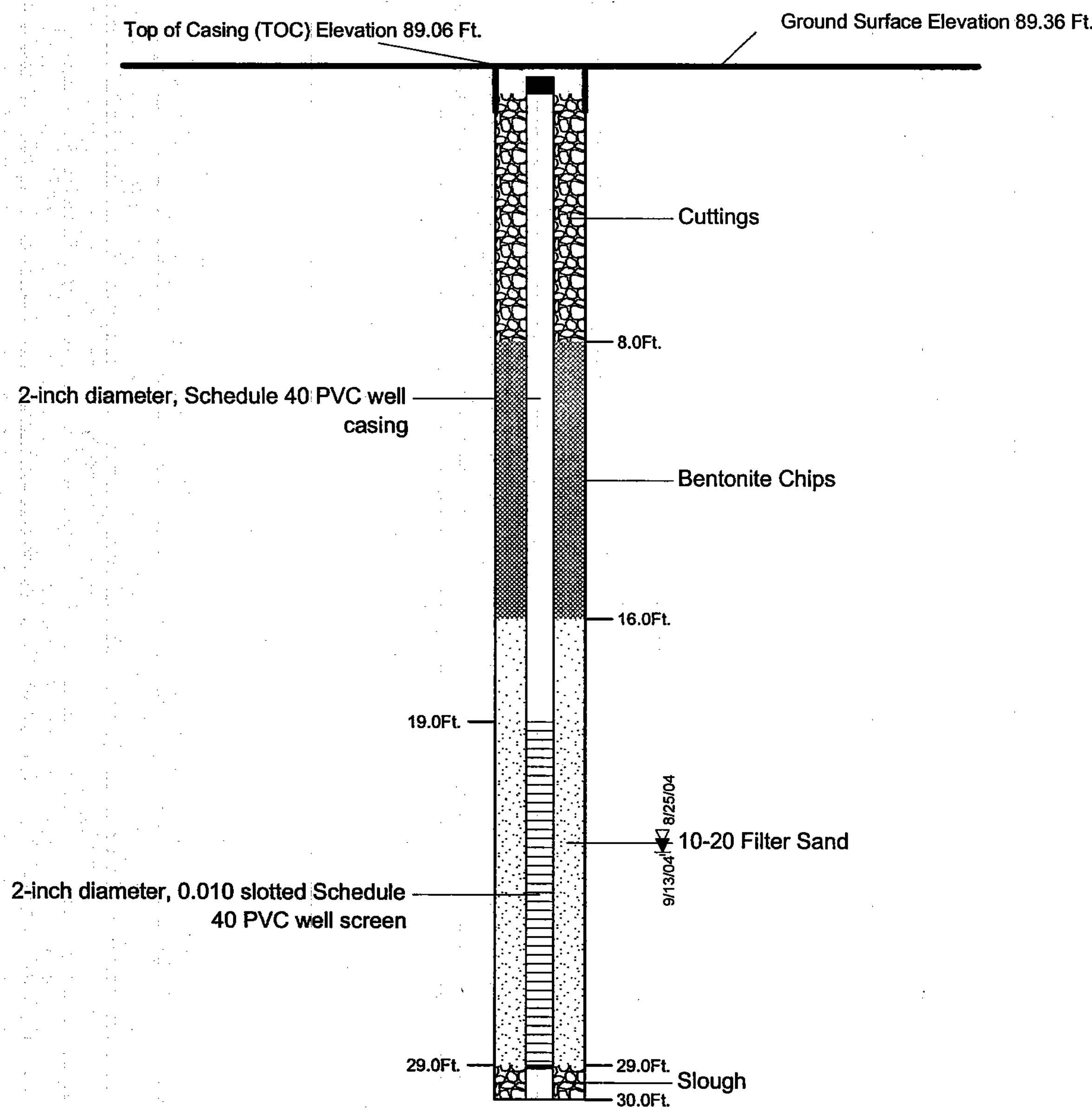
SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-16a

ENVIRONMENTAL LOG 16821DRILLF.GPJ S&W GEO1.GDT 6/22/05

Coordinates: N: 97,854 E: 96,208

Casing Description **Backfill Description**



LEGEND

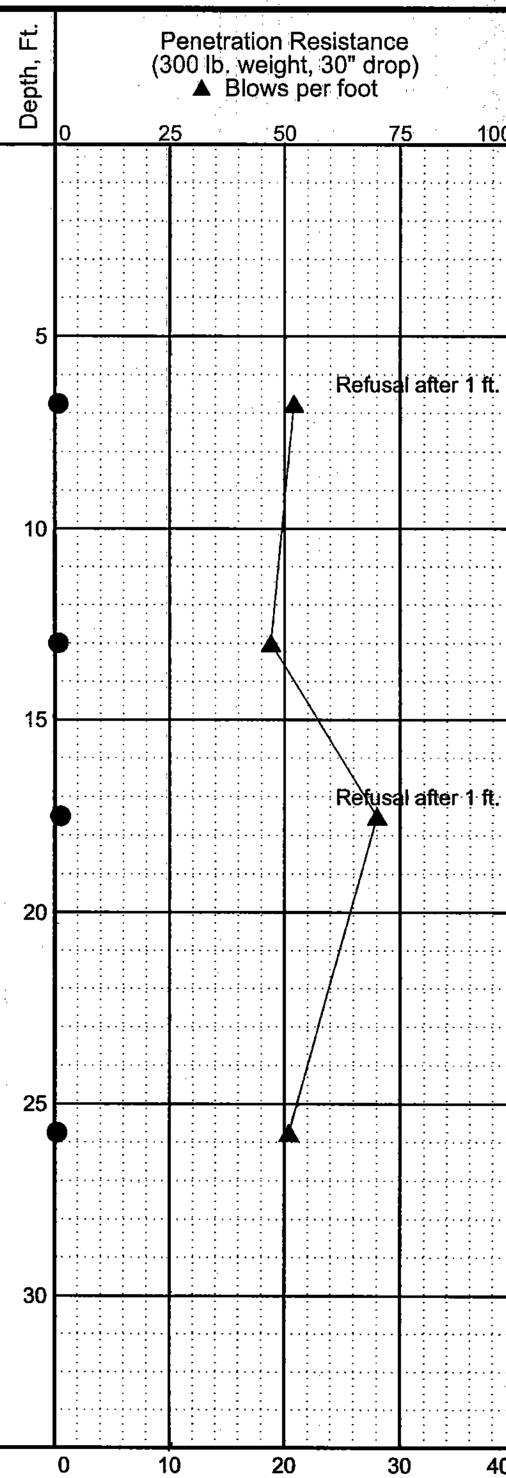
- ∇ Ground Water Level ATD
- ▼ Static Ground Water Level

NOTES: Cover is cast iron set in concrete
Top cap is locking expansion plug with padlock
Joints are machine threaded
Botton cap is friction fit

Phase IV RI, Northeast Cape St. Lawrence Island, Alaska	
MONITORING WELL 20MW1 CONSTRUCTION DETAIL	
June 2005	32-1-16821
SHANNON & WILSON, INC. Geotechnical and Environmental Consultants	**Fig. B-16b**

MATERIAL DESCRIPTION Coordinates: N: 97,612 E: 96,091 Elevation: 94.2 Ft.	Depth, Ft.	Samples
Brown, gravelly COBBLES; moist [Fill]		
Very dense, lt. brown, gravelly SAND in cobbles; dry to moist	5.0	22SB106
Drill action and cuttings suggest Rocks	7.0	
Dense, brown to gray, sandy GRAVEL; moist	12.0	22SB107
Drill action and cuttings suggest Rocks, possibly frozen at 15 ft.	13.5	
Gray, sandy GRAVEL; dry (Cuttings?)	17.0	22SB108
Drill action and cuttings suggest Rocks. The ability to drive a split spoon 18 inches and recover 6 inches of fractured rock/angular gravel suggests frozen depositional material.	18.0	S4
Bottom of Boring Boring Completed 8/28/04 Boring advanced with Tubex air/rotary	26.5	

Ground Water: Groundwater Not Encountered During Drilling on 8/28/04



LEGEND

* Sample Not Recovered

Ⅲ 3" O.D. Split Spoon Sample

B Auger Cuttings

⊻ Ground Water Level At Time Of Drilling

NOTES

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Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

LOG OF BORING 22B1

June 2005 32-1-16821

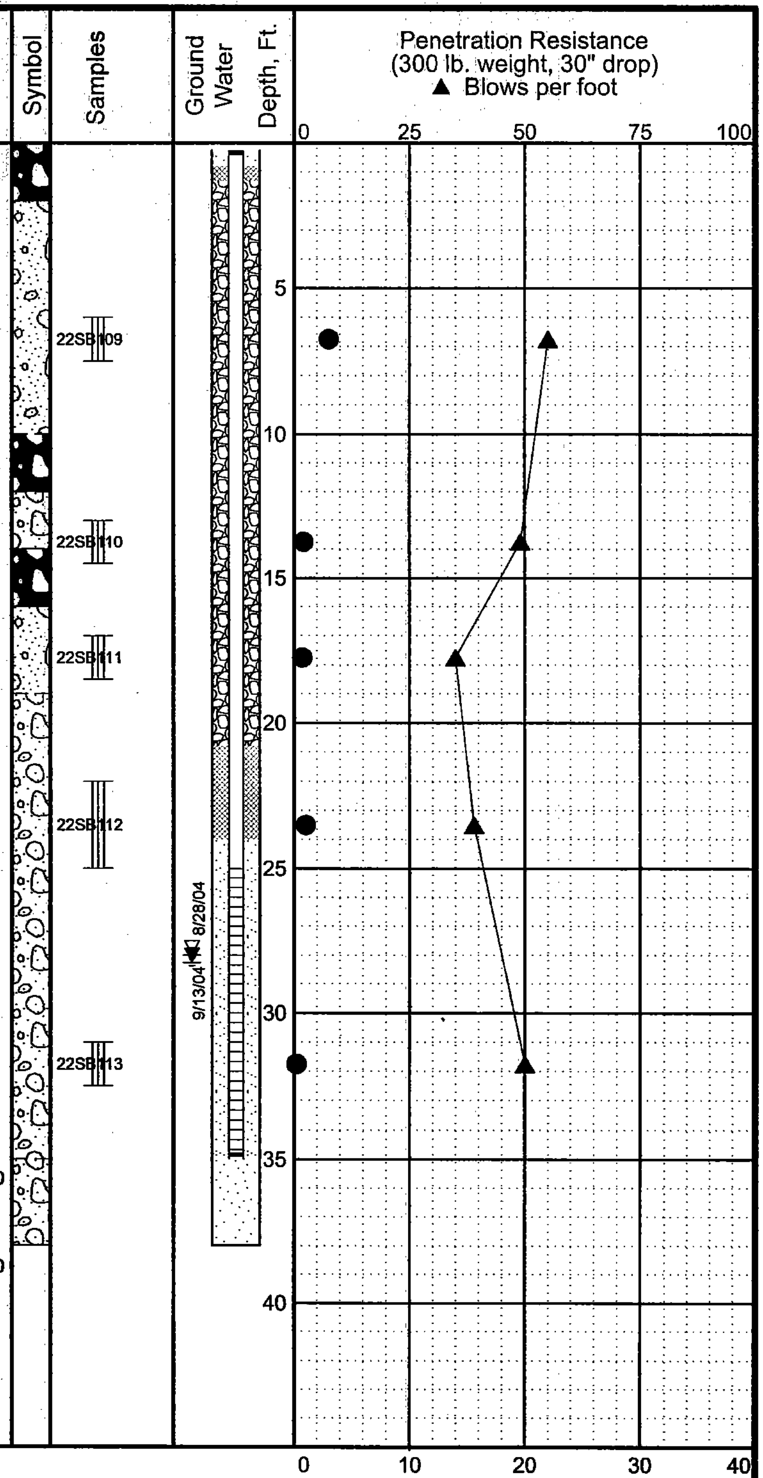
SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-17a

ENVIRONMENTAL LOG 16821DRILLF.GPJ S&W GEO1.GDT 6/22/05

MATERIAL DESCRIPTION	Depth, Ft.
Coordinates: N: 97,587 E: 96,081 Elevation: 94.02 Ft.	
Cobble and boulder FILL with concrete and steel	2.0
Very dense, brown to gray, gravelly SAND and cobbles; dry to moist, slight hydrocarbon odor and staining at 7.4 ft.	10.0
Boulder	12.0
Dense, brown to gray, silty, sandy GRAVEL and cobbles; moist	14.0
Boulder	16.0
Dense, brown, gravelly SAND; moist	19.0
Dense, brown, slightly silty, sandy GRAVEL and cobbles; moist to wet. Marginal water contact at 22 ft., better water at 28 ft., frozen ground first suspected at 30 ft.	35.0 35.0
Brown, slightly silty, sandy GRAVEL and cobbles; Frozen	38.0 38.0

Bottom of Boring
Boring Completed 8/28/04
Boring advanced with Tubex air/rotary



LEGEND

* Sample Not Recovered	Surface Seal
3" O.D. Split Spoon Sample	Solid Casing and Annular Seal
B Auger Cuttings	Well Casing and Filter Sand
	Cuttings Backfill
Frozen	Ground Water Level At Time Of Drilling
	Static Water Level

NOTES

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Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

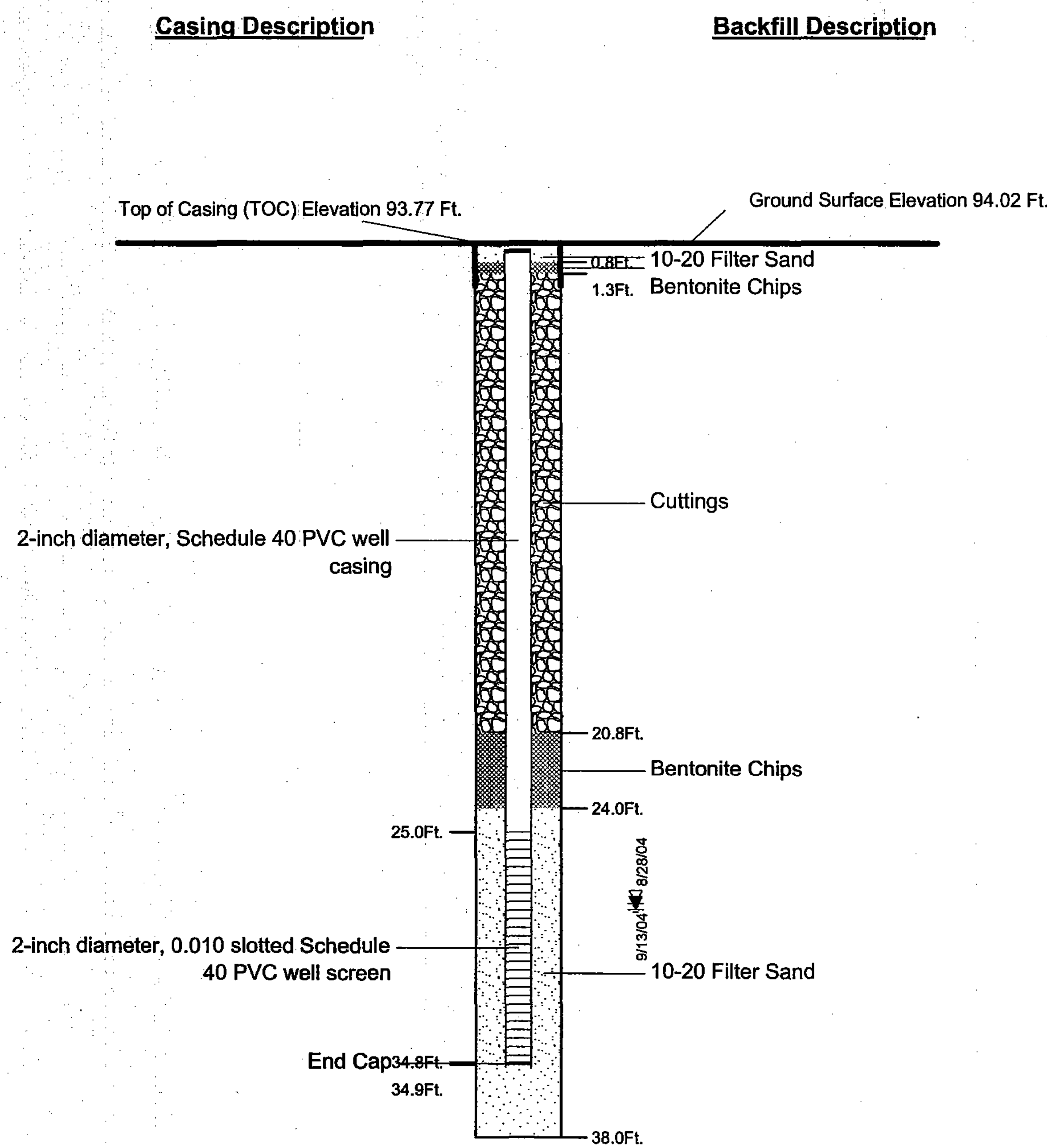
LOG OF BORING 22MW2

June 2005 32-1-16821

SHANNON & WILSON, INC. Geotechnical and Environmental Consultants **Fig. B-18a**

ENVIRONMENTAL LOG 16821DRILLF.GPJ S&W GEO1.GDT 6/22/05

Coordinates: N: 97,587 E: 96,081



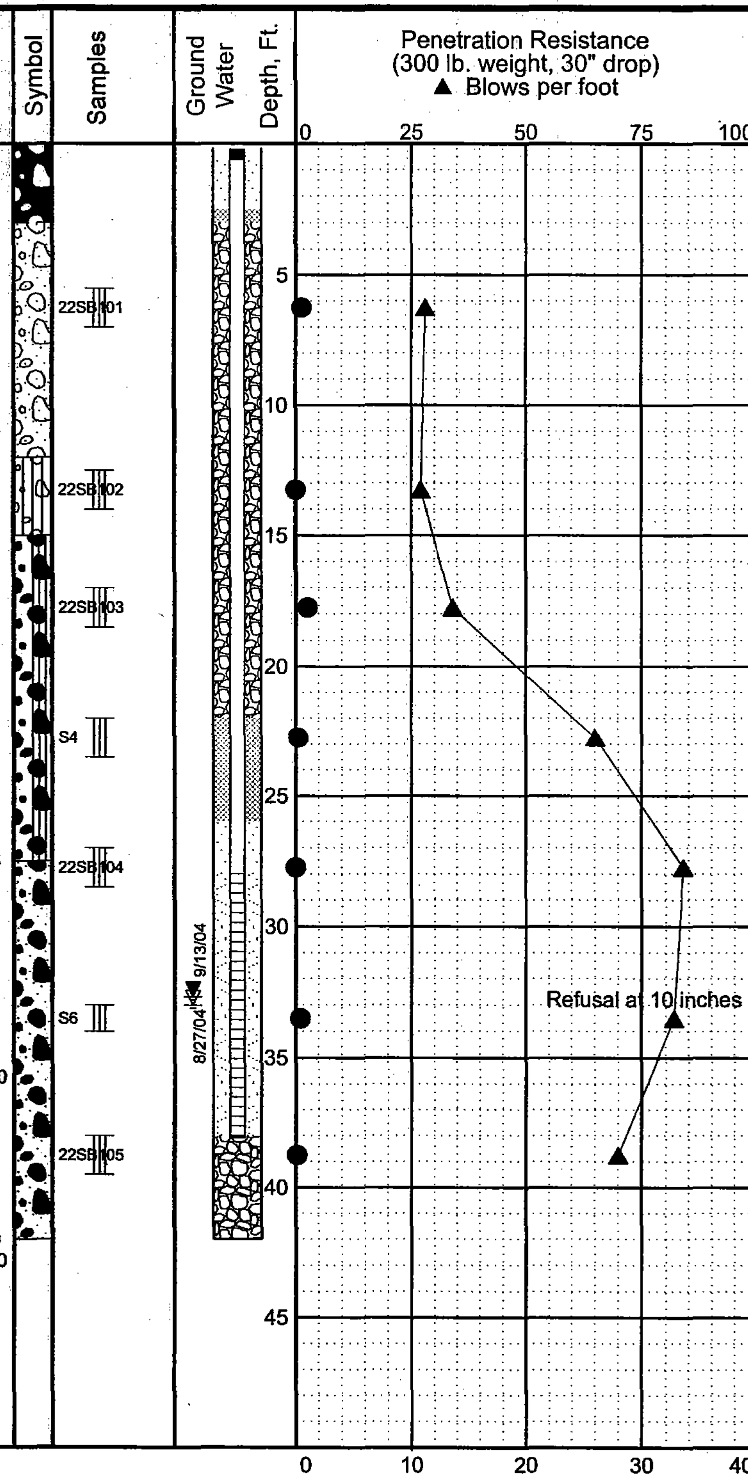
LEGEND

- Ground Water Level ATD
- Static Ground Water Level

NOTES: Cover is cast iron set in concrete
Top cap is locking expansion plug with padlock
Joints are machine threaded
Botton cap is friction fit

Phase IV RI, Northeast Cape St. Lawrence Island, Alaska
MONITORING WELL 22MW2 CONSTRUCTION DETAIL
June 2005 32-1-16821
SHANNON & WILSON, INC. Geotechnical and Environmental Consultants — **Fig. B-18b**

MATERIAL DESCRIPTION Coordinates: N: 97,538 E: 96,208 Elevation: 99.51 Ft.	Depth, Ft.
Gravelly COBBLES; moist [Fill]	
Medium dense, brown, silty, sandy GRAVEL and cobbles; moist. 22SB101: 45% Gravel, 25% Sand, 31% Fines	3.0
Dense, grayish brown, sandy, gravelly SILT and cobbles; moist	12.0
Dense to very dense, redish brown, sandy, silty GRAVEL and cobbles; moist. Minor water at 22.5 ft.	15.0
Very dense, brown, silty, sandy GRAVEL and cobbles; water at 32 to 33 ft. Suspected frozen at 34 ft., confirmed frozen ground at 38 ft.	27.5
	35.0
Bottom of Boring Boring Completed 8/27/04 Boring advanced with Tubex air/rotary	42.0 42.0



LEGEND

- * Sample Not Recovered
- 3" O.D. Split Spoon Sample
- B Auger Cuttings
- Frozen
- Surface Seal
- Solid Casing and Annular Seal
- Well Casing and Filter Sand
- Cuttings Backfill
- Ground Water Level At Time Of Drilling
- Static Water Level

NOTES

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Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

LOG OF BORING 22MW3

June 2005 32-1-16821

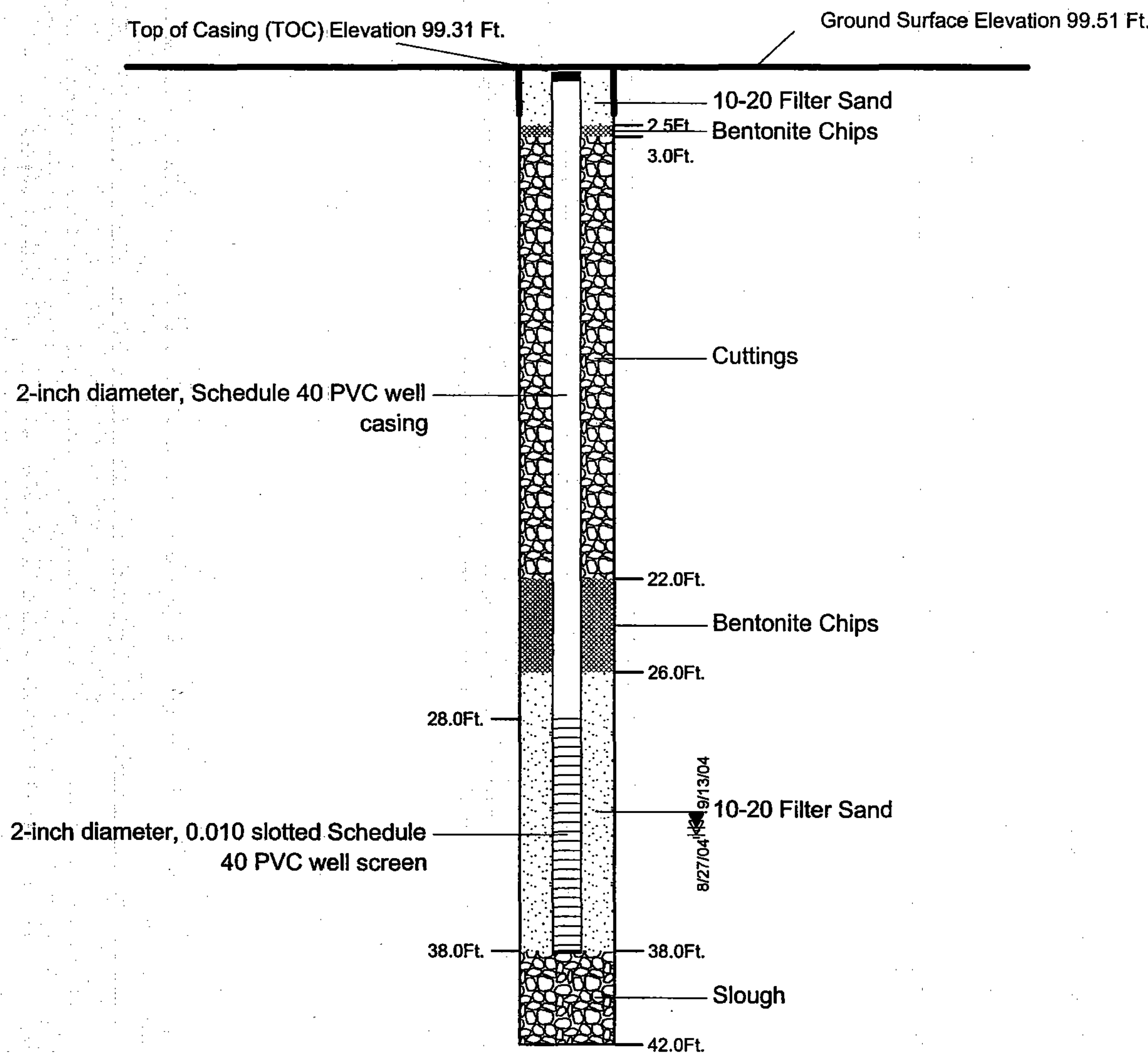
SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-19a

ENVIRONMENTAL LOG 16821DRILLF.GPJ S&W GEO1.GDT 6/22/05

Coordinates: N: 97,538 E: 96,208

Casing Description | **Backfill Description**



LEGEND

- ∇ Ground Water Level ATD
- ▼ Static Ground Water Level

NOTES: Cover is cast iron set in concrete
Top cap is locking expansion plug with padlock
Joints are machine threaded
Botton cap is friction fit

Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

MONITORING WELL 22MW3
CONSTRUCTION DETAIL

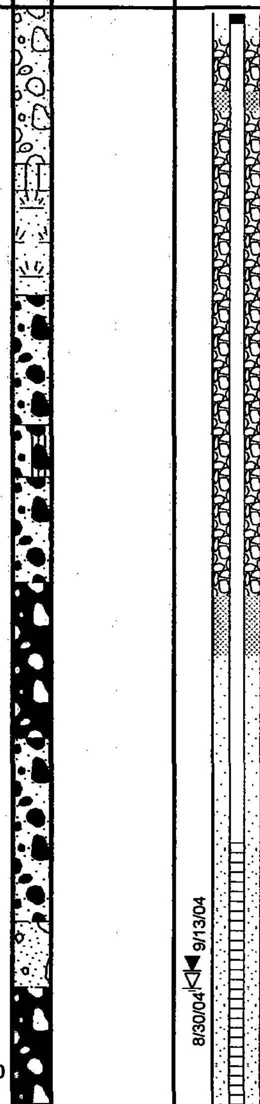
June 2005 32-1-16821

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-19b

MATERIAL DESCRIPTION Coordinates: N: 97,608 E: 96,561 Elevation: 107.62 Ft.	Depth, Ft.
Lithology based on cuttings and drill action.	
Brown, silty, sandy GRAVEL and cobbles; moist [Fill]	
Dk. brown, silty fine SAND; moist	6.0
Dk. brown, silty, sandy GRAVEL; moist; with organics (orginal top soil)	7.0
Lt. reddish brown, slightly silty, sandy GRAVEL and cobbles; moist	11.0
Increased silt content	16.0
Brown, slightly silty, sandy GRAVEL and cobbles; moist	18.0
Rocks	22.0
Brown, slightly silty, sandy GRAVEL to gravelly SAND and cobbles; moist	28.0
Brown, gravelly SAND and cobbles; moist to wet. Drill action similar to frozen ground	35.0
Mostly rock chips; wet	37.5
	40.0
	42.0
Bottom of Boring Boring Completed 8/30/04 Boring advanced with Tubex air/rotary	42.0

Symbol | Samples | Ground Water | Depth, Ft.



Penetration Resistance (300 lb. weight, 30" drop)
▲ Blows per foot

0 25 50 75 100

● PID Reading (ppm)

LEGEND

- * Sample Not Recovered
- Ⅲ 3" O.D. Split Spoon Sample
- B Auger Cuttings
- ▮ Frozen
- Surface Seal
- Solid Casing and Annular Seal
- Well Casing and Filter Sand
- Cuttings Backfill
- ▽ Ground Water Level At Time Of Drilling
- ▼ Static Water Level

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.

Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

LOG OF BORING 26MW1

June 2005 32-1-16821

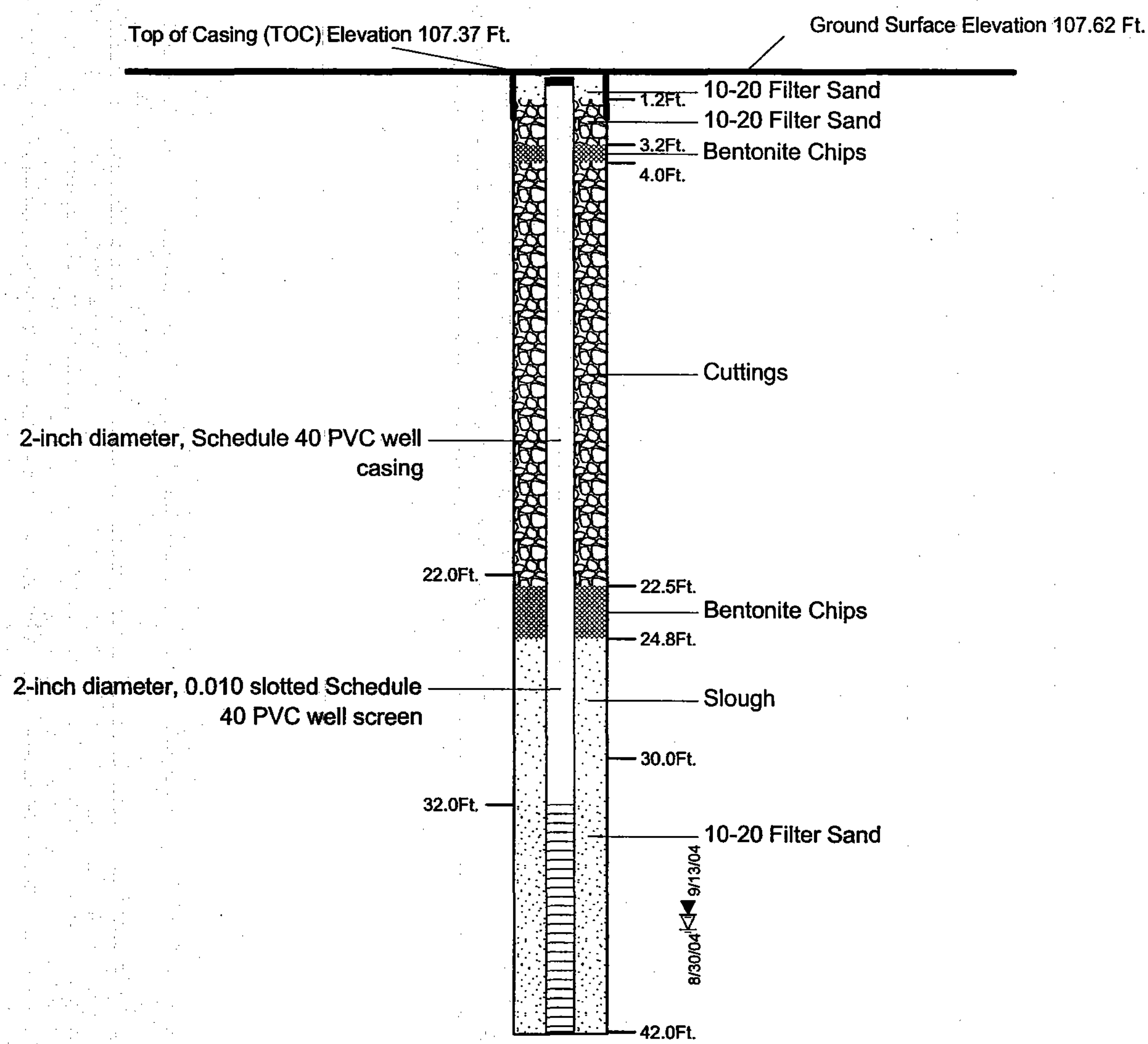
SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-20a

ENVIRONMENTAL LOG 16821DRILLF.GPJ S&W GEO1.GDT 6/22/05

Coordinates: N: 97,608 E: 96,561

Casing Description | **Backfill Description**



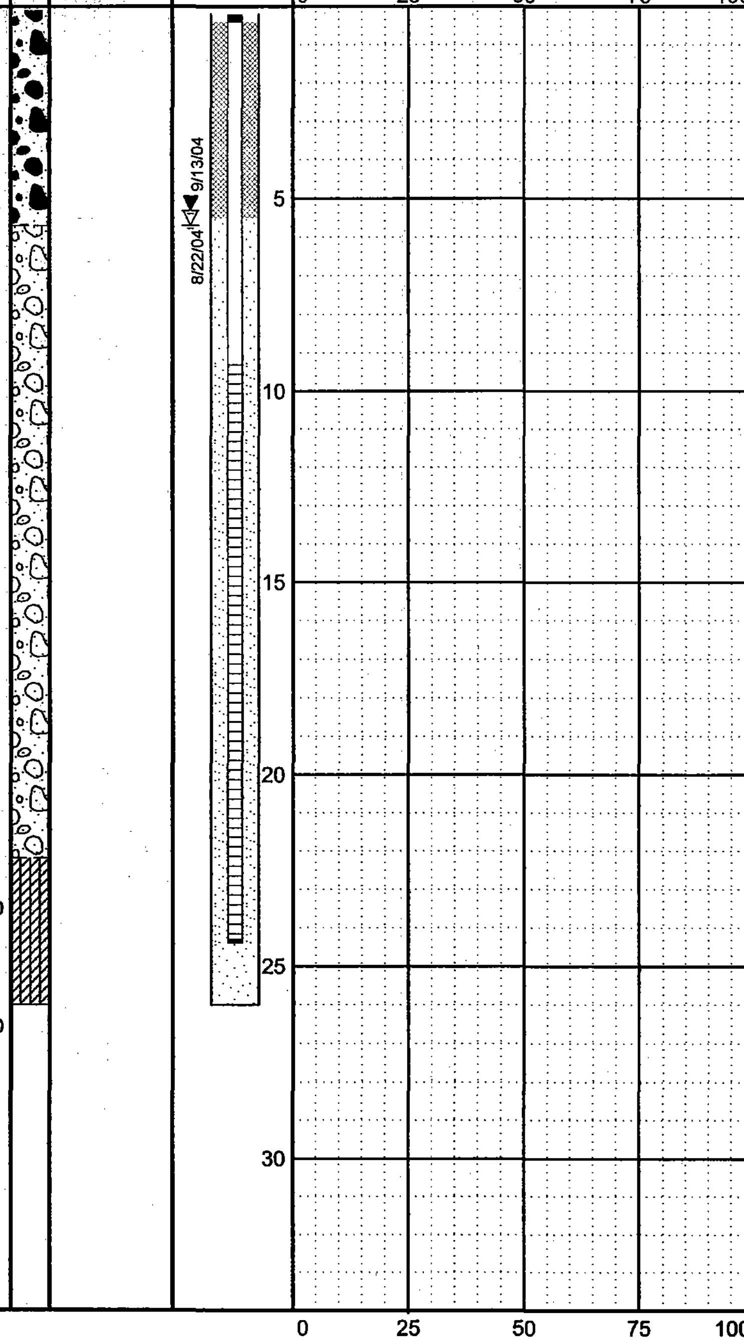
LEGEND

- ⊻ Ground Water Level ATD
- ▼ Static Ground Water Level

NOTES: Cover is cast iron set in concrete
Top cap is locking expansion plug with padlock
Joints are machine threaded
Botton cap is friction fit

Phase IV RI, Northeast Cape St. Lawrence Island, Alaska	
MONITORING WELL 26MW1 CONSTRUCTION DETAIL	
June 2005	32-1-16821
SHANNON & WILSON, INC. Geotechnical and Environmental Consultants	**Fig. B-20b**

MATERIAL DESCRIPTION Coordinates: N: 99,228 E: 97,287 Elevation: 56.69 Ft.	Depth, Ft.	Symbol	Samples	Ground Water	Depth, Ft.	Penetration Resistance (300 lb. weight, 30" drop) ▲ Blows per foot
Lithology based on cuttings and drill action Brown, silty, sandy, GRAVEL and cobbles; moist, becoming wet at 5.5 to 5.7 ft.						
Brown, medium to fine sandy, angular GRAVEL and cobbles; wet	5.7					
Very stiff, gray clayey SILT; wet to frozen [Till]	22.2 23.0					
Bottom of Boring Boring Completed 8/22/04 Boring advanced with Tubex air/rotary	26.0 26.0					



LEGEND

- * Sample Not Recovered
- Ⅲ 3" O.D. Split Spoon Sample
- B Auger Cuttings
- ▮ Frozen
- Surface Seal
- Solid Casing and Annular Seal
- Well Casing and Filter Sand
- Cuttings Backfill
- ∇ Ground Water Level At Time Of Drilling
- ▼ Static Water Level

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.

Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

LOG OF BORING 26MW3

June 2005 32-1-16821

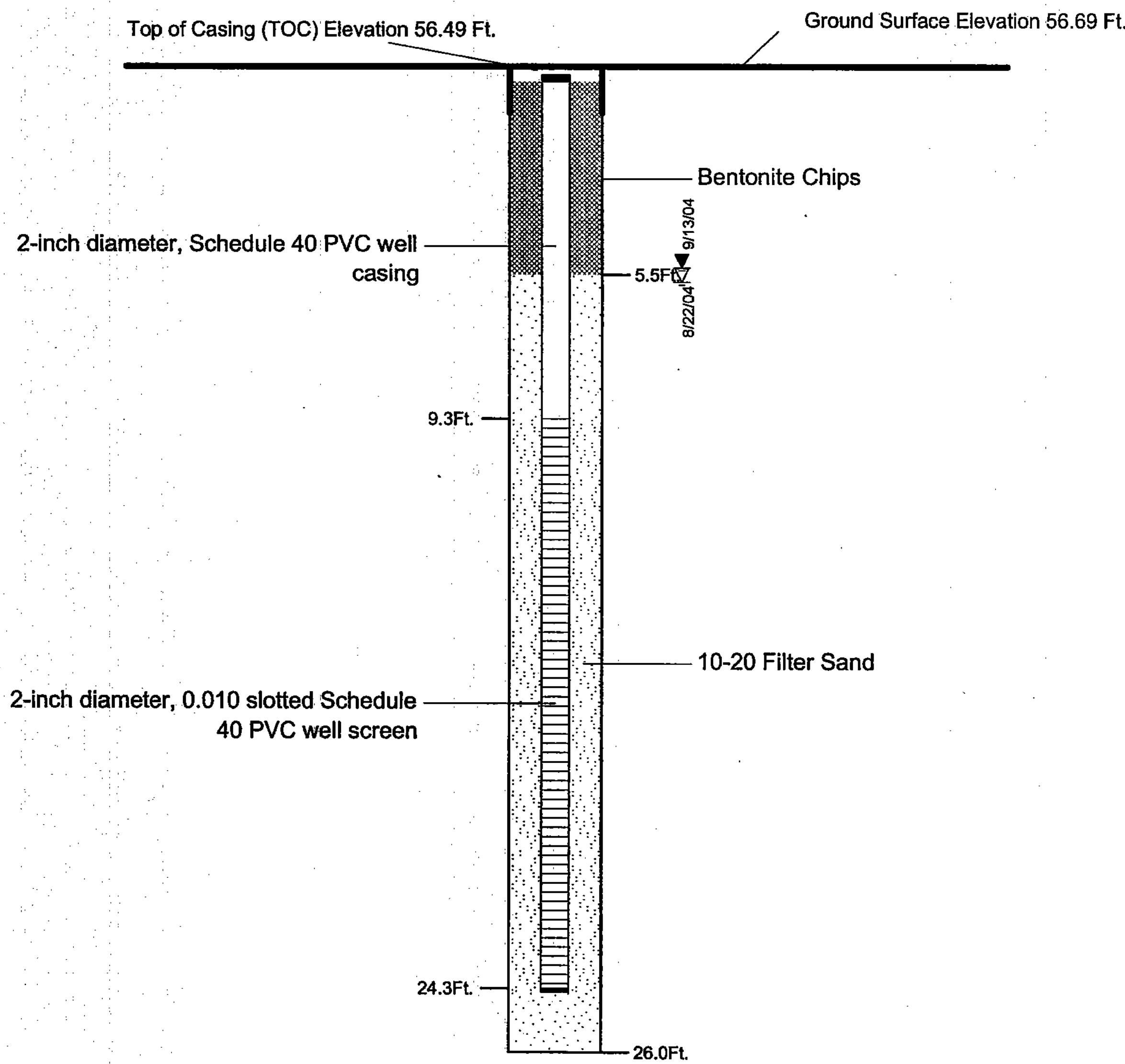
SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-21a

ENVIRONMENTAL LOG 16821DRILLF.GPJ S&W GEO1.GDT 6/22/05

Coordinates: N: 99,228 E: 97,287

Casing Description **Backfill Description**



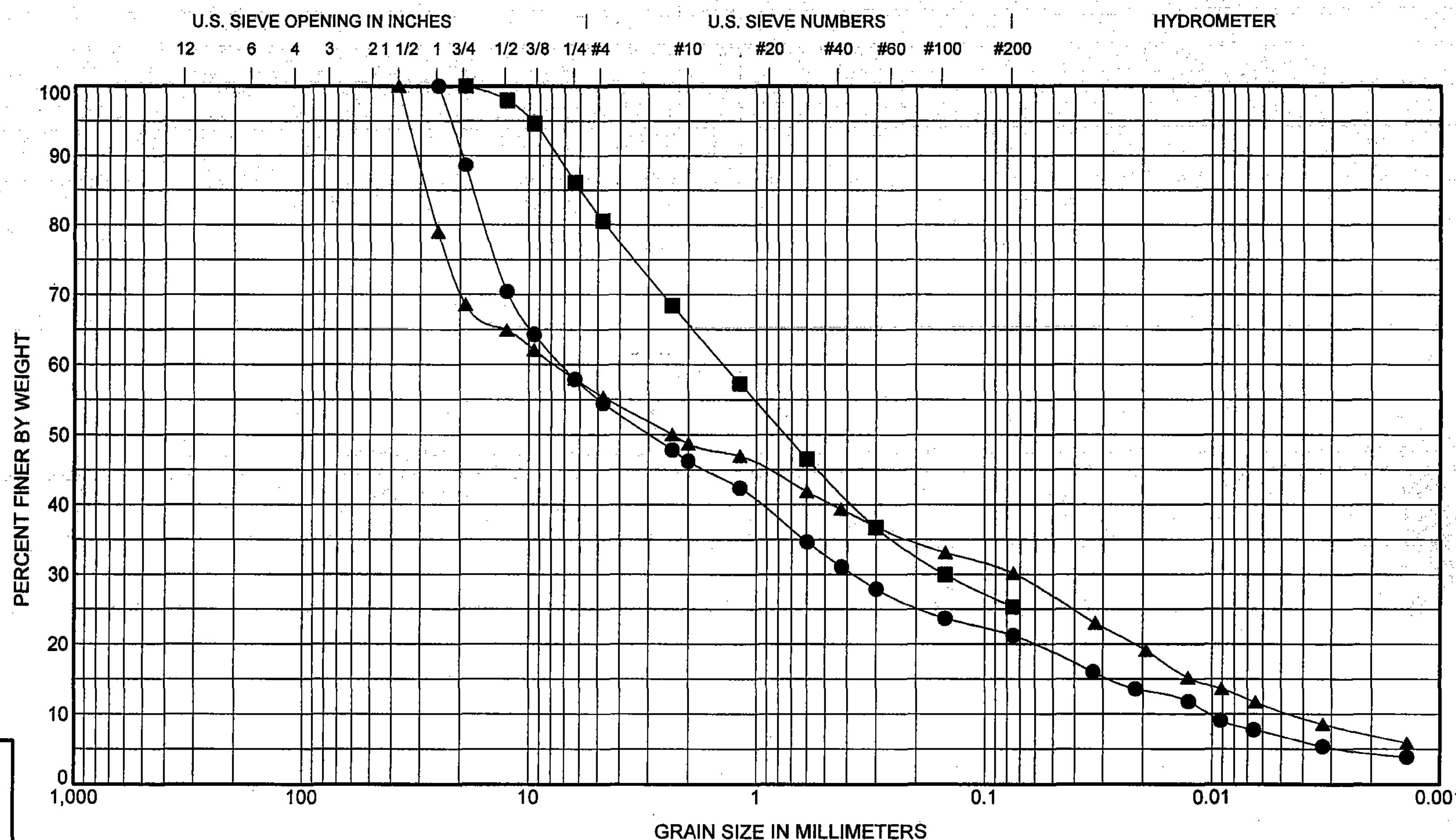
LEGEND

∇ Ground Water Level ATD

▼ Static Ground Water Level

NOTES: Cover is cast iron set in concrete
Top cap is locking expansion plug with padlock
Joints are machine threaded
Botton cap is friction fit

Phase IV RI, Northeast Cape St. Lawrence Island, Alaska	
MONITORING WELL 26MW3 CONSTRUCTION DETAIL	
June 2005	32-1-16821
SHANNON & WILSON, INC. Geotechnical and Environmental Consultants	**Fig. B-21b**



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Sample	Depth, Ft	Classification	LL	PL	PI	Cc	Cu
● 13B1 13SB103	18.0 -	**Silty GRAVEL with Sand, GM, 10.3 % Moisture**				1.9	703.0
■ 20MW1 20SB104	15.0 -	**Silty SAND with Gravel, SM, 7.0 % Moisture**					
▲ 22MW3 22SB101	5.5 -	**Silty GRAVEL with Sand, GM, 8.9 % Moisture**				0.2	1720.9

Sample	Depth, Ft	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● 13B1 13SB103	18.0 -	25	7.2	0.38	0.01	45	33	14	7
■ 20MW1 20SB104	15.0 -	19	1.4	0.15		19	55	25	
▲ 22MW3 22SB101	5.5 -	37.5	7.71	0.07	0	45	25	20	11

Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

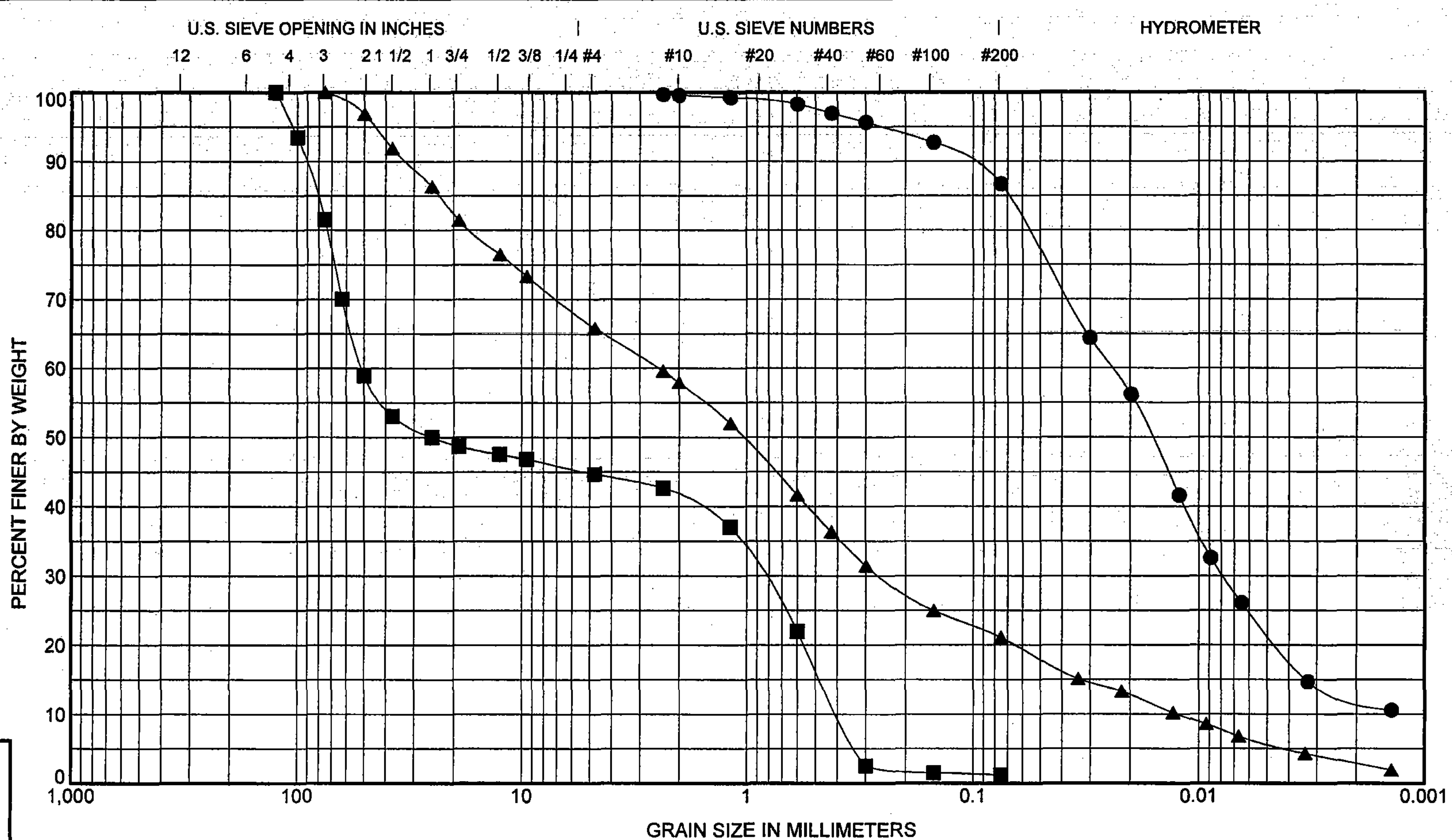
GRAIN SIZE CLASSIFICATION

January 2005

32-1-16821

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-22



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Sample		Classification	LL	PL	PI	Cc	Cu
●	**26MW2 - 20 ft.**	**Clayey SILT, ML, 24.5% Moisture**	**26**	**20**	**6**		
■	**88SS101**	**SAND with Gravel and Cobbles, SP, 2.7% Moisture**				**0.0**	**130.4**
▲	**88SS102**	**Silty SAND with Gravel, SM, 15.6% Moisture**				**2.1**	**198.2**

Sample		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**26MW2 - 20 ft.**	**2.36**	**0.02**	**0.01**		**0**	**13**	**65**	**22**
■	**88SS101**	**125**	**51.13**	**0.86**	**0.39**	**37**	**43**	**1**	
▲	**88SS102**	**75**	**2.47**	**0.26**	**0.01**	**34**	**45**	**15**	**6**

Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

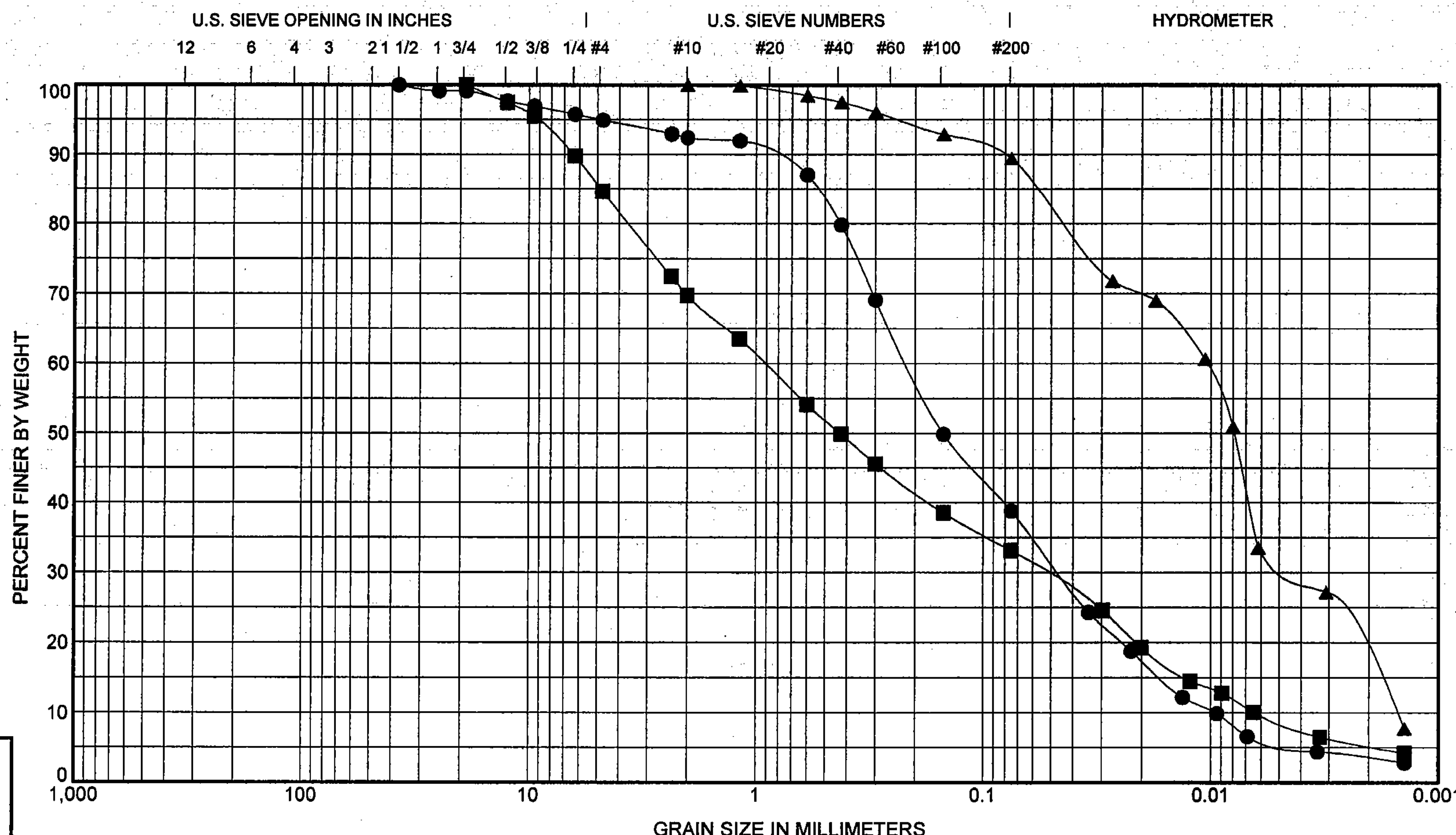
GRAIN SIZE CLASSIFICATION

June 2005

32-1-16821

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-23



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Sample	Classification	LL	PL	PI	Cc	Cu
● BGSD102	**Silty SAND, SM, 42.2% Moisture**				**1.1**	**22.6**
■ BGSS101	**Silty SAND with Gravel, SM, 16.3% Moisture**				**0.5**	**143.6**
▲ BGSS102	**SILT with Peat, ML or PT, 136% Moisture, 29% Organics by mass**				**1.1**	**6.8**

Sample	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● BGSD102	**37.5**	**0.22**	**0.05**	**0.01**	**5**	**56**	**33**	**6**
■ BGSS101	**19**	**0.92**	**0.05**	**0.01**	**15**	**52**	**24**	**9**
▲ BGSS102	**2**	**0.01**	**0**	**0**	**0**	**11**	**58**	**32**

Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

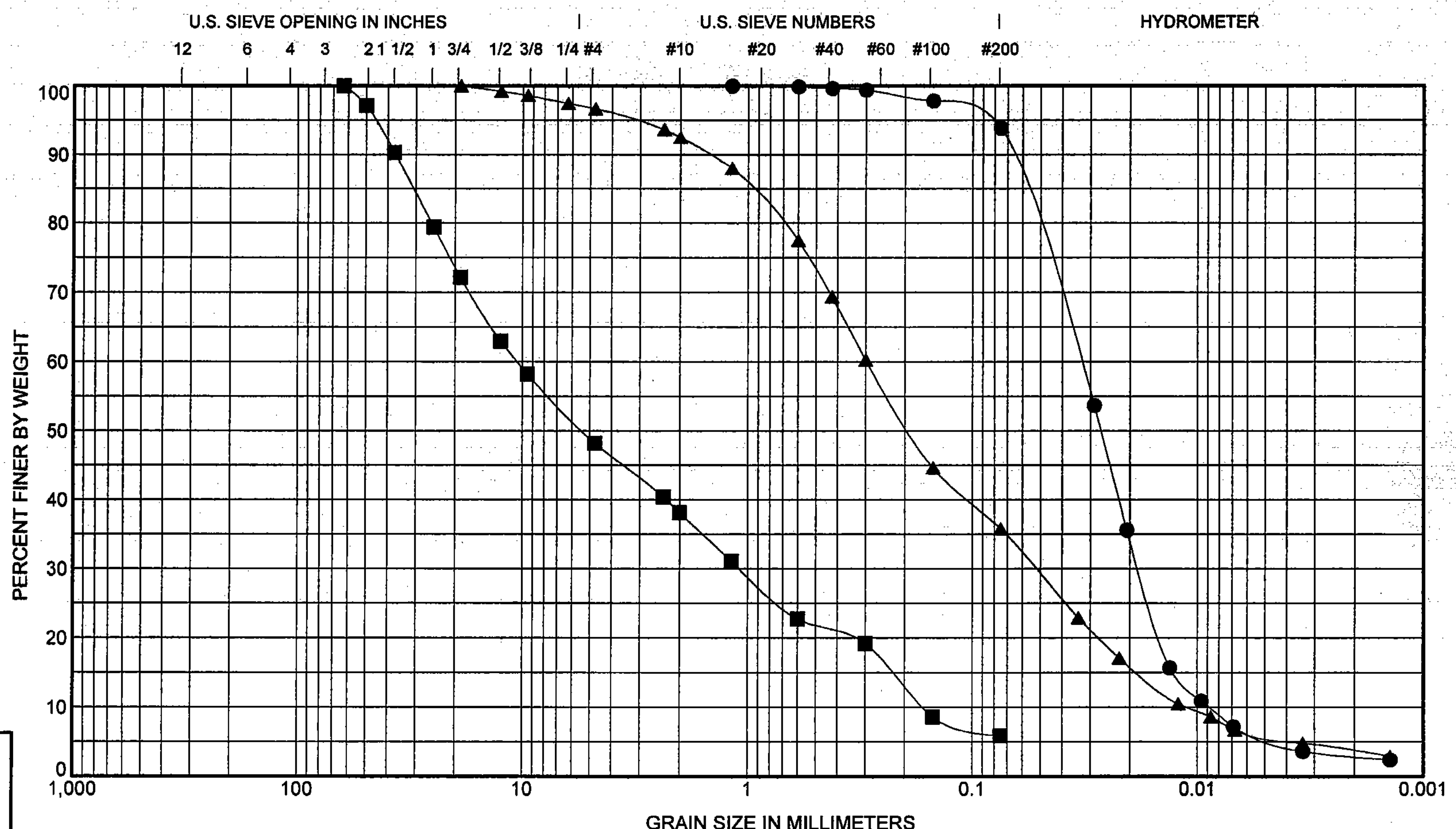
GRAIN SIZE CLASSIFICATION

June 2005

32-1-16821

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-24



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Sample	Classification	LL	PL	PI	Cc	Cu
● **BGSS104**	**SILT, ML, 40.9% Moisture**				**1.1**	**3.8**
■ **BGSS106**	**GRAVEL with Sand, GP, 9.9% Moisture**				**0.7**	**64.0**
▲ **BGSS107**	**Silty SAND, SM, 26% Moisture**				**0.8**	**26.6**

Sample	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● **BGSS104**	**1.18**	**0.03**	**0.02**	**0.01**	**0**	**6**	**88**	**6**
■ **BGSS106**	**63**	**10.54**	**1.08**	**0.16**	**52**	**42**	**6**	
▲ **BGSS107**	**19**	**0.3**	**0.05**	**0.01**	**3**	**61**	**30**	**6**

Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

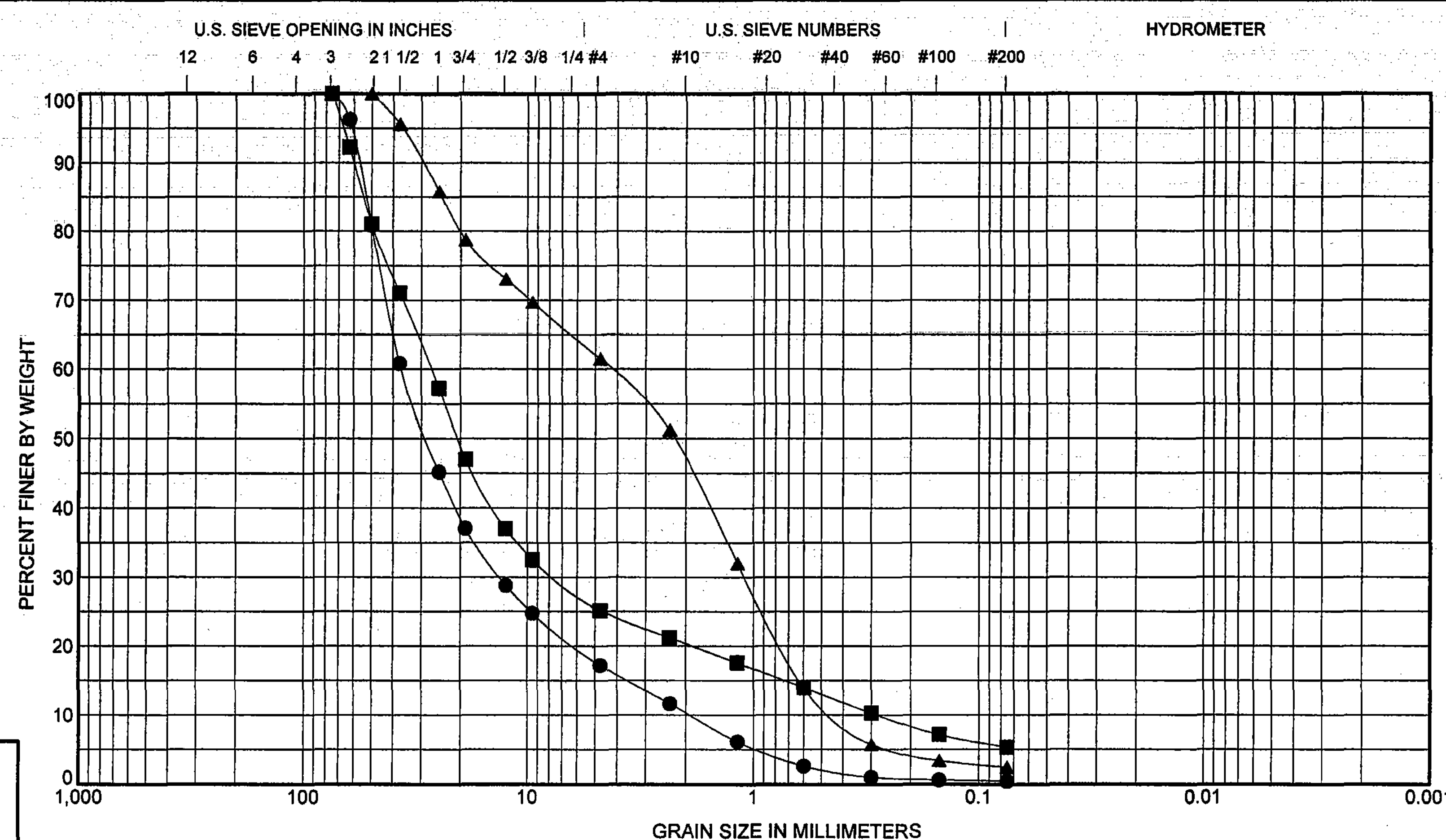
GRAIN SIZE CLASSIFICATION

June 2005

32-1-16821

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Fig. B-25



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Sample	Classification	LL	PL	PI	Cc	Cu
● BGSS108	**GRAVEL with Sand, GW, 2.0% Moisture**				**2.5**	**19.2**
■ BGSS109	**GRAVEL with Sand, GP, 4.8% Moisture**				**7.3**	**96.1**
▲ BGSS110	**SAND with Gravel, SP, 4.8% Moisture**				**0.6**	**9.9**

Sample	D100	D60	D30	D10	%Gravel	%Sand	%Silt / %Clay
● BGSS108	**75**	**36.71**	**13.26**	**1.92**	**83**	**17**	**0**
■ BGSS109	**75**	**27.1**	**7.49**	**0.28**	**75**	**20**	**5**
▲ BGSS110	**50**	**4.29**	**1.1**	**0.43**	**39**	**59**	**2**

Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

GRAIN SIZE CLASSIFICATION

June 2005

32-1-16821

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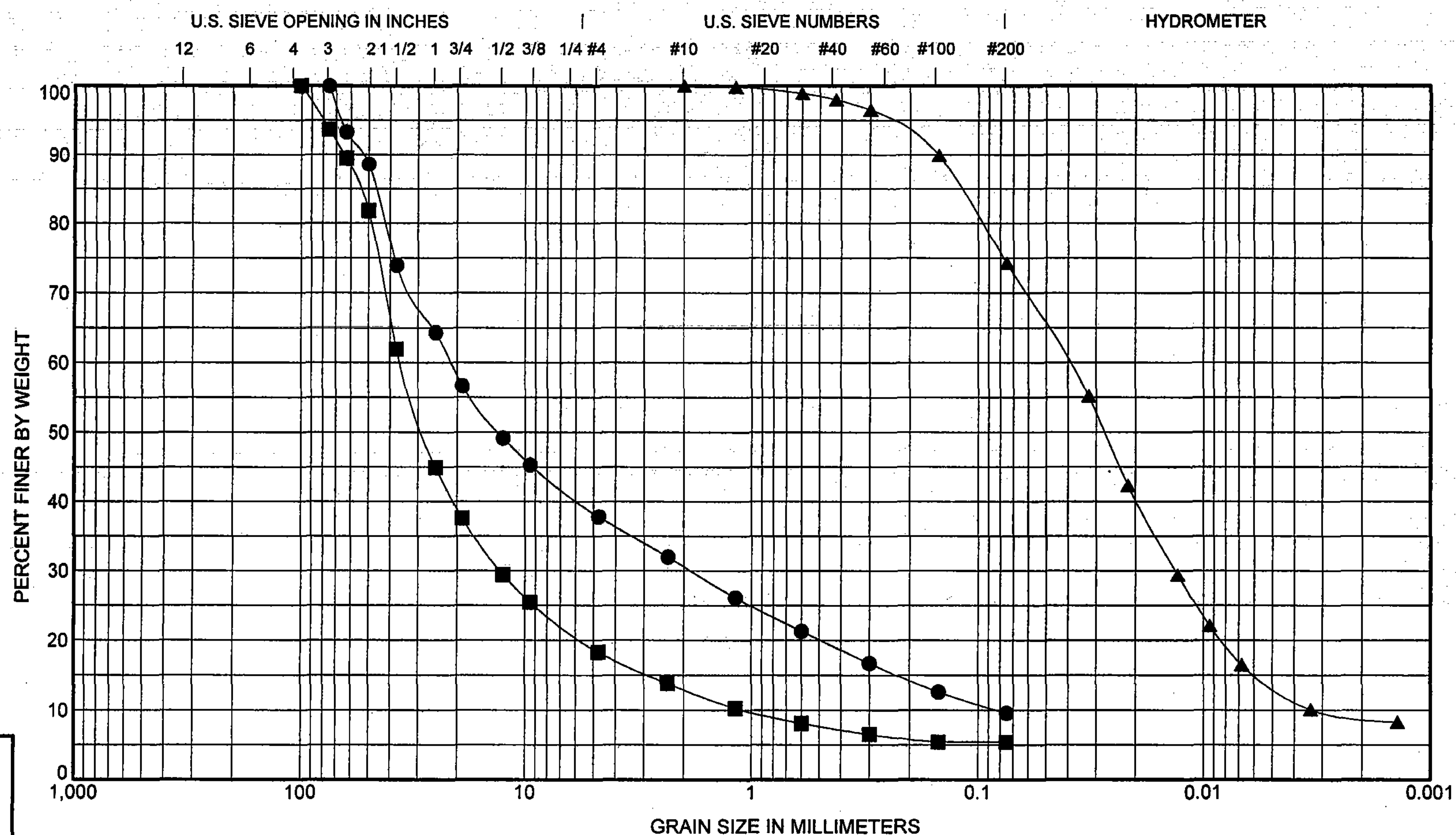
Fig. B-26



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Sample	Classification	LL	PL	PI	Cc	Cu
● BGSS111	**GRAVEL with Silt and Sand, GP-GM, 4.9% Moisture**				**2.0**	**260.1**
■ BGSS112	**GRAVEL with Sand and Cobbles, GP, 2.3% Moisture**				**4.3**	**33.3**
▲ BGSS113	**SILT with Peat, ML or PT, 208% Moisture, 36% organics by mass**				**1.4**	**12.4**

Sample	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● BGSS111	**75**	**21.42**	**1.86**	**0.08**	**62**	**28**	**10**	
■ BGSS112	**100**	**35.82**	**12.87**	**1.08**	**75**	**13**	**5**	
▲ BGSS113	**2**	**0.04**	**0.01**	**0**	**0**	**26**	**61**	**14**

Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

GRAIN SIZE CLASSIFICATION

June 2005

32-1-16821

SHANNON & WILSON, INC.
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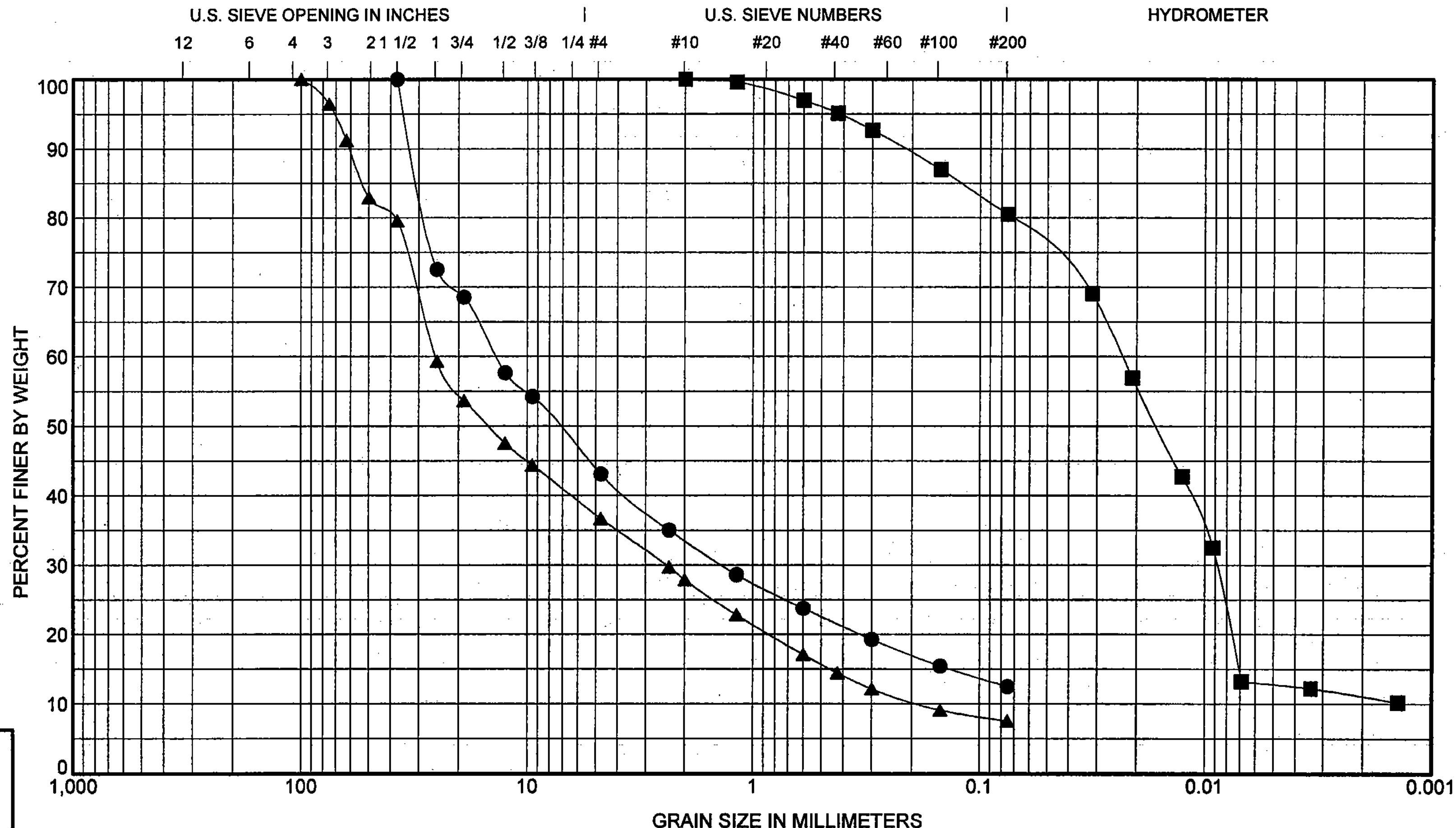
Fig. B-27



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Sample	Classification	LL	PL	PI	Cc	Cu
● BGSS114	Silty GRAVEL with Sand, GM, 5.4% Moisture					
■ BGSS115	SILT with Peat, ML or PT, 258% Moisture, 38% organics by mass					
▲ BGSS116	GRAVEL with Sand, Silt, and Cobbles GP-GM, 5.4% Moisture				1.3	138.1

Sample	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● BGSS114	37.5	13.67	1.37		57	31	13	
■ BGSS115	2	0.02	0.01		0	20	68	13
▲ BGSS116	100	25.36	2.43	0.18	60	29	8	

Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

GRAIN SIZE CLASSIFICATION

June 2005 32-1-16821

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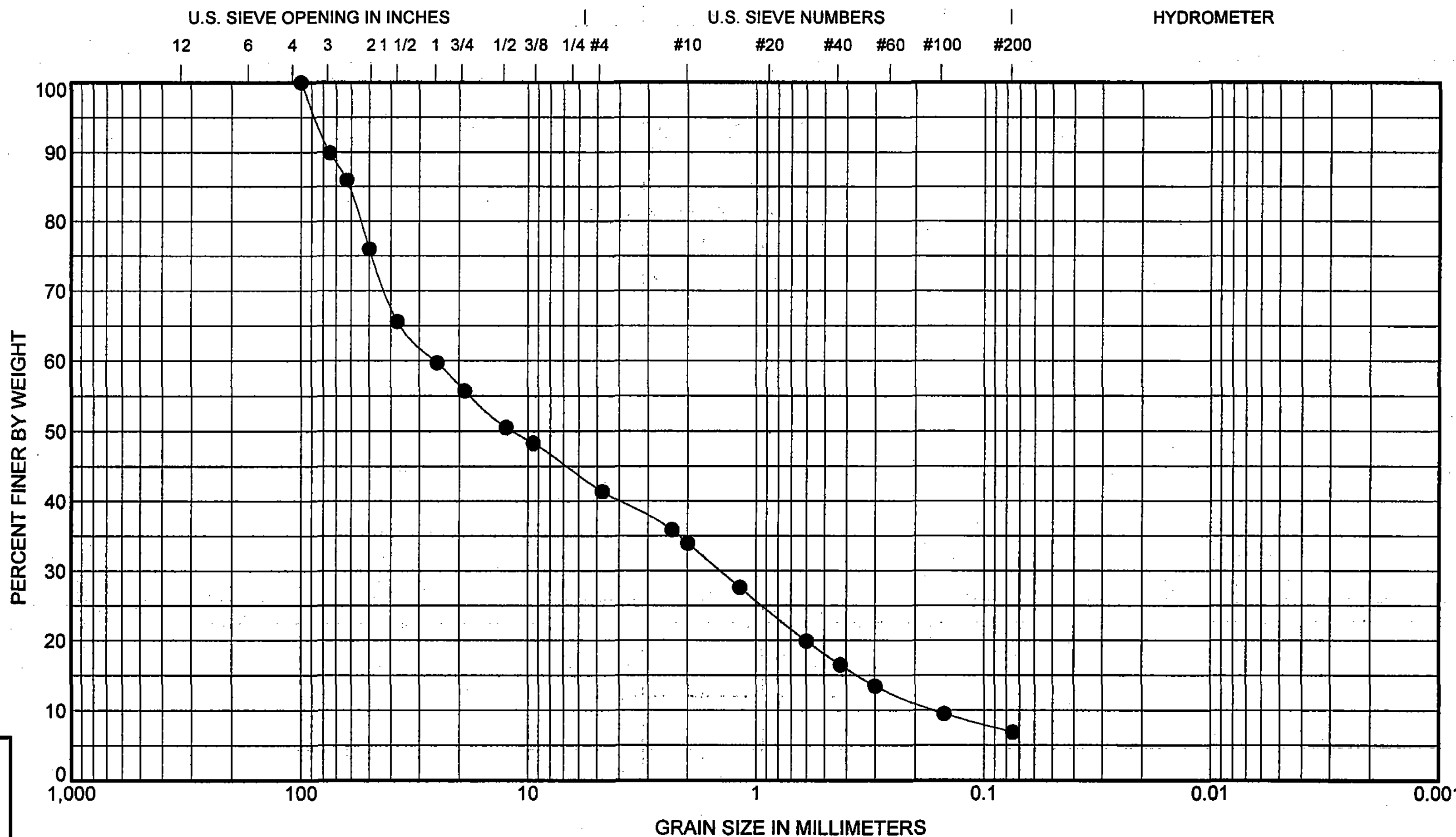
Fig. B-28



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Sample		Classification	LL	PL	PI	Cc	Cu
●	BGSS117	**Gravel with Sand and Silt, GP-GM, 6.3% Moisture**				**0.5**	**156.3**

Sample		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	BGSS117	**100**	**25.47**	**1.44**	**0.16**	**49**	**34**	**7**	

Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

GRAIN SIZE CLASSIFICATION

June 2005 32-1-16821

SHANNON & WILSON, INC.
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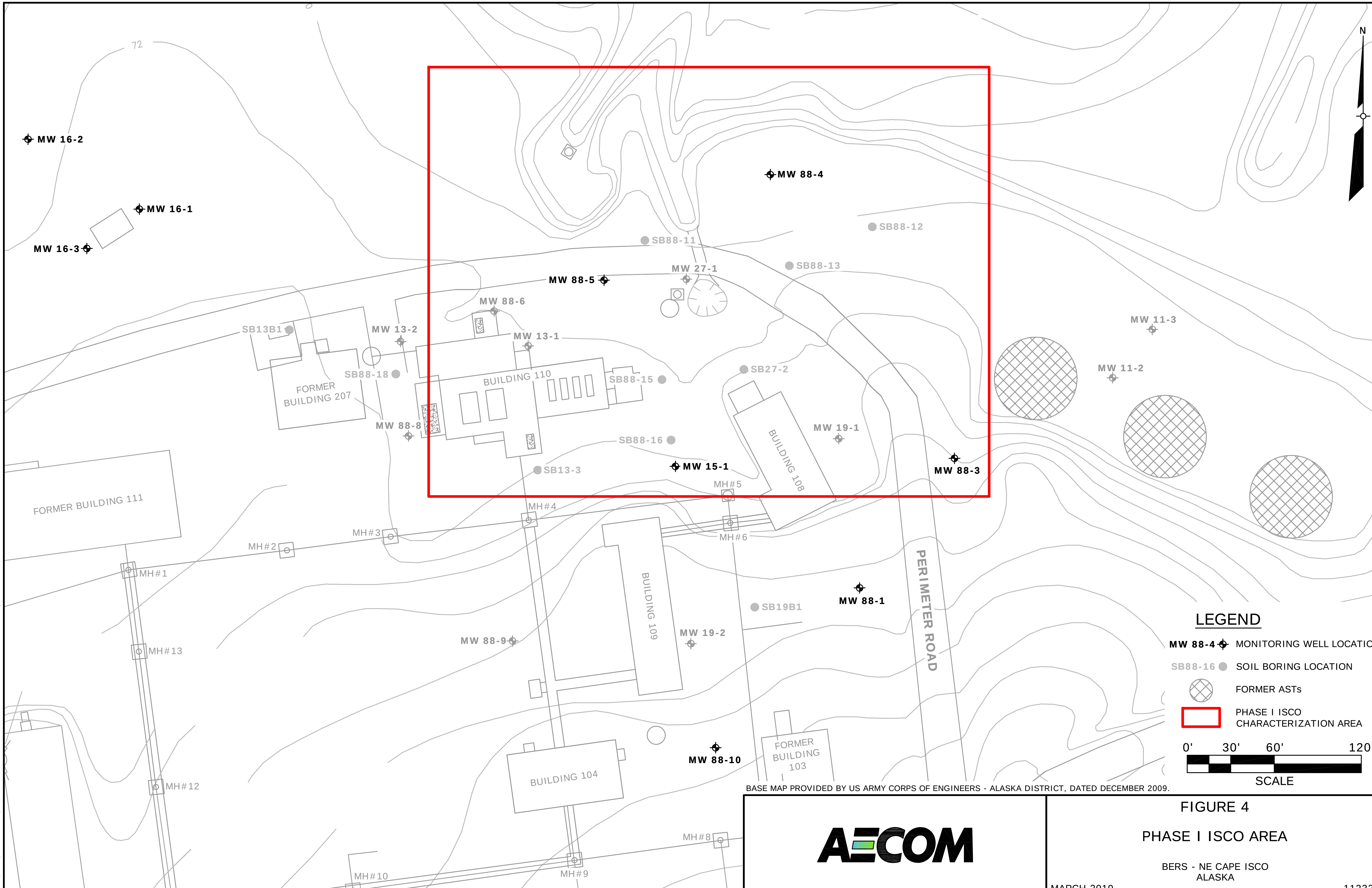
Fig. B-29



AECOM

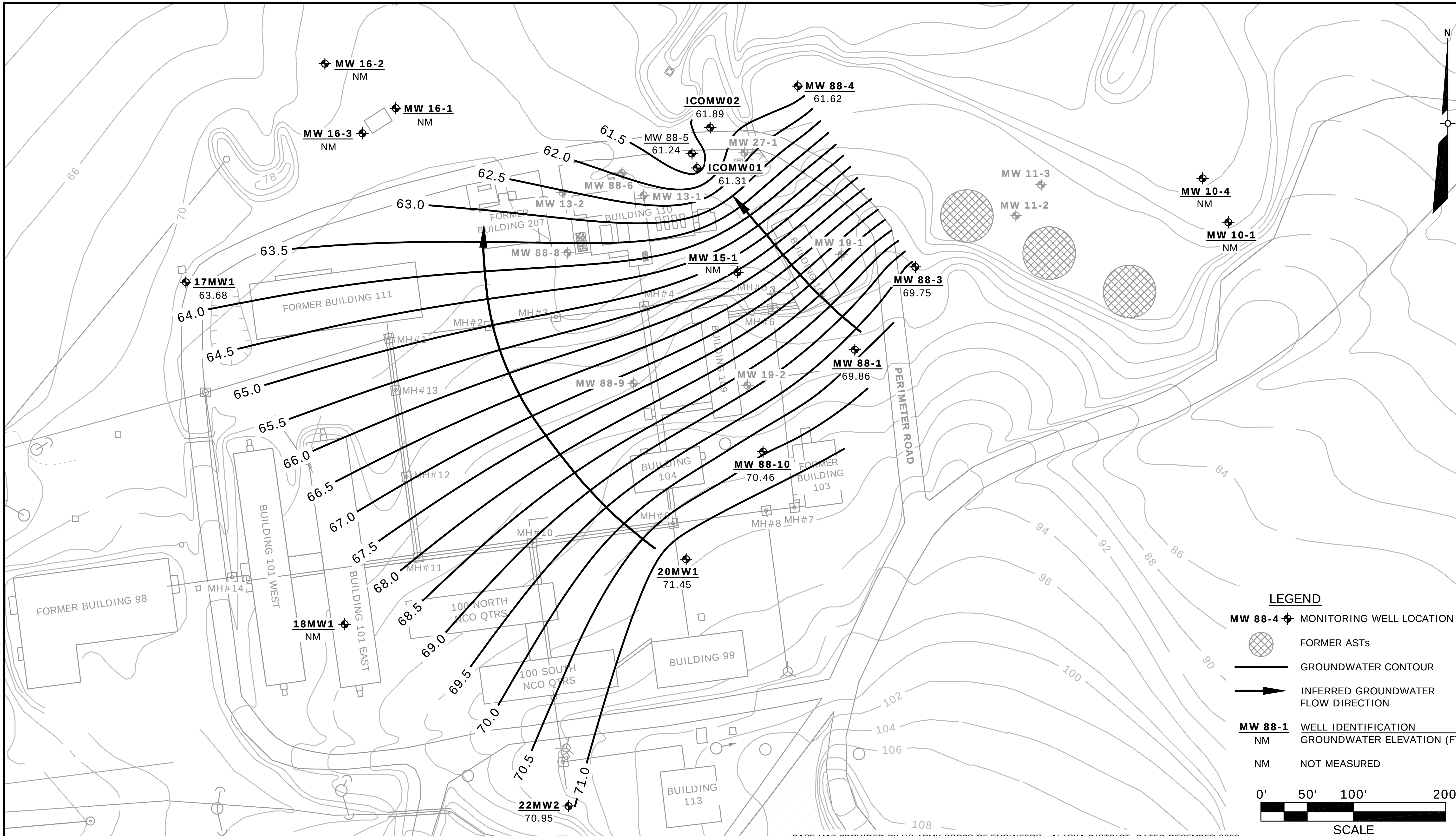
FIGURE 4

PHASE I ISCO AREA

BERS - NE CAPE ISCO
ALASKA

MARCH 2010

112321



MARCH 5, 2010

NEC BASEMAP.DWG

AECOM

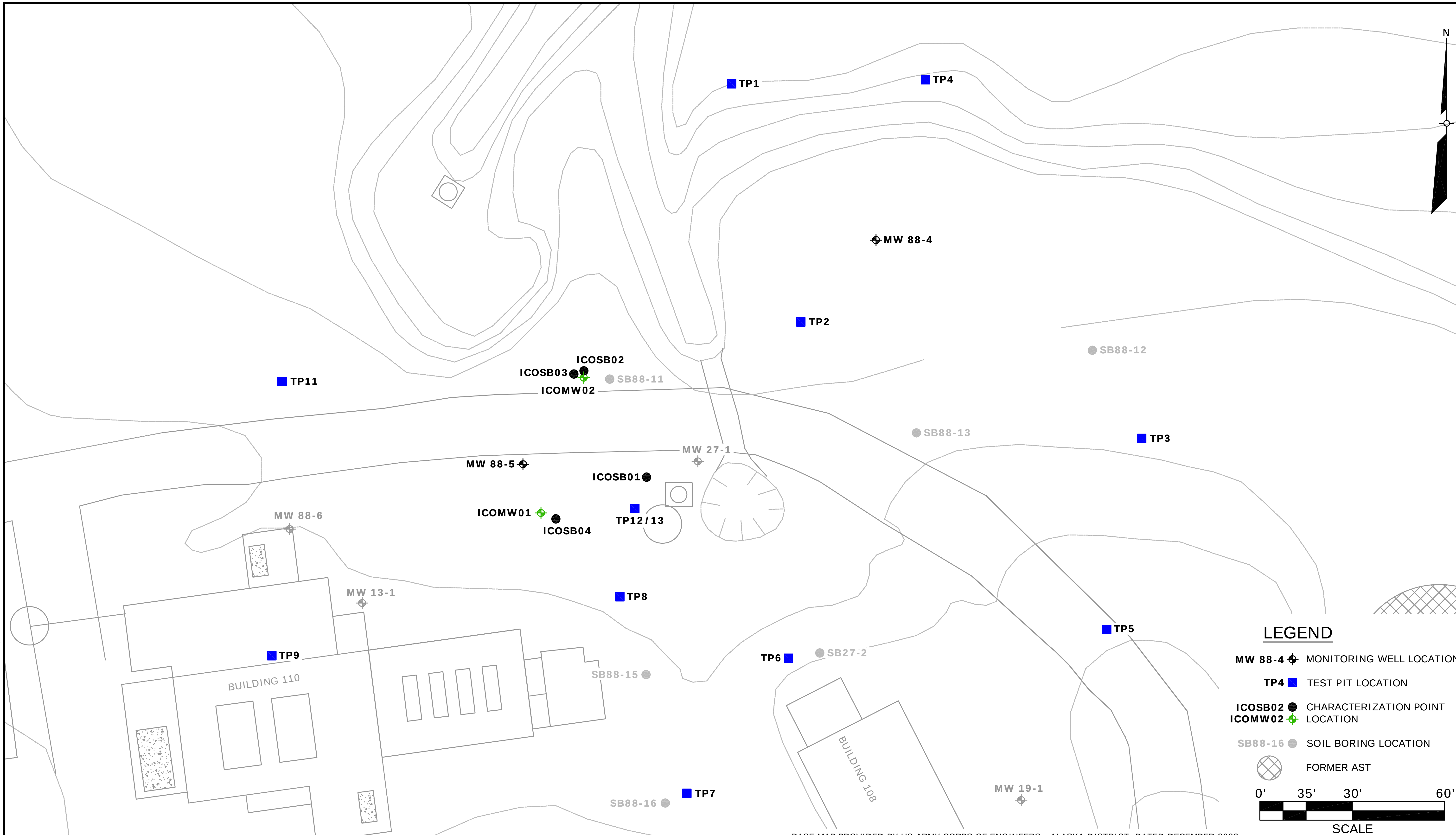
FIGURE 5

MOC AREA GROUNDWATER CONTOUR MAP
JULY 23, 2009

BERS - NE CAPE ISCO
ALASKA

MARCH 2010

112321



AECOM

FIGURE 6

PHASE I ISCO
CHARACTERIZATION LOCATIONS

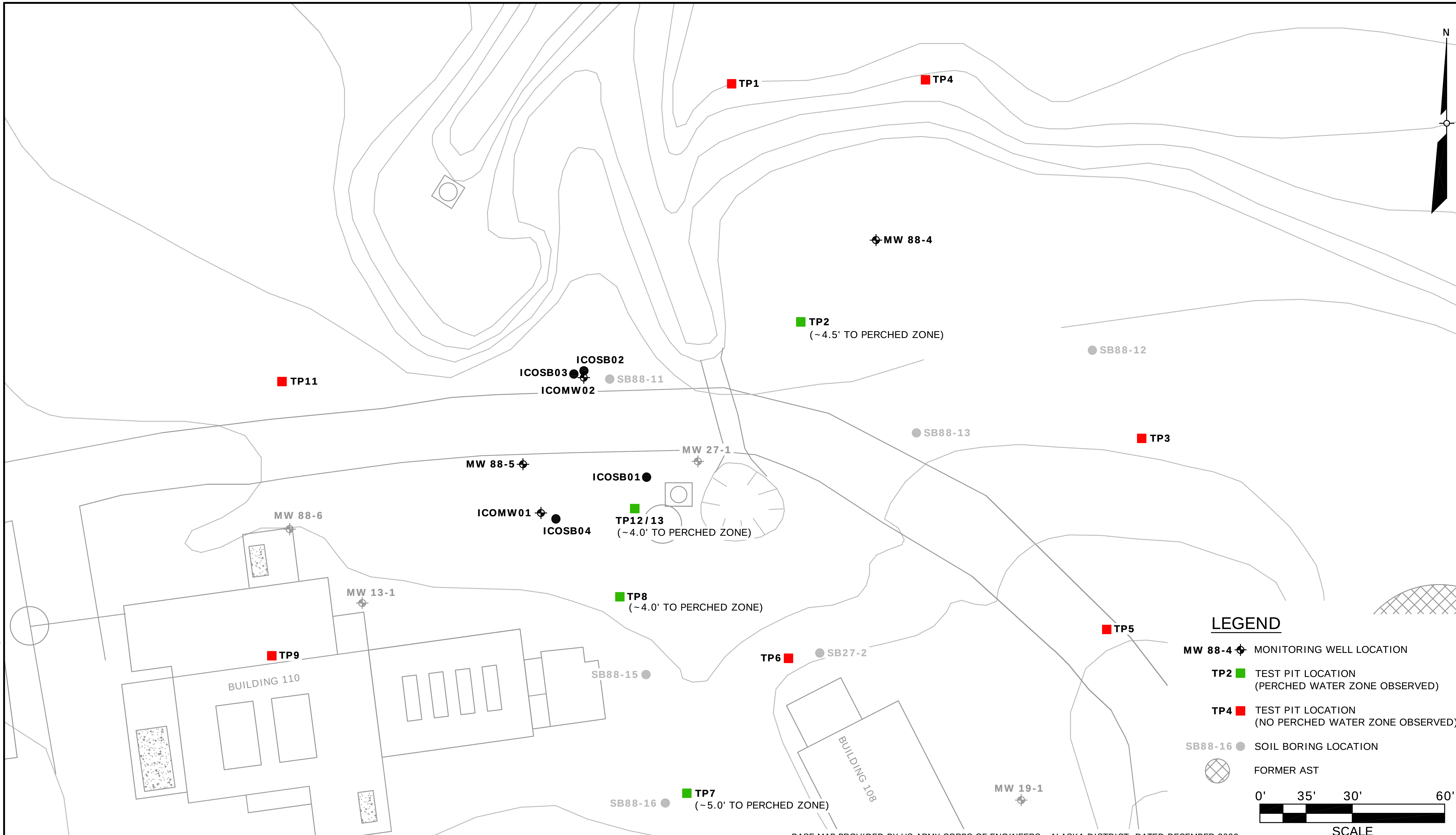
BERS - NE CAPE ISCO
ALASKA

MARCH 2010

112321

MARCH 5, 2010

NEC BASEMAP.DWG



BASE MAP PROVIDED BY US ARMY CORPS OF ENGINEERS - ALASKA DISTRICT, DATED DECEMBER 2009.

AECOM

FIGURE 7

PHASE I ISCO
PERCHED WATER ZONE OBSERVATIONS

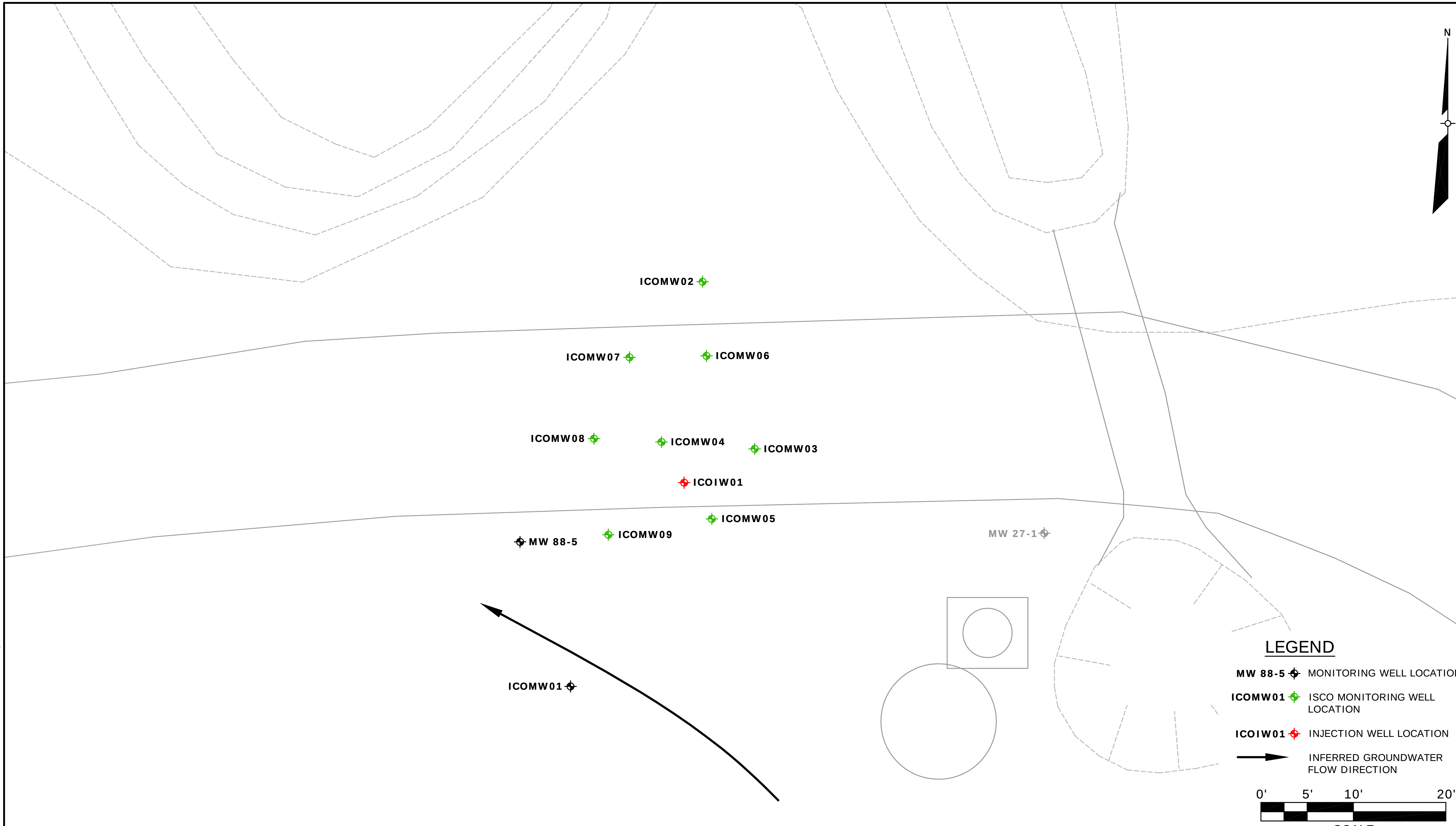
BERS - NE CAPE ISCO
ALASKA

MARCH 2010

112321

MARCH 5, 2010

NEC BASEMAP.DWG



BASE MAP PROVIDED BY US ARMY CORPS OF ENGINEERS - ALASKA DISTRICT, DATED DECEMBER 2009.

AECOM

FIGURE 8

PHASE I ISCO STUDY
MONITORING AND INJECTION WELLS

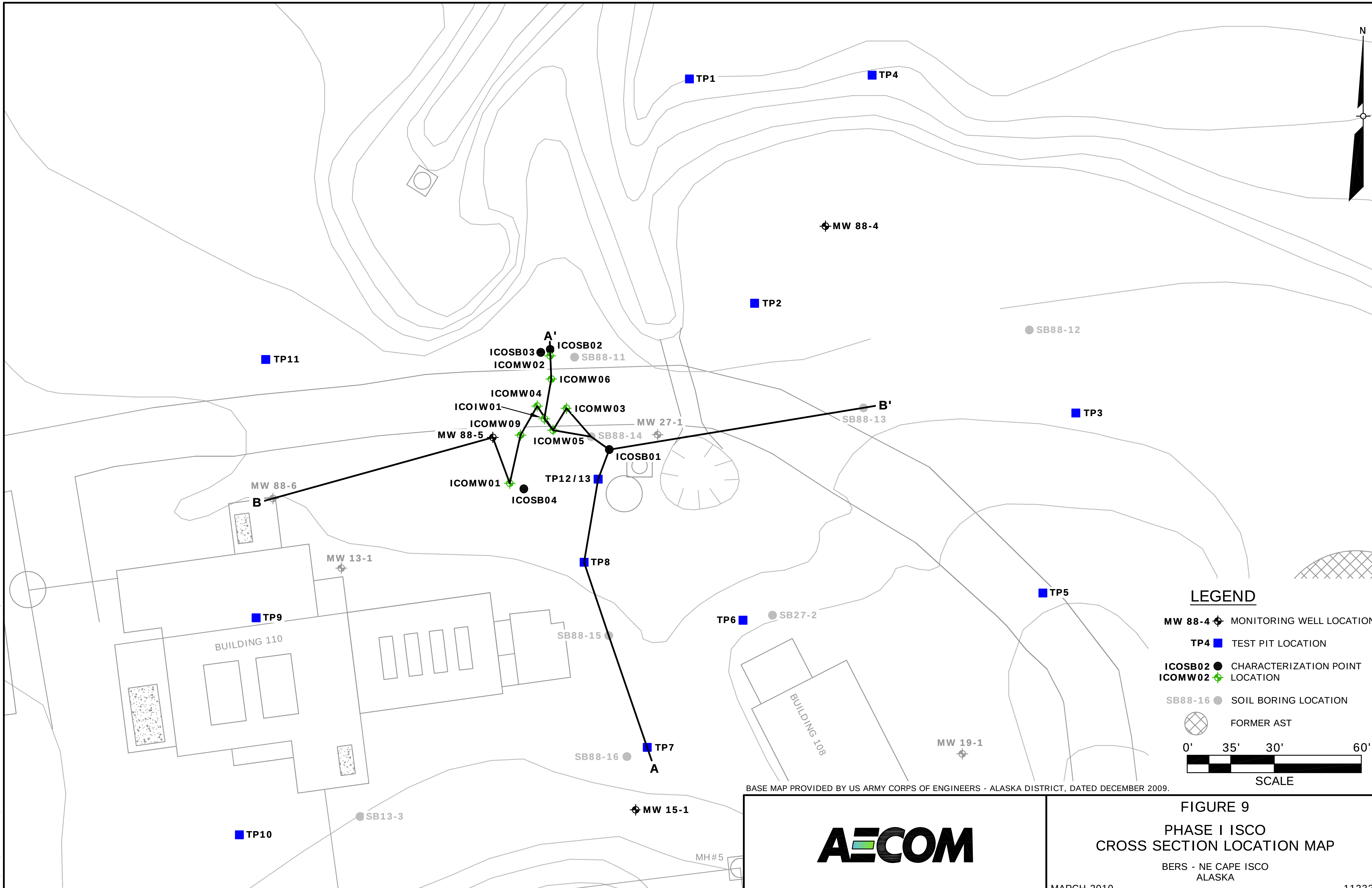
BERS - NE CAPE ISCO
ALASKA

JUNE 2010

112321

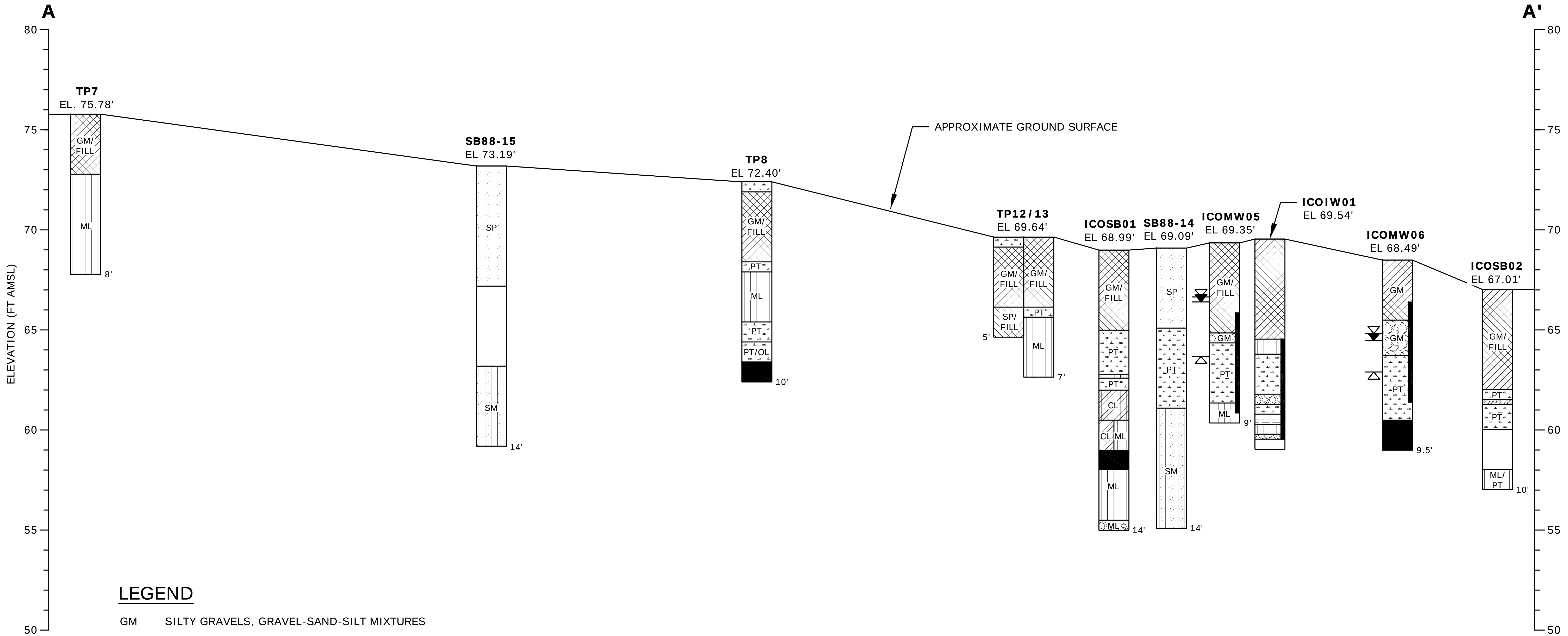
JUNE 11, 2010

NEC BASEMAP.DWG



MARCH 5, 2010

NEC BASEMAP.DWG



LEGEND

GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
SP	POORLY GRADED SANDS, GRAVELLY SANDS
SM	SILTY SANDS, SAND-SILT MIXTURES
ML	INORGANIC SILTS AND FINE SANDS
CL	INORGANIC CLAYS, GRAVELLY/SANDY/SILTY CLAYS
OL	ORGANIC SILTS
PT	PEAT
TP	TEST PIT
SB	SOIL BORING
	FROZEN
	HIGHEST GROUNDWATER ELEVATION
	LOWEST GROUNDWATER ELEVATION
	BASELINE ISCO GROUNDWATER ELEVATION (08/05/2009)
	SCREENED INTERVAL

NOTE:

1. MONITORING LOCATION WIDTH EXAGGERATED FOR ILLUSTRATIVE PURPOSES.
2. INFORMATION FOR SB88-15 AND SB88-14 BASED ON 2002 PHASE III REMEDIAL INVESTIGATION LOGS PROVIDED BY MWH.
3. ELEVATIONS ASSOCIATED WITH PHASE III REMEDIAL INVESTIGATION BORINGS WERE ADJUSTED UPWARD BY ~2 FT BASED ON OBSERVED DISCREPANCIES BETWEEN CURRENT AND HISTORICAL SURVEY DATUM.
4. SOIL BORING ANALYTICAL DATA ARE SUMMARIZED IN TABLE 3 (HISTORICAL DATA), TABLE 13 (ISCOSB DATA) AND TABLE 17 (ICOMW DATA).

HORIZ. 0' 5' 10' 20'
VERT. 0' 5' 10'
SCALE

AECOM

FIGURE 10

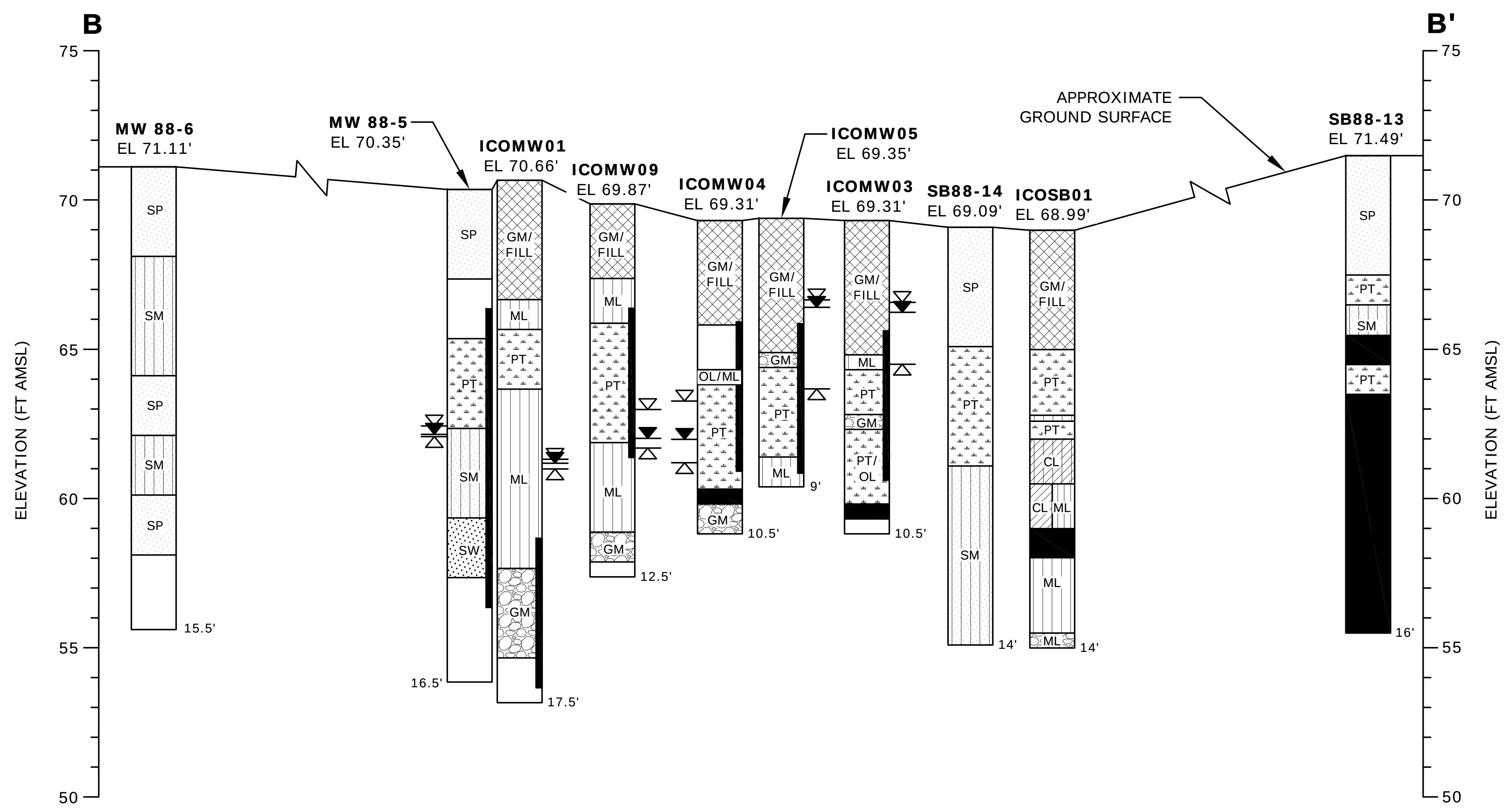
PHASE I ISCO
CROSS SECTION A - A'

BERS - NE CAPE ISCO
ALASKA

JUNE 2010 112321

JUNE 18, 2010

NEC BASEMAP.DWG



LEGEND

GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
SW	WELL GRADED SANDS, GRAVELLY SANDS
SP	POORLY GRADED SANDS, GRAVELLY SANDS
SM	SILTY SANDS, SAND-SILT MIXTURES
ML	INORGANIC SILTS AND FINE SANDS
CL	INORGANIC CLAYS, GRAVELLY/SANDY/SILTY CLAYS
OL	ORGANIC SILTS
PT	PEAT
TP	TEST PIT
SB	SOIL BORING
	FROZEN
	HIGHEST GROUNDWATER ELEVATION
	LOWEST GROUNDWATER ELEVATION
	BASELINE ISCO GROUNDWATER ELEVATION (08/05/2009)
	SCREENED INTERVAL

NOTE:

1. MONITORING LOCATION WIDTH EXAGGERATED FOR ILLUSTRATIVE PURPOSES.
2. INFORMATION FOR MW 88-6, MW 88-5, SB88-13 AND SB88-14 BASED ON 2002 PHASE III REMEDIAL INVESTIGATION LOGS PROVIDED BY MWH.
3. ELEVATIONS ASSOCIATED WITH PHASE III REMEDIAL INVESTIGATION BORINGS WERE ADJUSTED UPWARD BY ~2 FT BASED ON OBSERVED DISCREPANCIES BETWEEN CURRENT AND HISTORICAL SURVEY DATUM.
4. SOIL BORING ANALYTICAL DATA ARE SUMMARIZED IN TABLE 3 (HISTORICAL DATA), TABLE 13 (ISCOSB DATA) AND TABLE 17 (ICOMW DATA).

HORIZ. 0' 5' 10' 20'
VERT. 0' 5' 10'
SCALE

AECOM

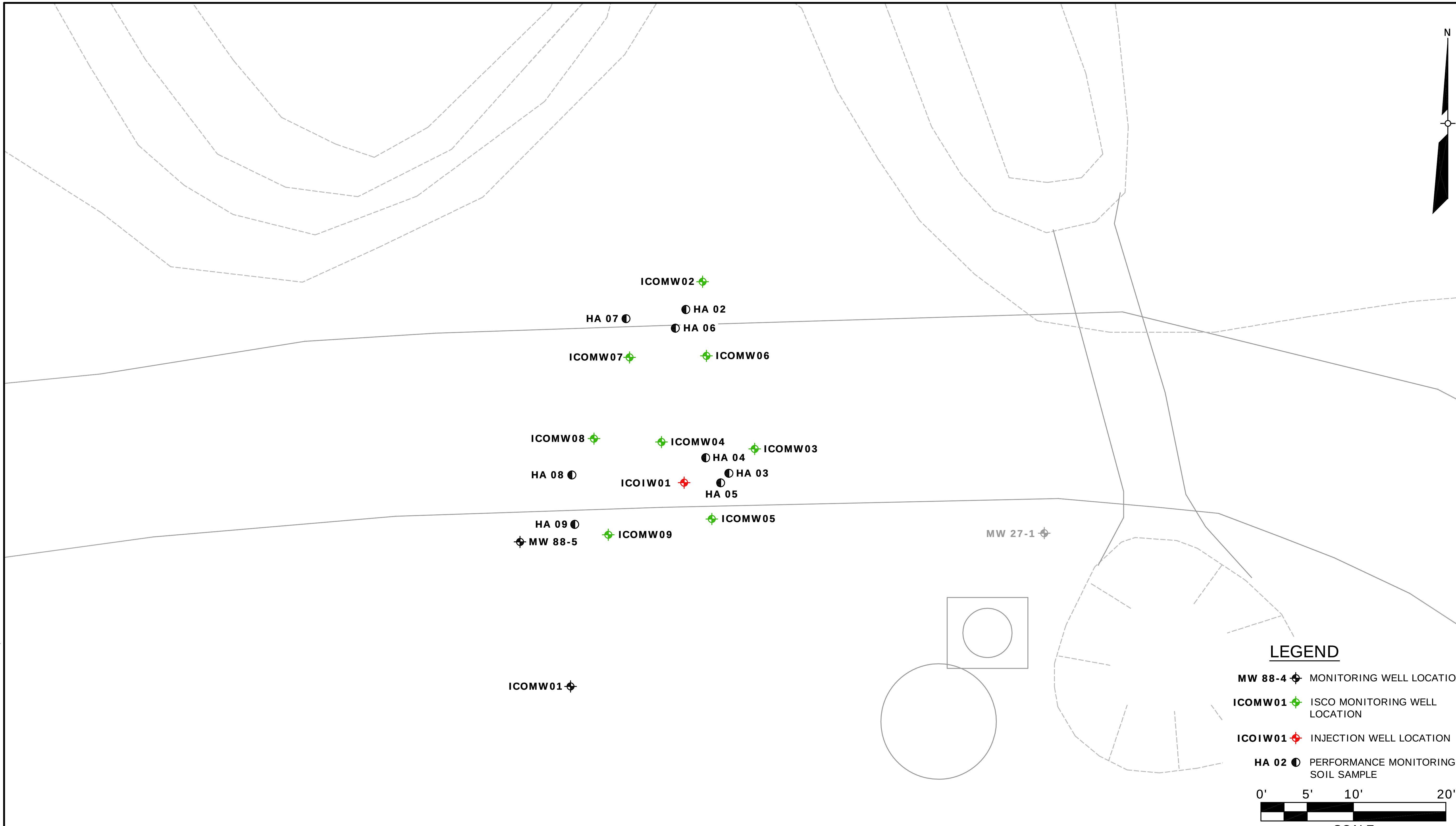
FIGURE 11
PHASE I ISCO
CROSS SECTION B - B'

BERS - NE CAPE ISCO
ALASKA

JUNE 2010 112321

JUNE 18, 2010

NEC BASEMAP.DWG



BASE MAP PROVIDED BY US ARMY CORPS OF ENGINEERS - ALASKA DISTRICT, DATED DECEMBER 2009.

AECOM

FIGURE 12

PHASE I ISCO STUDY
SOIL MONITORING LOCATIONS

BERS - NE CAPE ISCO
ALASKA

MARCH 2010

112321

MARCH 5, 2010

NEC BASEMAP.DWG

Boring # - MW 88-1 | Project- NEC Phase III RI | Client- USACE | Date- 8/14/02

Boring Size- 8.25 in | AK State Plane Coordinates- 96392.8914 / 98080.4492 (Northing / Easting)

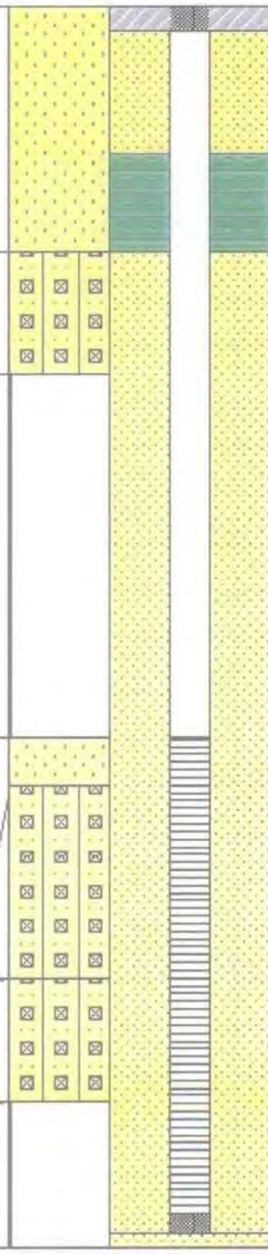
Drilling Method- Hollow Stem Augur

Rig Type- 45-C

Hammer Drop- 30 in / 360 lbs | Total Depth- 22.5 ft | Elevation Datum- MSL

Sample Type- Grab | Sampler Type- 2.5 in SS | Geologist- O'Connell | Top of Hole Elev.-82.29 ft

Depth (ft)	Blows	Sample Interval	Sample ID	Soil Class and Description	Soil Lithology	Well Construction Details
0 to -2.5		0 to -2.5		SP: Fill material. Crushed rock and sand. Dry. Reddish-brown. No odor or staining. PID=1.0		Ground elevation=82.29 feet above msl 2 foot square concrete pad with flush mount Top of PVC Elevation 81.89 feet above msl
-2.5 to -5	11, 9, 10, 12, 12	-2.5 to -5				Seal type- Pure Gold Medium bentonite chips
-5 to -7.5	6, 9, 8, 10	-5 to -7.5		GM: Moist silt and broken, angular rock. Dark olive brown. PID=1.0		Filter pack- Colorado Silica sand 10-40
-7.5 to -15	46, 43, 35, 15, 7, 8, 15, 12, 1, 7, 31, 36, 39, 33, 31			BLANK: No retrieval 7.5 to 15 ft. bgs		
-15 to -17.5	72, 34, 36, 31	-15 to -17.5	02NE88SB001 plus MS/MSD @1530	SP: Crushed rock and sand. Grey-brown. Dry. No odor or staining.PID=204.0		Screened interval 0.010 in. slots in schedule 40 PVC with threaded joints
-17.5 to -20	29, 27, 27, 50	-18 to -20		GM: Crushed rock with fines. Dry. No odor or staining PID=98.7		
-20 to -22.5	20, 17, 28, 27	-20 to -22.5	02NE88SB002 @1600 Water located at 20.0 ft. bgs	GM: Crushed rock, sand and silt. Grey-brown. Saturated. PID=18.6		
-22.5 to -25				BLANK: Boring continued beyond water table for monitoring well construction		



Boring # - MW 88-2	Project- NEC Phase III RI	Client- USACE	Date- 8/14/02
Boring Size- 8.25 in	AK State Plane Coordinates- 96455.0726 / 98257.8812 (Northing / Easting)		
Drilling Method- Hollow Stem Augur			
Rig Type- 45-C			
Hammer Drop- 30 in / 360 lbs		Total Depth- 18 ft.	Elevation Datum- MSL
Sample Type- Grab	Sampler Type- 2.5 in SS	Geologist- O'Connell	Top of Hole Elev.- 71.18 ft.

Depth	Blows	Sample ID	Soil Class and Description
0 to -2.5			SP: Fill. Crushed rock and sand. No odor or staining PID=0
-2.5 to -5	8 7 7 6 6		SM: Dark brown sand with fines. No odor or staining PID=19.0
-5 to -7.5	5 5 5 7		SM: Dark brown sand with fines. No odor or staining PID=29.8
-7.5 to -10	6 8 7 6	02NE88SB003 @1645	SM: Dark brown sand with fines. No odor or staining PID=30.9
-10 to -12	9 8 12 20		BLANK: Little recovery PID=13.8
-12 to -18		02NE88SB004 @1700 Water located at 14.5 ft. bgs	BLANK: No recovery. boring completed to 18 feet bgs for monitoring well installation

Well Construction Details:

- Ground elevation 71.18 feet above msl 2 foot square concrete pad with flush mount
- Top of PVC 70.88 feet above msl
- Seal type- Pure Gold bentonite chips
- Filter Pack- Colorado silica sand 10-40
- Screened interval
- 0.010 in. slots in scedule 40 PVC with threaded joints

Boring # - MW 88-3 | Project- NEC Phase III RI | Client- USACE | Date- 8/15/02

Boring Size- 8.25 in | AK State Plane Coordinates- 96458.3585 / 98169.9401 (Northing / Easting)

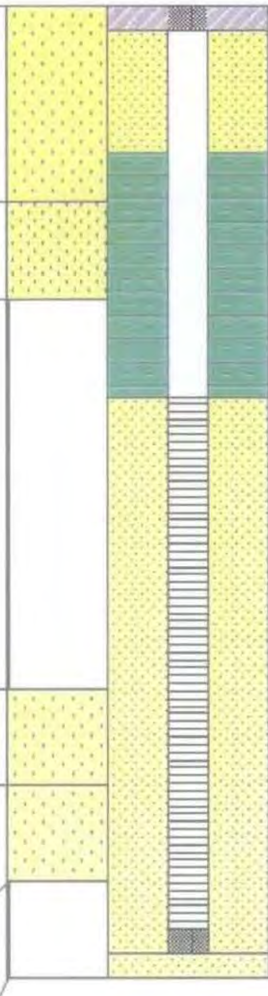
Drilling Method- Hollow Stem Augur

Rig Type- 45-C

Hammer Drop- 30 in / 360 lbs | Total Depth- 20 ft. | Elevation Datum- MSL

Sample Type- Grab | Sampler Type- 2.5 in SS | Geologist- O'Connell | Top of Hole Elev.- 77.75 ft.

Depth (ft)	Blows	Sample Interval	Sample ID	Soil Class and Description	Soil Lithology	Well Construction Details
0 to -4				SP: Fill. Rocks and gravel		Ground Elevation = 77.75 feet above msl 2 foot square concrete pad with flush mount Top of PVC Elevation = 77.35 feet above msl
-4 to -6	5 5 6 5	-4 to -6		SW: Greenish-brown. Angular gravel		Seal Type- Pure Gold medium bentonite chips
-6 to -14	50 (-8), 50 (-10), 21 15 12 16 (-12 to -14)		02NE88SB005 @1155	BLANK: No recovery. Broken drive line on drill rig, shut down for the day		Filter Pack- Colorado silica sand 10-40 Screened Interval 0.010 in. slots in schedule 40 PVC with threaded joints
-14 to -16	9 14 12 10		02NE88SB006 @1110, 02NE88SB206 @1110, 02NE88SB306 @1110	SP: Continued. Grey sand and broken rock. Strong odor		
-16 to -18	14 23 21 27	-16 to -18		SP: Grey sand and angular rocks. Slight odor. Water on spoon, samples dry.		
-18 to -20			Water located at 18.0 ft. bgs	BLANK: Boring continued to 20.5 feet for monitoring well installation		



Boring # - MW 88-4 Project- NEC Phase III RI Client- USACE Date- 8/14/02

Boring Size- 8.25 in AK State Plane Coordinates- 96331.1320 / 98365.8078

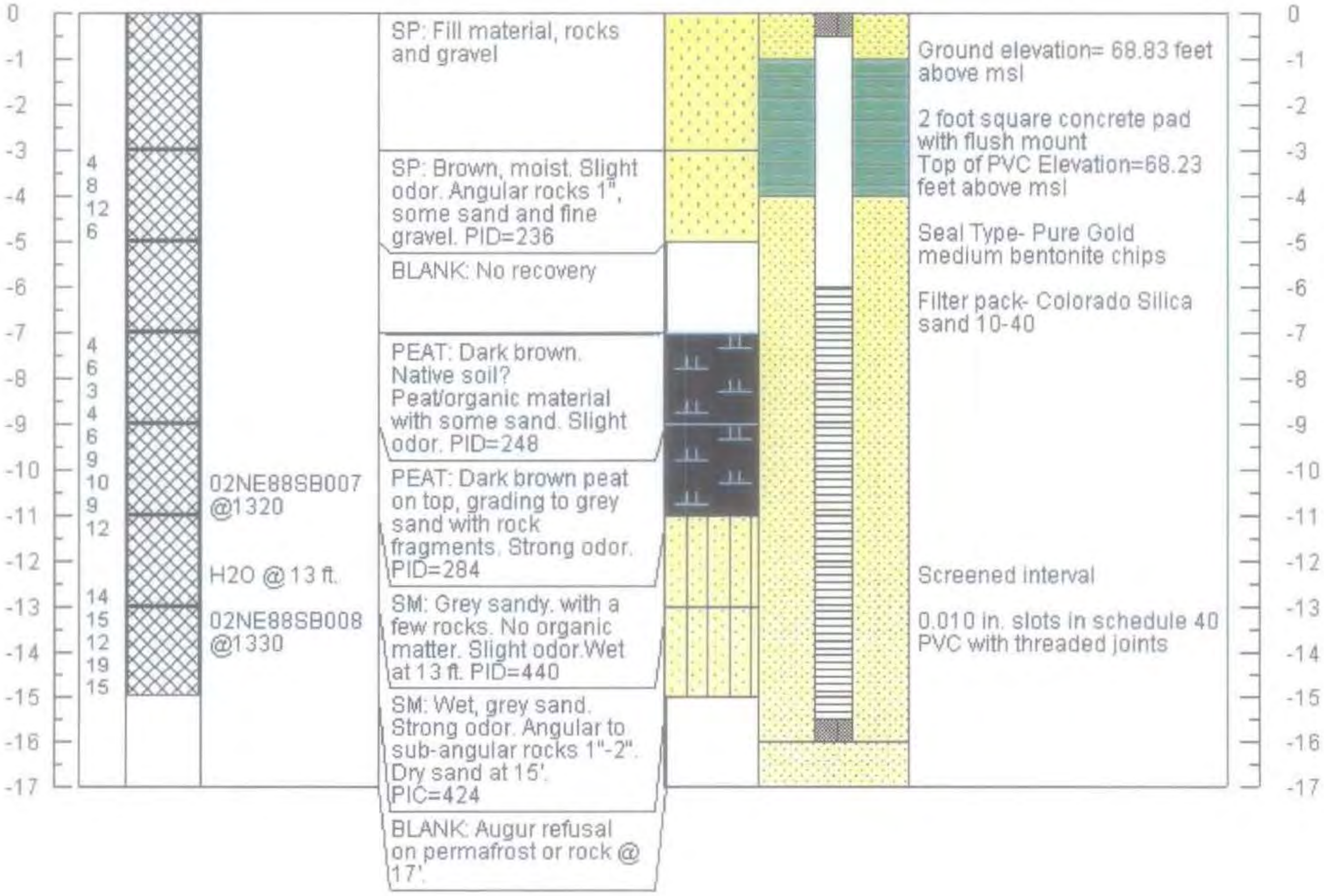
Drilling Method- Hollow Stem Augur Northing / Easting

Rig Type- 45-C

Hammer Drop- 30 in / 360 lbs Total Depth- 17 ft. Elevation Datum- MSL

Sample Type- Grab Sampler Type- 2.5 in SS Geologist- O'Connell Top of Hole Elev.- 68.63 ft.

Blows	Sample Interval	Sample ID	Soil Class and Description	Soil Lithology	Well Construction Details



Boring #- MW 88-5 | Project- NEC Phase III RI | Client- USACE | Date- 8/17/02

Boring Size- 8.25 in | AK State Plane Coordinates- 96216.7210 / 98292.1088

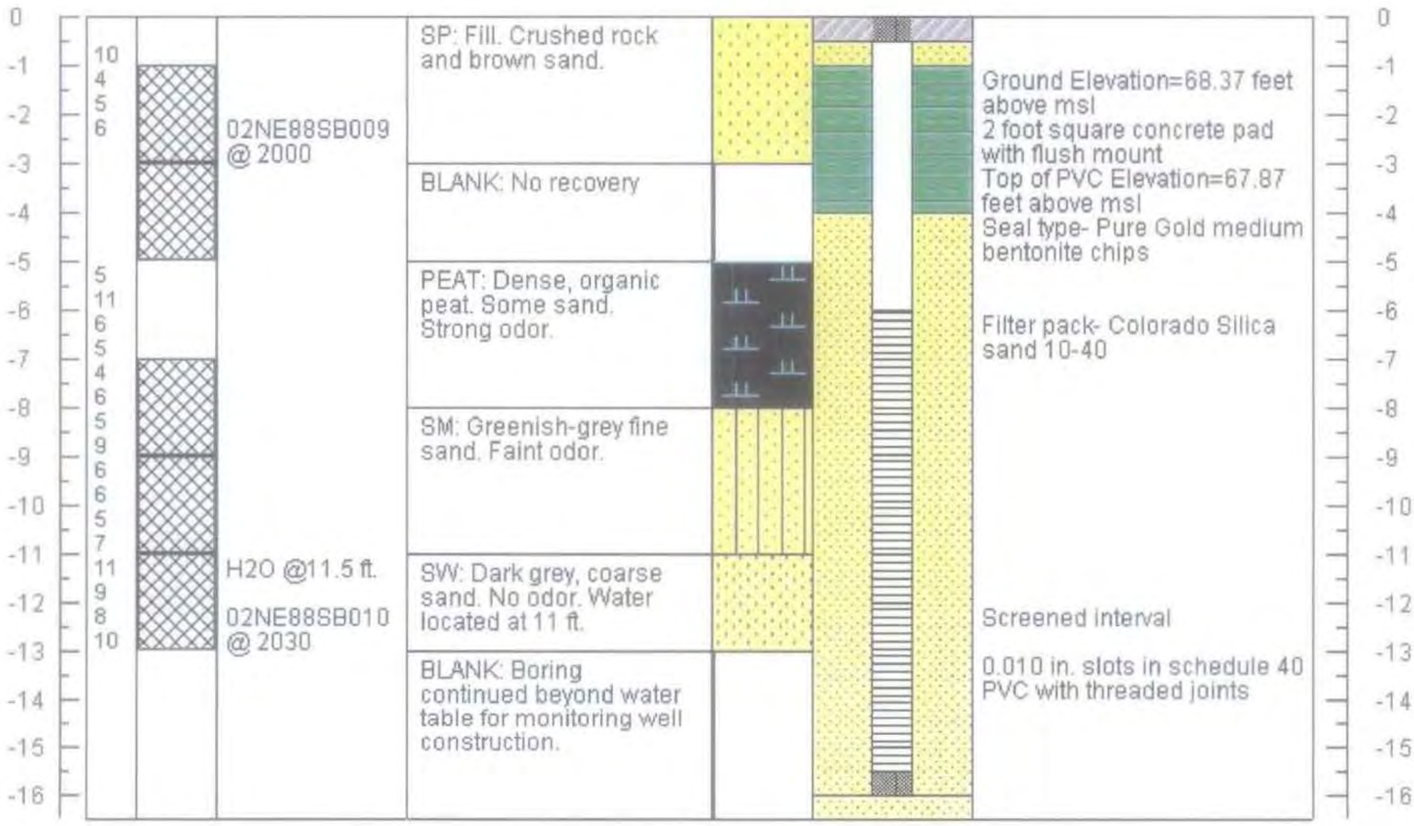
Drilling Method- Hollow Stem Augur | Northing / Easting

Rig Type- 45-C

Hammer Drop- 30 in / 360 lbs | Total Depth- 16.5 ft. | Elevation Datum- MSL

Sample Type- Grab | Sampler Type- 2.5 in SS | Geologist- O'Connell | Top of Hole Elev.- 68.37 ft.

Blows | Sample Interval | Sample ID | Soil Class and Description | Soil Lithology | Well Construction Details



Boring # - MW 88-6 | Project- NEC Phase III RI | Client- USACE | Date- 8/18/02

Boring Size- 8.25 in | AK State Plane Coordinates- 96140.494 / 98271.8042 (Northing / Easting)

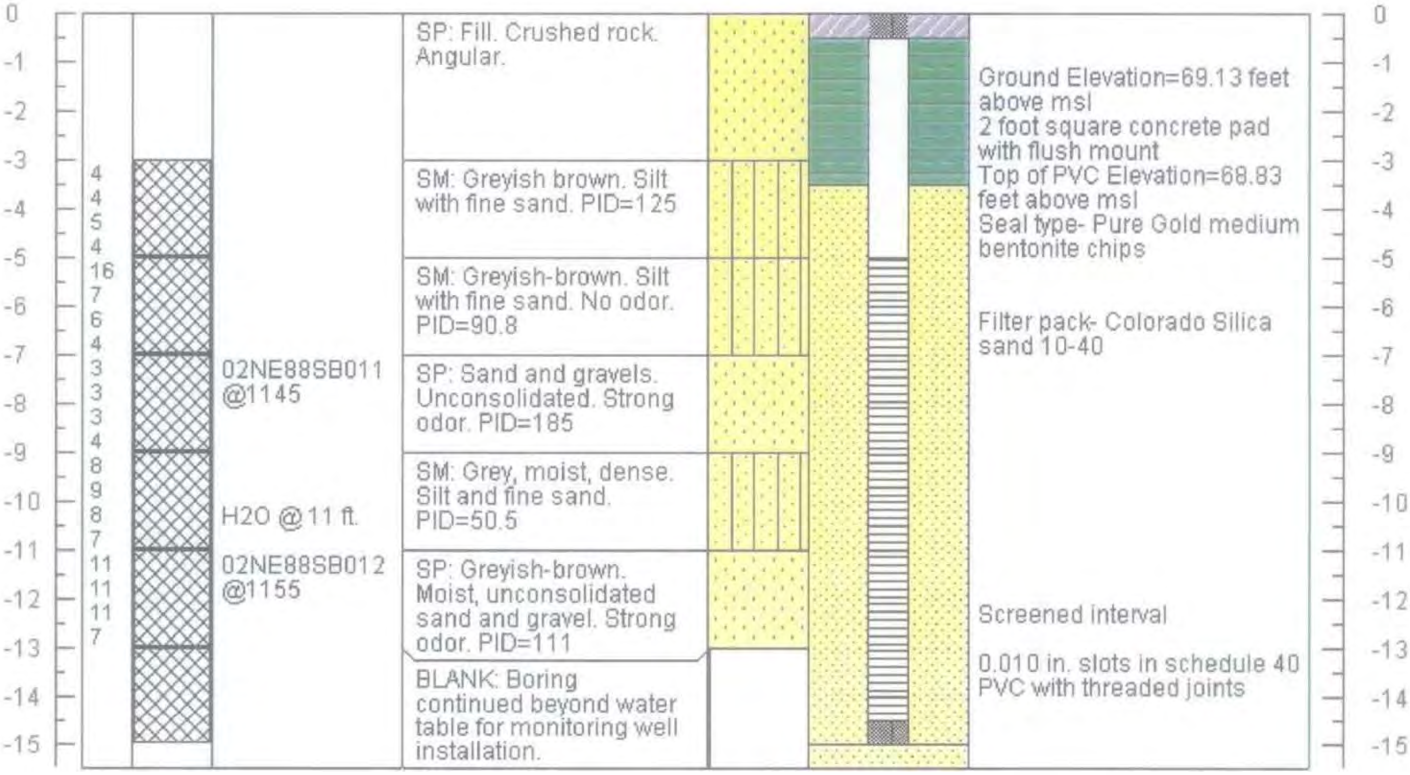
Drilling Method- Hollow Stem Augur

Rig Type- 45-C

Hammer Drop- 30 in / 360 lbs | Total Depth- 15.5 ft. | Elevation Datum- MSL

Sample Type- Grab | Sampler Type- 2.5 in SS | Geologist- O'Connell | Top of Hole Elev.- 69.13 ft.

Blows | Sample Interval | Sample ID | Soil Class and Description | Soil Lithology | Well Construction Details



Boring #- MW 88-7 | Project- NEC Phase III RI | Client- USACE | Date- 8/18/02

Boring Size- 8.25 in | AK State Plane Coordinates- 96033.1581 / 98271.2457 (Northing / Easting)

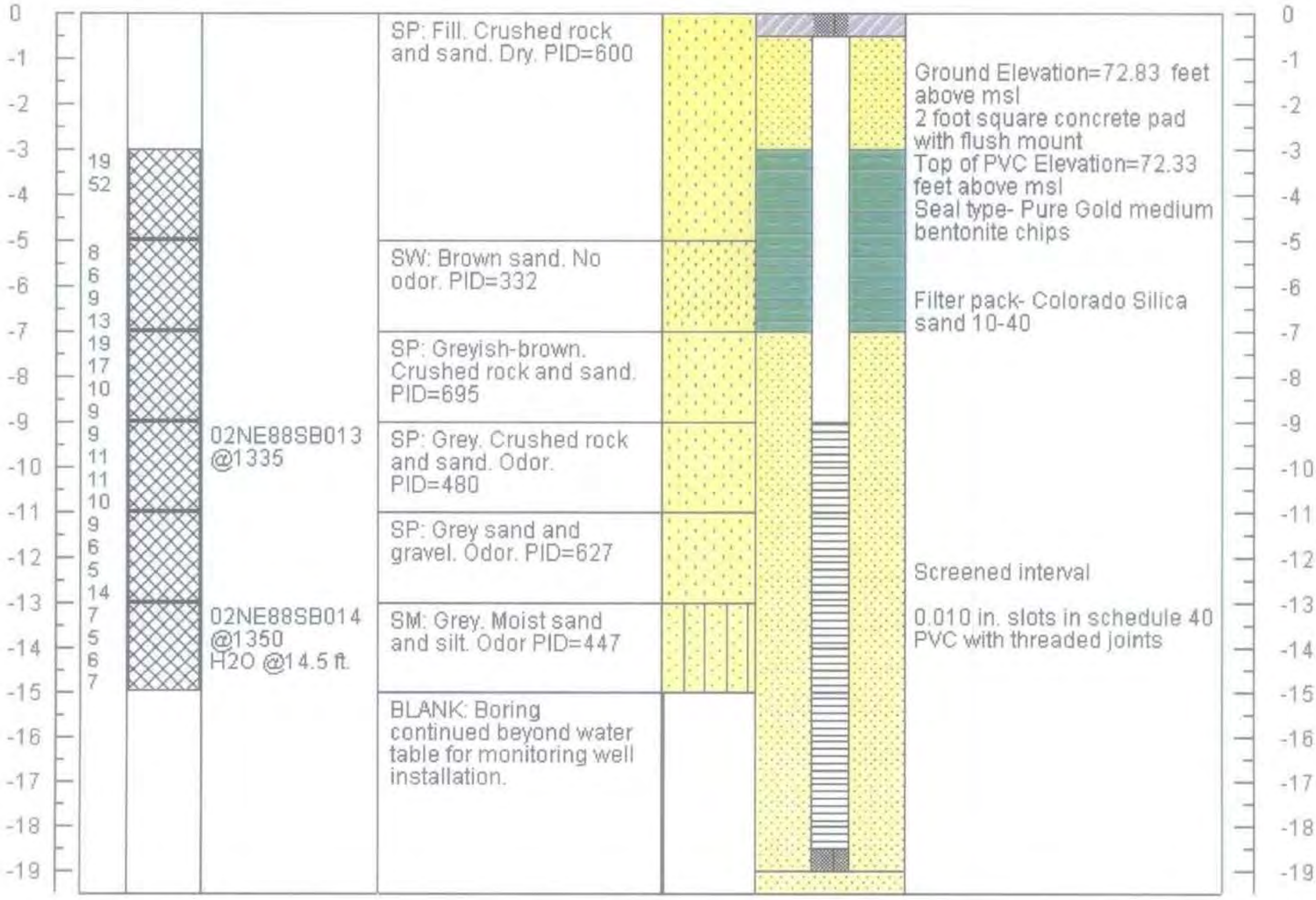
Drilling Method- Hollow Stem Augur

Rig Type- 45-C

Hammer Drop- 30 in / 360 lbs | Total Depth- 19.5 ft. | Elevation Datum- MSL

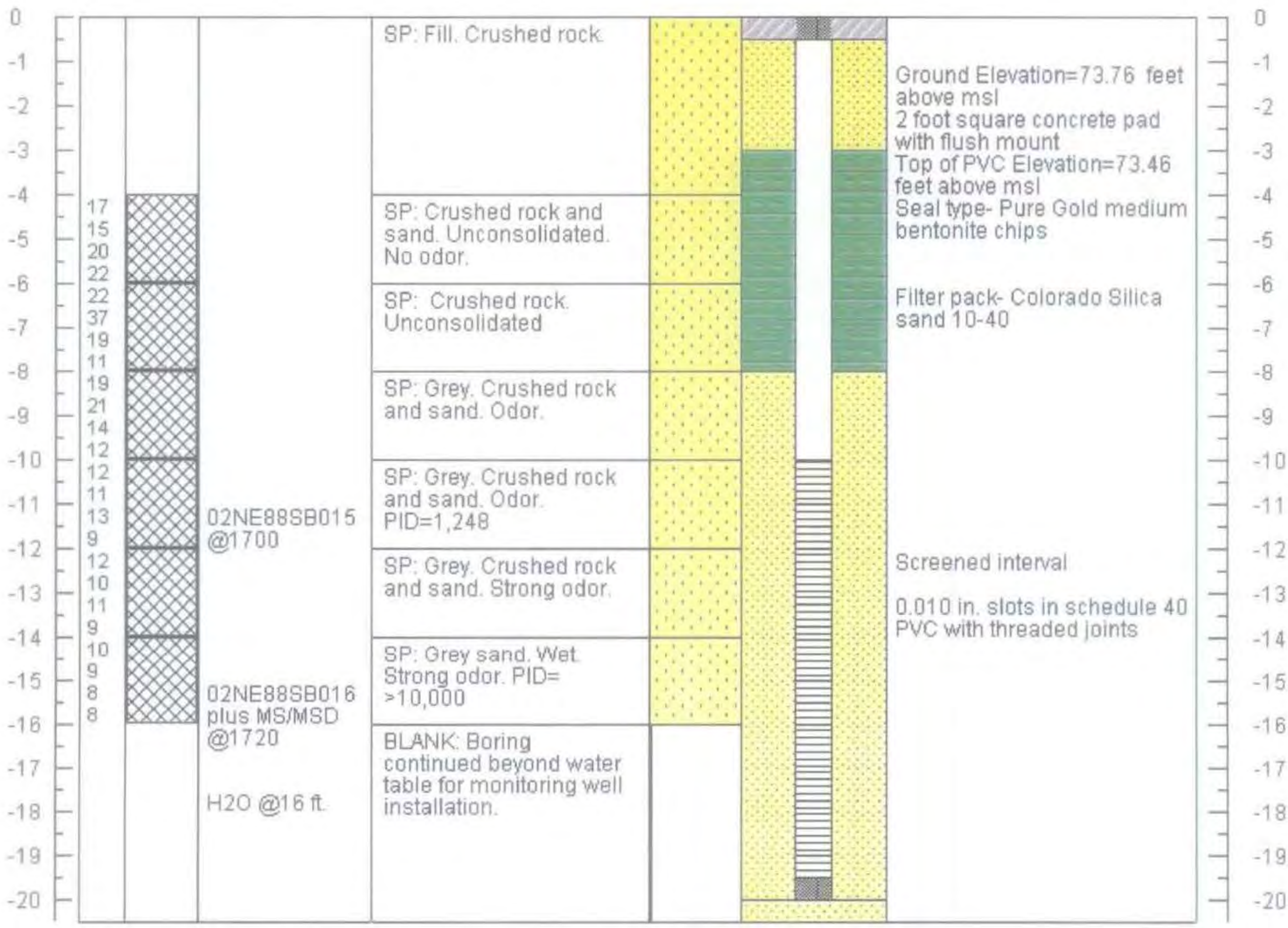
Sample Type- Grab | Sampler Type- 2.5 in SS | Geologist- O'Connell | Top of Hole Elev.-72.83 ft.

Blows | Sample Interval | Sample ID | Soil Class and Description | Soil Lithology | Well Construction Details



Boring # - MW 88-8	Project- NEC Phase III RI	Client- USACE	Date- 8/18/02
Boring Size- 8.25 in	AK State Plane Coordinates- 96083.4849 / 98185.9420 Northing / Easting		
Drilling Method- Hollow Stem Augur Rig Type- 45-C			
Hammer Drop- 30 in / 360 lbs		Total Depth- 20.5 ft.	Elevation Datum- MSL
Sample Type- Grab	Sampler Type- 2.5 in SS	Geologist- O'Connell	Top of Hole Elev.-73.76 ft.

Blows | Sample Interval | Sample ID | Soil Class and Description | Soil Lithology | Well Construction Details



Boring # - MW 88-9 | Project- NEC Phase III RI | Client- USACE | Date- 8/19/02

Boring Size- 8.25 in | AK State Plane Coordinates- 96154.1887 / 98.44.5023

Northing / Easting

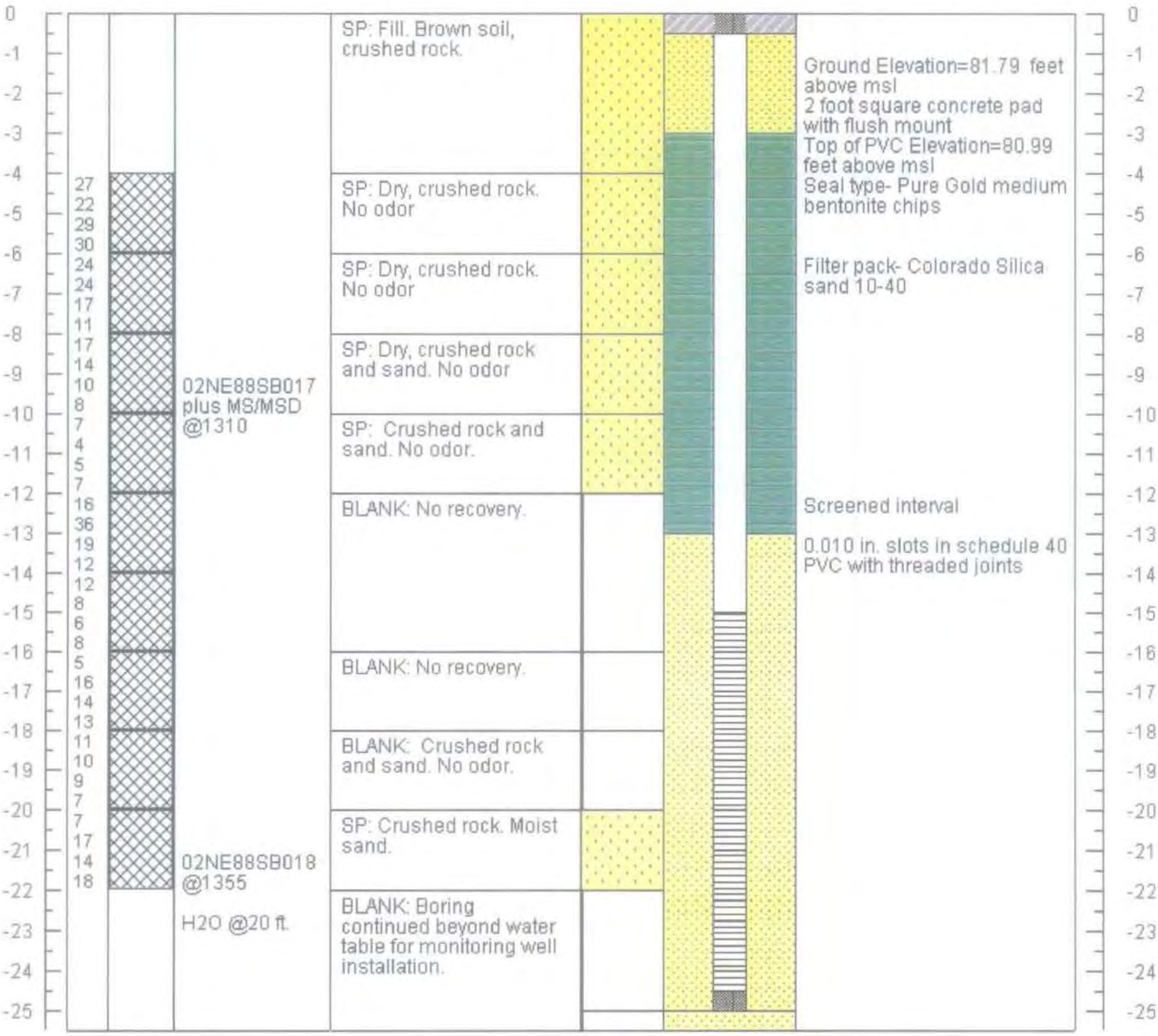
Drilling Method- Hollow Stem Augur

Rig Type- 45-C

Hammer Drop- 30 in / 360 lbs | Total Depth- 25 ft. | Elevation Datum- MSL

Sample Type- Grab | Sampler Type- 2.5 in SS | Geologist- O'Connell | Top of Hole Elev.- 81.79 ft.

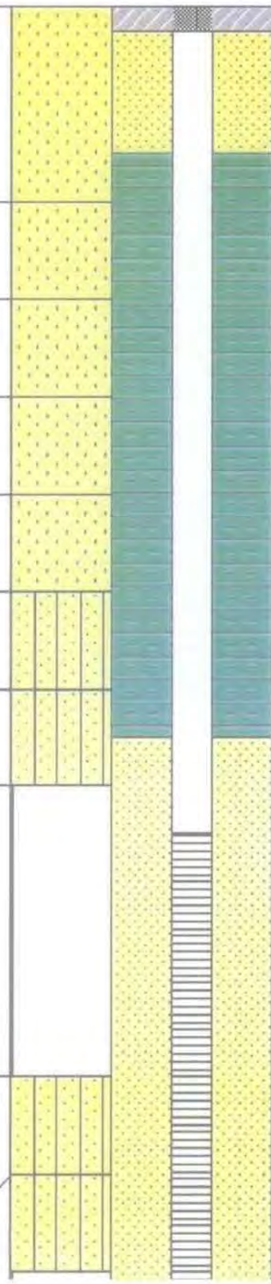
Blows | Sample Interval | Sample ID | Soil Class and Description | Soil Lithology | Well Construction Details



Boring # - MW 88-10	Project- NEC Phase III RI	Client- USACE	Date- 8/19/02
Boring Size- 8.25 in	AK State Plane Coordinates- 96293.0099 / 97970.2989		
Drilling Method- Hollow Stem Augur	Northing / Easting		
Rig Type- 45-C			
Hammer Drop- 30 in / 360 lbs		Total Depth- 27.5 ft.	Elevation Datum- MSL
Sample Type- Grab	Sampler Type- 2.5 in SS	Geologist- O'Connell	Top of Hole Elev.- 86.86 ft.

Blows | Sample Interval | Sample ID | Soil Class and Description | Soil Lithology | Well Construction Details

Depth	Blows	Sample ID	Soil Class and Description
0 to -4			SP: Fill.Rock and gravel.
-4 to -6	19 17 12 14		SP: Greyish-brown. Crushed rock and sand. No odor
-6 to -8	18 16 16		SP: Greyish-brown. Crushed rock and sand. No odor
-8 to -10	12 12 10 12		SP: Greyish-brown. Crushed rock and sand. No odor
-10 to -12	11 11 8 8		SP: Greyish-brown. Crushed rock and sand. No odor
-12 to -14	9 6 9 8		SM: Moist, fine sand with some iron staining. No odor.
-14 to -16	8 8 8 15		SM: Greyish-brown. Moist, fine sand with crushed rock
-16 to -22	11 10 12 10 16 50 11 9 12 10		BLANK: No recovery
-22 to -24	13 112 13 12	02NE88SB019 @1705	SM: Grey. Moist, crushed rock and coarse sand. Odor. PID=881
-24 to -26	14 12 19 21	02NE88SB020 @1715	SM: Grey. Moist, crushed rock and coarse sand. Odor. Sheen on spoon



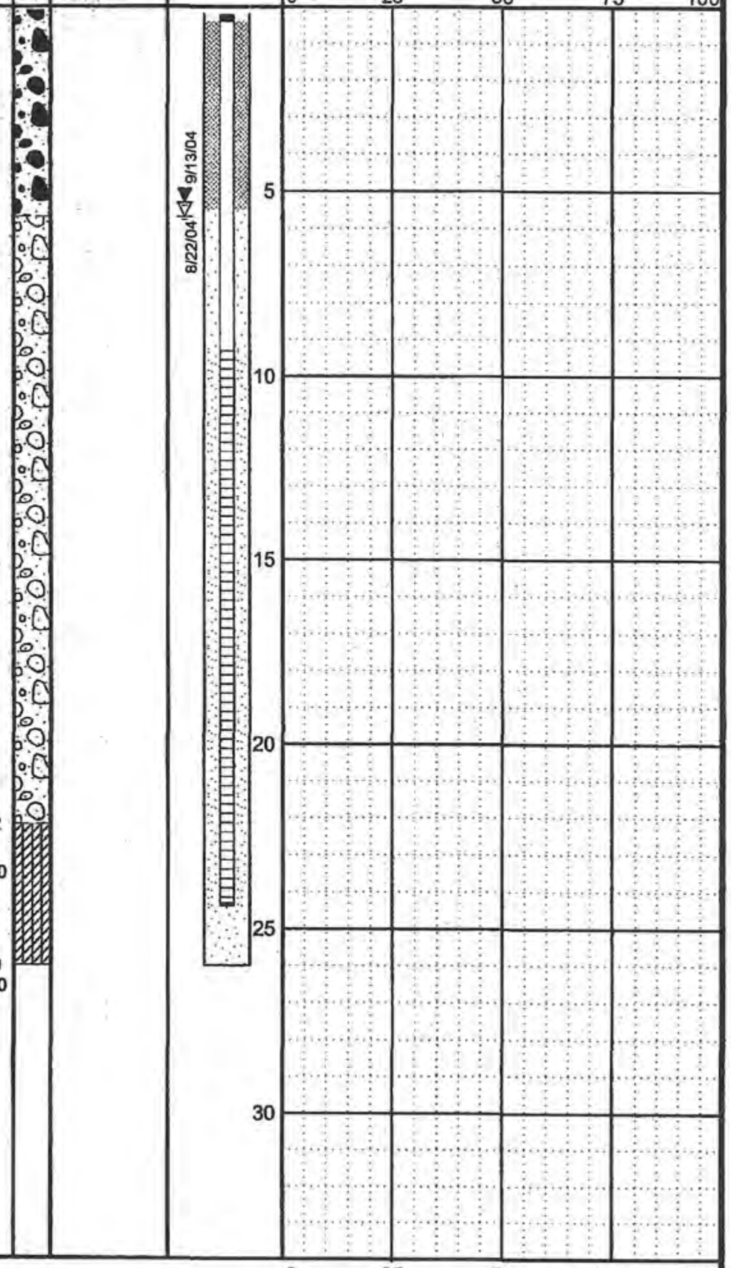
Ground Elevation=86.86 feet above msl
2 foot square concrete pad with flush mount
Top of PVC Elevation=86.46 feet above msl
Seal type- Pure Gold medium bentonite chips

Filter pack- Colorado Silica sand 10-40

Screened interval

0.010 in. slots in schedule 40 PVC with threaded joints

MATERIAL DESCRIPTION Coordinates: N: 99,228 E: 97,287 Elevation: 56.69 Ft.	Depth, Ft.	Symbol	Samples	Ground Water	Depth, Ft.	Penetration Resistance (300 lb. weight, 30" drop) ▲ Blows per foot
Lithology based on cuttings and drill action Brown, silty, sandy, GRAVEL and cobbles; moist, becoming wet at 5.5 to 5.7 ft.						
Brown, medium to fine sandy, angular GRAVEL and cobbles; wet	5.7					
Very stiff, gray clayey SILT; wet to frozen [Till]	22.2 23.0 26.0					
Bottom of Boring Boring Completed 8/22/04 Boring advanced with Tubex air/rotary	26.0					



0 25 50 75 100

● PID Reading (ppm)

LEGEND

- * Sample Not Recovered
- 3" O.D. Split Spoon Sample
- B Auger Cuttings
- Frozen
- Surface Seal
- Solid Casing and Annular Seal
- Well Casing and Filter Sand
- Cuttings Backfill
- Ground Water Level At Time Of Drilling
- Static Water Level

NOTES

1. The stratification lines represent the approximate boundaries between soil types, and the transition may be gradual.
2. The discussion in the text of this report is necessary for a proper understanding of the nature of subsurface materials.
3. Water level, if indicated above, is for the date specified and may vary.

Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

LOG OF BORING 26MW3

June 2005 32-1-16821

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

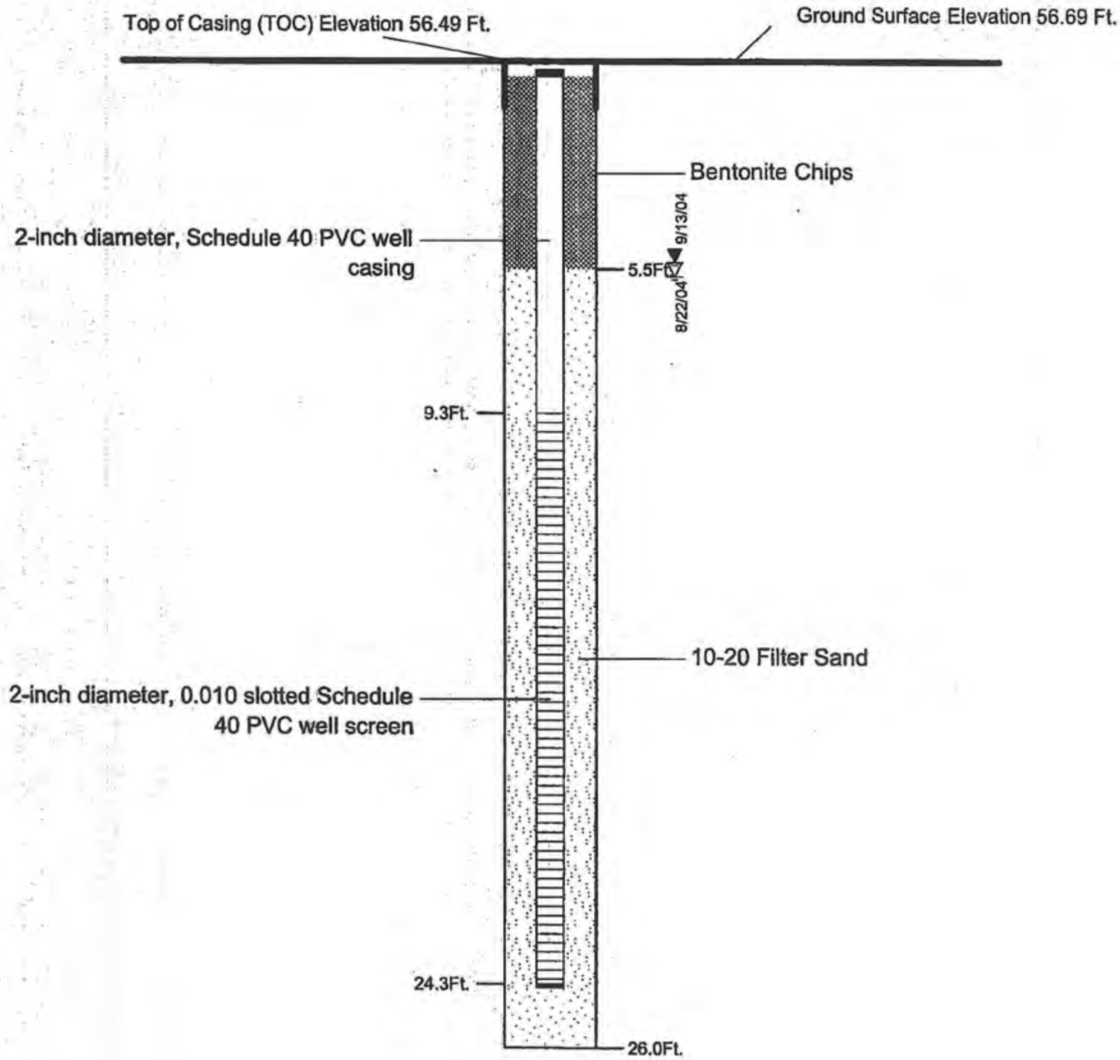
Fig. B-21a

ENVIRONMENTAL LOG 16821DRILLF.GPJ S&W GEO1.GDT 6/22/05

Coordinates: N: 99,228 E: 97,287

Casing Description

Backfill Description



LEGEND

- ▽ Ground Water Level ATD
- ▼ Static Ground Water Level

NOTES: Cover is cast iron set in concrete
Top cap is locking expansion plug with padlock
Joints are machine threaded
Botton cap is friction fit

Phase IV RI, Northeast Cape St. Lawrence Island, Alaska	
MONITORING WELL 26MW3 CONSTRUCTION DETAIL	
June 2005	32-1-16821
SHANNON & WILSON, INC. Geotechnical and Environmental Consultants	**Fig. B-21b**

SOIL BORING LOG

MONTGOMERY WATSON

PROJECT NO.:	BORING NO.:	SHEET
2198.0230	9-3	1 OF 1

PROJECT NE Cape SITE 9 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-17-94 WEATHER Cloudy, calm LOCATION COORDINATES 98260.0772 (Northing) / 97177.3812 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8 HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

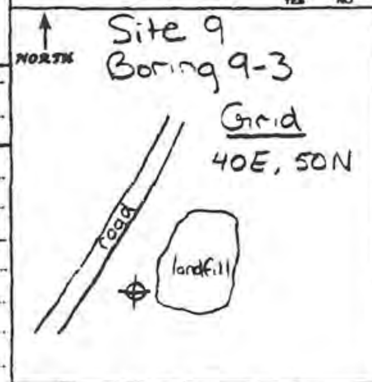
SAMPLES 2 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 2.5" split TOTAL DEPTH (FT) 9.5 DEPTH TO SWL (FT) 2.0 TOP OF HOLE ELVEVATION 73.66

WELL COMPLETED? YES ☒ NO ☐

DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (IN)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0										Tundra - Mat
		0	0	100	-	OL		0900		ORGANIC SOIL: dk brown, very moist, soft, motlets
1		5	5	90	1	ML				SILT: brown, moist, firm, fine to coarse subangular gravel,
2							▽			fine grained sand, no apparent
								0915		staining
5										color change to green
7										ice crystals in soil matrix
10										Boring terminated at 9.5 fbg Groundwater encountered at approx 2 fbg Installed 2" groundwater monitoring well

99157 SB

99035 SB



LOCATION SKETCH

JOB No. 0000.0000 Time: 00-XXX-00 00:00 File: user name/project/File Name

MONTGOMERY WATSON

SOIL BORING LOG

PROJECT NO.: 2198.0230 | BORING NO.: 9-1 | SHEET 1 OF 1

PROJECT NE Cape SITE 9 CLIENT USACOE (AK) GEOLOGIST John DeGeorge

DATE 7-16-94 WEATHER Sunny, breezy LOCATION COORDINATES 98501.6918 (Northing) / 97366.2958 (Easting) ELEVATION DATUM MSL (MSL/Other)

DRILLING METHOD HSA BORING SIZE 8" HAMMER DROP (IN/LBS) 30/340 RIG TYPE CME 55 DRILL COMPANY Denali Drilling

SAMPLES 2 SAMPLE TYPE discreet SAMPLER TYPE/DIAMETER 2.5" split TOTAL DEPTH (FT) 7.5 DEPTH TO SWL (FT) 1.5 TOP OF HOLE ELVEVATION 65.14

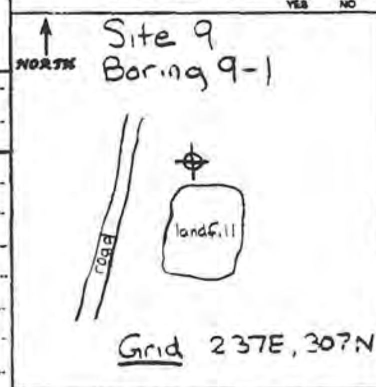
WELL COMPLETED? YES ☒ NO ☐

DEPTH (FEET)	BLOWS (6 IN.)	% GRAVEL	% SAND	% FINES	MAX SIZE (in)	SOIL CLASS	PID (PPM)	SAMPLE TIME	SAMPLE INTERVAL	SOIL DESCRIPTION (ASTM 2488)
0										Tundra - Small Schrubs - Boulders
		0	0	100	-	OL		1430		ORGANIC SOIL: dk brown, very moist, soft, mottles
1		5	5	90	1	ML	▽			SILT: brown, color change to green at 2 fbg, moist to very moist, firm, fine to coarse subangular gravel, fine-grained sand, no apparent stains
2.5								1530		

09155
255
355
SB

Boring terminated at 7.5 fbg.
Groundwater encountered at apprx 1.5 fbg.
Installed 2" groundwater monitoring well.

Collected sample (0-2') from first boring. Groundwater seeped into hole during sample collection (1 hr). Decided to move well location (see above grid coordinates) 4 feet north, to avoid drilling through water in hole = muds.



LOCATION SKETCH

JOB No. 0000.000C File name: 00-XXX-00 00:00 File: user name/project/File Name

4.5 SITES 10 AND 11

4.5.1 Geology

Sites 10 and 11 are located at the northern boundary of a building pad created by the emplacement of fill materials over native soils. The majority of the Northeast Cape structures were constructed on this fill pad, which consists primarily of course angular gravels and finer material believed to be partially derived from the site borrow area at the southern boundary of the site west of the White Alice Site (Figure 4-1).

Four boreholes were completed at Site 10, and three boreholes were completed at Site 11 to a maximum depth of 20 feet. Figure 4-7-2 depicts a subsurface cross section of Sites 10 and 11, the location of which is depicted on Figure 4-7-1. Based on borings completed in the fill materials, the fill consists of sandy silt with subangular cobbles. Underlying the fill materials are native soils consisting of silty sand and sandy silt with variable amounts of gravel.

4.5.2 Hydrogeology

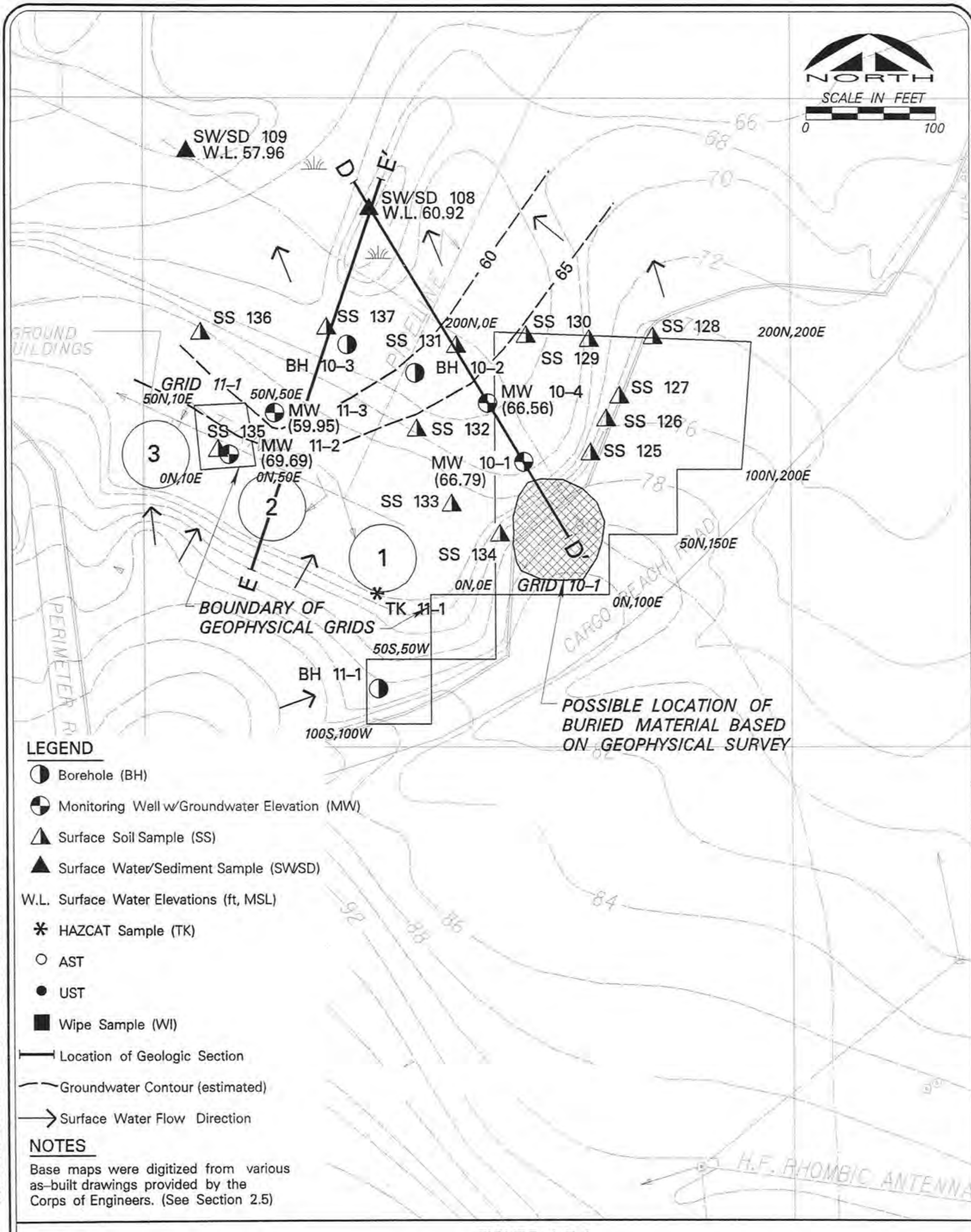
Four of the seven boreholes completed at Sites 10 and 11 were converted to monitoring wells. Depth to groundwater in these wells varies from 10 feet near the location of Tanks 2 and 3, to less than 2 feet in the marshy drainage area northeast of the diesel storage tanks. Based on groundwater elevations measured in the four monitoring wells and surface water elevations in the marshy area north of the tanks (Figure 4-7-1), groundwater is flowing in a generally north to northwest direction coincident with the surface water drainage. A slug test conducted on MW 10-4 indicates a very low permeability of approximately 0.1 feet per day.

Marshy conditions, shallow groundwater, and small areas of standing surface water are present in the lowland area northeast of the diesel tanks. This drainage area combines with drainage coming east from Site 27, then flowing northward from the site.

Groundwater was encountered at an anomalously high elevation in BH 10-3, at a depth of 0.5 feet. This groundwater may represent a local perched horizon caused either by a low-permeability zone associated with the fill/native soil interface, or a local zone of frozen soils (Figure 4-7-2).

4.5.3 Geophysical Survey

Geophysical surveys were performed on Sites 10 and 11 to delineate the extent of a reported buried drum field and to identify any underground piping associated with the tank area so as to avoid it while drilling. The geophysical grid boundaries are shown in Figure 4-7-1. A very important finding of the geophysical survey at Site 10 is the apparent absence of 29,500 buried drums as reported by E&E (1993). The relatively few magnetic and conductive anomalies noted are attributed to surface debris or the adjacent large diesel storage tanks, although a smaller area of buried debris was noted east of Tank No. 1. No underground piping was noted at Site 11.



FILE: /usr3/corps/necape/fg4_7_1.dgn TIME: 02-FEB-1995 16:29 JOB No. 2198.0230

MONTGOMERY WATSON

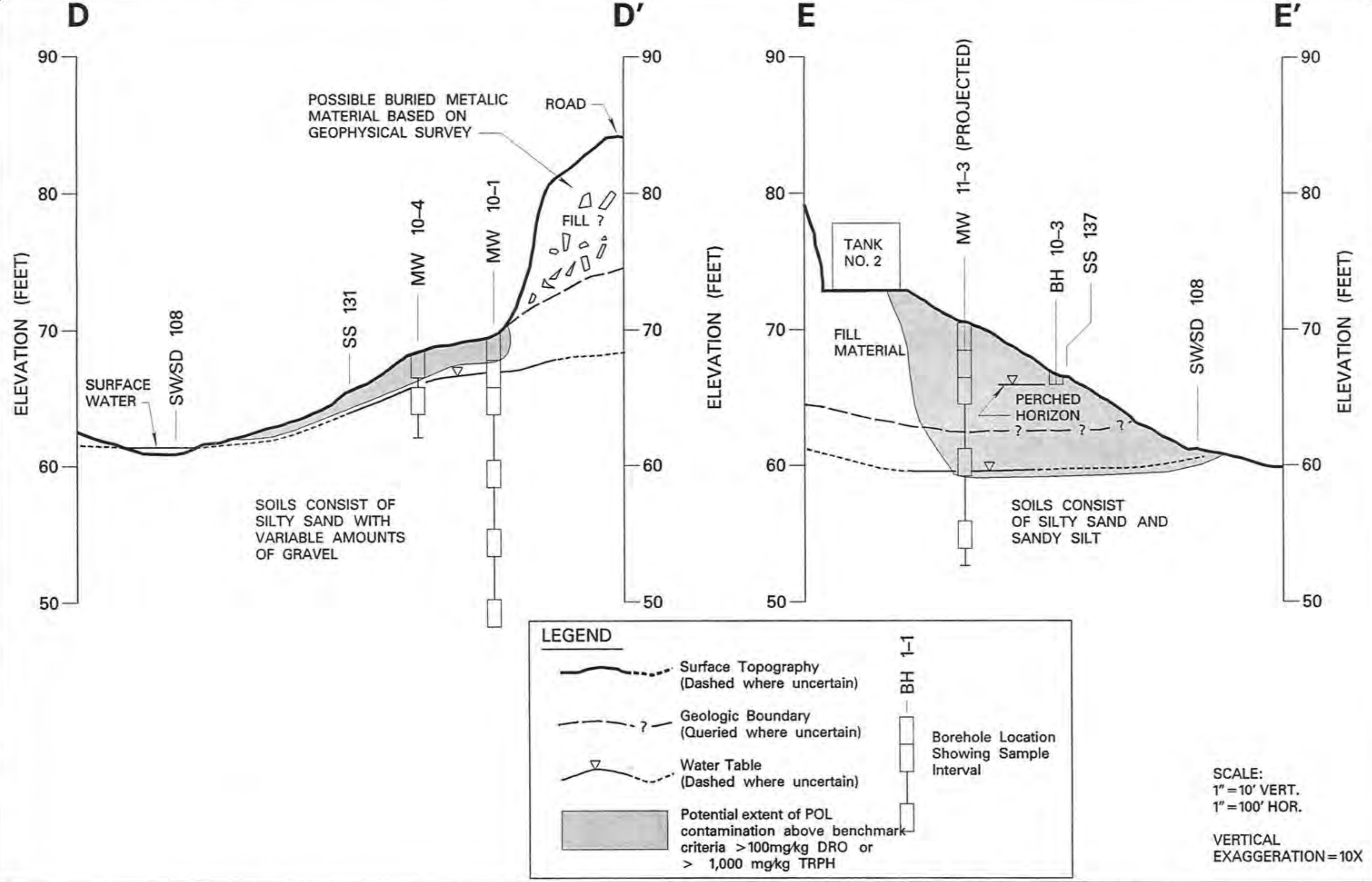
Anchorage, Alaska

FIGURE 4-7-1

ALASKA DISTRICT - CORPS OF ENGINEERS
N.E. CAPE - ST. LAWRENCE ISLAND, ALASKA

page 4-45

SITES 10 & 11 GEOPHYSICAL GRIDS AND HYDROGEOLOGY REFERENCE MAP



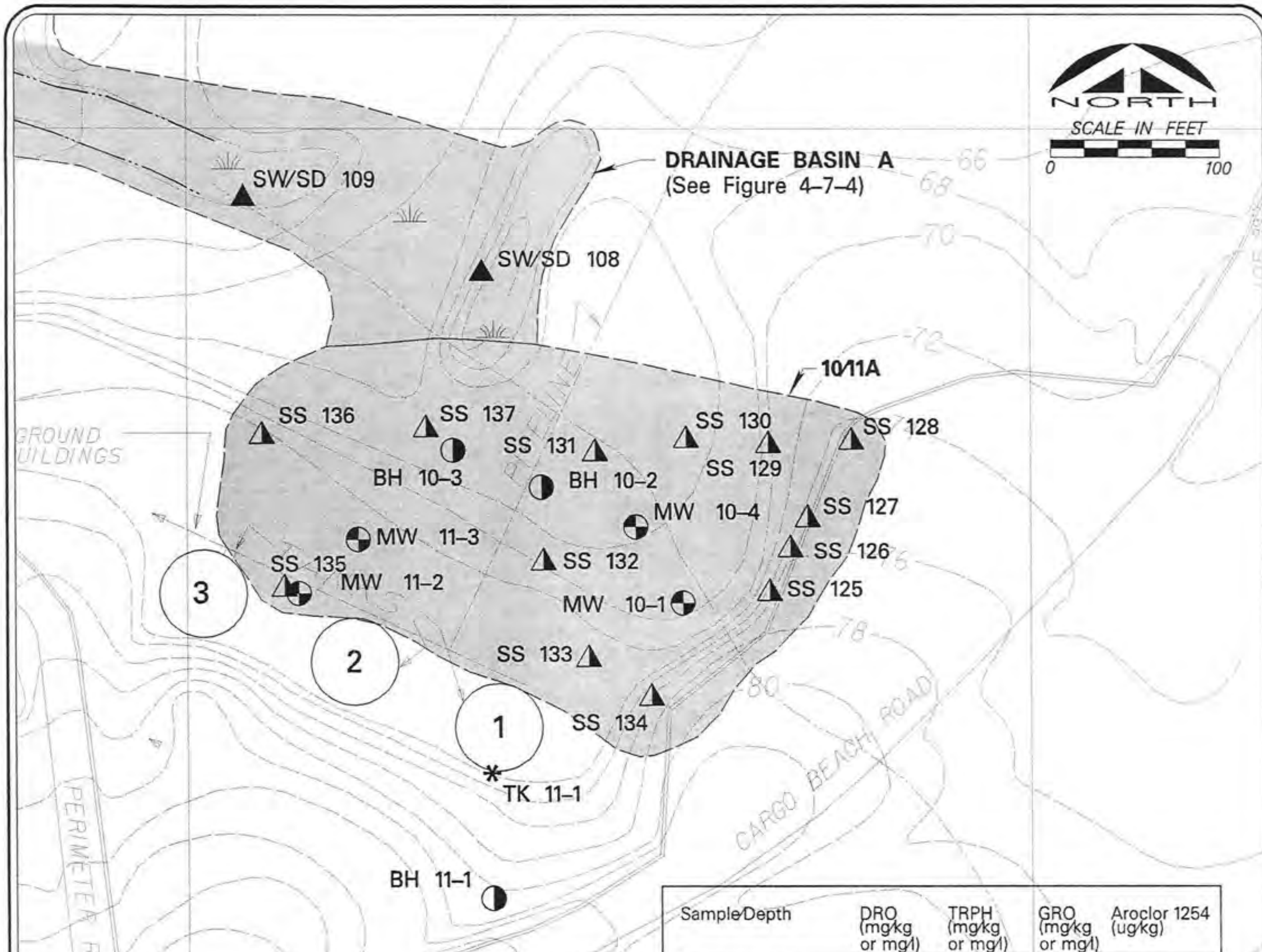
MONTGOMERY WATSON

Anchorage, Alaska

FIGURE 4-7-2

ALASKA DISTRICT - CORPS OF ENGINEERS
N.E. CAPE - ST. LAWRENCE ISLAND, ALASKA

SITE 10
SECTIONS D-D' & E-E'



Sample/Depth	DRO (mg/kg or mg/l)	TRPH (mg/kg or mg/l)	GRO (mg/kg or mg/l)	Aroclor 1254 (ug/kg)
SS 125	22700	43700		
SS 126	26500	62300		
SS 127	24500	119000		
SS 128	2170	7910		
SS 129	1860	4850		
SS 130	348	2450		
SS 131	1260	5230		
SS 132	35800	24500		
SS 133	69100	32100		793
SS 134	379	416		
SS 135	902	2120		323
SS 136	195	464		
SS 137	22600	80400		979
MW 10-1 GW	0.49			
MW 10-1 0-2'	366	810		
MW 10-1 2-4'	7.9			
MW 10-1 4-6'		12		
MW 10-4 GW	3.2			
MW 10-4 0-2'	720	907	3.7	
BH 10-2 0-2'	104000	104000	166	2170
BH 10-3 0-2'	43000	83600		
MW 11-2 GW	3.2			
MW 11-2 0-2'	130	436		
MW 11-2 2-4'	358	168		
MW 11-3 GW	6.1	6.6	1.1	
MW 11-3 0-2'	27	182		
MW 11-3 2-4'	31	90		
MW 11-3 4-6'	11	76		
MW 11-3 9.5-11.5'	22000	29200	192	

LEGEND

- Borehole (BH)
- Monitoring Well w/Groundwater Elevation (MW)
- Surface Soil Sample (SS)
- Surface Water/Sediment Sample (SW/SD)
- W.L. Surface Water Elevations (ft.,MSL)
- * HAZCAT Sample (TK)
- AST
- UST
- Wipe Sample (WI)
- 3A Potential extent of POL contamination above benchmark criteria >100 mg/kg DRO or 1,000 mg/kg TRPH

NOTES

Base maps were digitized from various as-built drawings provided by the Corps of Engineers. (See Section 2.5)

FILE: /usr3/corps/necape/fg4_7_3.dgn TIME: 02-FEB-1995 16:30 JOB No. 2198.0230

MONTGOMERY WATSON
Anchorage, Alaska

FIGURE 4-7-3

ALASKA DISTRICT - CORPS OF ENGINEERS
N.E. CAPE - ST. LAWRENCE ISLAND, ALASKA

SITES 10 & 11 SAMPLING LOCATIONS

5.7 Site 11: Fuel Storage Tanks

Two of four existing monitoring wells were scoped to be sampled based on observations of site conditions. Monitoring wells MW 11-3 and MW 10-1 were selected and sampled as part of the Site 11 field activities (see Figure 5-7 and Table 5-7a).

5.7.1 Site Description

Three large fuel storage tanks (~400,000 gallons each) were formerly located on the northeast corner of the Main Operations Complex, between the perimeter access road and Site 10, as shown in Figure 5-7. The tanks have been dismantled, and the steel is piled on two of the three oil sand foundations. The tanks sat on a constructed gravel pad, and the gravel embankment drops to a shallow tundra basin on the northeast. The center tank was punctured during snow removal operations in the late 1960s and approximately 180,000 gallons of diesel fuel were released to the surrounding area.

5.7.2 Data Collection Objectives

Two of the four existing monitoring wells were sampled to gather current information regarding the site's groundwater quality. The samples were analyzed for DRO, RRO, GRO, BTEX, metals (Cr, Pb, Zn, and Hg), and natural attenuation parameters.

5.7.3 Work Plan Variances

Groundwater from Site 11 was to be tested for natural attenuation parameters, including field measurements of alkalinity and ferrous iron. The Hach colorimeter display failed while testing water from Monitoring Well MW 10-1, and ferrous iron values were not obtained from either well.

5.7.4 Field Investigation

Monitoring Wells MW 10-1 and MW 11-3 were purged and sampled on September 5, 2004 using a Redi-Flo 2 submersible pump. Table 5-7a describes the samples, and a groundwater sampling log is attached as Table 5-7b. Groundwater sampling, equipment decontamination and IDW disposal were handled as described in Section 3.

5.7.4.1 Field Observations

Four monitoring wells had been installed at Site 10/Site 11 previously, and are located as shown on Figure 5-6. MW 10-1 exhibited frost damage. The PVC casing extended a few inches above the 4-inch-diameter stick-up monument, and the concrete anchoring the monument was broken, leaving a void at the ground surface. Monitoring Well MW 10-4 was frost-jacked to the point the well screen was exposed above ground. Both of these wells are located in the shallow wetland basin, where the frost level is shallow beneath the thick, intact tundra. MW 11-3 was intact. Well MW 11-2 was found broken off near the ground surface. Both of these wells are located on the gravel pad constructed for the ASTs.

5.7.5 Analytical Results

Laboratory results for Site 11 samples are presented in Table 5-7c. Groundwater Sample 11GW102, from Monitoring Well MW11-3 contained 15.2 mg/L DRO, which exceeds the ADEC Table C cleanup criterion by an order of magnitude.

TABLE 5-7a SAMPLE LOCATIONS AND DESCRIPTIONS - SITE 11: FUEL STORAGE TANKS

Sample Number**	LOCID	Date	Sample Location (See Figure 5-7)	Depth (feet)	Sample Classification
Groundwater Samples					
* 11GW101	MW10-1	9/5/04	Existing Monitoring Well MW10-1; installation date not determined	WL 2.3	Groundwater - remained turbid after purging
* 11GW102	MW11-3	9/5/04	Existing Monitoring Well MW11-3; installation date not determined	WL 7.0	Groundwater - weathered diesel odor, nearly clear

KEY	DESCRIPTION
*	Sample analyzed by the project or QA laboratory (See Table 5-7b)
**	The full sample number is preceded by "04NE", for example 11GW102 is sample 04NE11GW102
WL	Approximate static water level in feet below ground surface
LOCID	Location Identification: "MW11-3" signifies Monitoring Well MW11-3

TABLE 5-7b GROUNDWATER SAMPLING LOG
SITE 11: FUEL STORAGE TANKS

MONITORING WELL INSTALLATION DATA

WELL ID	MW10-1	MW11-3
DATE WELL INSTALLED	Unknown	Unknown
GROUND SURFACE ELEVATION (ft)	68.87	69.63
WELL MP ELEVATION (ft)	71.42	72.33
INTERVAL OF SCREENED SECTION BELOW MP (ft)	Unknown	Unknown
TOTAL DEPTH OF WELL BELOW MP (ft)	11.52	20.30
DIAMETER OF WELL CASING (inches)	2	2

DEVELOPMENT DATA

DATE OF DEVELOPMENT	-	-
TIME DEVELOPMENT INITIATED	-	-
TIME DEVELOPMENT COMPLETED	-	-
DEPTH TO WATER BELOW MP (ft)	-	-
WATER COLUMN IN WELL (ft)	-	-
GALLONS PER FOOT	0.16	0.16
GALLONS IN WELL	-	-
DEVELOPMENT METHOD	-	-
VOLUME WATER REMOVED (gallons)	-	-

PURGING & SAMPLING DATA

LOCID	MW10-1	MW11-3
SAMPLE ID	04NE11GW101	04NE11GW102
DATE	9/5/04	9/5/04
TIME PURGING INITIATED	13:23	16:57
TIME SAMPLE INITIATED	13:50	17:25
DEPTH TO WATER BELOW MP (ft)	4.89	9.72
WATER COLUMN IN WELL (ft)	6.63	10.58
GALLONS IN WELL	1.06	1.69
PURGING METHOD	Redi-Flo 2	Redi-Flo 2
VOLUME WATER REMOVED (gallons)	5.0	5.0

WATER QUALITY DATA - YSI 556

DATE MEASURED	9/5/04	9/5/04
TIME MEASURED	16:18	17:34
TEMPERATURE (^{o}C)	10.2	7.1
SPECIFIC CONDUCTANCE (mS/cm)	0.10	0.15
DISSOLVED OXYGEN (mg/L)	3.8	1.7
pH (Standard Units)	5.4	5.1
OXYGEN REDUCTION POTENTIAL (mV)	215	181
TURBIDITY (NTUs) - Oakton	86.3	18.6
ALKALINITY (mg/L) - Hach phenolpthalein titration	-	15-20

WATER LEVEL MEASUREMENT DATA

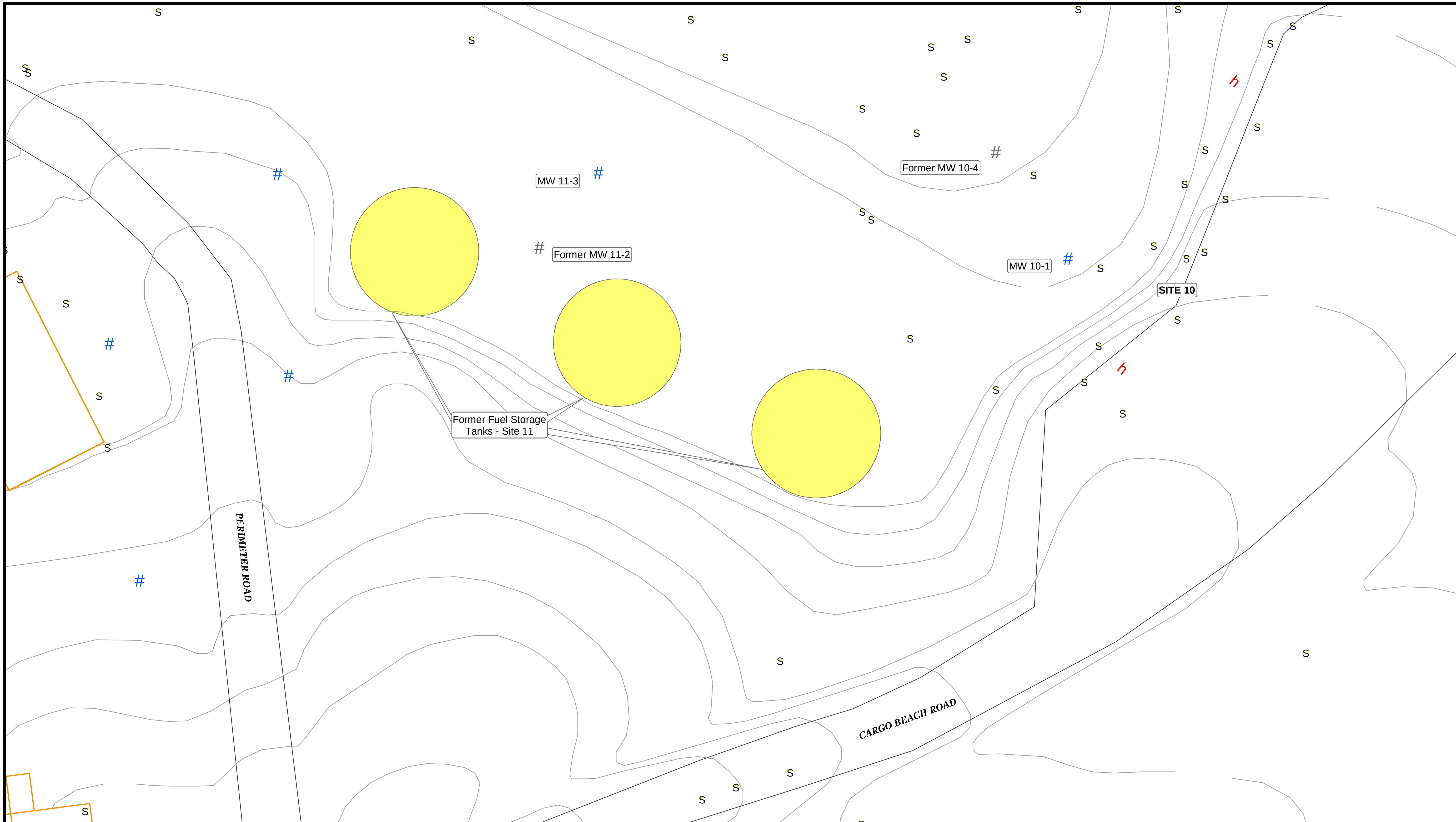
DATE WATER LEVEL MEASURED	9/13/04	9/13/04
TIME WATER LEVEL MEASURED	15:08	15:05
DEPTH TO WATER BELOW MP (ft)	5.27	9.80
WATER LEVEL ELEVATION (ft)	66.15	62.53

KEY	**DESCRIPTION**
-	Not developed or not measured
^{o}C	Degrees Celsius
ft	Feet
mg/L	Milligrams per liter
MP	Measuring Point is Top of Well Casing
mV	Millivolts
NTUs	Nephelometric Turbidity Units
mS/cm	Millisiemens per centimeter

TABLE 5-7c SUMMARY OF WATER ANALYTICAL RESULTS - SITE 11: FUEL STORAGE TANKS

Site 11 - Fuel Storage Tanks **Water Matrix**			Sample Type:	**GROUNDWATER**	
			Location ID:	MW10-1	MW11-3
			Sample ID:	04NE11GW101	04NE11GW102
			Depth (ft):	WL 2.3	WL 7.0
			Sample Date:	9/5/2004	9/5/2004
Parameter Tested	**Test Method**	**Units**	**Cleanup Level**		
Gasoline Range Organics (GRO)	AK101	mg/L	1.3	[0.090]	0.333
Diesel Range Organics (DRO)	AK102	mg/L	1.5	[0.333] B	**15.2**
Residual Range Organics (RRO)	AK103	mg/L	1.1	[0.556] B	0.940 B
Aromatic Organic Compounds (BTEX)					
Benzene	SW8260B	µg/L	5	[0.4]	[0.4]
Ethylbenzene	SW8260B	µg/L	700	[1]	[1]
Toluene	SW8260B	µg/L	1,000	[1]	0.37 J
o-Xylene	SW8260B	µg/L	10,000 (Total Xylenes)	[1]	[1]
m & p-Xylenes	SW8260B	µg/L	10,000 (Total Xylenes)	[2]	[2]
Polynuclear Aromatic Hydrocarbons (PAH SIM)					
Acenaphthene	PAH SIM	µg/L	2,200	-	[5.26]
Acenaphthylene	PAH SIM	µg/L	2,200	-	[5.26]
Anthracene	PAH SIM	µg/L	11,000	-	[0.0526]
Benzo(a)anthracene	PAH SIM	µg/L	1	-	[0.0526]
Benzo(a)pyrene	PAH SIM	µg/L	0.2	-	[0.0526]
Benzo(b)fluoranthene	PAH SIM	µg/L	1	-	[0.0526]
Benzo(g,h,i)perylene	PAH SIM	µg/L	1,100	-	[0.0526]
Benzo(k)fluoranthene	PAH SIM	µg/L	10	-	[0.0526]
Chrysene	PAH SIM	µg/L	100	-	[0.0526]
Dibenzo(a,h)anthracene	PAH SIM	µg/L	0.1	-	[0.0526]
Fluoranthene	PAH SIM	µg/L	1,460	-	[0.105]
Fluorene	PAH SIM	µg/L	1,460	-	[5.26]
Indeno(1,2,3-cd)pyrene	PAH SIM	µg/L	1	-	[0.0526]
Naphthalene	PAH SIM	µg/L	700	-	2.09J
Phenanthrene	PAH SIM	µg/L	11,000	-	0.561
Pyrene	PAH SIM	µg/L	1,100	-	[0.0526]
Total Metals					
Chromium	SW6020	µg/L	100 (Total)	32.8	[4]
Lead	SW6020	µg/L	15	4.57	1.35 B
Mercury	SW7470A	µg/L	2	[0.2]	0.068 J
Zinc	SW6020	µg/L	11,000	18.7 J	19.2 J
Natural Attenuation Parameters					
Nitrate	E300.0	mg/L	–	[0.1]	[0.1]
Sulfate	E300.0	mg/L	–	9.83	13.5
Iron	SW6010B	mg/L	–	4.8	6.01

KEY	**DESCRIPTION**
–	Measurement not recorded or not applicable
mg/L	milligrams per liter
µg/L	micrograms per liter
Cleanup Levels	Cleanup values are based on ADEC groundwater cleanup levels listed in 18 ACC 75.345, Table C
J	Estimated concentration; refer to Appendix C for data qualification information
[0.0532] B	Result qualified as not detected due to method, trip, or equipment blank detection
1.11 B	Analyte concentration biased due to detection in method, trip, or equipment blank
36	Concentration detected
2900	Reported concentration exceeds the regulatory cleanup level
[0.0072]	Analyte not detected above Practical Quantitation Limit (PQL)
WL	Approximate depth to water below ground surface



Legend

- Boring advanced by Shannon & Wilson, Inc. August/September 2004
- \# Existing monitoring well installed by others
- \# Former monitoring well installed by others
- S Historical sample location, collected by others
- Former Buildings and Utilidors
- Topographic Contours (Interval: 5 ft)
- Site 11 Former Tanks

Note: All locations approximate, see Appendix D of "Phase IV RI, Northeast Cape, St. Lawrence island, Alaska" for survey data.
Figure based on previous work. Physical features may not correspond to 2004 field observations.

0 20 40 80 120 160 Feet

1 inch equals 40 feet

N

Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

SITE 11 - FUEL STORAGE TANKS

June 2005 32-1-16821

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

Fig. 5-7

5.11 Site 16: Paint and Dope Storage Building

Groundwater samples from three existing monitoring wells were to be collected and analyzed at Site 16. No samples were collected however, due to insufficient water in these wells.

5.11.1 Site Description

Site 16 is located along the north edge of the Main Operations Complex, as shown on Figure 5-9. A building, fuel storage tank, miscellaneous debris, and contaminated soil were removed from the site during prior interim removal actions. Three monitoring wells with above ground monuments were present in an area capped with mixed soil types and sparse vegetation in 2004.

5.11.2 Data Collection Objectives

The Site 16 monitoring wells (MW 16-1, MW 16-2, and MW 16-3) are located in a general down-gradient direction from former Monitoring Well MW 88-7, which showed elevated levels of diesel in 2002. To characterize groundwater conditions, the three existing Site 16 monitoring wells were to be sampled and analyzed for DRO, RRO, GRO, BTEX, chromium, lead, zinc, and mercury. An assessment of the biogenic influence on DRO and RRO results was to be performed, and one sample was to be analyzed for PAHs and natural attenuation indicators.

5.11.3 Work Plan Variances

The three existing monitoring wells at Site 16 were observed to contain between 0.8 and 1.1 feet of water on September 9, and slightly less on September 12, 2004. The volume of water in the wells was found to be approximately the same as the volume of the tubing available to pump the wells. Bailing resulted in little recovery and turbid water. The insufficient water column precluded collecting samples that would be representative of the groundwater formation. The USACE Project Manager was consulted and a decision was made to not sample the wells. Groundwater levels were observed to drop across NE Cape during our field effort.

5.11.4 Field Activities

No petroleum odors or sheens were noted in the minimal volume of water recovered from the Site 16 wells. Water levels were measured in the Site 16 monitoring wells on September 13, 2004, along with the other wells in the MOC area. Table 5.11a summarizes the groundwater elevation data.

TABLE 5-11a GROUNDWATER SAMPLING LOG
SITE 16: PAINT AND DOPE STORAGE BUILDING

MONITORING WELL INSTALLATION DATA

WELL ID	MW 16-1	MW 16-2	MW 16-3
DATE WELL INSTALLED	unknown	unknown	unknown
GROUND SURFACE ELEVATION (ft)	-	-	-
WELL MP ELEVATION (ft)	75.11	74.87	75.28
TOP OF SCREENED SECTION, BELOW MP (ft)	-	-	-
TOTAL DEPTH OF WELL BELOW MP (ft)	16.7	16.65	16.61
DIAMETER OF WELL CASING (inches)	2	2	2

WATER LEVEL MEASUREMENT DATA

DATE WATER LEVEL MEASURED	9/13/2004	9/13/2004	9/13/2004
TIME WATER LEVEL MEASURED	15:55	15:58	16:01
WATER LEVEL ELEVATION (ft)	59.23	59.24	59.31
DEPTH TO WATER BELOW MP (ft)	15.88	15.63	15.97
WATER COLUMN IN WELL (ft)	0.82	1.02	0.64
GALLONS PER FOOT	0.16	0.16	0.16
GALLONS IN WELL	0.13	0.16	0.10

KEY	DESCRIPTION
-	Not developed or not measured
ft	Feet
MP	Measuring Point is Top of Well Casing

5.12 Site 22: Water Storage Building

Three soil borings (22B1, 22MW2, and 22MW3) were advanced at Site 22 and groundwater monitoring wells were installed in two of the borings. Thirteen project soil samples were collected from the borings, and groundwater was sampled from each of the new wells.

5.12.1 Site Description

This site is located on the southeastern edge of the Main Operations Complex, and sits higher on the same broad depositional feature as the MOC. The pumphouse, potable water wells, storage building and tanks were removed under previous interim removal actions. The former locations of these features are depicted in Figure 5-12. The area has been re-graded in the same manner as the MOC, and Figure 5-13 shows the position of Site 22 relative to the MOC.

5.12.2 Data Collection Objectives

A groundwater sample collected before decommissioning Potable Well PW-2 at the pumphouse contained 2.8mg/L RRO. To assess possible petroleum impacts to the ground water in the vicinity of PW-2, installation and sampling of a groundwater monitoring well was specified. A second groundwater monitoring well was specified in the vicinity of former potable water well PW-1 to assess the water quality in the fractured bedrock aquifer. One soil boring was planned to verify the depth of contamination adjacent to the former UST next to the pumphouse.

Soil samples were collected from each of the three borings for field screening and potential laboratory analysis. Five soil samples were to be selected from each boring for DRO, RRO, and GRO analysis. One of the analytical samples from each monitoring well boring was to be selected for PAHs, BTEX, and TOC testing. The five samples from the former UST soil boring were to also be analyzed for BTEX, and two samples were to be selected for PAH and TOC analyses.

Groundwater samples from both of the monitoring wells were analyzed for DRO, RRO, GRO, and natural attenuation parameters. The groundwater DRO and RRO results were assessed for biogenic versus petroleum derived compounds.

5.12.3 Work Plan Variances

Conditions found in the field led to alterations in the planned sampling activities. Subsurface rocks impacted the sampling intervals for borings at Site 22. Soil sample intervals in each boring were selected based on drill action in order to get adequate sample recovery, and varied from the specified 5-foot interval.

Partially buried concrete and rebar was encountered at the proposed location for Well 22MW2, and the boring was moved a few feet eastward. This boring was then stopped at 26.5 feet bgs due to difficult subsurface conditions. No water entered the boring in the time required to drill the next boring, and the boring was backfilled. Only three of the five soil samples specified in the WP were collected due to poor recovery. This location was renamed Boring 22B1, as shown on Figure 5-12.

Drilling moved to the original proposed location of Boring 22B1, roughly 25 feet away. After shifting the location a few feet due to concrete rubble, drilling and sample recovery was significantly better at this location. Water was encountered at 22 and 28 feet bgs, and the boring was extended to 38 feet bgs. A monitoring well was installed at this location and the location was named 22MW2 (see Figure 5-12).

The proposed location for Monitoring Well 22MW3, near PW-1 is now in the perimeter loop road, which was found to be relocated to loop around the south side of Site 22. Well 22MW3 was placed to the north-northeast of the proposed location, closer to PW-1. One soil sample was collected from 22MW3 for grainsize analysis to compensate for the deficit of grainsize samples from material representing the aquifer beneath the MOC. This grainsize sample is recorded on Table 5-9b (See Section 5.9.3).

5.12.4 Field Investigation

Field activities occurred at Site 22 between August 27 to September 11, 2004. A summary of samples collected, including sample locations and classifications, is presented in Table 5-12a. Boring and Monitoring Well Completion logs are provided in Appendix B.

5.12.4.1 Boring 22B1

Three samples were recovered from Boring 22B1. Samples 22SB106 and 22SB107 were collected from 6 and 13 feet bgs, respectively. The split spoon for Sample 22SB108 was driven from 17 to 18 feet where it met refusal, but an adequate amount of soil was recovered for an analytical sample. The drill cuttings appeared to consist of only freshly fractured rock chips from 18 to 25 feet bgs, and drill action suggested rock. A split spoon was driven at 25 feet to determine if the material was frozen soil. The split spoon did advance for the length of the spoon, suggesting frozen soil, but only 6 inches of damp rock chips were recovered. The boring was not advanced beyond 26.5 feet.

5.12.4.2 Monitoring Well 22MW2

Five analytical soil samples were recovered at the new location for well 22MW2. Sample 22SB109 was collected from petroleum-stained soil that was encountered at roughly 6 to 8 feet bgs. Samples 22SB110 and 22SB111 were collected in unsaturated media typical of the

MOC area. A low-yield water bearing zone was encountered at about 22 to 23 feet bgs, and split spoons were driven from 22 to 23.5 and 23.5 to 25 feet bgs. The two split spoons were combined to obtain sufficient soil volume for a QC/QA replicate set (Samples 22SB112, 22SB212, and 22SB312). A high-yield water bearing zone was encountered at about 28 feet bgs, and Sample 22SB113 was collected at 31 to 32.5 feet bgs. Frozen ground was suspected around 30 feet bgs and confirmed at 35 feet bgs.

5.12.4.3 Monitoring Well 22MW3

Samples were collected from five locations in the Monitoring Well 22MW3 boring. Samples 22SB101, 102, and 103 were collected in the unsaturated zone at depths around 6, 13, and 18 feet bgs, respectively. Frozen ground was suspected after driving the split spoon for Sample 22SB104 past 28 feet bgs. Two attempts were made to reduce the heat input from drilling and reduce the split spoon recovery time in order to obtain a sample of coarse granular material that remained frozen. The first attempt failed. After the drill passed a large rock, a split spoon driven from 38 to 39.5 feet recovered frozen, silty, sandy gravel, with parts of a fractured cobble (Sample 22SB105 22SB205, and 22SB305). The drill bit was advanced to 40.5 feet bgs to remove disturbance from the previous sample, and a split spoon was driven and recovered quickly to confirm frozen granular soil to 42 feet bgs.

5.12.4.4 IDW

IDW generated at Site 22, including headspace samples, soil cuttings, headspace bags, sampling gloves, groundwater sampling tubing, monitoring well purge water, and equipment decontamination water was handled as discussed in Section 3.5.

5.12.4.5 Field Observations

The SOW states that "Well #1 (PW-1) encountered overburden to a depth of 39 feet and bedrock granite or granodiorite below this depth." Rocky overburden was observed for the full 42 foot depth of the well 22MW3 borehole. The gray silt typical of basal till from a glacier was encountered at 40 feet bgs in Boring 13B1 (See Section 5.9 and Appendix B), which has a surface elevation about 25 feet lower than Monitoring Well 22MW3. Gray silt was not encountered at depth in well 22MW3, suggesting that the boring had not fully penetrated the moraine, and that bedrock is significantly deeper than 42 feet bgs. We suspect that frozen layers of rocky soil have been interpreted as bedrock in the past.

5.12.5 Analytical Results

Table 5-12b summarizes the Site 22 soil sample analytical results, Table 5-12c summarizes the monitoring well developing and sampling data, and Table 5-12d summarizes the Site 22 water sample analytical results. None of the thirteen soil samples or two groundwater samples collected from Site 22 contained analyte concentrations that exceed cleanup levels. Although benzene was not detected, the PQL for benzene in QA replicate Sample 22SB312 was above the cleanup criterion. The PQLs for the associated project and QC samples are less than the cleanup criterion.

TABLE 5-12a SAMPLE LOCATIONS AND DESCRIPTIONS - SITE 22: WATER STORAGE BUILDING

Sample Number**	LOCID	Date	Sample Location (See Figure 5-12 for borehole and well location	Depth (feet)	Screening (ppm) ^	Sample Classification†
Soil Samples						
* 22SB106	22B1-6	8/28/04	Boring 22B1	6-7.5	0.3	Light brown, gravelly SAND and cobbles; dry to moist
* 22SB107	22B1-13	8/28/04	Boring 22B1	12.3-14	0.3	Brown to gray, sandy GRAVEL; dry to moist
* 22SB108	22B1-17	8/28/04	Boring 22B1	17-18	0.5	Gray, sandy GRAVEL; dry - cuttings?
B1S4	22B1-25	8/28/04	Boring 22B1 - bottom of borehole	25-26.7	0.2	Granitic rock cuttings
* 22SB109	22MW2-6	8/28/04	Monitoring Well 22MW2	6-7.5	3.0	Brown to gray, gravelly SAND; moist; with cobbles, slight fuel odo
* 22SB110	22MW2-	8/28/04	Monitoring Well 22MW2	13-14.5	0.8	Brown to gray, silty, sandy GRAVEL and cobbles; moist
* 22SB111	22MW2-	8/28/04	Monitoring Well 22MW2	17-18.5	0.7	Brown, gravelly SAND; moist
* 22SB112	22MW2-22	8/28/04	Monitoring Well 22MW2 - Two sample intervals combined	22-25	1.0	Brown, slightly silty, sandy GRAVEL and cobbles; moist
* 22SB212	22MW2-	8/28/04	QC replicate of Sample 22SB112	22-25	1.0	Brown, slightly silty, sandy GRAVEL and cobbles; moist
* 22SB312	22MW2-	8/28/04	QA replicate of Sample 22SB112	22-25	1.0	Brown, slightly silty, sandy GRAVEL and cobbles; moist
* 22SB113	22MW2-	8/28/04	Monitoring Well 22MW2 - bottom of borehole	31-32.5	0.2	Brown, slightly silty, sandy GRAVEL and cobbles; wet
* 22SB101	22MW3-6	8/27/04	Monitoring Well 22MW3	5.5-7	0.5	Brown, silty, sandy GRAVEL and cobbles; moist - grainsize
* 22SB102	22MW3-	8/27/04	Monitoring Well 22MW3	12.5-14	<0.2	Grayish brown, sandy, gravelly SILT and cobbles; moist
* 22SB103	22MW3-	8/27/04	Monitoring Well 22MW3	17-18.5	1.0	Redish brown sandy, silty GRAVEL and cobbles; moist
MW3S4	22MW3-	8/27/04	Monitoring Well 22MW3	22-23.5	0.2	Redish brown sandy, silty GRAVEL and cobbles; moist
* 22SB104	22MW3-	8/27/04	Monitoring Well 22MW3	27-28.5	<0.2	Brown, silty, sandy GRAVEL and cobbles; moist
MW3S6	22MW3-	8/27/04	Monitoring Well 22MW3	33-34.5	0.4	Brown, silty, sandy GRAVEL and cobbles; moist - potentially froz
* 22SB105	22MW3-	8/27/04	Monitoring Well 22MW3	38-39.5	<0.2	Brown, silty, sandy GRAVEL and cobbles; frozen
* 22SB205	22MW3-	8/27/04	QC replicate of Sample 22SB105	38-39.5	<0.2	Brown, silty, sandy GRAVEL and cobbles; frozen
* 22SB305	22MW3-	8/27/04	QA replicate of Sample 22SB105	38-39.5	<0.2	Brown, silty, sandy GRAVEL and cobbles; frozen
Groundwater Samples						
* 22GW115	22MW2	9/11/04	Monitoring Well 22MW2	WL	-	Groundwater - clear
* 22GW114	22MW3	9/11/04	Monitoring Well 22MW3	WL	-	Groundwater - slight turbidity

KEY	DESCRIPTION
*	Sample analyzed by the project or QA laboratory (See Tables 5-12b and 5-12d)
**	The full sample number is preceded by "04NE", for example 22SB106 is sample 04NE22SB106
^	Field screening instrument was an HnU HW101 photoionization detector (PID) with 11.7 eV lamp
†	Sample classification applies to the portion of the specified sample interval from which the sample was collected
-	Measurement not recorded or not applicable
ppm	parts per million, calibrated to 100 ppm isobutylene
WL	Approximate static water level in feet below ground surface
LOCID	Location Identification: "22B1-6" signifies Site 22, Boring 1 at 6-foot depth (depth is rounded to the nearest foot)

TABLE 5-12b SUMMARY OF SOIL ANALYTICAL RESULTS - SITE 22: WATER STORAGE BUILDING

Site 22 - Water Storage Building Soil Matrix														
			Sample Type:	BOREHOLE 22MW2							BOREHOLE 22MW3			
			Location ID:	22MW2-6	22MW2-13	22MW2-17	22MW2-22			22MW2-31	22MW3-6	22MW3-13	22MW3-17	22MW3-27
			Sample ID:	04NE22SB109	04NE22SB110	04NE22SB111	04NE22SB112	04NE22SB212	04NE22SB312	04NE22SB113	04NE22SB101	04NE22SB102 *	04NE22SB103	04NE22SB104
			Depth (ft):	6-7.5	13-14.5	17-18.5	22-25	22-25	22-25	31-32.5	5.5-7	12.5-14	17-18.5	27-28.5
			Sample Date:	8/28/2004	8/28/2004	8/28/2004	8/28/2004	8/28/2004	8/28/2004	8/28/2004	8/27/2004	8/27/2004	8/27/2004	8/27/2004
Parameter Tested	**Test Method**	**Units**	**Cleanup Level**				*Primary*	*Duplicate*	*Triplicate*					
PID Headspace Reading	HNU HW101 PID	ppm	-	3.0	0.8	0.7	1.0	1.0	1.0	0.2	0.5	<0.2	1.0	<0.2
Percent Moisture	A2540G / E160.3M	%	-	3.6	3.4	5.1	7.9	6.9	5.3	12.5	7.3	11.2	8.5	9.6
Gasoline Range Organics (GRO)	AK101	mg/kg	300	2.7	0.957 J	0.651 J	0.841 J	0.727 J	0.517 J	0.685 J	[3.14] B	[2.84] B	[2.53] B	[2.45] B
Diesel Range Organics (DRO)	AK102	mg/kg	250	68.1	20.2 J	11.8 J	19.7 J	17.4 J	7.32	30.0 J	6.20 J	5.43 J	8.02 J	19.8 J
Residual Range Organics (RRO)	AK103	mg/kg	10,000 (ing)	19.4 J	44.7	26.3	37.3	35.7	23.1	65.7	13.4 J	14.2 J	10.7 J	29.5
Aromatic Organic Compounds (BTEX)														
Benzene	SW8260B	µg/kg	20	[13.1]	-	-	[12.1]	[11.1]	**[100]**	-	-	[14.8]	-	-
Ethylbenzene	SW8260B	µg/kg	5,500	[25.2]	-	-	[23.2]	[21.3]	[100]	-	-	[28.4]	-	-
Toluene	SW8260B	µg/kg	5,400	[50.5]	-	-	[46.5]	[42.5]	[100]	-	-	[56.8]	-	-
o-Xylene	SW8260B	µg/kg	78,000 (total Xylenes)	[25.2]	-	-	[23.2]	[21.3]	[100]	-	-	[28.4]	-	-
m & p-Xylenes	SW8260B	µg/kg	78,000 (total Xylenes)	[50.5]	-	-	[46.5]	[42.5]	[200]	-	-	[56.8]	-	-
Polynuclear Aromatic Hydrocarbons (PAH)														
Acenaphthene	PAH SIM	µg/kg	210,000	[5.3]	-	-	[5.44]	[5.44]	[10]	-	-	[5.76]	-	-
Acenaphthylene	PAH SIM	µg/kg	210,000	[5.3]	-	-	[5.44]	[5.44]	[10]	-	-	[5.76]	-	-
Anthracene	PAH SIM	µg/kg	4,300,000	[5.3]	-	-	[5.44]	[5.44]	[10]	-	-	[5.76]	-	-
Benzo(a)anthracene	PAH SIM	µg/kg	6,000	[5.3]	-	-	[5.44]	[5.44]	[10]	-	-	[5.76]	-	-
Benzo(a)pyrene	PAH SIM	µg/kg	1,000 (ing)	[5.3]	-	-	[5.44]	[5.44]	2.1 J	-	-	[5.76]	-	-
Benzo(b)fluoranthene	PAH SIM	µg/kg	21,000	[5.3]	-	-	[5.44]	[5.44]	[10]	-	-	[5.76]	-	-
Benzo(g,h,i)perylene	PAH SIM	µg/kg	1,500,00	[5.3]	-	-	[5.44]	[5.44]	[10]	-	-	[5.76]	-	-
Benzo(k)fluoranthene	PAH SIM	µg/kg	1,500,00	[5.3]	-	-	[5.44]	[5.44]	[10]	-	-	[5.76]	-	-
Chrysene	PAH SIM	µg/kg	620,000	3.83 J	-	-	[5.44]	[5.44]	[10]	-	-	[5.76]	-	-
Dibenzo(a,h)anthracene	PAH SIM	µg/kg	1,000 (ing)	[5.3]	-	-	[5.44]	[5.44]	[10]	-	-	[5.76]	-	-
Fluoranthene	PAH SIM	µg/kg	2,100,000	4.21 J	-	-	[5.44]	[5.44]	[10]	-	-	[5.76]	-	-
Fluorene	PAH SIM	µg/kg	270,000	[5.3]	-	-	[5.44]	[5.44]	[10]	-	-	[5.76]	-	-
Indeno(1,2,3-cd)pyrene	PAH SIM	µg/kg	11,000 (ing)	[5.3]	-	-	[5.44]	[5.44]	[10]	-	-	[5.76]	-	-
Naphthalene	PAH SIM	µg/kg	21,000	5.45 J	-	-	24.5 J	[5.44]	[10]	-	-	10.7 J	-	-
Phenanthrene	PAH SIM	µg/kg	4,300,000	7.93	-	-	[5.44]	[5.44]	[10]	-	-	[5.76]	-	-
Pyrene	PAH SIM	µg/kg	1,500,000	7.77	-	-	1.71 J	2.08 J	[10]	-	-	[5.76]	-	-
Total Organic Carbon (TOC)	SGS SOP	mg/kg	-	847	-	-	-	-	-	-	-	1,230	-	-

KEY	DESCRIPTION
-	Analysis not requested or cleanup level not established
ppm	parts per million
%	percent
mg/kg	milligrams per kilogram
µg/kg	micrograms per kilogram
PID	Photoionization detector
Cleanup Levels	Cleanup values are based on the most stringent ADEC Method 2 default soil cleanup levels listed in 18 ACC 75.341, Tables B1 and B2 for the "Under 40 inches" precipitation zone.
ing	Cleanup level based on ingestion pathway
J	Estimated concentration; refer to Appendix C for data qualification information
[0.0532] B	Result qualified as not detected due to method, trip, or equipment blank detection
36	Concentration detected
[0.0072]	Analyte not detected above Practical Quantitation Limit (PQL)
[0.037]	Analyte not detected above Practical Quantitation Limit (PQL); PQL exceeds the regulatory cleanup leve
*	Matrix Spike / Matrix Spike Duplicate (MS/MSD)

TABLE 5-12b SUMMARY OF SOIL ANALYTICAL RESULTS - SITE 22: WATER STORAGE BUILDING

Site 22 - Water Storage Building Soil Matrix			Sample Type:	BOREHOLE 22MW3			BOREHOLE BORING 22B1		
			Location ID:	22MW3-38			22B1-6	22B1-13	22B1-17
			Sample ID:	04NE22SB105	04NE22SB205	04NE22SB305	04NE22SB106	04NE22SB107	04NE22SB108
			Depth (ft):	38-39.5	38-39.5	38-39.5	6-7.5	12.5-14	17-18
			Sample Date:	8/27/2004	8/27/2004	8/27/2004	8/28/2004	8/28/2004	8/28/2004
Parameter Tested	**Test Method**	**Units**	**Cleanup Level**	*Primary*	*Duplicate*	*Triplicate*			
PID Headspace Reading	HNU HW101 PID	ppm	-	<0.2	<0.2	<0.2	0.3	0.3	0.5
Percent Moisture	A2540G / E160.3M	%	-	14.3	13.0	12.7	3.1	3.5	3.9
Gasoline Range Organics (GRO)	AK101	mg/kg	300	[2.30] B	[1.90]	0.365 J	1.33 J	1.56 J	1.27 J
Diesel Range Organics (DRO)	AK102	mg/kg	250	27 J	47.1 J	7.29	35 J	11.4 J	22
Residual Range Organics (RRO)	AK103	mg/kg	10,000 (ing)	36.7 J	75.9	14.4 J	56.6 J	24.2	42.7
Aromatic Organic Compounds (BTEX)									
Benzene	SW8260B	µg/kg	20	-	-	-	[10.1]	[14.7]	[10.6]
Ethylbenzene	SW8260B	µg/kg	5,500	-	-	-	[19.5]	[28.3]	[20.3]
Toluene	SW8260B	µg/kg	5,400	-	-	-	[38.9]	[56.6]	[40.7]
o-Xylene	SW8260B	µg/kg	78,000 (total Xylenes)	-	-	-	[19.5]	[28.3]	[20.3]
m & p-Xylenes	SW8260B	µg/kg	78,000 (total Xylenes)	-	-	-	[38.9]	[56.6]	[40.7]
Polynuclear Aromatic Hydrocarbons (PAH)									
Acenaphthene	PAH SIM	µg/kg	210,000	-	-	-	-	[5.27]	-
Acenaphthylene	PAH SIM	µg/kg	210,000	-	-	-	-	[5.27]	-
Anthracene	PAH SIM	µg/kg	4,300,000	-	-	-	-	[5.27]	-
Benzo(a)anthracene	PAH SIM	µg/kg	6,000	-	-	-	-	[5.27]	-
Benzo(a)pyrene	PAH SIM	µg/kg	1,000 (ing)	-	-	-	-	[5.27]	-
Benzo(b)fluoranthene	PAH SIM	µg/kg	21,000	-	-	-	-	[5.27]	-
Benzo(g,h,i)perylene	PAH SIM	µg/kg	1,500,00	-	-	-	-	[5.27]	-
Benzo(k)fluoranthene	PAH SIM	µg/kg	1,500,00	-	-	-	-	[5.27]	-
Chrysene	PAH SIM	µg/kg	620,000	-	-	-	-	[5.27]	-
Dibenzo(a,h)anthracene	PAH SIM	µg/kg	1,000 (ing)	-	-	-	-	[5.27]	-
Fluoranthene	PAH SIM	µg/kg	2,100,000	-	-	-	-	[5.27]	-
Fluorene	PAH SIM	µg/kg	270,000	-	-	-	-	[5.27]	-
Indeno(1,2,3-cd)pyrene	PAH SIM	µg/kg	11,000 (ing)	-	-	-	-	[5.27]	-
Naphthalene	PAH SIM	µg/kg	21,000	-	-	-	-	14.3 J	-
Phenanthrene	PAH SIM	µg/kg	4,300,000	-	-	-	-	[5.27]	-
Pyrene	PAH SIM	µg/kg	1,500,000	-	-	-	-	[5.27]	-
Total Organic Carbon (TOC)	SGS SOP	mg/kg	-	-	-	-	-	[523]	-

KEY	DESCRIPTION
-	Analysis not requested or cleanup level not established
ppm	parts per million
%	percent
mg/kg	milligrams per kilogram (ppm)
µg/kg	micrograms per kilogram (ppb)
PID	Photoionization detector
Cleanup Levels	Cleanup values are based on the most stringent ADEC Method 2 default soil cleanup levels listed in 18 ACC 75.341, Tables B1 and B2 for the "Under 40 inches" precipitation zone.
ing	Cleanup level based on ingestion pathway
J	Estimated concentration; refer to Appendix C for data qualification information
[0.0532] B	Result qualified as not detected due to method, trip, or equipment blank detection
36	Concentration detected
[0.0072]	Analyte not detected above Practical Quantitation Limit (PQL)
[0.037]	Analyte not detected above Practical Quantitation Limit (PQL); PQL exceeds the regulatory cleanup leve
*	Matrix Spike / Matrix Spike Duplicate (MS/MSD)

TABLE 5-12c GROUNDWATER SAMPLING LOG
SITE 22: WATER STORAGE BUILDING

MONITORING WELL INSTALLATION DATA

WELL ID	22MW2	22MW3
DATE WELL INSTALLED	8/29/04	8/27/04
GROUND SURFACE ELEVATION (ft)	94.03	99.55
WELL MP ELEVATION (ft)	93.77	99.31
TOP OF SCREENED SECTION, BELOW MP (ft)	24.77	28.30
TOTAL DEPTH OF WELL BELOW MP (ft)	34.57	38.00
DIAMETER OF WELL CASING (inches)	2	2

DEVELOPMENT DATA

DATE OF DEVELOPMENT	9/11/04	9/11/04
TIME DEVELOPMENT INITIATED	17:45	13:40
TIME DEVELOPMENT COMPLETED	18:25	16:30
DEPTH TO WATER BELOW MP (ft)	27.87	32.40
WATER COLUMN IN WELL (ft)	6.70	5.60
GALLONS PER FOOT	0.16	0.16
GALLONS IN WELL	1.07	0.90
DEVELOPMENT METHOD	Purging Pump	Redi-Flo-2
VOLUME WATER REMOVED (gallons)	25	80

PURGING & SAMPLING DATA

LOCID	22MW2	22MW3
SAMPLE ID	04NE22GW115	04NE22GW114
DATE	9/11/04	9/11/04
TIME PURGING INITIATED	18:25	16:31
TIME SAMPLING INITIATED	18:45	17:05
DEPTH TO WATER BELOW MP (ft)	27.87	32.40
WATER COLUMN IN WELL (ft)	6.70	5.60
GALLONS IN WELL	1.07	0.90
PURGING METHOD	Redi-Flo 2	Redi-Flo 2
VOLUME WATER REMOVED (gallons)	3.0	4.50

WATER QUALITY DATA - YSI 556

DATE MEASURED	9/11/04	9/11/04
TIME MEASURED	18:40	17:11
TEMPERATURE (°C)	5.2	7.5
SPECIFIC CONDUCTANCE (mS/cm)	0.08	0.09
DISSOLVED OXYGEN (mg/L)	12.6*	10.8*
pH (Standard Units)	5.8	5.5
OXYGEN REDUCTION POTENTIAL (mV)	211	187
TURBIDITY (NTUs) - Oakton	1.1	17.1
ALKALINITY (mg/L) - Hach phenolpthalein titration	5	5 - 10
FERROUS IRON (mg/L) - Hach colorimeter	0.03	0.00

WATER LEVEL MEASUREMENT DATA

DATE WATER LEVEL MEASURED	9/13/04	9/13/04
TIME WATER LEVEL MEASURED	14:20	14:10
DEPTH TO WATER BELOW MP (ft)	28.26	32.68
WATER LEVEL ELEVATION (ft)	65.51	66.63

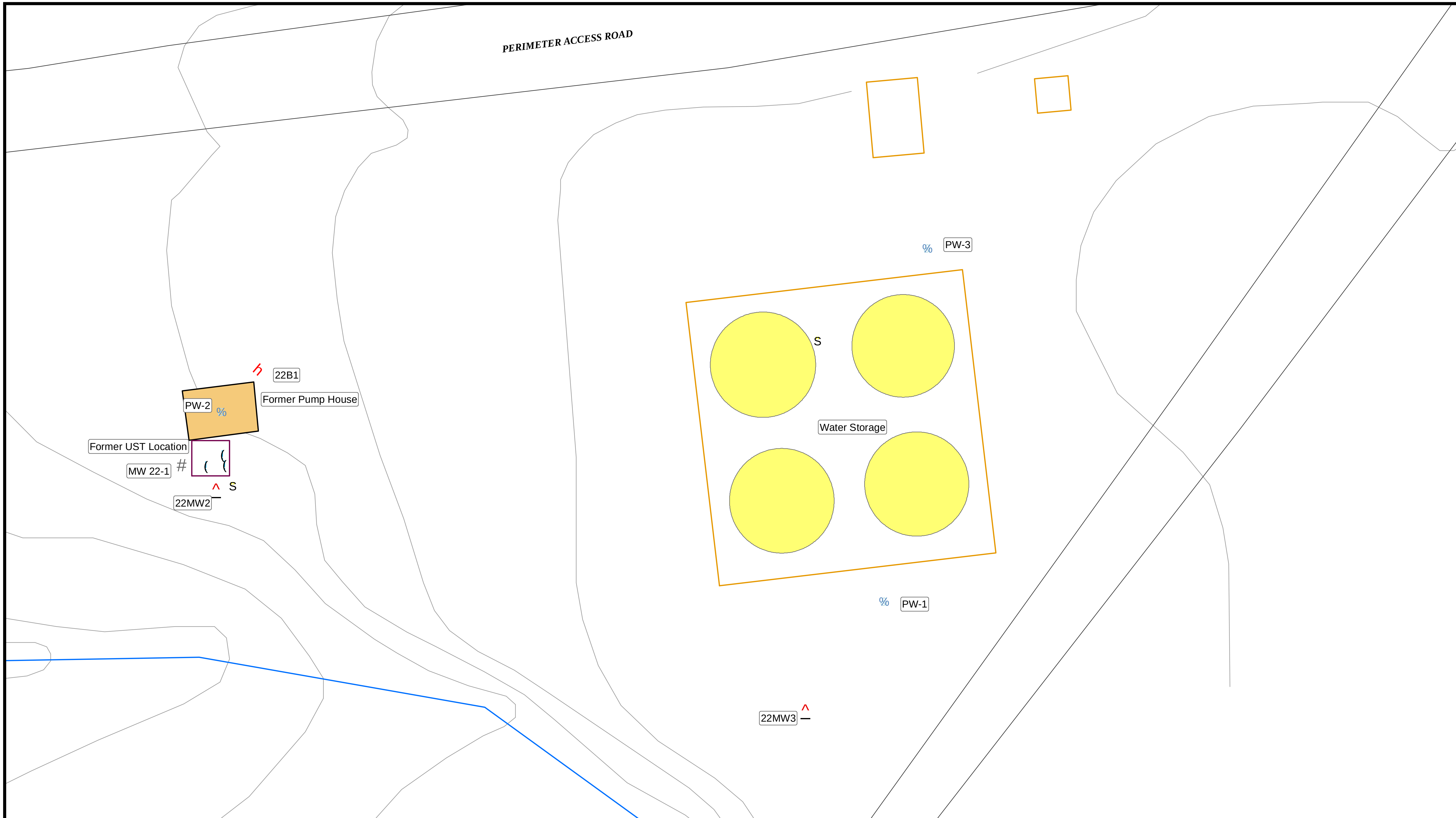
* unusually high DO readings may be due to instrument malfunctic

KEY	DESCRIPTION
-	Not developed or not measured
°C	Degrees Celsius
ft	Feet
mg/L	Milligrams per liter
MP	Measuring Point is Top of Well Casing
mV	Millivolts
NTUs	Nephelometric Turbidity Units
mS/cm	Millisiemens per centimeter

TABLE 5-12d SUMMARY OF WATER ANALYTICAL RESULTS - SITE 22: WATER STORAGE BUILDING

Site 22 - Water Storage Building Water Matrix			Sample Type:	GROUNDWATER	
			Location ID:	22MW2	22MW3
			Sample ID:	04NE22GW115	04NE22GW114
			Depth (ft):	28.5	32.5
			Sample Date:	9/11/2004	9/11/2004
Parameter Tested	**Test Method**	**Units**	**Cleanup Level**		
Gasoline Range Organics (GRO)	AK101	mg/L	1.3	[0.090]	0.0133 J
Diesel Range Organics (DRO)	AK102	mg/L	1.5	[0.333] B	[0.341] B
Lab Assessment of Hydrocarbon Origin†	-	-	-	^	^
Residual Range Organics (RRO)	AK103	mg/L	1.1	[0.556] B	[0.568] B
Lab Assessment of Hydrocarbon Origin†	-	-	-	^	^
Natural Attenuation Parameters					
Nitrogen, Nitrate-Nitrite	E300.0	mg/L	–	0.263	0.243
Sulfate	E300.0	mg/L	–	11.2	11.9
Iron	SW6010B	mg/L	–	[0.2]	4.69

KEY	DESCRIPTION
–	Measurement not recorded or not applicable
†	Refer to Table D-1 in Appendix D for assessment of hydrocarbon origin
^	Tentatively identified compounds not reviewed due to low concentration
mg/L	milligrams per liter
Cleanup Levels	Cleanup values are based on ADEC groundwater cleanup levels listed in 18 ACC 75.345, Table C
J	Estimated concentration; refer to Appendix C for data qualification information
[0.0532] B	Result qualified as not detected due to method, trip, or equipment blank detection
36	Concentration detected
[0.0072]	Analyte not detected above Practical Quantitation Limit (PQL)
WL	Approximate depth to water below ground surface



Legend

- Monitoring well installed by Shannon & Wilson, Inc. August/September 2004
- Boring advanced by Shannon & Wilson, Inc. August/September 2004
- # Former monitoring well, installed by others
- % Former potable water well, installed by others
- (Historical soil sample from the UST excavation, collected by others
- S Historical sample location, collected by others
- Former building
- Topographic Contours (Interval: 5 ft)
- Former pump house
- Former water storage tanks

0 10 20 40 60 80 Feet

1 inch equals 20 feet

Note: All locations approximate, see Appendix D of "Phase IV RI, Northeast Cape, St. Lawrence Island, Alaska" for survey data.
Figure based on previous work. Physical features may not correspond to 2004 field observations.

N

Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

SITE 22 - WATER STORAGE BUILDING

June 2005 32-1-16821

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

Fig. 5-12

5.13 Site 26: Former Construction Camp

Groundwater samples were collected from two new monitoring wells (26MW1 and 26MW3) installed at Site 26. A third monitoring well (26MW2) was partially drilled but could not be completed as planned (see Figure 5-13 and Table 5-13a). One soil sample for material testing was collected from 26MW2 at 20 feet bgs.

5.13.1 Site Description

Site 26 encompasses two geographically distinct areas: the original Morrison-Knudson construction camp, and a location along the road northeast of the Main Operations Complex, but south of the Suqitughneq River, as shown in Figure 5-13. The former construction camp location is uphill and southeast of the MOC on the same topographic feature. The area appears to have been used to store material from previous removal actions because there are supersacks with soil, an abandoned vehicle, large diesel-powered generators, and dismantled steel tank pieces in the area. The northern location along the road is a relatively dry rise west of the road to the main complex, and south of the Mid-Suqi. River bridge. The ground surface had evidence of frost segregation similar to the vicinity of Site 6.

5.13.2 Data Collection Objectives

The upper well (Monitoring Well 26MW1) was installed as a replacement for former potable water well PW-4 to allow for a monitoring well upgradient of the MOC. The northern wells near the Mid-Suqi. Bridge were to be installed to determine if shallow groundwater in the overburden has hydraulic connectivity to the fractured bedrock aquifer presumed to be present beneath the MOC.

5.13.3 Work Plan Variances

Conditions found in the field led to alterations in the planned sampling activities. Specifically, the location of Monitoring Well 26MW1 was adjusted due to surface obstructions, and the deeper well near the Mid-Suqi. River Bridge was not completed because the resources and technology were not available to seal a conductor casing to the heterogeneous frozen material encountered.

The proposed Monitoring Well 26MW1 location was on the side of an embankment, and the nearest flat location for the drill rig had three partially full supersacks on it. A location with adequate drill rig access was selected to the southwest, closer to former PW-4. Based on the difference in surface elevations between PW-4 and 26MW1, the depth of the new well was adjusted in an attempt to complete the well in the same water bearing zone as the former well.

The boring for the deep well near the Mid-Suqi Bridge (26MW2) was attempted, but drilling stopped when frozen silt was encountered at a depth of about 20 feet bgs. The boring was backfilled with cuttings. Though not in the work plan, a sample of the frozen silt from 20 feet bgs was collected and submitted for grainsize, moisture content, and liquid and plastic limits analysis. The results of these tests are presented in Appendix B and Table 5-13b.

5.13.4 Field Investigation

Field activities occurred at Site 26 between August 25 and September 12, 2004. A summary of samples collected, including a description of sample location and classification, is presented in Table 5-13a. Boring and Monitoring Well Completion logs are provided in Appendix B.

5.13.4.1 Monitoring Well 26MW1

Monitoring Well 26MW1 was installed to a depth of 42 feet bgs. It was developed as described in Section 3, and one water sample was collected for DRO, RRO, GRO, BTEX, PAHs, and natural attenuation parameter analysis. Soil samples were not collected during the installation of this monitoring well.

5.13.4.2 Monitoring Well 26MW3

Shallow groundwater monitoring well 26MW3 was drilled to explore the nature of the subsurface materials and potential confining layer(s) before the deep 26MW2 well was attempted. After development, one water sample was collected from the well and analyzed for DRO, RRO, GRO, BTEX and PAHs on a rush 3-day turnaround time basis. Natural attenuation parameters were analyzed on the normal laboratory schedule.

5.13.4.3 Monitoring Well 26MW2

The deep well location (26MW2) was selected 78 feet from the shallow well to avoid problems with compressed air short-circuiting to the shallow well. Drilling was stopped at 20 feet bgs, and a sample was collected from 20 to 21.5 feet. A well was not installed. The sample of the frozen silt from 20 feet bgs was collected for optional material testing of grainsize, moisture content, and liquid and plastic limits. The boring was backfilled with cuttings.

5.13.4.4 IDW

IDW generated at Site 26 was handled as discussed in Section 3.7.

5.13.4.5 Field Observations

During the boring for Monitoring Well 26MW1, drill action and cuttings suggested groundwater, sand, and then frozen ground at the 35 to 36 feet bgs intervals. From 37.5 to 42 feet, drill action suggested rock, but bedrock is not suspected because similar drill action and cuttings were encountered between 22 and 28 feet bgs.

The subsurface material at shallow well 26MW3 was sandy gravel in cobbles with an iron-brown color and very few fines. Gray silt, suggesting glacial till, was encountered at 22 feet bgs and the drill action suggested harder material. The air hammer would stop operation because the compressed air couldn’t exhaust through the sticky silt. With a sufficient pause in drilling, the silt would become wet enough to be blown out of the hole. In retrospect, the unusual drill action occurred because the silt was frozen, and was thawing in the casing.

The soil had greater silt and gravel content and fewer cobbles at the deep well (26MW2) location, suggesting the up-welling portion of a frost pattern cell. At 10 feet bgs, the silt in the coarse soil became gray. Pieces of clear water ice were observed coming up the casing with the cuttings at 18 to 19 feet bgs, and a split spoon was driven to 21.5 feet. The split spoon contained solidly frozen, gray clayey silt with lenses of gravel/fractured rock. The silt began to flow from the split spoon as it thawed.

5.13.5 Analytical Results

Table 5-13c presents the Site 26 monitoring well development and sampling data, and Table 5-12d summarizes the water sample analytical results. GRO, DRO, and RRO were detected at estimated concentrations below the PQLs in the groundwater samples from the two Site 26 wells. All PQLs were less than the ADEC groundwater cleanup criteria, typically by more than an order of magnitude.

The grain size distribution, liquid limit (LL), plastic limit (PL), and moisture content for soil sample 26SB103 are presented in Appendix B Figure B-23. The liquid limit was 26%, while the analyzed moisture content was 24.5%. However, the moisture sample sat for over 1 month before analysis was approved. Since the sample likely lost moisture while awaiting analysis, these results suggest that in-situ material may deform or flow if thawed. The ratio of clay versus silt in sample 26SB103 did not provide insight into the deposition of the glacial till.

TABLE 5-13a SAMPLE LOCATIONS AND DESCRIPTIONS - SITE 26: FORMER CONSTRUCTION CAMP

Sample Number**	LOCID	Date	Sample Location (See Figure 5-13)	Depth (feet)	Sample Classification†
Soil Samples					
26SB103	26MW2-20	9/2/04	Proposed deep Well, SW of Mid-Suqi. Bridge	19-20.5	Gray, clayey SILT; frozen - with fractured rock inclusions
Groundwater Samples					
* 26GW101	26MW3	8/25/04	"Shallow" well 26MW3, SW of Mid-Suqi. Bridge	WL 5.5	Groundwater - clear
* 26GW102	26MW1	9/12/04	Well 26MW1, near former PW04	WL 37	Groundwater - clear
* 26GW202	26MW1	9/12/04	QC replicate of Sample 26GW102	WL 37	Groundwater - clear
* 26GW302	26MW1	9/12/04	QA replicate of Sample 26GW102	WL 37	Groundwater - clear

KEY	DESCRIPTION
*	Sample analyzed by the project or QA laboratory (See Table 5-13b)
**	The full sample number is preceded by "04NE", for example 26SB103 is sample 04NE26SB103
†	Sample classification applies to the portion of the specified sample interval from which the sample was collected
WL	Approximate static water level in feet below ground surface after installation
LOCID	Location Identification: "26MW2-20" signifies Site 26, Monitoring Well 2 at 20-foot depth (depth is rounded to the nearest foot)

TABLE 5-13b SUMMARY OF SOIL TESTING RESULTS
SITE 26: FORMER CONSTRUCTION CAMP

Site 26 - Former Construction Camp		Sample Type:	**BOREHOLE**
		Location ID:	26MW2-20
		Sample ID:	04NE26SB103
		Depth (ft):	20
Soil Material Testing		Sample Date:	9/2/2004
Parameter Tested	**Test Method**	**Units**	
Moisture Content	ASTM D2216	%	24.5
Sieve Analysis	ASTM D422 or C136	**	See Figure B-23
Hydrometer Analysis	ASTM D422	**	See Figure B-23
Plastic Limit	ASTM D4318	% Moisture	26.0
Liquid Limit	ASTM D4318	% Moisture	20.0
Soil Classification	USCS		CL-ML

KEY	DESCRIPTION
%	percent dry weight
**	Sieve and Hydrometer Analysis Reports are provided in Appendix B
CL-ML	Low Plasticity Silty Clay

TABLE 5-13c GROUNDWATER SAMPLING LOG
SITE 26: FORMER CONSTRUCTION CAMP

MONITORING WELL INSTALLATION DATA

WELL ID	26MW1	26MW3
DATE WELL INSTALLED	8/30/04	8/22/04
GROUND SURFACE ELEVATION (ft)	107.62 (est.)	56.89
WELL MP ELEVATION (ft)	107.37	56.49
TOP OF SCREENED SECTION, BELOW MP (ft)	32.1	9.4
TOTAL DEPTH OF WELL BELOW MP (ft)	41.9	24.22
DIAMETER OF WELL CASING (inches)	2	2

DEVELOPMENT DATA

DATE OF DEVELOPMENT	9/12/04	8/25/04
TIME DEVELOPMENT INITIATED	16:43	14:23
TIME DEVELOPMENT COMPLETED	17:25	15:00
DEPTH TO WATER BELOW MP (ft)	36.74	5.06
WATER COLUMN IN WELL (ft)	5.16	19.16
GALLONS PER FOOT	0.16	0.16
GALLONS IN WELL	0.83	3.07
DEVELOPMENT METHOD	Redi-Flo-2	Redi-Flo-2
VOLUME WATER REMOVED (gallons)	85	40

PURGING & SAMPLING DATA

LOCID	26MW1	26MW3
SAMPLE ID	04NE26GW102	04NE26GW101
DATE	9/12/04	8/25/04
TIME PURGING INITIATED	17:53	15:00
TIME SAMPLING INITIATED	18:05	15:38
DEPTH TO WATER BELOW MP (ft)	36.74	5.07
WATER COLUMN IN WELL (ft)	5.16	19.15
GALLONS IN WELL	0.83	3.06
PURGING METHOD	Redi-Flo 2	Redi-Flo 2
VOLUME WATER REMOVED (gallons)	4.00	8.0

WATER QUALITY DATA - YSI 556

DATE MEASURED	9/12/04	8/25/04
TIME MEASURED	18:30	16:14
TEMPERATURE (°C)	5.3	3.5
SPECIFIC CONDUCTANCE (mS/cm)	0.06	0.18
DISSOLVED OXYGEN (mg/L)	12.2*	1.7
pH (Standard Units)	5.4	6.6
OXYGEN REDUCTION POTENTIAL (mV)	276	77.8
TURBIDITY (NTUs) - Oakton	3.9	11.3
ALKALINITY (mg/L) - Hach phenolpthalein titration	5 - 10	55 (Methyl orange)
FERROUS IRON (mg/L) - Hach colorimeter	0.01	0.48

WATER LEVEL MEASUREMENT DATA

DATE WATER LEVEL MEASURED	9/13/04	9/13/04
TIME WATER LEVEL MEASURED	14:05	12:45
DEPTH TO WATER BELOW MP (ft)	36.84	5.32
WATER LEVEL ELEVATION (ft)	70.53	51.17

* unusually high DO readings may be due to instrument malfunctic

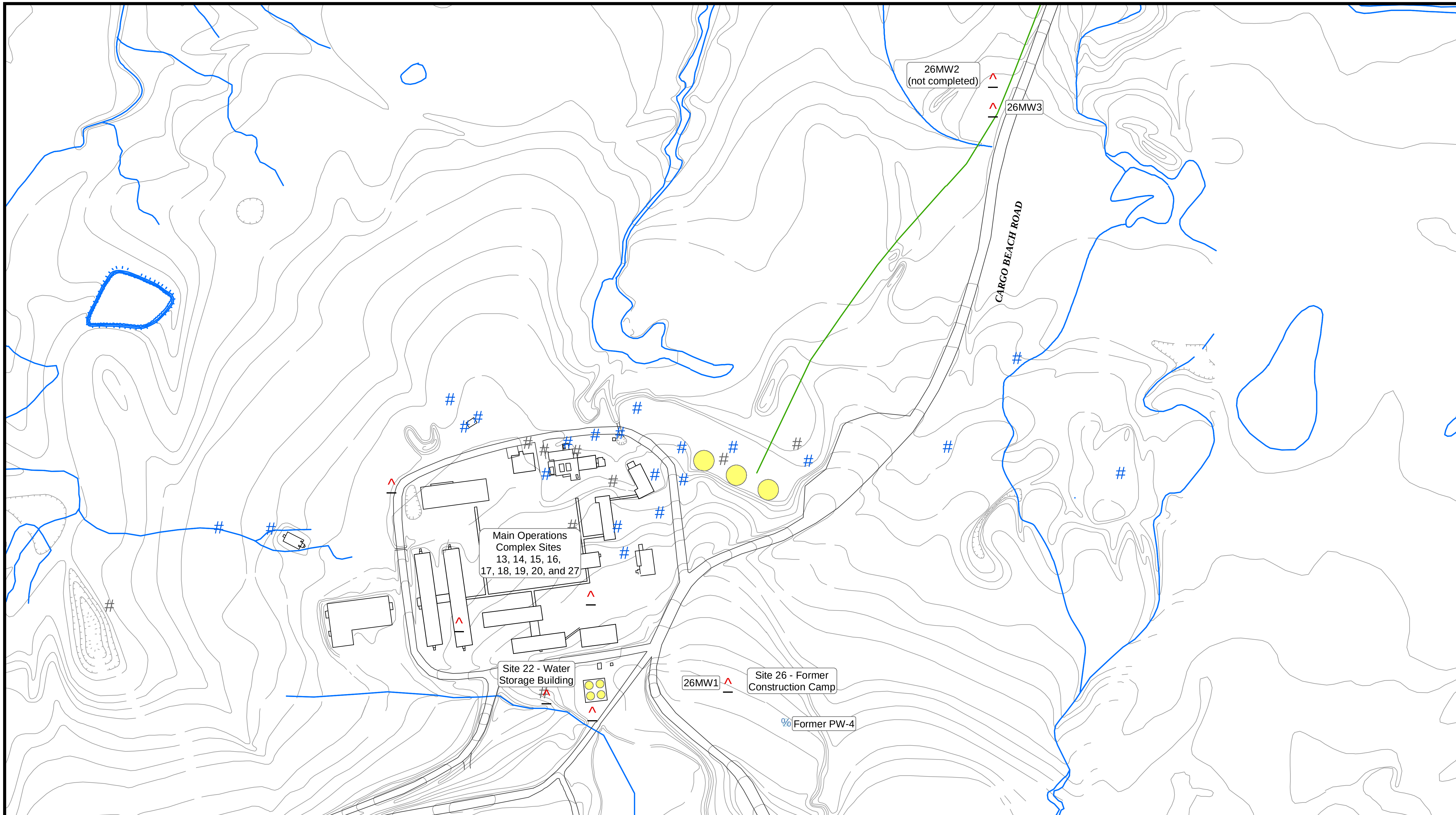
KEY	DESCRIPTION
-	Not developed or not measured
°C	Degrees Celsius
ft	Feet
mg/L	Milligrams per liter
MP	Measuring Point is Top of Well Casing
mV	Millivolts
NTUs	Nephologmetric Turbidity Units
mS/cm	Millisiemens per centimeter

TABLE 5-13d SUMMARY OF WATER ANALYTICAL RESULTS - SITE 26: FORMER CONSTRUCTION CAMP

Site 26 - Former Construction Camp
Water Matrix

			Sample Type:	GROUNDWATER			
			Location ID:	26MW1			26MW3
			Sample ID:	04NE26GW102	04NE26GW202	04NE26GW302	04NE26GW101
			Depth (ft):	37	37	37	5.5
			Sample Date:	9/12/2004	9/12/2004	9/12/2004	8/25/2004
Parameter Tested	**Test Method**	**Units**	**Cleanup Level**	*Primary*	*Duplicate*	*Triplicate*	
Gasoline Range Organics (GRO)	AK101	mg/L	1.3	0.0166 J	–	–	0.0135 J
Diesel Range Organics (DRO)	AK102	mg/L	1.5	0.078 J	–	–	0.0812 J
Residual Range Organics (RRO)	AK103	mg/L	1.1	0.249 J	–	–	0.0911 J
Aromatic Organic Compounds (BTEX)							
Benzene	SW8260B	µg/L	5	[0.4]	–	–	[0.4]
Ethylbenzene	SW8260B	µg/L	700	[1]	–	–	[1]
Toluene	SW8260B	µg/L	1,000	[1]	–	–	[1]
o-Xylene	SW8260B	µg/L	10,000 (Total Xylenes)	[1]	–	–	[1]
m & p-Xylenes	SW8260B	µg/L	10,000 (Total Xylenes)	[2]	–	–	[2]
Polynuclear Aromatic Hydrocarbons (PAH SIM)							
Acenaphthene	PAH SIM	µg/L	2,200	[0.0562]	[0.0543]	[0.111]	[0.0543]
Acenaphthylene	PAH SIM	µg/L	2,200	[0.0562]	[0.0543]	[0.111]	[0.0543]
Anthracene	PAH SIM	µg/L	11,000	[0.0562]	[0.0543]	[0.111]	[0.0543]
Benzo(a)anthracene	PAH SIM	µg/L	1	[0.0562]	[0.0543]	[0.0111]	[0.0543]
Benzo(a)pyrene	PAH SIM	µg/L	0.2	[0.0562]	[0.0543]	[0.0111]	[0.0543]
Benzo(b)fluoranthene	PAH SIM	µg/L	1	[0.0562]	[0.0543]	[0.0111]	[0.0543]
Benzo(g,h,i)perylene	PAH SIM	µg/L	1,100	[0.0562]	[0.0543]	[0.111]	[0.0543]
Benzo(k)fluoranthene	PAH SIM	µg/L	10	[0.0562]	[0.0543]	[0.0111]	[0.0543]
Chrysene	PAH SIM	µg/L	100	[0.0562]	[0.0543]	[0.0111]	[0.0543]
Dibenzo(a,h)anthracene	PAH SIM	µg/L	0.1	[0.0562]	[0.0543]	[0.0111]	[0.0543]
Fluoranthene	PAH SIM	µg/L	1,460	[0.112]	[0.109]	[0.111]	[0.109]
Fluorene	PAH SIM	µg/L	1,460	[0.0562]	[0.0543]	[0.111]	[0.0543]
Indeno(1,2,3-cd)pyrene	PAH SIM	µg/L	1	[0.0562]	[0.0543]	[0.0111]	[0.0543]
Naphthalene	PAH SIM	µg/L	700	[0.0562]	[0.0543]	[0.111]	0.153 B
Phenanthrene	PAH SIM	µg/L	11,000	[0.112]	[0.109]	0.0263 J	[0.109]
Pyrene	PAH SIM	µg/L	1,100	[0.0562]	[0.0543]	[0.111]	[0.0543]
Natural Attenuation Parameters							
Nitrate	E300.0	mg/L	–	–	–	–	[0.1]
Nitrogen, Nitrate-Nitrite	E300.0	mg/L	–	0.203	–	–	
Sulfate	E300.0	mg/L	–	7.64	–	–	9.58
Iron	SW6010B	mg/L	–	[0.2]	–	–	1.63

KEY	DESCRIPTION
–	Measurement not recorded or not applicable
mg/L	milligrams per liter
µg/L	micrograms per liter
Cleanup Levels	Cleanup values are based on ADEC groundwater cleanup levels listed in 18 ACC 75.345, Table C
J	Estimated concentration; refer to Appendix C for data qualification information
0.153 B	Analyte concentration biased due to detection in method, trip, or equipment blank
36	Concentration detected
[0.0072]	Analyte not detected above Practical Quantitation Limit (PQL)
WL	Approximate depth to water below ground surface



Legend

- ^ Monitoring well installed by Shannon & Wilson, Inc. August/September 2004
- # Existing monitoring well, installed by others
- # Former monitoring well installed by others
- % Former potable water well, installed by others
- Former fuel pipeline
- Water feature
- Topographic Contours (Interval: 5 ft)
- Former tank

Note: All locations approximate, see Appendix D of "Phase IV RI, Northeast Cape, St. Lawrence Island, Alaska" for survey data.
Figure based on previous work. Physical features may not correspond to 2004 field observations.

0 125 250 500 750 1,000 Feet

1 inch equals 250 feet

Phase IV RI, Northeast Cape
St. Lawrence Island, Alaska

SITE 26 - FORMER CONSTRUCTION CAMP

June 2005 | 32-1-16821

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

Fig. 5-13

4.6 SITES 13, 15, 19, AND 27

4.6.1 Geology

Sites 13, 15, 19, and 27 are located entirely on what is interpreted to be fill materials underlying the main complex of the Northeast Cape facilities. Eight boreholes where completed at these sites to a maximum depth of 21.5 feet. Figure 4-8-2 depicts a subsurface cross section of Sites 13, 15, 19, and 27, the location of which is depicted on Figure 4-8-1. Fill materials underlying the sites consist of gravely silt with variable amounts of sand, extending to a maximum interpreted depth of approximately 10 feet. Native soils underlying the fill materials consist of olive-brown silty sand.

4.6.2 Hydrogeology

Six of the boreholes completed at Sites 13, 15, 19, and 27 were completed as monitoring wells. Depth to groundwater in these wells varies from 4 to 16 feet from ground level. Groundwater is deeper in the southern portion of these sites where fill materials have caused the ground surface to be higher relative to the surrounding terrain. Groundwater is generally found below the fill/native soils interface, particularly in the southern portion of the sites in the vicinity of Site 19 (Figure 4-8-1).

Groundwater generally flows in a northern direction, coincident with topographic drainage. Groundwater surfaces in a small drainage north of the perimeter road to site road near SW/SD sampling location 107 (Figure 4-8-1). In general, there are no surface water bodies or marshy conditions noted in or on the fill materials on which the majority of the Northeast Cape facilities are constructed. The nearest surface water to these sites is the small surface water drainage which begins near SW/SD 107. At this location, groundwater flowing from the main facilities to the south is surfacing.

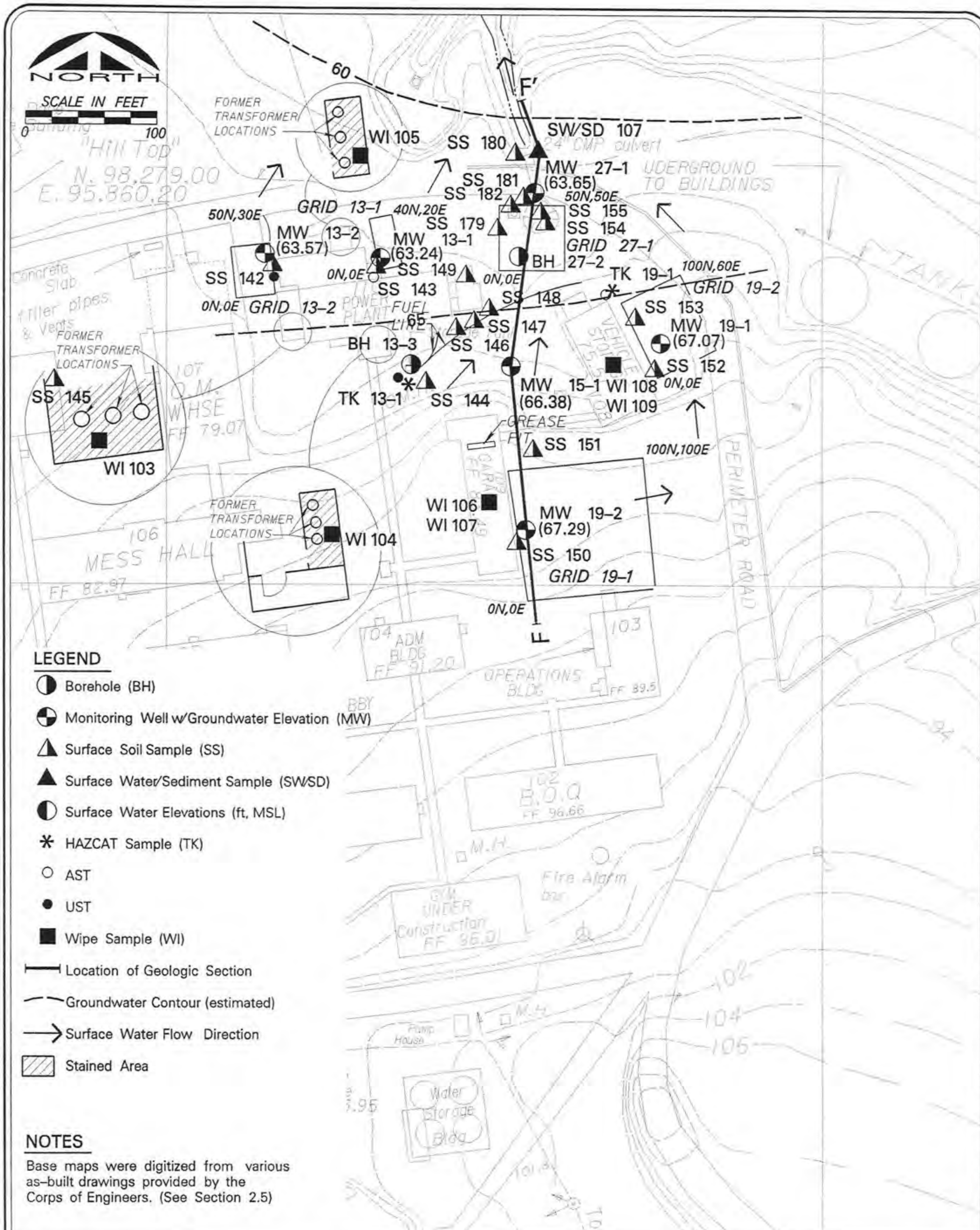
The permeability of subsurface materials (as measured in slug tests) varied considerably. Slug test results in these sites included:

MW 13-2	0.92 - 1.91 ft/day
MW 19-2	298 - 316 ft/day
MW 27-1	0.08 - 0.09 ft/day

Calculated permeability in MW 27-1 was the lowest value found at NEC, while the permeability noted at MW 19-2 was the highest (Appendix H). The high permeability noted at MW 19-2 may be related to the permeable fill materials which underlie the main operations complex.

4.6.3 Geophysical Survey

Geophysical surveys were performed at each of Sites 13, 15, 19, and 27. Surveys were performed at Site 13 to determine the location and contours of the two USTs. At Site 15 geophysical surveys were used to distinguish the location of the underground piping associated with the UST on the south edge of Site 13. Surveys at Site 19 were performed to determine the presence or absence of any buried materials in the areas just outside the maintenance and storage



JOB No. 2198.0230 TIME: 02-FEB-1995 16:32 FILE: /usr3/corps/necape/fg4_8_1.dgn

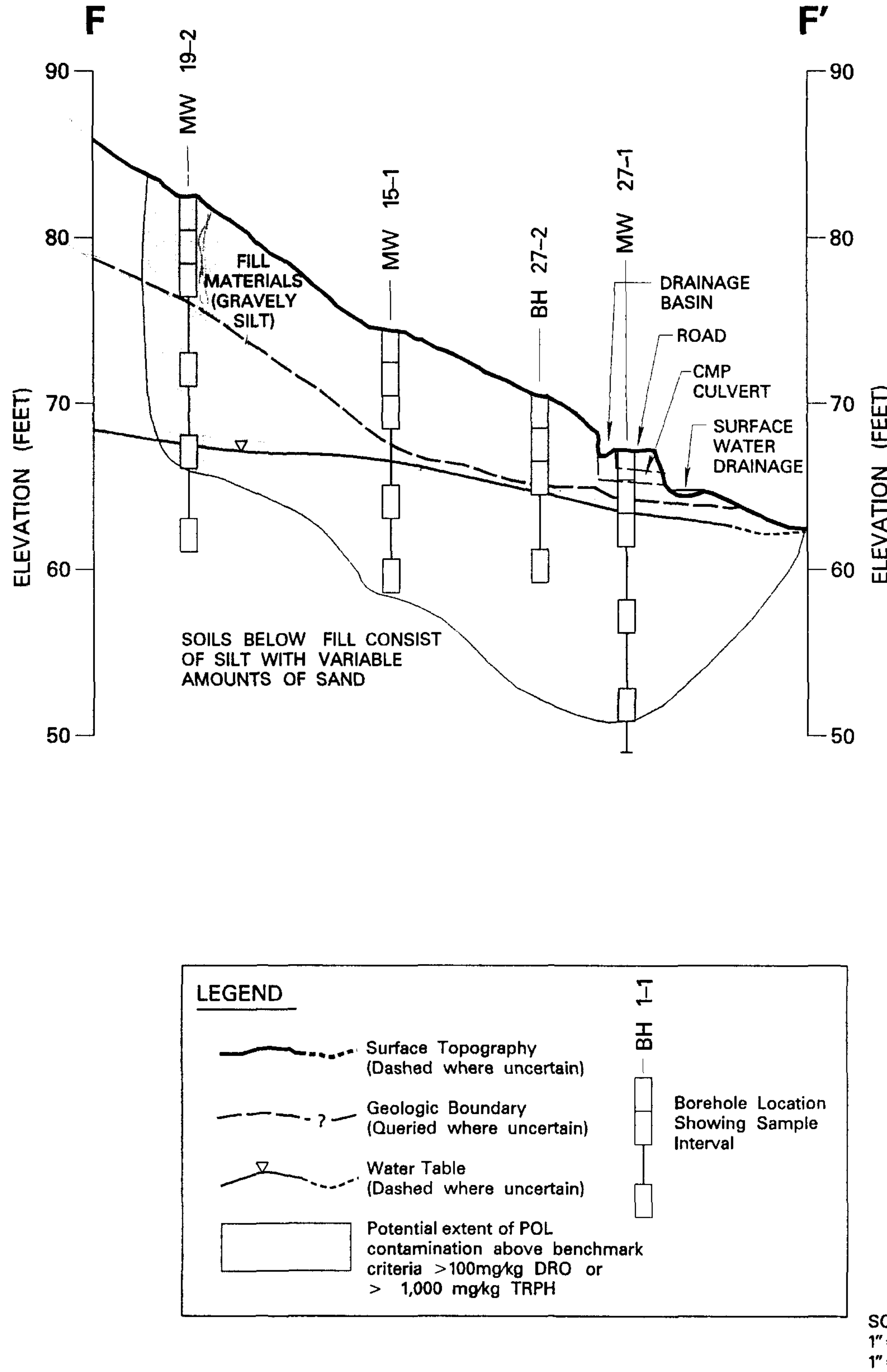
MONTGOMERY WATSON

Anchorage, Alaska

FIGURE 4-8-1

ALASKA DISTRICT - CORPS OF ENGINEERS
N.E. CAPE - ST. LAWRENCE ISLAND, ALASKA

SITES 13, 15, 19 & 27 GEOPHYSICAL GRIDS AND HYDROGEOLOGY REFERENCE MAP



SCALE:
1" = 10' VERT.
1" = 100' HOR.

VERTICAL EXAGGERATION = 10X

JOB No. 2198.0230 TIME: 02-FEB-1995 16:32 FILE: /usr3/corps/necape/fg4_8_2.dgn

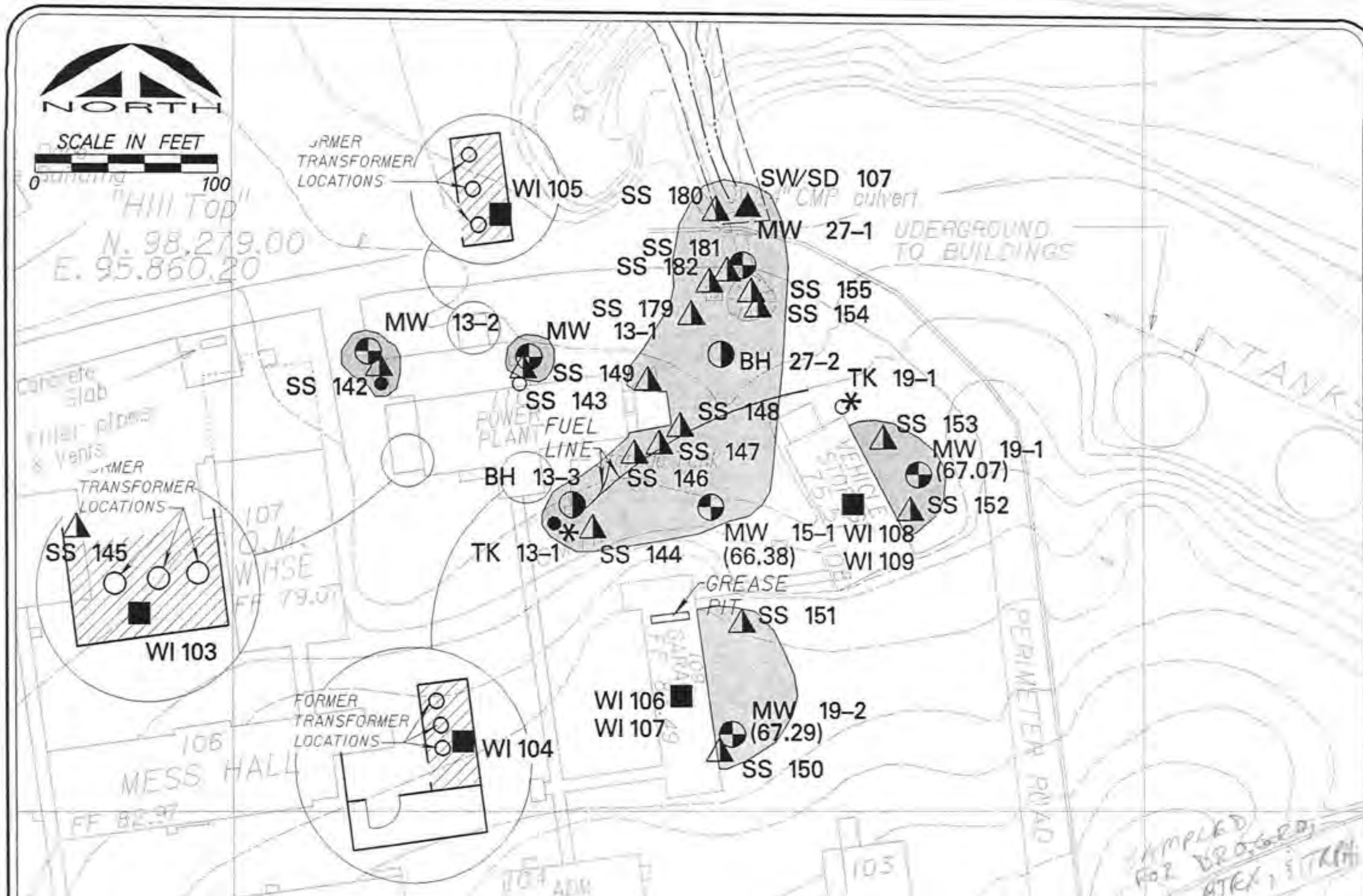
MONTGOMERY WATSON

Anchorage, Alaska

FIGURE 4-8-2

ALASKA DISTRICT - CORPS OF ENGINEERS
N.E. CAPE - ST. LAWRENCE ISLAND, ALASKA

SITES 13, 15, 19 & 27
SECTION F-F'



LEGEND

- Borehole (BH)
- Monitoring Well w/Groundwater Elevation (MW)
- Surface Soil Sample (SS)
- Surface Water/Sediment Sample (SW/SD)
- Surface Water Elevations (ft.,MSL)
- HAZCAT Sample (TK)
- AST
- UST
- Wipe Sample (WI)
- Potential extent of POL contamination above benchmark criteria >100 mg/kg DRO or 1,000 mg/kg TRPH
- Stained Area

Sample	DRO (mg/l & mg/kg)	TRPH (mg/l)	GRO (mg/l & mg/kg)	Aroclor 1260 (ug/kg)
MW 13-1 GW	23 mg/l	190	4	
MW 13-2 GW	22 mg/l	24	3.6	
MW 13-2 4-6'	955 mg/kg	945	7	
BH 13-3 4-6'	546 mg/kg	1150	7.1	
BH 13-3 9.5-11.5'	10800 mg/kg	7880	225	
MW 15-1 GW	9.3 mg/l	31		
MW 15-1 9.5-11.5'	2190 mg/kg	535	6.1	
MW 19-1 GW	13	907		
MW 19-1 0-2'	110	690	6650	
MW 19-1 4-6'	971	28800	461	
MW 19-1 9.5-11.5'	13300	16300		
MW 19-2 GW	34			
MW 19-2 14.5-16.5'	122	389	1.4	
MW 27-1 GW	3.2	2.1	886	
MW 27-1 0-2'	5710	18000	410	
MW 27-1 2-4	8470	29300	39	
MW 27-1 4-6'	569	1690		
MW 27-1 9.5-11.5'	19	181	283	
BH 27-2 0-2'	9230	32400	2.3	
BH 27-2 4-6'	52	535		
BH 27-2 9.5-11.5'	11	170		
SS 142	2610	2280		
SS 143	398	551		
SS 144	1530	6130		
SS 145				58300
SS 146	4660	20500		
SS 147	2840	12400		
SS 148	4860	24200		
SS 149	6580	36800		
SS 150	868	2000		
SS 151	328	680		
SS 152	1240	3150		
SS 153	43	413		
SS 154	9460	16600	9.1	
SS 155	35700	12800	89	
SS 179	27500	53700	370	
SS 180	37900	44700	7	
SS 181	33600	66400		
SS 182	9850	41800		
SW/SD 107	See Figure 4-7-4			

NOTES

Base maps were digitized from various as-built drawings provided by the Corps of Engineers. (See Section 2.5)

JOB No. 2198.0230 TIME: 02-FEB-1995 16:33 FILE: /usr3/corps/necape/fg4_8_3.dgn

MONTGOMERY WATSON

Anchorage, Alaska

FIGURE 4-8-3

ALASKA DISTRICT - CORPS OF ENGINEERS
N.E. CAPE - ST. LAWRENCE ISLAND, ALASKA

SITES 13, 15, 19 & 27 SAMPLING LOCATIONS

APPENDIX I

Laboratory Certifications

Certificate of Accreditation

ISO/IEC 17025:2005 ***Certificate Number L2236***

TestAmerica Laboratories, Inc

5755 8th Street East
Tacoma, WA 98424

has met the requirements set forth in L-A-B's policies and procedures, all requirements of ISO/IEC 17025:2005 "General Requirements for the competence of Testing and Calibration Laboratories" and the U.S. Department of Defense Environmental Laboratory Accreditation Program (DoD ELAP).*

The accredited lab has demonstrated technical competence to a defined "Scope of Accreditation" and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009).

Accreditation Granted through: January 19, 2013

R. Douglas Leonard, Jr., Managing Director
Laboratory Accreditation Bureau
Presented the 19th of January 2010

*See the laboratory's Scope of Accreditation for details of the DoD ELAP requirements
Laboratory Accreditation Bureau is found to be in compliance with ISO/IEC 17011:2004 and recognized by ILAC (International Laboratory Accreditation Cooperation) and NACLA (National Cooperation for Laboratory Accreditation).

Certificate # L2236

Scope of Accreditation
For
TestAmerica Laboratories, Inc.

5755 8th Street East
Tacoma, WA 98424
Dave Wunderlich
1-253-922-2310

In recognition of a successful assessment to ISO/IEC 17025:2005 and the requirements of the DoD Environmental Laboratory Accreditation Program (DoD ELAP) as detailed in the DoD Quality Systems Manual for Environmental Laboratories (DoD QSM v4.1) based on the National Environmental Laboratory Accreditation Conference Chapter 5 Quality Systems Standard (NELAC Voted Revision June 5, 2003), accreditation is granted to TestAmerica Laboratories, Inc. to perform the following tests:

Accreditation granted through: January 19, 2013

Testing - Environmental

Non-Potable Water

Technology	Method	Analyte
ICP-AES	6010B/200.7	Silver
ICP-AES	6010B/200.7	Aluminum
ICP-AES	6010B/200.7	Arsenic
ICP-AES	6010B/200.7	Boron
ICP-AES	6010B/200.7	Barium
ICP-AES	6010B/200.7	Beryllium
ICP-AES	6010B/200.7	Calcium
ICP-AES	6010B/200.7	Cadmium
ICP-AES	6010B/200.7	Cobalt
ICP-AES	6010B/200.7	Chromium
ICP-AES	6010B/200.7	Copper
ICP-AES	6010B/200.7	Iron
ICP-AES	6010B/200.7	Potassium
ICP-AES	6010B/200.7	Magnesium
ICP-AES	6010B/200.7	Manganese
ICP-AES	6010B/200.7	Molybdenum
ICP-AES	6010B/200.7	Sodium
ICP-AES	6010B/200.7	Nickel
ICP-AES	6010B/200.7	Lead
ICP-AES	6010B/200.7	Antimony
ICP-AES	6010B/200.7	Selenium

LABORATORY ACCREDITATION BUREAU

Certificate # L2236

Non-Potable Water

Technology	Method	Analyte
ICP-AES	6010B/200.7	Silicon
ICP-AES	6010B/200.7	Tin
ICP-AES	6010B/200.7	Titanium
ICP-AES	6010B/200.7	Strontium
ICP-AES	6010B/200.7	Thallium
ICP-AES	6010B/200.7	Vanadium
ICP-AES	6010B/200.7	Zinc
ICP-MS	6020/200.8	Silver
ICP-MS	6020/200.8	Arsenic
ICP-MS	6020/200.8	Barium
ICP-MS	6020/200.8	Beryllium
ICP-MS	6020/200.8	Cadmium
ICP-MS	6020/200.8	Cobalt
ICP-MS	6020/200.8	Chromium
ICP-MS	6020/200.8	Copper
ICP-MS	6020/200.8	Manganese
ICP-MS	6020/200.8	Molybdenum
ICP-MS	6020/200.8	Nickel
ICP-MS	6020/200.8	Lead
ICP-MS	6020/200.8	Antimony
ICP-MS	6020/200.8	Selenium
ICP-MS	6020/200.8	Thallium
ICP-MS	6020/200.8	Uranium
ICP-MS	6020/200.8	Vanadium
ICP-MS	6020/200.8	Zinc
CVAAS	7470A/245.1	Mercury
ICP-AES	7195/6010B	Hexavalent Chromium
GC/MS	8260B/624	1,1,1,2-Tetrachloroethane
GC/MS	8260B/624	1,1,1-Trichloroethane
GC/MS	8260B/624	1,1,2,2-Tetrachloroethane
GC/MS	8260B/624	1,1,2-Trichloroethane
GC/MS	8260B/624	1,1-Dichloroethane
GC/MS	8260B/624	1,1-Dichloroethene
GC/MS	8260B/624	1,1-Dichloropropene
GC/MS	8260B/624	1,2,3-Trichlorobenzene
GC/MS	8260B/624	1,2,3-Trichloropropane
GC/MS	8260B/624	1,2,4-Trichlorobenzene
GC/MS	8260B/624	1,2,4-Trimethylbenzene
GC/MS	8260B/624	1,2-Dibromo-3-Chloropropane
GC/MS	8260B/624	1,2-Dichlorobenzene

LABORATORY ACCREDITATION BUREAU

Certificate # L2236

Non-Potable Water		
Technology	**Method**	**Analyte**
GC/MS	8260B/624	1,2-Dichloroethane
GC/MS	8260B/624	1,2-Dichloropropane
GC/MS	8260B/624	1,3,5-Trimethylbenzene
GC/MS	8260B/624	1,3-Dichlorobenzene
GC/MS	8260B/624	1,3-Dichloropropane
GC/MS	8260B/624	1,4-Dichlorobenzene
GC/MS	8260B/624	2,2-Dichloropropane
GC/MS	8260B/624	2-Chlorotoluene
GC/MS	8260B/624	2-Hexanone
GC/MS	8260B/624	4-Chlorotoluene
GC/MS	8260B/624	4-Isopropyltoluene
GC/MS	8260B/624	Acetone
GC/MS	8260B/624	Benzene
GC/MS	8260B/624	Bromobenzene
GC/MS	8260B/624	Bromodichloromethane
GC/MS	8260B/624	Bromoform
GC/MS	8260B/624	Bromomethane
GC/MS	8260B/624	Carbon disulfide
GC/MS	8260B/624	Carbon tetrachloride
GC/MS	8260B/624	Chlorobenzene
GC/MS	8260B/624	Chlorobromomethane
GC/MS	8260B/624	Chlorodibromomethane
GC/MS	8260B/624	Chloroethane
GC/MS	8260B/624	Chloroform
GC/MS	8260B/624	Chloromethane
GC/MS	8260B/624	cis-1,2-Dichloroethene
GC/MS	8260B/624	cis-1,3-Dichloropropene
GC/MS	8260B/624	Dibromomethane
GC/MS	8260B/624	Dichlorodifluoromethane
GC/MS	8260B/624	Ethylbenzene
GC/MS	8260B/624	Ethylene Dibromide
GC/MS	8260B/624	Hexachlorobutadiene
GC/MS	8260B/624	Isopropylbenzene
GC/MS	8260B/624	Methyl Ethyl Ketone
GC/MS	8260B/624	Methyl Isobutyl Ketone
GC/MS	8260B/624	Methyl tert-butyl ether
GC/MS	8260B/624	Methylene Chloride
GC/MS	8260B/624	m-Xylene & p-Xylene
GC/MS	8260B/624	Naphthalene
GC/MS	8260B/624	n-Butylbenzene

LABORATORY ACCREDITATION BUREAU

Certificate # L2236

Non-Potable Water

Technology	Method	Analyte
GC/MS	8260B/624	N-Propylbenzene
GC/MS	8260B/624	o-Xylene
GC/MS	8260B/624	sec-Butylbenzene
GC/MS	8260B/624	Styrene
GC/MS	8260B/624	tert-Butylbenzene
GC/MS	8260B/624	Tetrachloroethene
GC/MS	8260B/624	Toluene
GC/MS	8260B/624	trans-1,2-Dichloroethene
GC/MS	8260B/624	trans-1,3-Dichloropropene
GC/MS	8260B/624	Trichloroethene
GC/MS	8260B/624	Trichlorofluoromethane
GC/MS	8260B/624	Vinyl chloride
GC/MS	8270C/625	1,2,4-Trichlorobenzene
GC/MS	8270C/625	1,2-Dichlorobenzene
GC/MS	8270C/625	1,3-Dichlorobenzene
GC/MS	8270C/625	1,4-Dichlorobenzene
GC/MS	8270C/625	bis(2-chloroisoprolyl)ether
GC/MS	8270C/625	2,4,5-Trichlorophenol
GC/MS	8270C/625	2,4,6-Trichlorophenol
GC/MS	8270C/625	2,4-Dichlorophenol
GC/MS	8270C/625	2,4-Dimethylphenol
GC/MS	8270C/625	2,4-Dinitrophenol
GC/MS	8270C/625	2,4-Dinitrotoluene
GC/MS	8270C/625	2,6-Dinitrotoluene
GC/MS	8270C/625	2-Chloronaphthalene
GC/MS	8270C/625	2-Chlorophenol
GC/MS	8270C/625	2-Methylnaphthalene
GC/MS	8270C/625	2-Methylphenol
GC/MS	8270C/625	2-Nitroaniline
GC/MS	8270C/625	2-Nitrophenol
GC/MS	8270C/625	3 & 4 Methylphenol
GC/MS	8270C/625	3,3'-Dichlorobenzidine
GC/MS	8270C/625	3-Nitroaniline
GC/MS	8270C/625	4,6-Dinitro-2-methylphenol
GC/MS	8270C/625	4-Bromophenyl phenyl ether
GC/MS	8270C/625	4-Chloro-3-methylphenol
GC/MS	8270C/625	4-Chloroaniline
GC/MS	8270C/625	4-Chlorophenyl phenyl ether
GC/MS	8270C/625	4-Nitroaniline
GC/MS	8270C/625	Acenaphthene

LABORATORY ACCREDITATION BUREAU

Certificate # L2236

Non-Potable Water		
Technology	**Method**	**Analyte**
GC/MS	8270C/625	Acenaphthylene
GC/MS	8270C/625	Anthracene
GC/MS	8270C/625	1,2-Diphenylhydrazine as Azobenzene
GC/MS	8270C/625	Benzo[a]anthracene
GC/MS	8270C/625	Benzo[a]pyrene
GC/MS	8270C/625	Benzo[b]fluoranthene
GC/MS	8270C/625	Benzo[g,h,i]perylene
GC/MS	8270C/625	Benzo[k]fluoranthene
GC/MS	8270C/625	Benzoic acid
GC/MS	8270C/625	Benzyl alcohol
GC/MS	8270C/625	Bis(2-chloroethoxy)methane
GC/MS	8270C/625	Bis(2-chloroethyl)ether
GC/MS	8270C/625	Bis(2-ethylhexyl) phthalate
GC/MS	8270C/625	Butyl benzyl phthalate
GC/MS	8270C/625	Carbazole
GC/MS	8270C/625	Chrysene
GC/MS	8270C/625	Dibenz(a,h)anthracene
GC/MS	8270C/625	Dibenzofuran
GC/MS	8270C/625	Diethyl phthalate
GC/MS	8270C/625	Dimethyl phthalate
GC/MS	8270C/625	Di-n-butyl phthalate
GC/MS	8270C/625	Di-n-octyl phthalate
GC/MS	8270C/625	Fluoranthene
GC/MS	8270C/625	Fluorene
GC/MS	8270C/625	Hexachlorobenzene
GC/MS	8270C/625	Hexachlorobutadiene
GC/MS	8270C/625	Hexachloroethane
GC/MS	8270C/625	Indeno[1,2,3-cd]pyrene
GC/MS	8270C/625	Isophorone
GC/MS	8270C/625	Naphthalene
GC/MS	8270C/625	Nitrobenzene
GC/MS	8270C/625	N-Nitrosodimethylamine
GC/MS	8270C/625	N-Nitrosodi-n-propylamine
GC/MS	8270C/625	N-Nitrosodiphenylamine
GC/MS	8270C/625	Pentachlorophenol
GC/MS	8270C/625	Phenanthrene
GC/MS	8270C/625	Phenol
GC/MS	8270C/625	Pyrene
GC/MS SIM	8270C SIM	2-Methylnaphthalene
GC/MS SIM	8270C SIM	Acenaphthene

Non-Potable Water		
Technology	**Method**	**Analyte**
GC/MS SIM	8270C SIM	Acenaphthylene
GC/MS SIM	8270C SIM	Anthracene
GC/MS SIM	8270C SIM	Benzo[a]anthracene
GC/MS SIM	8270C SIM	Benzo[a]pyrene
GC/MS SIM	8270C SIM	Benzo[b]fluoranthene
GC/MS SIM	8270C SIM	Benzo[g,h,i]perylene
GC/MS SIM	8270C SIM	Benzo[k]fluoranthene
GC/MS SIM	8270C SIM	Chrysene
GC/MS SIM	8270C SIM	Dibenz(a,h)anthracene
GC/MS SIM	8270C SIM	Fluoranthene
GC/MS SIM	8270C SIM	Fluorene
GC/MS SIM	8270C SIM	Indeno[1,2,3-cd]pyrene
GC/MS SIM	8270C SIM	Naphthalene
GC/MS SIM	8270C SIM	Phenanthrene
GC/MS SIM	8270C SIM	Pyrene
GC-ECD	8011	1,2-Dibromoethane
GC-ECD	8011	1,2-Dibromo-3-Chloropropane
GC-ECD	8081A/608	4,4'-DDD
GC-ECD	8081A/608	4,4'-DDE
GC-ECD	8081A/608	4,4'-DDT
GC-ECD	8081A/608	Aldrin
GC-ECD	8081A/608	alpha-BHC
GC-ECD	8081A/608	alpha-Chlordane
GC-ECD	8081A/608	beta-BHC
GC-ECD	8081A/608	delta-BHC
GC-ECD	8081A/608	Dieldrin
GC-ECD	8081A/608	Endosulfan I
GC-ECD	8081A/608	Endosulfan II
GC-ECD	8081A/608	Endosulfan sulfate
GC-ECD	8081A/608	Endrin
GC-ECD	8081A/608	Endrin aldehyde
GC-ECD	8081A/608	Endrin ketone
GC-ECD	8081A/608	gamma-BHC (Lindane)
GC-ECD	8081A/608	gamma-Chlordane
GC-ECD	8081A/608	Heptachlor
GC-ECD	8081A/608	Heptachlor epoxide
GC-ECD	8081A/608	Methoxychlor
GC-ECD	8081A/608	Technical Chlordane
GC-ECD	8081A/608	Toxaphene
GC-ECD	8082/608	PCB-1016

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Non-Potable Water

Technology	Method	Analyte
GC-ECD	8082/608	PCB-1221
GC-ECD	8082/608	PCB-1232
GC-ECD	8082/608	PCB-1242
GC-ECD	8082/608	PCB-1248
GC-ECD	8082/608	PCB-1254
GC-ECD	8082/608	PCB-1260
GC-IT/MS	8151A mod.	2,4,5-T
GC-IT/MS	8151A mod.	2,4-D
GC-IT/MS	8151A mod.	2,4-DB
GC-IT/MS	8151A mod.	4-Nitrophenol
GC-IT/MS	8151A mod.	Dalapon
GC-IT/MS	8151A mod.	Dicamba
GC-IT/MS	8151A mod.	Dichlorprop
GC-IT/MS	8151A mod.	Dinoseb
GC-IT/MS	8151A mod.	MCPA
GC-IT/MS	8151A mod.	Mecoprop
GC-IT/MS	8151A mod.	Pentachlorophenol
GC-IT/MS	8151A mod.	Silvex (2,4,5-TP)
GC-FID	EPA 8015B/AK101/ NWTPH-Gx/NWVPH	Gasoline and Volatile Petroleum Hydrocarbons
GC-FID	EPA 8015B/AK102/ NWTPH-Dx/NWEPH	Diesel and Extractable Petroleum Hydrocarbons
GC-FID	EPA 8015B/AK102/ NWTPH-Dx/NWEPH	Motor Oil and Extractable Petroleum Hydrocarbons
Gravimetric	1664A	Oil & Grease
Colorimetric/RFA	9012A	Total Cyanides
Ion Chromatography	300.0/9056A	Bromide
Ion Chromatography	300.0/9056A	Chloride
Ion Chromatography	300.0/9056A	Fluoride
Ion Chromatography	300.0/9056A	Sulfate
Ion Chromatography	300.0/9056A	Nitrate
Ion Chromatography	300.0/9056A	Nitrite
TOC Analyzer (IR)	415.1/9060	TOC
Probe	9040/9045/150.1	pH
Conductivity meter	9050/120.1/SM2510B	Specific Conductance
Pensky-Martens closed-cup tester/ Setaflash	1010/1020	Ignitability/Flashpoint
Preparation	**Method**	**Type**
Separatory Funnel Liquid-Liquid Extraction	3510C	Semivolatile and Nonvolatile Organics

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Non-Potable Water		
Preparation	**Method**	**Type**
Continuous Liquid-Liquid Extraction	3520	Semivolatile and Nonvolatile Organics
Solvent Dilution	3580	Semivolatile and Nonvolatile Organics
Waste Dilution	3585	Volatile Organic Compounds
Purge and Trap	5030	Volatile Organic Compounds
Purge and Trap	5035	Volatile Organic Compounds
Acid Digestion (Aqueous)	3005/3010	Inorganics
Acid Digestion (Sediments, Sludges, and Soils)	3050	Inorganics
TCLP Extraction	1311	Toxicity Characteristic Leaching Procedure
Florisil Cleanup	3620B	Cleanup of pesticide residues and other chlorinated hydrocarbons
Silica Gel Cleanup	3630C	Column Cleanup
Gel Permeation Cleanup	3640A	Separation of Synthetic Macromolecules
Sulfur Cleanup	3660B	Sulfur Cleanup Reagent
Sulfuric Acid Cleanup	3665A	Cleanup for Quantitation of PCBs

Solid and Chemical Materials		
Technology	**Method**	**Analyte**
ICP-AES	6010B	Silver
ICP-AES	6010B	Aluminum
ICP-AES	6010B	Arsenic
ICP-AES	6010B	Boron
ICP-AES	6010B	Barium
ICP-AES	6010B	Beryllium
ICP-AES	6010B	Calcium
ICP-AES	6010B	Cadmium
ICP-AES	6010B	Cobalt
ICP-AES	6010B	Chromium
ICP-AES	6010B	Copper
ICP-AES	6010B	Iron
ICP-AES	6010B	Potassium
ICP-AES	6010B	Magnesium
ICP-AES	6010B	Manganese
ICP-AES	6010B	Molybdenum
ICP-AES	6010B	Sodium
ICP-AES	6010B	Nickel
ICP-AES	6010B	Lead
ICP-AES	6010B	Antimony
ICP-AES	6010B	Selenium

Solid and Chemical Materials

Technology	Method	Analyte
ICP-AES	6010B	Silicon
ICP-AES	6010B	Tin
ICP-AES	6010B	Titanium
ICP-AES	6010B	Strontium
ICP-AES	6010B	Thallium
ICP-AES	6010B	Vanadium
ICP-AES	6010B	Zinc
ICP-MS	6020	Silver
ICP-MS	6020	Arsenic
ICP-MS	6020	Barium
ICP-MS	6020	Beryllium
ICP-MS	6020	Cadmium
ICP-MS	6020	Cobalt
ICP-MS	6020	Chromium
ICP-MS	6020	Copper
ICP-MS	6020	Iron
ICP-MS	6020	Manganese
ICP-MS	6020	Molybdenum
ICP-MS	6020	Nickel
ICP-MS	6020	Lead
ICP-MS	6020	Antimony
ICP-MS	6020	Selenium
ICP-MS	6020	Thallium
ICP-MS	6020	Uranium
ICP-MS	6020	Vanadium
ICP-MS	6020	Zinc
CVAAS	7471A	Mercury
ICP-AES	7195/6010B	Hexavalent Chromium
GC/MS	8260B	1,1,1,2-Tetrachloroethane
GC/MS	8260B	1,1,1-Trichloroethane
GC/MS	8260B	1,1,2,2-Tetrachloroethane
GC/MS	8260B	1,1,2-Trichloroethane
GC/MS	8260B	1,1-Dichloroethane
GC/MS	8260B	1,1-Dichloroethene
GC/MS	8260B	1,1-Dichloropropene
GC/MS	8260B	1,2,3-Trichlorobenzene
GC/MS	8260B	1,2,3-Trichloropropane
GC/MS	8260B	1,2,4-Trichlorobenzene
GC/MS	8260B	1,2,4-Trimethylbenzene

Solid and Chemical Materials		
Technology	**Method**	**Analyte**
GC/MS	8260B	1,2-Dibromo-3-Chloropropane
GC/MS	8260B	1,2-Dichlorobenzene
GC/MS	8260B	1,2-Dichloroethane
GC/MS	8260B	1,2-Dichloropropane
GC/MS	8260B	1,3,5-Trimethylbenzene
GC/MS	8260B	1,3-Dichlorobenzene
GC/MS	8260B	1,3-Dichloropropane
GC/MS	8260B	1,4-Dichlorobenzene
GC/MS	8260B	2,2-Dichloropropane
GC/MS	8260B	2-Chlorotoluene
GC/MS	8260B	2-Hexanone
GC/MS	8260B	4-Chlorotoluene
GC/MS	8260B	4-Isopropyltoluene
GC/MS	8260B	Acetone
GC/MS	8260B	Benzene
GC/MS	8260B	Bromobenzene
GC/MS	8260B	Bromoform
GC/MS	8260B	Bromomethane
GC/MS	8260B	Carbon disulfide
GC/MS	8260B	Carbon tetrachloride
GC/MS	8260B	Chlorobenzene
GC/MS	8260B	Chlorodibromomethane
GC/MS	8260B	Chloroethane
GC/MS	8260B	Chloroform
GC/MS	8260B	Chloromethane
GC/MS	8260B	cis-1,2-Dichloroethene
GC/MS	8260B	cis-1,3-Dichloropropene
GC/MS	8260B	Dibromomethane
GC/MS	8260B	Dichlorodifluoromethane
GC/MS	8260B	Ethylbenzene
GC/MS	8260B	Ethylene Dibromide
GC/MS	8260B	Hexachlorobutadiene
GC/MS	8260B	Isopropylbenzene
GC/MS	8260B	Methyl Ethyl Ketone
GC/MS	8260B	Methyl Isobutyl Ketone
GC/MS	8260B	Methyl tert-butyl ether
GC/MS	8260B	Methylene Chloride
GC/MS	8260B	m-Xylene & p-Xylene
GC/MS	8260B	Naphthalene
GC/MS	8260B	n-Butylbenzene

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Solid and Chemical Materials

Technology	Method	Analyte
GC/MS	8260B	N-Propylbenzene
GC/MS	8260B	o-Xylene
GC/MS	8260B	sec-Butylbenzene
GC/MS	8260B	Styrene
GC/MS	8260B	tert-Butylbenzene
GC/MS	8260B	Tetrachloroethene
GC/MS	8260B	Toluene
GC/MS	8260B	trans-1,2-Dichloroethene
GC/MS	8260B	trans-1,3-Dichloropropene
GC/MS	8260B	Trichloroethene
GC/MS	8260B	Trichlorofluoromethane
GC/MS	8260B	Vinyl chloride
GC/MS	8270C	1,2,4-Trichlorobenzene
GC/MS	8270C	1,2-Dichlorobenzene
GC/MS	8270C	1,3-Dichlorobenzene
GC/MS	8270C	1,4-Dichlorobenzene
GC/MS	8270C	bis(2-chloroisoprolyl)ether
GC/MS	8270C	2,4,5-Trichlorophenol
GC/MS	8270C	2,4,6-Trichlorophenol
GC/MS	8270C	2,4-Dichlorophenol
GC/MS	8270C	2,4-Dimethylphenol
GC/MS	8270C	2,4-Dinitrophenol
GC/MS	8270C	2,4-Dinitrotoluene
GC/MS	8270C	2,6-Dinitrotoluene
GC/MS	8270C	2-Chloronaphthalene
GC/MS	8270C	2-Chlorophenol
GC/MS	8270C	2-Methylnaphthalene
GC/MS	8270C	2-Methylphenol
GC/MS	8270C	2-Nitroaniline
GC/MS	8270C	2-Nitrophenol
GC/MS	8270C	3 & 4 Methylphenol
GC/MS	8270C	3,3'-Dichlorobenzidine
GC/MS	8270C	3-Nitroaniline
GC/MS	8270C	4,6-Dinitro-2-methylphenol
GC/MS	8270C	4-Bromophenyl phenyl ether
GC/MS	8270C	4-Chloro-3-methylphenol
GC/MS	8270C	4-Chloroaniline
GC/MS	8270C	4-Chlorophenyl phenyl ether
GC/MS	8270C	4-Nitroaniline
GC/MS	8270C	Acenaphthene

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Solid and Chemical Materials

Technology	Method	Analyte
GC/MS	8270C	Acenaphthylene
GC/MS	8270C	Anthracene
GC/MS	8270C	1,2-Diphenylhydrazine as Azobenzene
GC/MS	8270C	Benzo[a]anthracene
GC/MS	8270C	Benzo[a]pyrene
GC/MS	8270C	Benzo[b]fluoranthene
GC/MS	8270C	Benzo[g,h,i]perylene
GC/MS	8270C	Benzo[k]fluoranthene
GC/MS	8270C	Benzoic acid
GC/MS	8270C	Benzyl alcohol
GC/MS	8270C	Bis(2-chloroethoxy)methane
GC/MS	8270C	Bis(2-chloroethyl)ether
GC/MS	8270C	Bis(2-ethylhexyl) phthalate
GC/MS	8270C	Butyl benzyl phthalate
GC/MS	8270C	Carbazole
GC/MS	8270C	Chrysene
GC/MS	8270C	Dibenz(a,h)anthracene
GC/MS	8270C	Dibenzofuran
GC/MS	8270C	Diethyl phthalate
GC/MS	8270C	Dimethyl phthalate
GC/MS	8270C	Di-n-butyl phthalate
GC/MS	8270C	Di-n-octyl phthalate
GC/MS	8270C	Fluoranthene
GC/MS	8270C	Fluorene
GC/MS	8270C	Hexachlorobenzene
GC/MS	8270C	Hexachlorobutadiene
GC/MS	8270C	Hexachloroethane
GC/MS	8270C	Indeno[1,2,3-cd]pyrene
GC/MS	8270C	Isophorone
GC/MS	8270C	Naphthalene
GC/MS	8270C	Nitrobenzene
GC/MS	8270C	N-Nitrosodimethylamine
GC/MS	8270C	N-Nitrosodi-n-propylamine
GC/MS	8270C	N-Nitrosodiphenylamine
GC/MS	8270C	Pentachlorophenol
GC/MS	8270C	Phenanthrene
GC/MS	8270C	Phenol
GC/MS	8270C	Pyrene
GC/MS SIM	8270C SIM	2-Methylnaphthalene
GC/MS SIM	8270C SIM	Acenaphthene

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Solid and Chemical Materials

Technology	Method	Analyte
GC/MS SIM	8270C SIM	Acenaphthylene
GC/MS SIM	8270C SIM	Anthracene
GC/MS SIM	8270C SIM	Benzo[a]anthracene
GC/MS SIM	8270C SIM	Benzo[a]pyrene
GC/MS SIM	8270C SIM	Benzo[b]fluoranthene
GC/MS SIM	8270C SIM	Benzo[g,h,i]perylene
GC/MS SIM	8270C SIM	Benzo[k]fluoranthene
GC/MS SIM	8270C SIM	Chrysene
GC/MS SIM	8270C SIM	Dibenz(a,h)anthracene
GC/MS SIM	8270C SIM	Fluoranthene
GC/MS SIM	8270C SIM	Fluorene
GC/MS SIM	8270C SIM	Indeno[1,2,3-cd]pyrene
GC/MS SIM	8270C SIM	Naphthalene
GC/MS SIM	8270C SIM	Phenanthrene
GC/MS SIM	8270C SIM	Pyrene
GC-ECD	8081A	4,4'-DDD
GC-ECD	8081A	4,4'-DDE
GC-ECD	8081A	4,4'-DDT
GC-ECD	8081A	Aldrin
GC-ECD	8081A	alpha-BHC
GC-ECD	8081A	alpha-Chlordane
GC-ECD	8081A	beta-BHC
GC-ECD	8081A	delta-BHC
GC-ECD	8081A	Dieldrin
GC-ECD	8081A	Endosulfan I
GC-ECD	8081A	Endosulfan II
GC-ECD	8081A	Endosulfan sulfate
GC-ECD	8081A	Endrin
GC-ECD	8081A	Endrin aldehyde
GC-ECD	8081A	Endrin ketone
GC-ECD	8081A	gamma-BHC (Lindane)
GC-ECD	8081A	gamma-Chlordane
GC-ECD	8081A	Heptachlor
GC-ECD	8081A	Heptachlor epoxide
GC-ECD	8081A	Methoxychlor
GC-ECD	8081A	Technical Chlordane
GC-ECD	8081A	Toxaphene
GC-ECD	8082	PCB-1016
GC-ECD	8082	PCB-1221
GC-ECD	8082	PCB-1232

Solid and Chemical Materials		
Technology	**Method**	**Analyte**
GC-ECD	8082	PCB-1242
GC-ECD	8082	PCB-1248
GC-ECD	8082	PCB-1254
GC-ECD	8082	PCB-1260
GC-IT/MS	8151A mod.	2,4,5-T
GC-IT/MS	8151A mod.	2,4-D
GC-IT/MS	8151A mod.	2,4-DB
GC-IT/MS	8151A mod.	4-Nitrophenol
GC-IT/MS	8151A mod.	Dalapon
GC-IT/MS	8151A mod.	Dicamba
GC-IT/MS	8151A mod.	Dichlorprop
GC-IT/MS	8151A mod.	Dinoseb
GC-IT/MS	8151A mod.	MCPA
GC-IT/MS	8151A mod.	Mecoprop MCPP
GC-IT/MS	8151A mod.	Pentachlorophenol
GC-IT/MS	8151A mod.	Silvex (2,4,5-TP)
GC-FID	8015B/AK101/ NWTPH-Gx/NWVPH	Gasoline and Volatile Petroleum Hydrocarbons
GC-FID	8015B/AK102/ NWTPH-Dx/NWEPH	Diesel and Extractable Petroleum Hydrocarbons
GC-FID	8015B/AK102/ NWTPH-Dx/NWEPH	Motor Oil and Extractable Petroleum Hydrocarbons
Colorimetric/RFA	9012A	Total Cyanides
Ion Chromatography	300.0/9056A	Fluoride
Ion Chromatography	300.0/9056A	Chloride
Ion Chromatography	300.0/9056A	Fluoride
Ion Chromatography	300.0/9056A	Sulfate
Ion Chromatography	300.0/9056A	Nitrate
Ion Chromatography	300.0/9056A	Nitrite
TOC Analyzer (IR)	9060	TOC
Probe	9040/9045	pH/Corrosivity
Conductivity meter	9050	Specific Conductance
Pensky-Martens closed-cup tester/ Setaflash	1010/1020	Ignitability/Flashpoint
Preparation	**Method**	**Type**
Separatory Funnel Liquid-Liquid Extraction	3510C	Semivolatile and Nonvolatile Organics
Continuous Liquid-Liquid Extraction	3520	Semivolatile and Nonvolatile Organics
Ultrasonic Extraction	3550C	Semivolatile and Nonvolatile Organics
Solvent Dilution	3580	Semivolatile and Nonvolatile Organics

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Solid and Chemical Materials		
Preparation	**Method**	**Type**
Waste Dilution	3585	Volatile Organic Compounds
Purge and Trap	5030	Volatile Organic Compounds
Purge and Trap	5035	Volatile Organic Compounds
Acid Digestion (Aqueous)	3005/3010	Inorganics
Acid Digestion (Sediments, Sludges, and Soils)	3050	Inorganics
TCLP Extraction	1311	Toxicity Characteristic Leaching Procedure
Florisil Cleanup	3620B	Cleanup of pesticide residues and other chlorinated hydrocarbons
Silica Gel Cleanup	3630C	Column Cleanup
Gel Permeation Cleanup	3640A	Separation of Synthetic Macromolecules
Sulfur Cleanup	3660B	Sulfur Cleanup Reagent
Sulfuric Acid Cleanup	3665A	Cleanup for Quantitation of PCBs

Notes:

1) This laboratory offers commercial testing service.

Approved By: ______________________ Date: January 19, 2010

R. Douglas Leonard
Chief Technical Officer

Issued: 01/19/10

THE STATE OF ALASKA

Department of Environmental Conservation
Laboratory Certification Program

Certificate of Approval for Contaminated Sites Analysis

TestAmerica-Tacoma

5755 8th Street East
Tacoma, WA 98424

UST-022

has complied with the provisions set forth in 18 AAC 78 and is hereby recognized by The Department of Environmental Conservation as **Approved** for the analytical parameter listed on the accompanying Scope of Accreditation. This certificate is effective **3/4/12**, and expires **3/4/13**.

THE SEAL OF THE STATE OF ALASKA

Patryce D. McKinney
State of Alaska Certification Authority

Lance W. Morris
Laboratory Chemistry Certification Officer

THE STATE OF ALASKA
Department of Environmental Conservation
Laboratory Approval Program

Scope of Approval

Expiration: 03/04/2013

TestAmerica-Seattle, WA **UST-022**
5755 8th Street East
Tacoma, WA 98424

is approved by the State of Alaska Department of Environmental Conservation, pursuant to 18 AAC 78, to perform analysis for the parameters listed below using the analytical methods indicated. Approval for all parameters is final. Approval is for the latest version of a method unless specified otherwise in a note. EPA refers to the U.S. Environmental Protection Agency. AK refers to Alaska Methods 101, 102 and 103 for the determination of gasoline, diesel and residual range organics in soil and water. ASTM refers to the American Society for Testing and Materials.

Contaminated Sites

Method/Test Name	Reference	Analyte	Matrix	Status
6010B	EPA	Total Arsenic	Soil	Approved
6010B	EPA	Total Barium	Soil	Approved
6010B	EPA	Total Cadmium	Soil	Approved
6010B	EPA	Total Chromium	Soil	Approved
6010B	EPA	Total Lead	Soil	Approved
6010B	EPA	Total Nickel	Soil	Approved
6010B	EPA	Total Vanadium	Soil	Approved
6010B	EPA	Total Arsenic	Water	Approved
6010B	EPA	Total Barium	Water	Approved
6010B	EPA	Total Cadmium	Water	Approved
6010B	EPA	Total Chromium	Water	Approved
6010B	EPA	Total Lead	Water	Approved
6010B	EPA	Total Nickel	Water	Approved
6010B	EPA	Total Vanadium	Water	Approved
6020	EPA	Total Arsenic	Soil	Approved
6020	EPA	Total Barium	Soil	Approved
6020	EPA	Total Cadmium	Soil	Approved
6020	EPA	Total Chromium	Soil	Approved

Contaminated Sites

Method/Test Name	Reference	Analyte	Matrix	Status
6020	EPA	Total Lead	Soil	Approved
6020	EPA	Total Nickel	Soil	Approved
6020	EPA	Total Vanadium	Soil	Approved
6020	EPA	Total Arsenic	Water	Approved
6020	EPA	Total Barium	Water	Approved
6020	EPA	Total Cadmium	Water	Approved
6020	EPA	Total Chromium	Water	Approved
6020	EPA	Total Lead	Water	Approved
6020	EPA	Total Nickel	Water	Approved
6020	EPA	Total Vanadium	Water	Approved
8021B	EPA	BTEX	Water	Approved
8082	EPA	Polychlorinated Biphenyls-PCB	Soil	Approved
8082	EPA	Polychlorinated Biphenyls-PCB	Water	Approved
8260B	EPA	BTEX	Soil	Approved
8260B	EPA	Total Volatile Chlorinated Solvents	Soil	Approved
8260B	EPA	BTEX	Water	Approved
8260B	EPA	Total Volatile Chlorinated Solvents	Water	Approved
8270C	EPA	PAH	Soil	Approved
8270C	EPA	PAH	Water	Approved
AK101	AK	Gasoline Range Organics	Soil	Approved
AK101	AK	Gasoline Range Organics	Water	Approved
AK101/8021B	EPA	BTEX-methanol preserved	Soil	Approved
AK102	AK	Diesel Range Organics	Soil	Approved
AK102	AK	Diesel Range Organics	Water	Approved
AK102-SV	AK	Diesel Range Organics-small volume	Water	Approved
AK103	AK	Residual Range Organics	Soil	Approved

The American Association for Laboratory Accreditation

World Class Accreditation

Accredited DoD ELAP Laboratory

A2LA has accredited

TESTAMERICA DENVER

Arvada, CO

for technical competence in the field of

Environmental Testing

In recognition of the successful completion of the A2LA evaluation process that includes an assessment of the laboratory's compliance with ISO/IEC 17025:2005, the 2003 NELAC Chapter 5 Standard, and the requirements of the Department of Defense Environmental Laboratory Accreditation Program (DoD ELAP) as detailed in the DoD Quality Systems Manual for Environmental Laboratories (QSM v4.1); accreditation is granted to this laboratory to perform recognized EPA methods as defined on the associated A2LA Environmental Scope of Accreditation. This accreditation demonstrates technical competence for this defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009*).

Presented this 30th day of November 2009.

President & CEO
For the Accreditation Council
Certificate Number 2907.01
Valid to October 31, 2011

For the tests or types of tests to which this accreditation applies, please refer to the laboratory's Environmental Scope of Accreditation.

The American Association for Laboratory Accreditation

"World Class Accreditation"

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

TESTAMERICA DENVER
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ENVIRONMENTAL

Valid To: October 31, 2011 Certificate Number: 2907.01

In recognition of the successful completion of the A2LA evaluation process, (including an assessment of the laboratory's compliance with ISO IEC 17025:2005, the 2003 NELAC Chapter 5 Standard, and the requirements of the DoD Environmental Laboratory Accreditation Program (DoD ELAP) as detailed in the DoD Quality Systems Manual for Environmental Laboratories (DoD QSM v4.1)) accreditation is granted to this laboratory to perform recognized EPA methods using the following testing technologies and in the analyte categories identified below:

Testing Technologies

Atomic Absorption/ICP-AES Spectrometry, ICP/MS, Gas Chromatography, Gas Chromatography/Mass Spectrometry, Gravimetry, High Performance Liquid Chromatography, Ion Chromatography, Misc.- Electronic Probes (pH, O_2), Oxygen Demand, Hazardous Waste Characteristics Tests, Spectrophotometry (Visible), Spectrophotometry (Automated), IR Spectrometry, Titrimetry, Total Organic Carbon, Total Organic Halide

Parameter/Analyte	Non-Potable Water	Solid Hazardous Waste
Metals		
Aluminum	------------------------------------	EPA 6010B/6010C
Antimony	------------------------------------	EPA 6010B/6010C/6020/6020A
Arsenic	------------------------------------	EPA 6010B/6010C/6020/6020A
Barium	------------------------------------	EPA 6010B/6010C/6020/6020A
Beryllium	------------------------------------	EPA 6010B/6010C/6020/6020A
Boron	------------------------------------	EPA 6010B/6010C
Cadmium	------------------------------------	EPA 6010B/6010C/6020/6020A
Calcium	------------------------------------	EPA 6010B/6010C
Chromium	------------------------------------	EPA 6010B/6010C/6020/6020A
Cobalt	------------------------------------	EPA 6010B/6010C/6020/6020A
Copper	------------------------------------	EPA 6010B/6010C/6020/6020A
Iron	------------------------------------	EPA 6010B/6010C
Lead	------------------------------------	EPA 6010B/6010C/6020/6020A
Lithium	------------------------------------	EPA 6010B/6010C
Magnesium	------------------------------------	EPA 6010B/6010C
Manganese	------------------------------------	EPA 6010B/6010C/6020/6020A
Mercury	------------------------------------	EPA 7470A/7471A/7471B

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Parameter/Analyte	Non-Potable Water	Solid Hazardous Waste
Molybdenum	-----------------------------------	EPA 6010B/6010C/6020/6020A
Nickel	-----------------------------------	EPA 6010B/6010C/6020/6020A
Potassium	-----------------------------------	EPA 6010B/6010C
Selenium	-----------------------------------	EPA 6010B/6010C/6020/6020A
Silica	-----------------------------------	EPA 6010B/6010C
Silicon	-----------------------------------	EPA 6010B/6010C
Silver	-----------------------------------	EPA 6010B/6010C/6020/6020A
Sodium	-----------------------------------	EPA 6010B/6010C
Strontium	-----------------------------------	EPA 6010B/6010C
Thallium	-----------------------------------	EPA 6010B/6010C/6020/6020A
Tin	-----------------------------------	EPA 6010B/6010C
Titanium	-----------------------------------	EPA 6010B/6010C
Tungsten	-----------------------------------	EPA 6020/6020A
Vanadium	-----------------------------------	EPA 6010B/6010C/6020/6020A
Zinc	-----------------------------------	EPA 6010B/6010C/6020/6020A
Nutrients		
Nitrate (as N)	By calculation	EPA 9056/9056A
Nitrate-nitrite (as N)	EPA 353.2	EPA 9056/9056A
Nitrite (as N)	SM 4500-NO2 B	EPA 9056/9056A
Orthophosphate (as P)	-----------------------------------	EPA 9056/9056A
Total phosphorus	-----------------------------------	EPA 6010B/6010C
Demands		
Total organic carbon	-----------------------------------	EPA 9060
Total organic halides	-----------------------------------	EPA 9020B/9023
Wet Chemistry		
Alkalinity	SM 2320 B	-----------------------------------
Ammonia	EPA 350.1	-----------------------------------
Bromide	-----------------------------------	EPA 9056/9056A
Total organic carbon	-----------------------------------	EPA 9060
Chloride	-----------------------------------	EPA 9056/9056A
Conductivity	-----------------------------------	EPA 9050/EPA 9050A
Cyanide	-----------------------------------	EPA 9010B/9012A/9012B
Extractable organic halides (EOX)	-----------------------------------	EPA 9023
Ferrous Iron	SM 3500 Fe B, D	-----------------------------------
Fluoride	-----------------------------------	EPA 9056/9056A
Hexavalent Chromium	EPA 7196	EPA 7196 (water only)
pH	-----------------------------------	EPA 9040B/9045C
Oil and Grease (HEM and SGT-HEM)	EPA 1664A	EPA 1664A/9071B
Percent moisture	-----------------------------------	ASTM D2216
Perchlorate	-----------------------------------	EPA 6860
Phenols	-----------------------------------	EPA 9066
Solids, Total	SM 2540 B	-----------------------------------
Solids, Total Suspended	SM 2540 D	-----------------------------------
Solids, Total Dissolved	SM 2540 C	-----------------------------------
Sulfate	-----------------------------------	EPA 9038/9056/9056A
Sulfide, Total	-----------------------------------	EPA 9034
Sulfide	-----------------------------------	EPA 9030

Parameter/Analyte	Non-Potable Water	Solid Hazardous Waste
Purgeable Organics (volatiles)		
Acetone	------------------------------------	EPA 8260B
Acetonitrile	------------------------------------	EPA 8260B
Acrolein	------------------------------------	EPA 8260B
Acrylonitrile	------------------------------------	EPA 8260B
Allyl Chloride	------------------------------------	EPA 8260B
Benzene	------------------------------------	EPA 8260B/8021B/AK101
Bromobenzene	------------------------------------	EPA 8260B/8021B(water only)
Bromochloromethane	------------------------------------	EPA 8260B
Bromodichloromethane	------------------------------------	EPA 8260B/8021B(water only)
Bromoform	------------------------------------	EPA 8260B/8021B(water only)
Bromomethane	------------------------------------	EPA 8260B
2-Butanone	------------------------------------	EPA 8260B
n-Butyl alcohol	------------------------------------	EPA 8260B/8015B/8015C
n-Butylbenzene	------------------------------------	EPA 8260B
Sec-Butylbenzene	------------------------------------	EPA 8260B
Tert-Butylbenzene	------------------------------------	EPA 8260B
Carbon disulfide	------------------------------------	EPA 8260B
Carbon tetrachloride	------------------------------------	EPA 8260B
Chlorobenzene	------------------------------------	EPA 8260B / 8021B
2-Chloro-1,3-butadiene	------------------------------------	EPA 8260B
Chloroethane	------------------------------------	EPA 8260B
2-Chloroethyl vinyl ether	------------------------------------	EPA 8260B/8021B(water only)
Chloroform	------------------------------------	EPA 8260B/8021B(water only)
1-Chlorohexane	------------------------------------	EPA 8260B
Chloromethane	------------------------------------	EPA 8260B/8021B(water only)
Chloroprene	------------------------------------	EPA 8260B
3-Chloroprene	------------------------------------	EPA 8260B
4-Chlorotoluene	------------------------------------	EPA 8260B
2-Chlorotoluene	------------------------------------	EPA 8260B
Cyclohexane	------------------------------------	EPA 8260B
Cyclohexanone	------------------------------------	EPA 8260B
Dibromochloromethane	------------------------------------	EPA 8260B
1,2-Dibromo-3-chloropropane (DBCP)	EPA 504	EPA 8260B/8011/8021B (water only)
Dibromochloromethane	------------------------------------	EPA 8260B/8021B(water only)
Dichlorodifluoromethane	------------------------------------	EPA 8260B
Dibromomethane	------------------------------------	EPA 8260B/8021B(water only)
1,2 Dibromomethane (EDB)	EPA 504	EPA 8260B/8011/8021B (water only)
1,2-Dichlorobenzene	------------------------------------	EPA 8260B/8021B
1,3-Dichlorobenzene	------------------------------------	EPA 8260B/8021B
1,4-Dichlorobenzene	------------------------------------	EPA 8260B/8021B
cis-1,4-Dichloro-2-butene	------------------------------------	EPA 8260B/8021B(water only)
trans-1,4-Dichloro-2-butene	------------------------------------	EPA 8260B
1,1-Dichloroethane	------------------------------------	EPA 8260B/8021B(water only)
1,2-Dichloroethane	------------------------------------	EPA 8260B/8021B(water only)
1,1-Dichloroethene	------------------------------------	EPA 8260B/8021B(water only)
1,2-Dichloroethene	------------------------------------	EPA 8260B
cis-1,2-Dichloroethene	------------------------------------	EPA 8260B/8021B(water only)
trans-1,2-Dichloroethene	------------------------------------	EPA 8260B/8021B(water only)

Parameter/Analyte	Non-Potable Water	Solid Hazardous Waste
Dichlorofluoromethane	------------------------------------	EPA 8260B
1,2-Dichloropropane	------------------------------------	EPA 8260B/8021B(water only)
1,3-Dichloropropane	------------------------------------	EPA 8260B
2,2-Dichloropropane	------------------------------------	EPA 8260B/8021B(water only)
1,1-Dichloropropene	------------------------------------	EPA 8260B/8021B(water only)
1,3-Dichloropropene	------------------------------------	EPA 8260B
cis-1,3-Dichloropropene	------------------------------------	EPA 8260B/8021B(water only)
trans-1,3-Dichloropropene	------------------------------------	EPA 8260B/8021B(water only)
Diethyl ether	------------------------------------	EPA 8260B
Di-isopropylether	------------------------------------	EPA 8260B
1,4-Dioxane	------------------------------------	EPA 8260B
Ethanol	------------------------------------	EPA 8260B/8015B/8015C
Ethyl acetate	------------------------------------	EPA 8260B
Ethyl benzene	------------------------------------	EPA 8260B/8021B/AK101
Ethyl methacrylate	------------------------------------	EPA 8260B
Gas Range Organics (GRO)	------------------------------------	EPA 8015B/8015C/AK101
Hexane	------------------------------------	EPA 8260B
2-Hexanone	------------------------------------	EPA 8260B
Hexachlorobutadiene	------------------------------------	EPA 8260B
Isobutyl alcohol (2-Methyl-1-propanol)	------------------------------------	EPA 8260B/8015B/8015C
Isopropyl alcohol	------------------------------------	EPA 8260B
Isopropylbenzene	------------------------------------	EPA 8260B
1,4-Isopropyltoluene	------------------------------------	EPA 8260B
Iodomethane	------------------------------------	EPA 8260B
Methacrylonitrile	------------------------------------	EPA 8260B
Methanol	------------------------------------	EPA 8015B/8015C
Methyl acetate	------------------------------------	EPA 8260B
Methyl cyclohexane	------------------------------------	EPA 8260B
Methylene chloride	------------------------------------	EPA 8260B
Methyl ethyle ketone (MEK)	------------------------------------	EPA 8260B
Methyl isobutyl ketone	------------------------------------	EPA 8260B
Methyl methacrylate	------------------------------------	EPA 8260B
Methyl tert-butyl ether (MtBE)	------------------------------------	EPA 8260B/8021B
4-Methyl-2-pentanone	------------------------------------	EPA 8260B
Naphthalene	------------------------------------	EPA 8260B/8021B(water only)
2-Nitropropane	------------------------------------	EPA 8260B
2-Pentanone	------------------------------------	EPA 8260B
2-Propanol	------------------------------------	EPA 8260B
Propionitrile	------------------------------------	EPA 8260B
n-Propylbenzene	------------------------------------	EPA 8260B
Styrene	------------------------------------	EPA 8260B
1,1,1,2-Tetrachloroethane	------------------------------------	EPA 8260B/8021B(water only)
1,1,2,2-Tetrachloroethane	------------------------------------	EPA 8260B/8021B(water only)
Tetrachloroethene	------------------------------------	EPA 8260B/8021B(water only)
Tetrahydrofuran	------------------------------------	EPA 8260B
Toluene	------------------------------------	EPA 8260B / 8021B/AK101
Total Petroleum Hydrocarbons (TPH)	------------------------------------	EPA 1664A
1,2,3-Trichlorobenzene	------------------------------------	EPA 8260B/8021B(water only)
1,1,1-Trichloroethane	------------------------------------	EPA 8260B
1,1,2-Trichloroethane	------------------------------------	EPA 8260B
Trichloroethene	------------------------------------	EPA 8260B/8021B(water only)

Parameter/Analyte	Non-Potable Water	Solid Hazardous Waste
Trichlorofluoromethane	------------------------------------	EPA 8260B/8021B(water only)
1,2,3-Trichlorobenzene	------------------------------------	EPA 8260B
1,2,4-Trichlorobenzene	------------------------------------	EPA 8260B/8021B(water only)
1,2,3-Trichloropropane	------------------------------------	EPA 8260B/8021B(water only)
1,1,2-Trichloro-1,2,2-trifluoroethane	------------------------------------	EPA 8260B
1,2,3-Trimethylbenzene	------------------------------------	EPA 8260B
1,2,4-Trimethylbenzene	------------------------------------	EPA 8260B/8021B(water only)
1,3,5-Trimethylbenzene	------------------------------------	EPA 8260B
Vinyl acetate	------------------------------------	EPA 8260B
Vinyl chloride	------------------------------------	EPA 8260B/8021B(water only)
Xylenes, total	------------------------------------	EPA 8260B/8021B/AK101
1,2-Xylene	------------------------------------	EPA 8260B/8021B/AK101
M+P-Xylene	------------------------------------	EPA 8260B/8021B/AK101
Methane	------------------------------------	RSK-175
Ethane	------------------------------------	RSK-175
Ethylene (Ethene)	------------------------------------	RSK-175
Acetylene	------------------------------------	RSK-175
Acetylene Ethane	------------------------------------	RSK-175
Extractable Organics (semivolatiles)		
Acenaphthene	------------------------------------	EPA 8270C/8270D/8310/8270SIM
Acenaphthylene	------------------------------------	EPA 8270C/8270D/8310/8270SIM
Acetophenone	------------------------------------	EPA 8270C/8270D
2-Acetylaminofluorene	------------------------------------	EPA 8270C/8270D
Alachlor	------------------------------------	EPA 8270C/8270D
4-Aminobiphenyl	------------------------------------	EPA 8270C/8270D
Aniline	------------------------------------	EPA 8270C/8270D
Anthracene	------------------------------------	EPA 8270C/8270D/8310/8270SIM
Aramite	------------------------------------	EPA 8270C/8270D
Atrazine	------------------------------------	EPA 8270C/8270D
Azobenzene	------------------------------------	EPA 8270C/8270D
Benzaldehyde	------------------------------------	EPA 8270C/8270D
Benzidine	------------------------------------	EPA 8270C/8270D
Benzoic acid	------------------------------------	EPA 8270C/8270D
Benzo (a) anthracene	------------------------------------	EPA 8270C/8270D/8310/8270SIM
Benzo (b) fluoranthene	------------------------------------	EPA 8270C/8270D/8310/8270SIM
Benzo (k) fluoranthene	------------------------------------	EPA 8270C/8270D/8310/8270SIM
Benzo (ghi) perylene	------------------------------------	EPA 8270C/8270D/8310/8270SIM
Benzo (a) pyrene	------------------------------------	EPA 8270C/8270D/8310/8270SIM
Benzyl alcohol	------------------------------------	EPA 8270C/8270D
Bis (2-chloroethoxy) methane	------------------------------------	EPA 8270C/8270D
Bis (2-chloroethyl) ether	------------------------------------	EPA 8270C/8270D
Bis (2-chloroisopropyl) ether (2,2'Oxybis(1-chloropropane)	------------------------------------	EPA 8270C/8270D
Bis (2-ethylhexyl) phthalate	------------------------------------	EPA 8270C/8270D
4-Bromophenyl phenyl ether	------------------------------------	EPA 8270C/8270D
Butyl benzyl phthalate	------------------------------------	EPA 8270C/8270D
2-sec-Butyl-4,6-dinitrophenol	------------------------------------	EPA 8270C/8270D
Carbazole	------------------------------------	EPA 8270C/8270D
4-Chloroanilene	------------------------------------	EPA 8270C/8270D
Chlorobenzilate	------------------------------------	EPA 8270C/8270D

Parameter/Analyte	Non-Potable Water	Solid Hazardous Waste
4-Chloro-3-methylphenol	-------------------------------------	EPA 8270C/8270D
1-Chloronaphthalene	-------------------------------------	EPA 8270C/8270D
2-Chloronaphthalene	-------------------------------------	EPA 8270C/8270D
2-Chlorophenol	-------------------------------------	EPA 8270C/8270D
4-Chlorophenyl phenyl ether	-------------------------------------	EPA 8270C/8270D
Chrysene	-------------------------------------	EPA 8270C/8270D/8310/8270SIM
Cresols	-------------------------------------	EPA 8270C/8270D
Diallate	-------------------------------------	EPA 8270C/8270D
Dibenzo (a,h) anthracene	-------------------------------------	EPA 8270C/8270D/8310/8270SIM
Dibenzofuran	-------------------------------------	EPA 8270C/8270D
1,2-Dichlorobenzene	-------------------------------------	EPA 8270C/8270D
1,3-Dichlorobenzene	-------------------------------------	EPA 8270C/8270D
1,4-Dichlorobenzene	-------------------------------------	EPA 8270C/8270D
3,3’-Dichlorobenzidine	-------------------------------------	EPA 8270C/8270D
2,4-Dichlorophenol	-------------------------------------	EPA 8270C/8270D
2,6-Dichlorophenol	-------------------------------------	EPA 8270C/8270D
Diethyl phthalate	-------------------------------------	EPA 8270C/8270D
Dimethoate	-------------------------------------	EPA 8270C/8270D
3,3-Dimethylbenzidine	-------------------------------------	EPA 8270C/8270D
p-Dimethylaminoazobenzene	-------------------------------------	EPA 8270C/8270D
7,12-Dimethylbenz(a)anthracene	-------------------------------------	EPA 8270C/8270D
Alpha-,alpha-Dimethylphenethylamine	-------------------------------------	EPA 8270C/8270D
2,4-Dimethylphenol	-------------------------------------	EPA 8270C/8270D
Dimethyl phthalate	-------------------------------------	EPA 8270C/8270D
Di-n-butyl phthalate	-------------------------------------	EPA 8270C/8270D
Di-n-octyl phthalate	-------------------------------------	EPA 8270C/8270D
1,3-Dinitrobenzene	-------------------------------------	EPA 8270C/8270D
1,4-Dinitrobenzene	-------------------------------------	EPA 8270C/8270D
2,4-Dinitrophenol	-------------------------------------	EPA 8270C/8270D
2,4-Dinitrotoluene	-------------------------------------	EPA 8270C/8270D
2,6-Dinitrotoluene	-------------------------------------	EPA 8270C/8270D
Diphenylamine	-------------------------------------	EPA 8270C/8270D
1,2-Diphenylhydrazine	-------------------------------------	EPA 8270C/8270D
Disulfoton	-------------------------------------	EPA 8270C/8270D
Diesel Range Organics (DRO)	-------------------------------------	EPA 8015B/8015C, AK102, TX 1005
Ethyl methanesulfonate	-------------------------------------	EPA 8270C/8270D
Famphur	-------------------------------------	EPA 8270C/8270D
Fluoroanthene	-------------------------------------	EPA 8270C/8270D/8310/8270SIM
Fluorene	-------------------------------------	EPA 8270C/8270D/8310/8270SIM
Gasoline Range Organics	-------------------------------------	TX 1005
Hexachlorobenzene	-------------------------------------	EPA 8270C/8270D
Hexachlorobutadiene	-------------------------------------	EPA 8270C/8270D
Hexachlorocyclopentadiene	-------------------------------------	EPA 8270C/8270D
Hexachloroethane	-------------------------------------	EPA 8270C/8270D
Hexachloropropene	-------------------------------------	EPA 8270C/8270D
Indeno (1,2,3-cd) pyrene	-------------------------------------	EPA 8270C/8270D/8310/8270SIM
Isodrin	-------------------------------------	EPA 8270C/8270D
Isophorone	-------------------------------------	EPA 8270C/8270D
Isosafrole	-------------------------------------	EPA 8270C/8270D
Methapyrilene	-------------------------------------	EPA 8270C/8270D
3-Methylcholanthrene	-------------------------------------	EPA 8270C/8270D

Parameter/Analyte	Non-Potable Water	Solid Hazardous Waste
2-Methyl-4,6-Dinitrophenol	------------------------------------	EPA 8270C/8270D
Methyl methane sulfonate	------------------------------------	EPA 8270C/8270D
2-Methylcholanthrene	------------------------------------	EPA 8270C/8270D
1-Methylnaphthalene	------------------------------------	EPA 8270C/8270D/8270SIM
2-Methylnaphthalene	------------------------------------	EPA 8270C/8270D/8270SIM
2-Methylphenol	------------------------------------	EPA 8270C/8270D
3+4-Methylphenol	------------------------------------	EPA 8270C/8270D
Naphthalene	------------------------------------	EPA 8270C/8270D/8310/8270SIM
1,4-Naphthoquinone	------------------------------------	EPA 8270C/8270D
1-Naphthylamine	------------------------------------	EPA 8270C/8270D
2-Naphthylamine	------------------------------------	EPA 8270C/8270D
2-Nitroaniline	------------------------------------	EPA 8270C/8270D
3-Nitroaniline	------------------------------------	EPA 8270C/8270D
4-Nitroaniline	------------------------------------	EPA 8270C/8270D
Nitrobenzene	------------------------------------	EPA 8270C/8270D
2-Nitrophenol	------------------------------------	EPA 8270C/8270D
4-Nitrophenol	------------------------------------	EPA 8270C/8270D
Nitroquinoline-1-oxide	------------------------------------	EPA 8270C/8270D
N-Nitrosodiethylamine	------------------------------------	EPA 8270C/8270D/8070A
N-Nitrosodimethylamine	------------------------------------	EPA 8270C/8270D/8070A
N-Nitrosodi-n-butylamine	------------------------------------	EPA 8270C/8270D
N-Nitrosodi-n-propylamine	------------------------------------	EPA 8270C/8270D
N-Nitrosodiphenylamine	------------------------------------	EPA 8270C/8270D/8070A
N-Nitrosomethylethylamine	------------------------------------	EPA 8270C/8270D
N-Nitrosomorpholine	------------------------------------	EPA 8270C/8270D
N-Nitrosopiperidine	------------------------------------	EPA 8270C/8270D
N-Nitrosopyrrolidine	------------------------------------	EPA 8270C/8270D
5-Nitro-o-toluidine	------------------------------------	EPA 8270C/8270D
2,2-oxybis(1-chloropropane)	------------------------------------	EPA 8270C/8270D
Parathion, methyl	------------------------------------	EPA 8270C/8270D
Parathion, ethyl	------------------------------------	EPA 8270C/8270D
Pentachlorobenzene	------------------------------------	EPA 8270C/8270D
Pentachloroethane	------------------------------------	EPA 8270C/8270D
Pentachloronitobenzene	------------------------------------	EPA 8270C/8270D
Pentachlorophenol	------------------------------------	EPA 8270C/8270D
Phenacetin	------------------------------------	EPA 8270C/8270D
Phenanthrene	------------------------------------	EPA 8270C/8270D/8310/8270SIM
Phenol	------------------------------------	EPA 8270C/8270D
1,4-Phenylenediamine	------------------------------------	EPA 8270C/8270D
Phorate	------------------------------------	EPA 8270C/8270D
2-Picoline	------------------------------------	EPA 8270C/8270D
Pronamide	------------------------------------	EPA 8270C/8270D
Pyrene	------------------------------------	EPA 8270C/8270D/8310/8270SIM
Pyridine	------------------------------------	EPA 8270C/8270D
Safrole	------------------------------------	EPA 8270C/8270D
Sulfotepp	------------------------------------	EPA 8270C/8270D
1,2,4,5-Tetrachlorobenzene	------------------------------------	EPA 8270C/8270D
2,3,4,6-Tetrachlorophenol	------------------------------------	EPA 8270C/8270D
Thionazin	------------------------------------	EPA 8270C/8270D
o-Toluidine	------------------------------------	EPA 8270C/8270D
1,2,4-Trichlorobenzene	------------------------------------	EPA 8270C/8270D

Parameter/Analyte	Non-Potable Water	Solid Hazardous Waste
2,4,5-Trichlorophenol	------------------------------------	EPA 8270C/8270D
2,4,6-Trichlorophenol	------------------------------------	EPA 8270C/8270D
o,o,o-Triethyl phosphorothioate	------------------------------------	EPA 8270C/8270D
1,3,5-Trinitrobenzene	------------------------------------	EPA 8270C/8270D
Tris(2,3-Dibromopropyl) phosphate	------------------------------------	EPA 8270C/8270D
Motor Oil (Residual Range Organics)	------------------------------------	EPA 8015B/8015C, AK103
Pesticides/Herbicides/PCBs		
Aldicarb	------------------------------------	EPA 8321A
Aldrin	------------------------------------	EPA 8081A/8081B
Anilazine	------------------------------------	EPA 8141A/8141B
Atrazine	------------------------------------	EPA 8141A/8141B
Azinophos ethyl	------------------------------------	EPA 8141A/8141B
Azinophos methyl	------------------------------------	EPA 8141A/8141B
alpha-BHC	------------------------------------	EPA 8081A/8081B
Beta-BHC	------------------------------------	EPA 8081A/8081B
delta-BHC	------------------------------------	EPA 8081A/8081B
Gamma-BHC	------------------------------------	EPA 8081A/8081B
Bolstar	------------------------------------	EPA 8141A/8141B
Carbaryl	------------------------------------	EPA 8321A
Carbofuran	------------------------------------	EPA 8321A
Alpha-Chlordane	------------------------------------	EPA 8081A/8081B
Gamma-Chlordane	------------------------------------	EPA 8081A/8081B
Chlordane (technical)	------------------------------------	EPA 8081A/8081B
Chloropyrifos	------------------------------------	EPA 8081A/8081B/8141A/8141B
Coumaphos	------------------------------------	EPA 8141A/8141B
2,4-D	------------------------------------	EPA 8151A/8321A
Dalapon	------------------------------------	EPA 8151A/8321A
2,4-DB	------------------------------------	EPA 8151A/8321A
2,4'-DDD	------------------------------------	EPA 8081A/8081B
4,4'-DDD	------------------------------------	EPA 8081A/8081B
2,4'-DDE	------------------------------------	EPA 8081A/8081B
4,4'-DDE	------------------------------------	EPA 8081A/8081B
2,4',-DDT	------------------------------------	EPA 8081A/8081B
4,4',-DDT	------------------------------------	EPA 8081A/8081B
Demeton-O	------------------------------------	EPA 8141A/8141B
Demeton-S	------------------------------------	EPA 8141A/8141B
Demeton, total	------------------------------------	EPA 8141A/8141B
Diazinon	------------------------------------	EPA 8141A/8141B
Dicamba	------------------------------------	EPA 8151A/8321A
Dichlorovos	------------------------------------	EPA 8141A/8141B
Dichloroprop	------------------------------------	EPA 8151A/8321A
Dicofol	------------------------------------	EPA 8081A/8081B
Dieldrin	------------------------------------	EPA 8081A/8081B
Dimethoate	------------------------------------	EPA 8141A/8141B
Dinoseb	------------------------------------	EPA 8151A/8321A
Disulfoton	------------------------------------	EPA 8141A/8141B
Diuron	------------------------------------	EPA 8321A
Endosulfan I	------------------------------------	EPA 8081A/8081B
Endosulfan II	------------------------------------	EPA 8081A/8081B
Endonsulfan sulfate	------------------------------------	EPA 8081A/8081B

Parameter/Analyte	Non-Potable Water	Solid Hazardous Waste
Endrin	------------------------------------	EPA 8081A/8081B
Endrin aldehyde	------------------------------------	EPA 8081A/8081B
Endrin ketone	------------------------------------	EPA 8081A/8081B
EPN	------------------------------------	EPA 8141A/8141B
Ethoprop	------------------------------------	EPA 8141A/8141B
Ethyl parathion	------------------------------------	EPA 8141A/8141B
Famphur	------------------------------------	EPA 8141A/8141B
Fensulfothion	------------------------------------	EPA 8141A/8141B
Fenthion	------------------------------------	EPA 8141A/8141B
Heptachlor	------------------------------------	EPA 8081A/8081B
Heptachlor epoxide	------------------------------------	EPA 8081A/8081B
Hexachlorobenzene	------------------------------------	EPA 8081A/8081B
Isodrin	------------------------------------	EPA 8081A/8081B
Kepone	------------------------------------	EPA 8081A/8081B
Malathion	------------------------------------	EPA 8141A/8141B
MCPA	------------------------------------	EPA 8151A/8321A
MCPP	------------------------------------	EPA 8151A/8321A
Merphos	------------------------------------	EPA 8141A/8141B
Methiocarb	------------------------------------	EPA 8321A
Methoxychlor	------------------------------------	EPA 8081A/8081B
Methyl parathion	------------------------------------	EPA 8141A/8141B
Mevinphos	------------------------------------	EPA 8141A/8141B
Mirex	------------------------------------	EPA 8081A/8081B
Naled	------------------------------------	EPA 8141A/8141B
Oxamyl	------------------------------------	EPA 8321A
PCB-1016 (Arochlor)	------------------------------------	EPA 8082/8082A
PCB-1221	------------------------------------	EPA 8082/8082A
PCB-1232	------------------------------------	EPA 8082/8082A
PCB-1242	------------------------------------	EPA 8082/8082A
PCB-1248	------------------------------------	EPA 8082/8082A
PCB-1254	------------------------------------	EPA 8082/8082A
PCB-1260	------------------------------------	EPA 8082/8082A
PCB-1262	------------------------------------	EPA 8082/8082A
PCB-1268	------------------------------------	EPA 8082/8082A
Phorate	------------------------------------	EPA 8141A/8141B
Phosmet	------------------------------------	EPA 8141A/8141B
Propazine	------------------------------------	EPA 8141A/8141B
Propham	------------------------------------	EPA 8321A
Propoxur	------------------------------------	EPA 8321A
Ronnel	------------------------------------	EPA 8141A/8141B
Simazine	------------------------------------	EPA 8081A/8081B/8141A/8141B
Stirophos	------------------------------------	EPA 8141A/8141B
Sulfotepp	------------------------------------	EPA 8141A/8141B
2,4,5-T	------------------------------------	EPA 8151A/8321A
Thionazin	------------------------------------	EPA 8141A/8141B
Tokuthion	------------------------------------	EPA 8141A/8141B
2,4,5-TP	------------------------------------	EPA 8151A/8321A
Toxaphene	------------------------------------	EPA 8081A/8081B
Trichloronate	------------------------------------	EPA 8141A/8141B
o,o,o-triethylphos phorothioate	------------------------------------	EPA 8141A/8141B
tris(2,3-Dibromopropyl)phosphate	------------------------------------	EPA 8081A/8081B

Parameter/Analyte	Non-Potable Water	Solid Hazardous Waste
Explosives		
1,3,5-Trinitrobenzene	------------------------------------	EPA 8330A/8330B/8321A/8321B
1,3-Dinitrobenzene	------------------------------------	EPA 8330A/8330B/8321A/8321B
2,4,6-Trinitrotoluene	------------------------------------	EPA 8330A/8330B/8321A/8321B
2,4-Dinitrotoluene	------------------------------------	EPA 8330A/8330B/8321A/8321B
2,6-Dinitroltoluene	------------------------------------	EPA 8330A/8330B/8321A/8321B
2-Amino-4,6-dinitrotoluene	------------------------------------	EPA 8330A/8330B/8321A/8321B
2-Nitrotoluene	------------------------------------	EPA 8330A/8330B/8321A/8321B
3-Nitrotoluene	------------------------------------	EPA 8330A/8330B/8321A/8321B
4-Amino-2,6-dinitrotoluene	------------------------------------	EPA 8330A/8330B/8321A/8321B
4-Nitrotoluene	------------------------------------	EPA 8330A/8330B/8321A/8321B
Nitrobenzene	------------------------------------	EPA 8330A/8330B/8321A/8321B
Nitroglycerin	------------------------------------	EPA 8330A/8330B/8321A/8321B
Octahydro-1,3,5,7-tetrabitro-1,3,5,7-tetrazocine (HMX)	------------------------------------	EPA 8330A/8330B/8321A/8321B
Pentaerythritoltetranitrate (PETN)	------------------------------------	EPA 8330A/8330B/8321A/8321B
Picric acid	------------------------------------	EPA 8330A/8330B
RDX (hexahydro-1,3,5-trinitro-1,3,5-triazine)	------------------------------------	EPA 8330A/8330B/8321A/8321B
Tetryl (methyl2,4,6-trinitrophenylnitramine	------------------------------------	EPA 8330A/8330B/8321A/8321B
Hydrazines		
Hydrazine	------------------------------------	SOP DV WC-0077
Monomethyl hydrazine	------------------------------------	SOP DV WC-0077
1,1-Dimethylhydrazine	------------------------------------	SOP DV WC-0077
Perfluorinated Hydrocarbons (PFCs) and Perfluorinated Sulfonates (PFSs)		
Perfluorobutanoic acid	------------------------------------	SOP DV-LC-0012
Perfluoropentanoic acid	------------------------------------	SOP DV-LC-0012
Perfluorohexanoic acid	------------------------------------	SOP DV-LC-0012
Perfluoroheptanoic acid	------------------------------------	SOP DV-LC-0012
Perfluorooctanoic acid	------------------------------------	SOP DV-LC-0012
Perfluorononanoic acid	------------------------------------	SOP DV-LC-0012
Perfluorodecanoic acid	------------------------------------	SOP DV-LC-0012
Perfluoroundecanoic acid	------------------------------------	SOP DV-LC-0012
Perfluorododecanoic acid	------------------------------------	SOP DV-LC-0012
Perfluorotridecanoic acid	------------------------------------	SOP DV-LC-0012
Perfluorotetradecanoic acid	------------------------------------	SOP DV-LC-0012
Perfluorobutane Sulfonate	------------------------------------	SOP DV-LC-0012
Perfluorohexane Sulfonate	------------------------------------	SOP DV-LC-0012
Perfluorooctane Sulfonate	------------------------------------	SOP DV-LC-0012
Perfluorodecane Sulfonate	------------------------------------	SOP DV-LC-0012
Perfluorooctane Sulfonamide	------------------------------------	SOP DV-LC-0012
Perfluorooctane Sulfonamide	------------------------------------	SOP DV-LC-0012
Hazardous Waste Characteristics		
Conductivity	------------------------------------	EPA 9050A

Parameter/Analyte	Non-Potable Water	Solid Hazardous Waste
Corrosivity	-----------------------------------	EPA 9040B/9045C
Ignitibility	-----------------------------------	EPA 1010/EPA 1010A
Paint Filter Liquids Test	-----------------------------------	EPA 9095A
Synthetic Precipitation Leaching Procedure (SPLP)	-----------------------------------	EPA 1312
ToxicityCharacteristic Leaching Procedure	-----------------------------------	EPA 1311
Organic Prep Methods		
Separatory Funnel Liquid-Liquid Extraction	-----------------------------------	EPA 3510C
Continuous Liquid-Liquid Extraction	-----------------------------------	EPA 3520C
Soxhlet Extraction	-----------------------------------	EPA 3540C
Microwave Extraction	-----------------------------------	EPA 3546
Ultrasonic Extraction	-----------------------------------	EPA 3550B
Ultrasonic Extraction	-----------------------------------	EPA 3550C
Waste Dilution	-----------------------------------	EPA 3580A
Solid Phase Extraction Volatiles Purge and trap Volatiles purge and trap for soils	-----------------------------------	EPA 3535A EPA 5030B EPA 5035
Organic Cleanup Procedures		
Florisil Cleanup	-----------------------------------	EPA 3620B
Florisil Cleanup	-----------------------------------	EPA 3620C
Sulfur Cleanup	-----------------------------------	EPA 3660B
Sulfuric Acid/Permanganate Cleanup	-----------------------------------	EPA 3665A
Metals Digestion		
Acid Digestion Total Recoverable or Dissolved Metals	-----------------------------------	EPA 3005A
Acid Digestion for Total Metals	-----------------------------------	EPA 3010A
Acid Digestion for Total Metals	-----------------------------------	EPA 3020A
Acid Digestion of Sediments, Sludges and Soils	-----------------------------------	EPA 3050B

THE STATE OF ALASKA

Department of Environmental Conservation
Laboratory Certification Program

Certificate of Approval for Contaminated Sites Analysis

TestAmerica-Denver, CO

4955 Yarrow Street
Arvada, CO 80002

UST-030

has complied with the provisions set forth in 18 AAC 78 and is hereby recognized by The Department of Environmental Conservation as **Approved** for the analytical parameter listed on the accompanying Scope of Accreditation. This certificate is effective **4/5/12**, and expires **4/5/13**.

THE SEAL OF THE STATE OF ALASKA

Patryce D. McKinney
State of Alaska Certification Authority

Lance W. Morris
Laboratory Chemistry Certification Officer

THE STATE OF ALASKA
Department of Environmental Conservation
Laboratory Approval Program

Scope of Approval **Expiration: 04/05/2013**

TestAmerica-Denver, CO UST-030
4955 Yarrow Street
Arvada, CO 80002

is approved by the State of Alaska Department of Environmental Conservation, pursuant to 18 AAC 78, to perform analysis for the parameters listed below using the analytical methods indicated. Approval for all parameters is final. Approval is for the latest version of a method unless specified otherwise in a note. EPA refers to the U.S. Environmental Protection Agency. AK refers to Alaska Methods 101, 102 and 103 for the determination of gasoline, diesel and residual range organics in soil and water. ASTM refers to the American Society for Testing and Materials.

Contaminated Sites

Method/Test Name	Reference	Analyte	Matrix	Status
6010B	EPA	Total Arsenic	Soil	Approved
6010B	EPA	Total Barium	Soil	Approved
6010B	EPA	Total Cadmium	Soil	Approved
6010B	EPA	Total Chromium	Soil	Approved
6010B	EPA	Total Lead	Soil	Approved
6010B	EPA	Total Nickel	Soil	Approved
6010B	EPA	Total Vanadium	Soil	Approved
6010B	EPA	Total Arsenic	Water	Approved
6010B	EPA	Total Barium	Water	Approved
6010B	EPA	Total Cadmium	Water	Approved
6010B	EPA	Total Chromium	Water	Approved
6010B	EPA	Total Lead	Water	Approved
6010B	EPA	Total Nickel	Water	Approved
6010B	EPA	Total Vanadium	Water	Approved
6020	EPA	Total Arsenic	Soil	Approved
6020	EPA	Total Barium	Soil	Approved
6020	EPA	Total Cadmium	Soil	Approved
6020	EPA	Total Chromium	Soil	Approved

Method/Test Name	Reference	Analyte	Matrix	Status
6020	EPA	Total Lead	Soil	Approved
6020	EPA	Total Nickel	Soil	Approved
6020	EPA	Total Vanadium	Soil	Approved
6020	EPA	Total Arsenic	Water	Approved
6020	EPA	Total Barium	Water	Approved
6020	EPA	Total Cadmium	Water	Approved
6020	EPA	Total Chromium	Water	Approved
6020	EPA	Total Lead	Water	Approved
6020	EPA	Total Nickel	Water	Approved
6020	EPA	Total Vanadium	Water	Approved
8021B	EPA	BTEX	Water	Approved
8021B	EPA	Total Volatile Chlorinated Solvents	Water	Approved
8082	EPA	Polychlorinated Biphenyls-PCB	Soil	Approved
8082	EPA	Polychlorinated Biphenyls-PCB	Water	Approved
8260B	EPA	BTEX	Soil	Approved
8260B	EPA	Total Volatile Chlorinated Solvents	Soil	Approved
8260B	EPA	BTEX	Water	Approved
8260B	EPA	Total Volatile Chlorinated Solvents	Water	Approved
8270C	EPA	PAH	Soil	Approved
8270C	EPA	PAH	Water	Approved
8270D	EPA	PAH	Soil	Approved
8270D	EPA	PAH	Water	Approved
8310	EPA	PAH	Soil	Approved
8310	EPA	PAH	Water	Approved
AK101	AK	Gasoline Range Organics	Soil	Approved
AK101	AK	Gasoline Range Organics	Water	Approved
AK101/8021B	EPA	BTEX-methanol preserved	Soil	Approved
AK101/8021B	EPA	Total Volatile Chlorinated Solvents	Soil	Approved
AK102	AK	Diesel Range Organics	Soil	Approved
AK102	AK	Diesel Range Organics	Water	Approved
AK103	AK	Residual Range Organics	Soil	Approved

THE STATE OF ALASKA
Department of Environmental Conservation
Laboratory Approval Program

Scope of Approval **Expiration: 06/19/2013**

TestAmerica-Savannah, GA **UST-104**
5102 LaRoche Avenue
Savannah, GA 31404

is approved by the State of Alaska Department of Environmental Conservation, pursuant to 18 AAC 78, to perform analysis for the parameters listed below using the analytical methods indicated. Approval for all parameters is final. Approval is for the latest version of a method unless specified otherwise in a note. EPA refers to the U.S. Environmental Protection Agency. AK refers to Alaska Methods 101, 102 and 103 for the determination of gasoline, diesel and residual range organics in soil and water. ASTM refers to the American Society for Testing and Materials.

Contaminated Sites

Method/Test Name	Reference	Analyte	Matrix	Status
6010B	EPA	Total Arsenic	Soil	Approved
6010B	EPA	Total Barium	Soil	Approved
6010B	EPA	Total Cadmium	Soil	Approved
6010B	EPA	Total Chromium	Soil	Approved
6010B	EPA	Total Lead	Soil	Approved
6010B	EPA	Total Nickel	Soil	Approved
6010B	EPA	Total Vanadium	Soil	Approved
6010B	EPA	Total Arsenic	Water	Approved
6010B	EPA	Total Barium	Water	Approved
6010B	EPA	Total Cadmium	Water	Approved
6010B	EPA	Total Chromium	Water	Approved
6010B	EPA	Total Lead	Water	Approved
6010B	EPA	Total Nickel	Water	Approved
6010B	EPA	Total Vanadium	Water	Approved
6020	EPA	Total Arsenic	Soil	Approved
6020	EPA	Total Barium	Soil	Approved
6020	EPA	Total Cadmium	Soil	Approved
6020	EPA	Total Chromium	Soil	Approved
6020	EPA	Total Lead	Soil	Approved

Contaminated Sites

Method/Test Name	Reference	Analyte	Matrix	Status
6020	EPA	Total Nickel	Soil	Approved
6020	EPA	Total Vanadium	Soil	Approved
6020	EPA	Total Arsenic	Water	Approved
6020	EPA	Total Barium	Water	Approved
6020	EPA	Total Cadmium	Water	Approved
6020	EPA	Total Chromium	Water	Approved
6020	EPA	Total Lead	Water	Approved
6020	EPA	Total Nickel	Water	Approved
6020	EPA	Total Vanadium	Water	Approved
8082	EPA	Polychlorinated Biphenyls-PCB	Soil	Approved
8082	EPA	Polychlorinated Biphenyls-PCB	Water	Approved
8260B	EPA	BTEX	Soil	Approved
8260B	EPA	Total Volatile Chlorinated Solvents	Soil	Approved
8260B	EPA	BTEX	Water	Approved
8260B	EPA	Total Volatile Chlorinated Solvents	Water	Approved
8270C	EPA	PAH	Soil	Approved
8270C	EPA	PAH	Water	Approved
8270D	EPA	PAH	Soil	Approved
8270D	EPA	PAH	Water	Approved
AK101	AK	Gasoline Range Organics	Soil	Approved
AK101	AK	Gasoline Range Organics	Water	Approved
AK102	AK	Diesel Range Organics	Soil	Approved
AK102	AK	Diesel Range Organics	Water	Approved
AK103	AK	Residual Range Organics	Soil	Approved

SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

TEST AMERICA SAVANNAH
5102 LaRoche Avenue
Savannah, GA 31404
Andrea Teal   Phone: 912 354 7858

ENVIRONMENTAL

Valid To: February 28, 2013   Certificate Number: 0399.01

In recognition of the successful completion of the A2LA evaluation process, (including an assessment of the laboratory's compliance with ISO IEC 17025:2005, the 2003 NELAC Chapter 5 Standard, and the requirements of the DoD Environmental Laboratory Accreditation Program (DoD ELAP) as detailed in version 4.2 of the DoD Quality Systems Manual for Environmental Laboratories) accreditation is granted to this laboratory to perform recognized EPA methods using the following testing technologies and in the analyte categories identified below and for the test methods applicable to Kentucky Statute KRS 224.60-130(2)(a):

Testing Technologies

Atomic Absorption/ICP-AES Spectrometry, Gas Chromatography, Gas Chromatography/Mass Spectrometry, Gravimetry, Ion Chromatography, ICP/MS, Methylene Blue Active Substances, Misc.- Electronic Probes (pH, F^-, O_2), Oxygen Demand, Hazardous Waste Characteristics Tests, Spectrophotometry (Visible), Spectrophotometry (Automated), Titrimetry, Total Organic Carbon, Total Organic Halide, Turbidity

Parameter/Analyte	**Potable Water**	**Nonpotable Water**	**Solid Hazardous Waste**	
			Aqueous	**Solid**
Metals				
Aluminum	EPA 200.7 EPA 200.8	EPA 200.7 EPA 200.8	EPA 3005A/6010B EPA 3010A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B EPA 3005A/6010C EPA 3010A/6010C SM 3030C/EPA 6010C EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A ISM01.2 (ICP) ISM01.2 (ICPMS)	EPA 3050B/6010B EPA 3050B/6010C EPA 3050B/6020 EPA 3050B/6020A ISM01.2 (ICP)

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
Antimony	EPA 200.7 EPA 200.8	EPA 200.7 EPA 200.8	EPA 3005A/6010B EPA 3010A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B EPA 3005A/6010C EPA 3010A/6010C SM 3030C/EPA 6010C EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A ISM01.2 (ICP) ISM01.2 (ICPMS)	EPA 3050B/6010B EPA 3050B/6010C EPA 3050B/6020 EPA 3050B/6020A ISM01.2 (ICP) ISM01.2 (ICPMS)
Arsenic	EPA 200.7 EPA 200.8	EPA 200.7 EPA 200.8	EPA 3005A/6010B EPA 3010A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B EPA 3005A/6010C EPA 3010A/6010C SM 3030C/EPA 6010C EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A ISM01.2 (ICP) ISM01.2 (ICPMS)	EPA 3050B/6010B EPA 3050B/6010C EPA 3050B/6020 EPA 3050B/6020A ISM01.2 (ICP) ISM01.2 (ICPMS)
Barium	EPA 200.7 EPA 200.8	EPA 200.7 EPA 200.8	EPA 3005A/6010B EPA 3010A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B EPA 3005A/6010C EPA 3010A/6010C SM 3030C/EPA 6010C EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A ISM01.2 (ICP) ISM01.2 (ICPMS)	EPA 3050B/6010B EPA 3050B/6010C EPA 3050B/6020 EPA 3050B/6020A ISM01.2 (ICP) ISM01.2 (ICPMS)

Parameter/Analyte	**Potable Water**	**Nonpotable Water**	**Solid Hazardous Waste**	
			Aqueous	**Solid**
Beryllium	EPA 200.7 EPA 200.8	EPA 200.7 EPA 200.8	EPA 3005A/6010B EPA 3010A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B EPA 3005A/6010C EPA 3010A/6010C SM 3030C/EPA 6010C EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A ISM01.2 (ICP) ISM01.2 (ICPMS)	EPA 3050B/6010B EPA 3050B/6010C EPA 3050B/6020 EPA 3050B/6020A ISM01.2 (ICP) ISM01.2 (ICPMS)
Boron	EPA 200.7 EPA 200.8	EPA 200.7 EPA 200.8	EPA 3005A/6010B EPA 3010A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B EPA 3005A/6010C EPA 3010A/6010C SM 3030C/EPA 6010C EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A	EPA 3050B/6010B EPA 3050B/6010C EPA 3050B/6020 EPA 3050B/6020A
Cadmium	EPA 200.7 EPA 200.8	EPA 200.7 EPA 200.8	EPA 3005A/6010B EPA 3010A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B EPA 3005A/6010C EPA 3010A/6010C SM 3030C/EPA 6010C EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A ISM01.2 (ICP) ISM01.2 (ICPMS)	EPA 3050B/6010B EPA 3050B/6010C EPA 3050B/6020 EPA 3050B/6020A ISM01.2 (ICP) ISM01.2 (ICPMS)

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
Calcium	EPA 200.7 EPA 200.8	EPA 200.7 EPA 200.8	EPA 3005A/6010B EPA 3010A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B EPA 3005A/6010C EPA 3010A/6010C SM 3030C/EPA 6010C EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A ISM01.2 (ICP) ISM01.2 (ICPMS)	EPA 3050B/6010B EPA 3050B/6010C EPA 3050B/6020 EPA 3050B/6020A ISM01.2 (ICP)
Chromium	EPA 200.7 EPA 200.8	EPA 200.7 EPA 200.8	EPA 3005A/6010B EPA 3010A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B EPA 3005A/6010C EPA 3010A/6010C SM 3030C/EPA 6010C EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A ISM01.2 (ICP) ISM01.2 (ICPMS)	EPA 3050B/6010B EPA 3050B/6010C EPA 3050B/6020 EPA 3050B/6020A ISM01.2 (ICP) ISM01.2 (ICPMS)
Chromium 3+	SM 3500 Cr B_01 SM3500 Cr D	EPA 7196A SM 3500 Cr B_01 SM 3500 Cr D	EPA 7196A SM 3500 Cr B_01 SM 3500 Cr D	EPA 3060A/7196A
Chromium 6+	SM 3500 Cr B_01 SM3500 Cr D	EPA 7196A SM 3500 Cr B_01 SM 3500 Cr D	EPA 7196A SM 3500 Cr B_01 SM 3500 Cr D	EPA 3060A/7196A

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
Cobalt	EPA 200.7 EPA 200.8	EPA 200.7 EPA 200.8	EPA 3005A/6010B EPA 3010A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B EPA 3005A/6010C EPA 3010A/6010C SM 3030C/EPA 6010C EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A ISM01.2 (ICP) ISM01.2 (ICPMS)	EPA 3050B/6010B EPA 3050B/6010C EPA 3050B/6020 EPA 3050B/6020A ISM01.2 (ICP) ISM01.2 (ICPMS)
Copper	EPA 200.7 EPA 200.8	EPA 200.7 EPA 200.8	EPA 3005A/6010B EPA 3010A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B EPA 3005A/6010C EPA 3010A/6010C SM 3030C/EPA 6010C EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A ISM01.2 (ICP) ISM01.2 (ICPMS)	EPA 3050B/6010B EPA 3050B/6010C EPA 3050B/6020 EPA 3050B/6020A ISM01.2 (ICP) ISM01.2 (ICPMS)
Iron	EPA 200.7 EPA 200.8	EPA 200.7 EPA 200.8	EPA 3005A/6010B EPA 3010A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B EPA 3005A/6010C EPA 3010A/6010C SM 3030C/EPA 6010C EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A ISM01.2 (ICP) ISM01.2 (ICPMS)	EPA 3050B/6010B EPA 3050B/6010C EPA 3050B/6020 EPA 3050B/6020A ISM01.2 (ICP)

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
Iron, Ferric	SM 3500 Fe B_97 SM3500 Fe D	SM 3500 Fe B_97 SM3500 Fe D	SM 3500 Fe B_97 SM3500 Fe D	- - - - - - - - - -
Iron, Ferrous	SM 3500 Fe B_97 SM3500 Fe D	SM 3500 Fe B_97 SM3500 Fe D	SM 3500 Fe B_97 SM3500 Fe D	- - - - - - - - - -
Lead	EPA 200.7 EPA 200.8	EPA 200.7 EPA 200.8	EPA 3005A/6010B EPA 3010A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B EPA 3005A/6010C EPA 3010A/6010C SM 3030C/EPA 6010C EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A ISM01.2 (ICP) ISM01.2 (ICPMS)	EPA 3050B/6010B EPA 3050B/6010C EPA 3050B/6020 EPA 3050B/6020A ISM01.2 (ICP) ISM01.2 (ICPMS)
Magnesium	EPA 200.7 EPA 200.8	EPA 200.7 EPA 200.8	EPA 3005A/6010B EPA 3010A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B EPA 3005A/6010C EPA 3010A/6010C SM 3030C/EPA 6010C EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A ISM01.2 (ICP) ISM01.2 (ICPMS)	EPA 3050B/6010B EPA 3050B/6010C EPA 3050B/6020 EPA 3050B/6020A ISM01.2 (ICP)

Parameter/Analyte	**Potable Water**	**Nonpotable Water**	**Solid Hazardous Waste**	
			Aqueous	**Solid**
Manganese	EPA 200.7 EPA 200.8	EPA 200.7 EPA 200.8	EPA 3005A/6010B EPA 3010A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B EPA 3005A/6010C EPA 3010A/6010C SM 3030C/EPA 6010C EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A ISM01.2 (ICP) ISM01.2 (ICPMS)	EPA 3050B/6010B EPA 3050B/6010C EPA 3050B/6020 EPA 3050B/6020A ISM01.2 (ICP) ISM01.2 (ICPMS)
Mercury	EPA 200.8 EPA 245.1	EPA 200.8 EPA 245.1 SM 3112B	EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A EPA 7470A ISM01.2 (Hg) SM 3112B	EPA 3050B/6020 EPA 3050B/6020A EPA 7471A EPA 7471B ISM01.2 (Hg)
Molybdenum	EPA 200.7 EPA 200.8	EPA 200.7 EPA 200.8	EPA 3005A/6010B EPA 3010A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B EPA 3005A/6010C EPA 3010A/6010C SM 3030C/EPA 6010C EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A	EPA 3050B/6010B EPA 3050B/6010C EPA 3050B/6020 EPA 3050B/6020A

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
Nickel	EPA 200.7 EPA 200.8	EPA 200.7 EPA 200.8	EPA 3005A/6010B EPA 3010A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B EPA 3005A/6010C EPA 3010A/6010C SM 3030C/EPA 6010C EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A ISM01.2 (ICP) ISM01.2 (ICPMS)	EPA 3050B/6010B EPA 3050B/6010C EPA 3050B/6020 EPA 3050B/6020A ISM01.2 (ICP) ISM01.2 (ICPMS)
Potassium	EPA 200.7 EPA 200.8	EPA 200.7 EPA 200.8	EPA 3005A/6010B EPA 3010A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B EPA 3005A/6010C EPA 3010A/6010C SM 3030C/EPA 6010C EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A ISM01.2 (ICP) ISM01.2 (ICPMS)	EPA 3050B/6010B EPA 3050B/6010C EPA 3050B/6020 EPA 3050B/6020A ISM01.2 (ICP)
Selenium	EPA 200.7 EPA 200.8	EPA 200.7 EPA 200.8	EPA 3005A/6010B EPA 3010A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B EPA 3005A/6010C EPA 3010A/6010C SM 3030C/EPA 6010C EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A ISM01.2 (ICP) ISM01.2 (ICPMS)	EPA 3050B/6010B EPA 3050B/6010C EPA 3050B/6020 EPA 3050B/6020A ISM01.2 (ICP) ISM01.2 (ICPMS)

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
Silica	EPA 200.7	EPA 200.7	EPA 6010B EPA 6010C	- - - - - - - - - -
Silicon	EPA 200.7	EPA 200.7	EPA 6010B EPA 6010C	- - - - - - - - - -
Silver	EPA 200.7 EPA 200.8	EPA 200.7 EPA 200.8	EPA 3005A/6010B EPA 3010A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B EPA 3005A/6010C EPA 3010A/6010C SM 3030C/EPA 6010C EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A ISM01.2 (ICP) ISM01.2 (ICPMS)	EPA 3050B/6010B EPA 3050B/6010C EPA 3050B/6020 EPA 3050B/6020A ISM01.2 (ICP) ISM01.2 (ICPMS)
Sodium	EPA 200.7 EPA 200.8	EPA 200.7 EPA 200.8	EPA 3005A/6010B EPA 3010A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B EPA 3005A/6010C EPA 3010A/6010C SM 3030C/EPA 6010C EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A ISM01.2 (ICP) ISM01.2 (ICPMS)	EPA 3050B/6010B EPA 3050B/6010C EPA 3050B/6020 EPA 3050B/6020A ISM01.2 (ICP)
Sodium Adsorption Ratio	- - - - - - - - - -	USDA 20B	USDA 20B	- - - - - - - - - -

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
Strontium	EPA 200.7 EPA 200.8	EPA 200.7 EPA 200.8	EPA 3005A/6010B EPA 3010A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B EPA 3005A/6010C EPA 3010A/6010C SM 3030C/EPA 6010C EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A	EPA 3050B/6010B EPA 3050B/6010C EPA 3050B/6020 EPA 3050B/6020A
Thallium	EPA 200.8	EPA 200.7 EPA 200.8	EPA 3005A/6010B EPA 3010A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B EPA 3005A/6010C EPA 3010A/6010C SM 3030C/EPA 6010C EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A ISM01.2 (ICP) ISM01.2 (ICPMS)	EPA 3050B/6010B EPA 3050B/6010C EPA 3050B/6020 EPA 3050B/6020A ISM01.2 (ICP) ISM01.2 (ICPMS)
Tin	EPA 200.7 EPA 200.8	EPA 200.7 EPA 200.8	EPA 3005A/6010B EPA 3010A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B EPA 3005A/6010C EPA 3010A/6010C SM 3030C/EPA 6010C EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A	EPA 3050B/6010B EPA 3050B/6010C EPA 3050B/6020 EPA 3050B/6020A

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
Titanium	EPA 200.7 EPA 200.8	EPA 200.7 EPA 200.8	EPA 3005A/6010B EPA 3010A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B EPA 3005A/6010C EPA 3010A/6010C SM 3030C/EPA 6010C EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A	EPA 3050B/6010B EPA 3050B/6010C EPA 3050B/6020 EPA 3050B/6020A
Vanadium	EPA 200.7 EPA 200.8	EPA 200.7 EPA 200.8	EPA 3005A/6010B EPA 3010A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B EPA 3005A/6010C EPA 3010A/6010C SM 3030C/EPA 6010C EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A ISM01.2 (ICP) ISM01.2 (ICPMS)	EPA 3050B/6010B EPA 3050B/6010C EPA 3050B/6020 EPA 3050B/6020A ISM01.2 (ICP) ISM01.2 (ICPMS)
Zinc	EPA 200.7 EPA 200.8	EPA 200.7 EPA 200.8	EPA 3005A/6010B EPA 3010A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B EPA 3005A/6010C EPA 3010A/6010C SM 3030C/EPA 6010C EPA 3005A/6020 EPA 3010A/6020 SM 3030C/EPA 6020 EPA 3005A/6020A EPA 3010A/6020A SM 3030C/EPA 6020A ISM01.2 (ICP) ISM01.2 (ICPMS)	EPA 3050B/6010B EPA 3050B/6010C EPA 3050B/6020 EPA 3050B/6020A ISM01.2 (ICP) ISM01.2 (ICPMS)

Parameter/Analyte	**Potable Water**	**Nonpotable Water**	**Solid Hazardous Waste**	
			Aqueous	**Solid**
Nutrients				
Ammonia (as N)	EPA 350.1 SM4500NH3_G	EPA 350.1 SM4500NH3_G	EPA 350.1 SM4500NH3_G	- - - - - - - - - -
Kjeldahl nitrogen	EPA 351.2	EPA 351.2	EPA 351.2	- - - - - - - - - -
Nitrate (as N)	EPA 300.0 EPA 353.2	EPA 300.0 EPA 353.2 EPA 9056 EPA 9056A	EPA 300.0 EPA 353.2 EPA 9056 EPA 9056A	EPA 300.0 EPA 9056 EPA 9056A
Nitrate-nitrite (as N)	EPA 300.0 EPA 353.2	EPA 300.0 EPA 353.2 EPA 9056 EPA 9056A	EPA 300.0 EPA 353.2 EPA 9056 EPA 9056A	EPA 300.0 EPA 9056 EPA 9056A
Nitrite (as N)	EPA 300.0 EPA 353.2	EPA 300.0 EPA 353.2 EPA 9056 EPA 9056A	EPA 300.0 EPA 353.2 EPA 9056 EPA 9056A	EPA 300.0 EPA 9056 EPA 9056A
Nitrate (as NO3)	EPA 300.0 EPA 353.2	EPA 300.0 EPA 353.2 EPA 9056 EPA 9056A	EPA 300.0 EPA 353.2 EPA 9056 EPA 9056A	EPA 300.0 EPA 9056 EPA 9056A
Nitrate-nitrite (as NO3-NO2)	EPA 300.0 EPA 353.2	EPA 300.0 EPA 353.2 EPA 9056 EPA 9056A	EPA 300.0 EPA 353.2 EPA 9056 EPA 9056A	EPA 300.0 EPA 9056 EPA 9056A
Nitrite (as NO2)	EPA 300.0 EPA 353.2	EPA 300.0 EPA 353.2 EPA 9056 EPA 9056A	EPA 300.0 EPA 353.2 EPA 9056 EPA 9056A	EPA 300.0 EPA 9056 EPA 9056A
Organic Nitrogen (as N)	- - - - - - - - - -	TKN minus Ammonia	TKN minus Ammonia	- - - - - - - - - -
Orthophosphate (as P)	EPA 365.1 SM4500P F	EPA 365.1 SM4500P F	EPA 365.1 SM4500P F	- - - - - - - - - -
Total Nitrogen (as N)	- - - - - - - - - -	TKN plus Nitrate-Nitrite (as N)	TKN plus Nitrate-Nitrite (as N)	- - - - - - - - - -
Total phosphorus	EPA 365.4	EPA 365.4	EPA 365.4	- - - - - - - - - -
Demands				
Adsorbable organic halides (AOX)	- - - - - - - - - -	EPA 1650	EPA 1650	- - - - - - - - - -
Biochemical oxygen demand	EPA 405.1 SM 5210 B	EPA 405.1 SM 5210 B	EPA 405.1 SM 5210 B	- - - - - - - - - -
Carbonacious BOD	SM 5210 B	SM 5210 B	SM 5210 B	- - - - - - - - - -
Chemical oxygen demand	EPA 410.4 SM 5220 D	EPA 410.4 SM 5220 D	EPA 410.4 SM 5220 D	- - - - - - - - - -

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
Dissolved carbon	EPA 415.1 SM 5310B	EPA 415.1 SM 5310B EPA 9060 EPA 9060A	EPA 415.1 SM 5310B EPA 9060 EPA 9060A	- - - - - - - - - -
Dissolved inorganic carbon	EPA 415.1 SM 5310B	EPA 415.1 SM 5310B EPA 9060 EPA 9060A	EPA 415.1 SM 5310B EPA 9060 EPA 9060A	- - - - - - - - - -
Dissolved organic carbon	EPA 415.1 SM 5310B	EPA 415.1 SM 5310B EPA 9060 EPA 9060A	EPA 415.1 SM 5310B EPA 9060 EPA 9060A	- - - - - - - - - -
Extractable organic halides	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -	EPA 9023
Total carbon	EPA 415.1 SM 5310B	EPA 415.1 SM 5310B EPA 9060 EPA 9060A	EPA 415.1 SM 5310B EPA 9060 EPA 9060A	- - - - - - - - - -
Total inorganic carbon	EPA 415.1 SM 5310B	EPA 415.1 SM 5310B EPA 9060 EPA 9060A	EPA 415.1 SM 5310B EPA 9060 EPA 9060A	- - - - - - - - - -
Total organic carbon	EPA 415.1 SM 5310B	EPA 415.1 SM 5310B EPA 9060 EPA 9060A	EPA 415.1 SM 5310B EPA 9060 EPA 9060A	EPA 9060 EPA 9060A Lloyd Kahn
Total organic halides	EPA 9020B	EPA 450.1 EPA 9020B	- - - - - - - - - -	- - - - - - - - - -
Wet Chemistry				
Acidity	EPA 305.1 SM 2310B	EPA 305.1 SM 2310B	EPA 305.1 SM 2310B	- - - - - - - - - -
Alkalinity	EPA 310.1 SM 2320B	EPA 310.1 SM 2320B	EPA 310.1 SM 2320B	- - - - - - - - - -
Anion/Cation Balance	- - - - - - - - - -	SM 1030 F	SM 1030 F	- - - - - - - - - -
Bicarbonate alkalinity	EPA 310.1 SM 2320B	EPA 310.1 SM 2320B	EPA 310.1 SM 2320B	- - - - - - - - - -
Bromide	EPA 300.1B	EPA 300.0 EPA 9056 EPA 9056A	EPA 300.0 EPA 9056 EPA 9056A	EPA 300.0 EPA 9056 EPA 9056A
Bromate	EPA 300.1B	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
Carbon dioxide, free	EPA 310.1 SM 2320B	EPA 310.1 SM 2320B	EPA 310.1 SM 2320B	- - - - - - - - - -
Carbonate alkalinity	EPA 310.1 SM 2320B	EPA 310.1 SM 2320B SM 4500 CO2 D	EPA 310.1 SM 2320B SM 4500 CO2 D	- - - - - - - - - -
Chlorate	EPA 300.1B	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Chloride	EPA 300.0 EPA 325.2 SM 4500 Cl- E	EPA 300.0 EPA 325.2 SM4500 Cl- E EPA 9056 EPA 9056A EPA 9251	EPA 9056 EPA 9056A EPA 9251 EPA 300.0 EPA 325.2 SM4500 Cl-E	EPA 300.0 EPA 9056 EPA 9056A EPA 9251
Chloride, residual	EPA 330.3 SM 4500 Cl-B	EPA 330.3 SM4500 Cl-B	EPA 330.3 SM4500 Cl-B	- - - - - - - - - -
Chlorite	EPA 300.1B	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Color	EPA 110.2 SM 2120B	EPA 110.2 SM 2120B	EPA 110.2 SM 2120B	- - - - - - - - - -
Corrosivity-calc.carb. stability	SM 2330B	SM 2330B	SM 2330B	- - - - - - - - - -
Cyanide	EPA 335.4 SM 4500-CN-E	EPA 335.4 SM 4500 CN-E ISM01.2 (CN) EPA 9012A EPA 9012B	EPA 9012A EPA 9012B ISM01.2 (CN) EPA 335.4 SM 4500 CN-E	EPA 9012A EPA 9012B ISM01.2 (CN)
Cyanide amenable to chlorination	EPA 335.1	EPA 335.1 EPA 9013/9012A EPA 9013/9012B	EPA 9013/9012A EPA 9013/9012B EPA 335.1	EPA 9013/9012A EPA 9013/9012B
Cyanide, weak acid dissociable	- - - - - - - - - -	SM 4500-CN-I	SM 4500-CN-I	- - - - - - - - - -
Fluoride	EPA 300.0	EPA 300.0 EPA 9056 EPA 9056A	EPA 300.0 EPA 9056 EPA 9056A	EPA 300.0 EPA 9056 EPA 9056A
Hardness (as calcium carbonate)	EPA 130.2 SM 2340B SM 2340C	EPA 130.2 SM 2340B SM 2340C	EPA 130.2 SM 2340B SM 2340C	- - - - - - - - - -
Hardness, Calcium (as calcium carbonate)	SM 2340B	SM 2340B	SM 2340B	- - - - - - - - - -
Hardness, Magnesium (as calcium carbonate)	SM 2340B	SM 2340B	SM 2340B	- - - - - - - - - -
Hydroxide alkalinity	EPA 310.1 SM 2320B	EPA 310.1 SM 2320B	EPA 310.1 SM 2320B	- - - - - - - - - -
Odor	EPA 140.1 SM 2150 B	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
Oxygen, dissolved	EPA 360.2 SM 4500 O C	EPA 360.2 SM 4500 O C	EPA 360.2 SM 4500 O C	- - - - - - - - - -
Perchlorate	EPA 314.0	EPA 314.0	EPA 314.0	EPA 314.0
pH	EPA 150.1 SM 4500 H+ B	EPA 150.1 SM 4500 H+ B EPA 9040B EPA 9040C	EPA 9040B EPA 9040C EPA 150.1 SM 4500 H+ B	EPA 9045C EPA 9045D
Phenolphthalein alkalinity	EPA 310.1 SM 2320B	EPA 310.1 SM 2320B	EPA 310.1 SM 2320B	- - - - - - - - - -
MBAS (Surfactants)	EPA 425.1 SM 5540C	EPA 425.1 SM 5540C	EPA 425.1 SM 5540C	
Oil and Grease (HEM)	- - - - - - - - - -	EPA 1664A	EPA 1664A	EPA 9071B
Phenols	EPA 420.1	EPA 420.1 EPA 9065 EPA 9065A	EPA 9065 EPA 9065A EPA 420.1	EPA 9065 EPA 9065A
Filterable residue	EPA 160.1 SM 2540C	EPA 160.1 SM 2540C	EPA 160.1 SM 2540C	- - - - - - - - - -
Nonfilterable residue	EPA 160.2 SM 2540D	EPA 160.2 SM 2540D	EPA 160.2 SM 2540D	- - - - - - - - - -
Settleable Residue	EPA 160.5 SM 2540F	EPA 160.5 SM 2540F	EPA 160.5 SM 2540F	- - - - - - - - - -
Total residue	EPA 160.3 SM 2540B	EPA 160.3 SM 2540B	EPA 160.3 SM 2540B	SM2540G
Volatile dissolved residue	- - - - - - - - - -	SM 2540E	SM 2540E	- - - - - - - - - -
Total volatile suspended residue	- - - - - - - - - -	SM 2540E	SM 2540E	- - - - - - - - - -
Volatile residue	EPA 160.4 SM 2540E	EPA 160.4 SM 2540E	EPA 160.4 SM 2540E	SM2540G
Ash Content	- - - - - - - - - -	SM 2540E	SM 2540E	SM2540G
Fixed residue	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -	SM2540G
Percent Moisture	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -	SM2540G
Resistivity	EPA 120.1 SM 2510B	EPA 120.1 SM 2510B	EPA 120.1 SM 2510B	- - - - - - - - - -
Salinity	SM 2520B	SM 2520B	SM 2520B	- - - - - - - - - -
Specific conductance	EPA 120.1 SM 2510B	EPA 120.1 SM 2510B	EPA 9050A EPA 120.1 SM 2510B	EPA 9050A
Sulfide	EPA 376.1 SM4500-S2-F	EPA 376.1 EPA 9030B/9034 SM4500 S2 F	EPA 9030B/9034 EPA 376.1 SM4500 S2 F	EPA 9030B/9034

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
Sulfate	EPA 300.0 EPA 375.4	EPA 300.0 EPA 375.4 EPA 9038 EPA 9056 EPA 9056A	EPA 300.0 EPA 375.4 EPA 9056 EPA 9056A EPA 9038	EPA 300.0 EPA 9056 EPA 9056A EPA 9038
Sulfite	EPA 377.1 SM4500 SO3 B	EPA 377.1 SM4500 SO3 B	EPA 377.1 SM4500-SO3-B	- - - - - - - - - -
Total Petroleum Hydrocarbons (TPH or SGT-HEM)	- - - - - - - - - -	EPA 1664A	EPA 1664A	EPA 9071B
Turbidity	EPA 180.1 SM 2130B	EPA 180.1 SM 2130B	EPA 180.1 SM 2130B	- - - - - - - - - -
Unionized ammonia	- - - - - - - - - -	FL-DEP SOP	FL-DEP SOP	- - - - - - - - - -
UV-254	SM5910B	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Purgeable Organics (Volatiles)				
Acetone	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Acetonitrile	- - - - - - - - - -	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Acrolein	- - - - - - - - - -	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Acrylonitrile	- - - - - - - - - -	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Amyl acetate, mixed isomers	- - - - - - - - - -	EPA 1666	EPA 1666	- - - - - - - - - -
Benzene	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
BTEX, Total		EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Bromobenzene	EPA 524.2	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Bromochloromethane	EPA 524.2	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Bromodichloromethane	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Bromoform	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Bromomethane	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
n-Butanol	- - - - - - - - - -	- - - - - - - - - -	EPA 8015B-DAI EPA 8015C-DAI	EPA 8015B-DAI EPA 8015C-DAI
sec-Butanol	- - - - - - - - - -	- - - - - - - - - -	EPA 8015B-DAI EPA 8015C-DAI	EPA 8015B-DAI EPA 8015C-DAI

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
2-Butanone	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
2-Butoxyethanol (Butyl cellosolve)	- - - - - - - - - -	- - - - - - - - - -	EPA 8015B-DAI EPA 8015C-DAI	EPA 8015B-DAI EPA 8015C-DAI
n-Butyl acetate	- - - - - - - - - -	EPA 1666	EPA 1666 EPA 8015B-DAI EPA 8015C-DAI	EPA 8015B-DAI EPA 8015C-DAI
sec-Butyl acetate	- - - - - - - - - -	- - - - - - - - - -	EPA 8015B-DAI EPA 8015C-DAI	EPA 8015B-DAI EPA 8015C-DAI
tert-Butyl alcohol (2-methyl-2-propanol)	- - - - - - - - - -	- - - - - - - - - -	EPA 8015B-DAI EPA 8015C-DAI	EPA 8015B-DAI EPA 8015C-DAI
n-Butylbenzene	EPA 524.2	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Sec-Butylbenzene	EPA 524.2	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Tert-Butylbenzene	EPA 524.2	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Carbon disulfide	- - - - - - - - - -	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Carbon tetrachloride	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Cellosolve acetate	- - - - - - - - - -	- - - - - - - - - -	EPA 8015B-DAI EPA 8015C-DAI	EPA 8015B-DAI EPA 8015C-DAI
Chlorobenzene	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Chloroethane	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
2-Chloroethyl vinyl ether	- - - - - - - - - -	EPA 624	EPA 5030B/8260B	- - - - - - - - - -
Chloroform	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
1-Chlorohexane	- - - - - - - - - -	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
4-Isopropyltoluene	EPA 524.2	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Chloromethane	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
3-Chloro-1-propene	- - - - - - - - - -	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Chloroprene	- - - - - - - - - -	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Cyclohexane	- - - - - - - - - -	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
2-Chlorotoluene	EPA 524.2	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
4-Chlorotoluene	EPA 524.2	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Dibromoacetic Acid (DBAA)	EPA 552.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Dibromochloromethane	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
1,2-Dibromo-3-chloropropane (DBCP)	EPA 504.1 EPA 524.2	- - - - - - - - - -	EPA 5030B/8260B EPA 8011	EPA 5030/8260B EPA 5035A/8260B
Dibromomethane	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
1,2-Dibromoethane (EDB)	EPA 504.1 EPA 524.2	EPA 624	EPA 5030B/8260B EPA 8011	EPA 5030/8260B EPA 5035A/8260B
Dichloroacetic Acid (DCAA)	EPA 552.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
1,2-Dichlorobenzene	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
1,3-Dichlorobenzene	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
1,4-Dichlorobenzene	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Trans-1,4-dichloro-2-butene	- - - - - - - - - -	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Dichlorodifluoromethane	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
1,1-Dichloroethane	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
1,2-Dichloroethane	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
1,1-Dichloroethene	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
cis-1,2-Dichloroethene	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
trans-1,2-Dichloroethene	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
1,2-Dichloroethene, Total	- - - - - - - - - -	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
1,2-Dichloropropane	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
1,3-Dichloropropane	EPA 524.2	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
2,2-Dichloropropane	EPA 524.2	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
1,1-Dichloropropene	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
cis-1,3-Dichloropropene	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
trans-1,3-Dichloropropene	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
1,3-Dichloropropene, Total	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Diethyl ether	- - - - - - - - - -	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Disopropyl ether	EPA 524.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
1,4-Dioxane	- - - - - - - - - -	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Ethanol	- - - - - - - - - -	- - - - - - - - - -	EPA 8015B-DAI EPA 8015C-DAI EPA 5030B/8260B	EPA 8015B-DAI EPA 8015C-DAI EPA 5030/8260B EPA 5035A/8260B
Ethyl acetate	- - - - - - - - - -	EPA 1666	EPA 1666 EPA 8015B-DAI EPA 8015C-DAI	EPA 8015B-DAI EPA 8015C-DAI
Ethyl benzene	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Ethyl methacrylate	- - - - - - - - - -	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Ethylene glycol	- - - - - - - - - -	- - - - - - - - - -	EPA 8015B-DAI EPA 8015C-DAI	EPA 8015B-DAI EPA 8015C-DAI
Tetraethylene glycol	- - - - - - - - - -	- - - - - - - - - -	EPA 8015B-DAI EPA 8015C-DAI	EPA 8015B-DAI EPA 8015C-DAI
Triethylene glycol	- - - - - - - - - -	- - - - - - - - - -	EPA 8015B-DAI EPA 8015C-DAI	EPA 8015B-DAI EPA 8015C-DAI
Furan	- - - - - - - - - -	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Haloacetic Acids, Total (HAA5)	EPA 552.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
n-Heptane	- - - - - - - - - -	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
n-Heptanol	- - - - - - - - - -	- - - - - - - - - -	EPA 8015B-DAI EPA 8015C-DAI	EPA 8015B-DAI EPA 8015C-DAI
2-Hexanone	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Hexachlorobutadiene	EPA 524.2	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Hexane	- - - - - - - - - -	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Isoamyl acetate	- - - - - - - - - -	- - - - - - - - - -	EPA 8015B-DAI EPA 8015C-DAI	EPA 8015B-DAI EPA 8015C-DAI

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
Isobutanol	- - - - - - - - - -	- - - - - - - - - -	EPA 5030B/8260B EPA 8015B-DAI EPA 8015C-DAI	EPA 5030/8260B EPA 5035A/8260B EPA 8015B-DAI EPA 8015C-DAI
Isobutyl acetate	- - - - - - - - - -	- - - - - - - - - -	EPA 8015B-DAI EPA 8015C-DAI	EPA 8015B-DAI EPA 8015C-DAI
Isopropyl acetate	- - - - - - - - - -	EPA 1666	EPA 1666 EPA 8015B-DAI EPA 8015C-DAI	EPA 8015B-DAI EPA 8015C-DAI
Isopropanol	- - - - - - - - - -	- - - - - - - - - -	EPA 8015B-DAI EPA 8015C-DAI	EPA 8015B-DAI EPA 8015C-DAI
Isopropyl ether	- - - - - - - - - -	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Isopropylbenzene	EPA 524.2	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Iodomethane	- - - - - - - - - -	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Methacrylonitrile	- - - - - - - - - -	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Methanol	- - - - - - - - - -	- - - - - - - - - -	EPA 8015B-DAI EPA 8015C-DAI	EPA 8015B-DAI EPA 8015C-DAI
Methyl acetate	- - - - - - - - - -	- - - - - - - - - -	EPA 5030B/8260B EPA 8015B-DAI EPA 8015C-DAI	EPA 5030/8260B EPA 5035A/8260B EPA 8015B-DAI EPA 8015C-DAI
Methylene chloride	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Methyl isobutyl ketone	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Methyl methacrylate	- - - - - - - - - -	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Methyl cyclohexane	- - - - - - - - - -	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Monobromoacetic Acid (MBAA)	EPA 552.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Monochloroacetic Acid (MCAA)	EPA 552.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Methyl tert-butyl ether (MTBE)	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Naphthalene	EPA 524.2	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
2,2'-Oxybisethanol (Diethylene glycol)	- - - - - - - - - -	- - - - - - - - - -	EPA 8015B-DAI EPA 8015C-DAI	EPA 8015B-DAI EPA 8015C-DAI
Pentachloroethane	- - - - - - - - - -	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Phenol	- - - - - - - - - -	- - - - - - - - - -	EPA 8015B-DAI EPA 8015C-DAI	EPA 8015B-DAI EPA 8015C-DAI

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
n-Propanol	- - - - - - - - - -	- - - - - - - - - -	EPA 8015B-DAI EPA 8015C-DAI	EPA 8015B-DAI EPA 8015C-DAI
Propionitrile	- - - - - - - - - -	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
2-Propoxy ethanol (Propyl cellosolve)	- - - - - - - - - -	- - - - - - - - - -	EPA 8015B-DAI EPA 8015C-DAI	EPA 8015B-DAI EPA 8015C-DAI
n-Propyl acetate	- - - - - - - - - -	- - - - - - - - - -	EPA 8015B-DAI EPA 8015C-DAI	EPA 8015B-DAI EPA 8015C-DAI
n-Propylbenzene	EPA 524.2	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Propylene glycol	- - - - - - - - - -	- - - - - - - - - -	EPA 8015B-DAI EPA 8015C-DAI	EPA 8015B-DAI EPA 8015C-DAI
Di-propylene glycol	- - - - - - - - - -	- - - - - - - - - -	EPA 8015B-DAI EPA 8015C-DAI	EPA 8015B-DAI EPA 8015C-DAI
Di-propylene glycol methyl ether	- - - - - - - - - -	- - - - - - - - - -	EPA 8015B-DAI	EPA 8015B-DAI
Styrene	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Tert-amyl alcohol	- - - - - - - - - -	- - - - - - - - - -	EPA 8015B-DAI EPA 8015C-DAI	EPA 8015B-DAI EPA 8015C-DAI
Tert-amyl methyl ether (TAME)	EPA 524.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Tert-butyl alcohol (TBA)	EPA 524.2	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Tert-butyl ethyl ether (ETBE)	EPA 524.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
1,1,1,2-Tetrachloroethane	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
1,1,2,2-Tetrachloroethane	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Tetrachloroethene	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Tetrahydrofuran	- - - - - - - - - -	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Toluene	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Trichloroacetic acid	EPA 552.2	- - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
1,1,1-Trichloroethane	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
1,1,2-Trichloroethane	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Trichloroethene	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Trichlorofluoromethane	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
1,2,3-Trichlorobenzene	EPA 524.2	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
1,2,4-Trichlorobenzene	EPA 524.2	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
1,2,3-Trichloropropane	EPA 524.2 EPA 504.1	- - - - - - - - - -	EPA 5030B/8260B EPA 8011	EPA 5030/8260B EPA 5035A/8260B
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	EPA 524.2	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
1,2,4-Trimethylbenzene	EPA 524.2	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
1,3,5-Trimethylbenzene	EPA 524.2	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Trihalomethanes, Total	EPA 524.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Vinyl acetate	- - - - - - - - - -	- - - - - - - - - -	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Vinyl chloride	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Xylenes, total	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
1,2-Xylene	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
1,3 & 1,4-Xylene	EPA 524.2	EPA 624	EPA 5030B/8260B	EPA 5030/8260B EPA 5035A/8260B
Gasoline Range Organics	- - - - - - - - - -	- - - - - - - - - -	EPA 5030B/8015B EPA 5030B/8015C AK101	EPA 5030/8015B EPA 5035A/8015B EPA 5030/8015C EPA 5035A/8015C AK101
Extractable Organics (Semivolatiles)				
Acenaphthene	EPA 525.2	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Acenaphthylene	EPA 525.2	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Acetochlor	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -

Parameter/Analyte	**Potable Water**	**Nonpotable Water**	**Solid Hazardous Waste**	
			Aqueous	**Solid**
Acetophenone	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
2-Acetylaminofluorene	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Alachlor	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
4-Aminobiphenyl	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Aniline	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Anthracene	EPA 525.2	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Aramite, Total	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Atrazine	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Benzaldehyde	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Benzidine	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Benzoic acid	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Benzo (a) anthracene	EPA 525.2	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D

Parameter/Analyte	**Potable Water**	**Nonpotable Water**	**Solid Hazardous Waste**	
			Aqueous	**Solid**
Benzo (b) fluoranthene	EPA 525.2	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Benzo (k) fluoranthene	EPA 525.2	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Benzo (ghi) perylene	EPA 525.2	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Benzo (a) pyrene	EPA 525.2	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Benzyl alcohol	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
1,1-Biphenyl	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Bis (2-chloroethoxy) methane	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Bis (2-chloroethyl) ether	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Bis (2-chloroisopropyl) ether	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Bis (2-ethylhexyl) phthalate	EPA 525.2	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Bromacil	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
4-Bromophenylphenyl ether	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
Butachlor	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Butylate	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Butyl benzyl phthalate	EPA 525.2	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
2-sec-Butyl-4,6-dinitrophenol	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Caprolactam	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Carbazole	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
4-Chloroaniline	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
4-Chloro-3-methylphenol	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
2-Chloronaphthalene	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
2-Chlorobiphenyl	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
2-Chlorophenol	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
4-Chlorophenol	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
4-Chlorophenyl phenyl ether	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
Chrysene	EPA 525.2	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Cresols (total methyl phenols)	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Diallate	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Dibenzofuran	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Dibenz(a,h) anthracene	EPA 525.2	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
1,2-Dichlorobenzene	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
1,3-Dichlorobenzene	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
1,4-Dichlorobenzene	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
3,3-Dichlorobenzidine	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
2,4-Dichlorophenol	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
2,6-Dichlorophenol	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
Diethyl phthalate	EPA 525.2	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Di(2-ethylhexyl)adipate	EPA 525.2	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Dimethoate	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
p-Dimethylaminoazobenzene	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
7,12-Dimethylbenz (a) anthracene	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
3,3'-Dimethylbenzidine	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Alpha-, alpha- Dimethylphenethlylamine	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
2,3-Dimethylphenol	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
2,4-Dimethylphenol	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
2,5-Dimethylphenol	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
2,4 & 2,5-Dimethylphenol	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
2,6-Dimethylphenol	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
3,4-Dimethylphenol	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Dimethyl phthalate	EPA 525.2	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Di-n-butyl phthalate	EPA 525.2	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Di-n-octyl phthalate	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Diphenyl ether	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
1,3-Dinitrobenzene	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
2,4-Dinitrophenol	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
2,4-Dinitrotoluene	EPA 525.2	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
2,6-Dinitrotoluene	EPA 525.2	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
1,4-Dioxane	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
1,2-Diphenylhydrazine	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Diphenamide	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
EPTC	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Ethoprop (Mocap)	EPA 525.2	- - - - - - - - - -		- - - - - - - - - -
Ethyl methane sulfonate	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Etridiazole	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Fenarimol	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Fluoranthene	EPA 525.2	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Fluorene	EPA 525.2	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Fluridone	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
2,2',3,3',4,4',6-Heptachlorobiphenyl	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Hexachlorobenzene	EPA 525.2	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Hexachlrobutadiene	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Hexachlorocyclopentadiene	EPA 525.2	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Hexachloroethane	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Hexachlorophene	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
Hexachloropropene	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Hexazinone	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Indeno (1,2,3-cd) pyrene	EPA 525.2	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Isophorone	EPA 525.2	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Isosafrole	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Methapyrilene	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Methylbenzoate	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
3-Methylcholanthrene	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
2-Methyl-4,6-Dinitrophenol	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Methyl methane sulfonate	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
1-Methylnaphthalene	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
2-Methylnaphthalene	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D

Parameter/Analyte	**Potable Water**	**Nonpotable Water**	**Solid Hazardous Waste**	
			Aqueous	**Solid**
Methyl paraoxon	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
2-Methylphenol	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
3 & 4-Methylphenol	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Metolachlor	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Metribuzin	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Mevinphos	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
MGK 264, total (isomer a+b)	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Molinate	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Napropamide	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Naphthalene	EPA 525.2	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
1,4-Naphthoquinone	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
1-Naphthylamine	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
2-Naphthylamine	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
2-Nitroaniline	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
3-Nitroaniline	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
4-Nitroaniline	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
Nitrobenzene	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
2-Nitrophenol	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
4-Nitrophenol	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
N-Nitroso-di-n-butylamine	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
N-Nitrosodiethylamine	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
N-Nitrosodimethylamine	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
N-Nitrosomethylethylamine	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
N-Nitrosomorpholine	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
N-Nitrosodi-n-propylamine	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
N-Nitrosodiphenylamine	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
N-Nitrosopiperidine	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
N-Nitrosopyrrolidine	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
4-Nitroquinoline-1-oxide	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
trans-Nonachlor	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Norflurazon	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Pebulate	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Pentachlorobenzene	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
2,2',3,4,6-Pentachlorobiphenyl	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Pentachlronitrobenzene	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Pentachlorophenol	- - - - - - - - - -	EPA 625 EPA 1653	EPA 3520C/8270C EPA 3520C/8270D EPA 1653	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Permethrin, total	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Phenacetin	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Phenanthrene	EPA 525.2	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Phenol	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Phenyl ether	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
p-Phenylene diamine	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
Phorate	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
2-Picoline	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
alpha-Pinene	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Pronamide	EPA 525.2	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Propazine	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Pyrene	EPA 525.2	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Pyridine	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Safrole, Total	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Terbacil	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
1,2,4,5-Tetrachlorobenzene	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
2,2’,4,4’-Tetrachlorobiphenyl	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Tetrachlorocatechol	- - - - - - - - - -	EPA 1653	EPA 1653	- - - - - - - - - -
Tetrachloroguaicol	- - - - - - - - - -	EPA 1653	EPA 1653	- - - - - - - - - -
2,3,4,6-Tetrachlorophenol	- - - - - - - - - -	EPA 1653	EPA 1653 EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
2-Toluidine (o-Toluidine)	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
Triademefon	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
2,4,5-Trichlorobiphenyl	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
1,2,3-Trichlorobenzene	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
1,2,4-Trichlorobenzene	- - - - - - - - - -	EPA 625	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
1,3,5-Trichlorobenzene	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
3,4,5-Trichlorocatechol	- - - - - - - - - -	EPA 1653	EPA 1653	- - - - - - - - - -
3,4,6-Trichlorocatechol	- - - - - - - - - -	EPA 1653	EPA 1653	- - - - - - - - - -
3,4,5-Trichloroguaicol	- - - - - - - - - -	EPA 1653	EPA 1653	- - - - - - - - - -
3,4,6-Trichloroguaicol	- - - - - - - - - -	EPA 1653	EPA 1653	- - - - - - - - - -
4,5,6-Trichloroguaicol	- - - - - - - - - -	EPA 1653	EPA 1653	- - - - - - - - - -
2,4,5-Trichlorophenol	- - - - - - - - - -	EPA 1653	EPA 3520C/8270C EPA 3520C/8270D EPA 1653	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
2,3,6-Trichlorophenol	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
2,4,6-Trichlorophenol	- - - - - - - - - -	EPA 625 EPA 1653	EPA 3520C/8270C EPA 3520C/8270D EPA 1653	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
3,4,5-Trichlorophenol	- - - - - - - - - -	EPA 1653	EPA 1653	- - - - - - - - - -
Trichlorosyringol	- - - - - - - - - -	EPA 1653	EPA 1653	- - - - - - - - - -
Tricyclazole	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
o,o',o''-Triethylphosphorothioate	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Trifluralin	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
1,3,5-Trinitrobenzene	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Vernolate	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -

Parameter/Analyte	**Potable Water**	**Nonpotable Water**	**Solid Hazardous Waste**	
			Aqueous	**Solid**
2,3-Xylenol	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
3,4-Xylenol	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8270C EPA 3520C/8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
#2 Diesel Fuel (Product Identification)	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8015B EPA 3520C/8015C	EPA 3550B/8015B EPA 3546/8015B EPA 3550C/8015C EPA 3546/8015C
Diesel Range Organics	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8015B EPA 3520C/8015C AK102	EPA 3550B/8015B EPA 3546/8015B EPA 3550C/8015C EPA 3546/8015C AK102
Residual Range Organics	- - - - - - - - - -	- - - - - - - - - -	AK103	AK103
Kerosene (Product Identification)	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8015B EPA 3520C/8015C	EPA 3550B/8015B EPA 3546/8015B EPA 3550C/8015C EPA 3546/8015C
Mineral Spirits (Product Identification)	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8015B EPA 3520C/8015C	EPA 3550B/8015B EPA 3546/8015B EPA 3550C/8015C EPA 3546/8015C
Motor Oil (Product Identification)	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8015B EPA 3520C/8015C	EPA 3550B/8015B EPA 3546/8015B EPA 3550C/8015C EPA 3546/8015C
Oil Range Organics	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8015B EPA 3520C/8015C	EPA 3550B/8015B EPA 3546/8015B EPA 3550C/8015C EPA 3546/8015C
Petroleum Range Organics	- - - - - - - - - -	- - - - - - - - - -	FL-PRO	FL-PRO
Pesticides-Herbicides-PCBs				
Acifluorfen	EPA 515.1	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Aldicarb (MS)	EPA 531.1	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Aldicarb sulfone	EPA 531.1	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Aldicarb sulfoxide	EPA 531.1	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
Aldrin	EPA 508 EPA 525.2	EPA 608	EPA 3520C/8081A EPA 3520C/8081B	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B
Atrazine	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
alpha-BHC	EPA 508 EPA 525.2	EPA 608	EPA 3520C/8081A EPA 3520C/8081B	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B
Bentazon	EPA 515.1	- - - - - - - - - -	- - - - - - - - - -	--------------------
beta-BHC	EPA 508 EPA 525.2	EPA 608	EPA 3520C/8081A EPA 3520C/8081B	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B
delta-BHC	EPA 508 EPA 525.2	EPA 608	EPA 3520C/8081A EPA 3520C/8081B	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B
gamma-BHC	EPA 508 EPA 525.2	EPA 608	EPA 3520C/8081A EPA 3520C/8081B	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B
Carbaryl	EPA 531.1	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Carbofuran (MS)	EPA 531.1	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Chloramben	EPA 515.1			
Chlordane (technical)	EPA 508	EPA 608	EPA 3520C/8081A EPA 3520C/8081B	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B
Chlordane (alpha)	EPA 525.2	EPA 608	EPA 3520C/8081A EPA 3520C/8081B	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B
Chlordane (gamma)	EPA 525.2	EPA 608	EPA 3520C/8081A EPA 3520C/8081B	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B
Chlorobenzilate	EPA 525.2		EPA 3520C/8081A EPA 3520C/8081B	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B
Decachlorobiphenyl	- - - - - - - - - -	EPA 680	EPA 680	EPA 680
Dichlorobiphenyl	- - - - - - - - - -	EPA 680	EPA 680	EPA 680

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
Heptachlorobiphenyl	- - - - - - - - - -	EPA 680	EPA 680	EPA 680
Hexachlorobiphenyl	- - - - - - - - - -	EPA 680	EPA 680	EPA 680
Monochlorobiphenyl	- - - - - - - - - -	EPA 680	EPA 680	EPA 680
Nonachlorobiphenyl	- - - - - - - - - -	EPA 680	EPA 680	EPA 680
Octachlorobiphenyl	- - - - - - - - - -	EPA 680	EPA 680	EPA 680
Pentachlorobiphenyl	- - - - - - - - - -	EPA 680	EPA 680	EPA 680
Tetrachlorobiphenyl	- - - - - - - - - -	EPA 680	EPA 680	EPA 680
Trichlorobiphenyl	- - - - - - - - - -	EPA 680	EPA 680	EPA 680
Chloroneb	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Chlorpropham	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Chlorpyrifos	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Chlorthalonil	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Cycloate	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
2,4-D	EPA 515.1	EPA 615	EPA 8151A	EPA 8151A
2,6-Dichlorophenol	- - - - - - - - - -	EPA 615	EPA 8151A	EPA 8151A
DCPA (Dacthal)	EPA 515.1 EPA 525.2	- - - - - - - - - -	EPA 8151A	EPA 8151A
Dalapon	EPA 515.1	EPA 615	EPA 8151A	EPA 8151A
2,4-DB	EPA 515.1	EPA 615	EPA 8151A	EPA 8151A
2,4'-DDD	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8081A EPA 3520C/8081B	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B
2,4' DDE	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8081A EPA 3520C/8081B	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B
2,4'-DDT	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8081A EPA 3520C/8081B	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B
4,4'-DDD	EPA 508 EPA 525.2	EPA 608	EPA 3520C/8081A EPA 3520C/8081B	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B
4,4' DDE	EPA 508 EPA 525.2	EPA 608	EPA 3520C/8081A EPA 3520C/8081B	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
4,4'-DDT	EPA 508 EPA 525.2	EPA 608	EPA 3520C/8081A EPA 3520C/8081B	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B
Dicamba	EPA 515.1	EPA 615	EPA 8151A	EPA 8151A
Dichlorvos	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
3,5-Dichlorobenzoic acid	EPA 515.1	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
2,3-Dichlorobiphenyl (PCB 5)	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Dichloroprop	EPA 515.1	EPA 615	EPA 8151A	EPA 8151A
Dieldrin	EPA 508 EPA 525.2	EPA 608	EPA 3520C/8081A EPA 3520C/8081B	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B
Dinoseb	EPA 515.1	EPA 615	EPA 8151A	EPA 8151A
Diquat	EPA 549.2	- - - - - - - - - -	- - - - - - - - -	- - - - - - - - - -
Disulfoton	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C /8270C EPA 3520C /8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Endosulfan I (alpha)	EPA 508 EPA 525.2	EPA 608	EPA 3520C/8081A EPA 3520C/8081B	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B
Endosulfan II (beta)	EPA 508 EPA 525.2	EPA 608	EPA 3520C/8081A EPA 3520C/8081B	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B
Endosulfan sulfate	EPA 508 EPA 525.2	EPA 608	EPA 3520C/8081A EPA 3520C/8081B	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B
Endothall	EPA 548.1	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Endrin	EPA 508 EPA 525.2	EPA 608	EPA 3520C/8081A EPA 3520C/8081B	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B
Endrin aldehyde	EPA 508 EPA 525.2	EPA 608	EPA 3520C/8081A EPA 3520C/8081B	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
Endrin ketone	- - - - - - - - - -	EPA 608	EPA 3520C/8081A EPA 3520C/8081B	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B
Famphur	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C /8270C EPA 3520C /8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Glyphosate	EPA 547	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Heptachlor	EPA 508 EPA 525.2	EPA 608	EPA 3520C/8081A EPA 3520C/8081B	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B
Heptachlor epoxide	EPA 508 EPA 525.2	EPA 608	EPA 3520C/8081A EPA 3520C/8081B.	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B
2,2',4,4',5,6'-Hexachlorobiphenyl (PCB 154)	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
3-Hydroxycarbofuran	EPA 531.1	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Isodrin	- - - - - - - - - -		EPA 3520C/8081A EPA 3520C/8081B	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B
MCPA	EPA 515.1	EPA 615	EPA 8151A	EPA 8151A
MCPP	EPA 515.1	EPA 615	EPA 8151A	EPA 8151A
Methiocarb	EPA 531.1	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Methomyl	EPA 531.1	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Methoxychlor	EPA 508 EPA 525.2	EPA 608	EPA 3520C/8081A EPA 3520C/8081B	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B
Mirex	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8081A EPA 3520C/8081B	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B
4-Nitrophenol	EPA 515.1	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
2,2',3,3',4,5',6,6'-Octachlorobiphenyl (PCB 201)	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Oxamyl (MS)	EPA 531.1	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Paraquat	EPA 549.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -

Parameter/Analyte	**Potable Water**	**Nonpotable Water**	**Solid Hazardous Waste**	
			Aqueous	**Solid**
Parathion ethyl	- - - - - - - - - -	EPA 614	EPA 3520C/8141A EPA 3520C/8141B EPA 3520C /8270C EPA 3520C /8270D	EPA 3550B/8141A EPA 3546/8141A EPA 3550C/8141B EPA 3546/8141B EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
Parathion methyl	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C /8270C EPA 3520C /8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
PCB-1016	EPA 508	EPA 608	EPA 3520C/8082 EPA 3520C/8082A	EPA 3550B/8082 EPA 3546/8082 EPA 3550C/8082A EPA 3546/8082A
PCB-1221	EPA 508	EPA 608	EPA 3520C/8082 EPA 3520C/8082A	EPA 3550B/8082 EPA 3546/8082 EPA 3550C/8082A EPA 3546/8082A
PCB-1232	EPA 508	EPA 608	EPA 3520C/8082 EPA 3520C/8082A	EPA 3550B/8082 EPA 3546/8082 EPA 3550C/8082A EPA 3546/8082A
PCB-1242	EPA 508	EPA 608	EPA 3520C/8082 EPA 3520C/8082A	EPA 3550B/8082 EPA 3546/8082 EPA 3550C/8082A EPA 3546/8082A
PCB-1248	EPA 508	EPA 608	EPA 3520C/8082 EPA 3520C/8082A	EPA 3550B/8082 EPA 3546/8082 EPA 3550C/8082A EPA 3546/8082A
PCB-1254	EPA 508	EPA 608	EPA 3520C/8082 EPA 3520C/8082A	EPA 3550B/8082 EPA 3546/8082 EPA 3550C/8082A EPA 3546/8082A
PCB-1260	EPA 508	EPA 608	EPA 3520C/8082 EPA 3520C/8082A	EPA 3550B/8082 EPA 3546/8082 EPA 3550C/8082A EPA 3546/8082A
PCB-1262	EPA 508	EPA 608	EPA 3520C/8082 EPA 3520C/8082A	EPA 3550B/8082 EPA 3546/8082 EPA 3550C/8082A EPA 3546/8082A

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
PCB-1268	EPA 508	EPA 608	EPA 3520C/8082 EPA 3520C/8082A	EPA 3550B/8082 EPA 3546/8082 EPA 3550C/8082A EPA 3546/8082A
PCBs, Total	EPA 508	EPA 608	EPA 3520C/8082 EPA 3520C/8082A	EPA 3550B/8082 EPA 3546/8082 EPA 3550C/8082A EPA 3546/8082A
Pentachlorophenol	EPA 515.1	- - - - - - - - - -	EPA 8151A	EPA 8151A
Picloram	EPA 515.1	- - - - - - - - - -	EPA 8151A	EPA 8151A
Propachlor	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Propoxur (Baygon)	EPA 531.1	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Simazine	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Stirophos	EPA 525.2	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -
Sulfotepp	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C /8270C EPA 3520C /8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
2,4,5-T	EPA 515.1	EPA 615	EPA 8151A	EPA 8151A
Thionazin	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C /8270C EPA 3520C /8270D	EPA 3550B/8270C EPA 3546/8270C EPA 3550C/8270D EPA 3546/8270D
2,4,6-Trichlorophenol	- - - - - - - - - -	EPA 615	EPA 8151A	EPA 8151A
2,4,5-TP (Silvex)	EPA 515.1	EPA 615	EPA 8151A	EPA 8151A
Toxaphene	EPA 508	EPA 608	EPA 3520C/8081A EPA 3520C/8081B EPA 3520C/8276	EPA 3550B/8081A EPA 3546/8081A EPA 3550C/8081B EPA 3546/8081B EPA 3546/8276
Hp-Sed	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8276	EPA 3546/8276
Hx-Sed	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8276	EPA 3546/8276
Parlar 26	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8276	EPA 3546/8276
Parlar 40	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8276	EPA 3546/8276
Parlar 41	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8276	EPA 3546/8276
Parlar 44	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8276	EPA 3546/8276
Parlar 50	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8276	EPA 3546/8276
Parlar 62	- - - - - - - - - -	- - - - - - - - - -	EPA 3520C/8276	EPA 3546/8276
Hazardous Waste Characteristics				
BTU	- - - - - - - - - -	ASTM D240	ASTM D240	ASTM D240

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
Free Liquid	- - - - - - - - - -	- - - - - - - - - -	- - - - - - - - - -	EPA 9095A EPA 9095B
Ignitability	- - - - - - - - - -	EPA 1010 EPA 1010A	EPA 1010 EPA 1010A	EPA 1030
Specific Gravity	- - - - - - - - - -	SM2710 F	SM2710 F	SM2710 F
SPLC	- - - - - - - - - -	- - - - - - - - - -	EPA 1312	EPA 1312
TCLP	- - - - - - - - - -	- - - - - - - - - -	EPA 1311	EPA 1311
Air Testing				
Purgeable Organics				
Methane (FID)	- - - - - - - - - -	RSK-175	RSK-175	- - - - - - - - - -
Methane (TCD)	- - - - - - - - - -	RSK-175	RSK-175	- - - - - - - - - -
Ethane (FID)	- - - - - - - - - -	RSK-175	RSK-175	- - - - - - - - - -
Ethene (FID)	- - - - - - - - - -	RSK-175	RSK-175	- - - - - - - - - -
Kentucky UST Program				
TCLP Metals				
Arsenic	- - - - - - - - - -	- - - - - - - - - -	EPA 3005A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B	EPA 3005A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B
Barium	- - - - - - - - - -	- - - - - - - - - -	EPA 3005A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B	EPA 3005A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B
Cadmium	- - - - - - - - - -	- - - - - - - - - -	EPA 3005A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B	EPA 3005A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B
Chromium	- - - - - - - - - -	- - - - - - - - - -	EPA 3005A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B	EPA 3005A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B
Lead	- - - - - - - - - -	- - - - - - - - - -	EPA 3005A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B	EPA 3005A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B
Mercury	- - - - - - - - - -	- - - - - - - - - -	EPA 7470A	EPA 7470A

Parameter/Analyte	Potable Water	Nonpotable Water	Solid Hazardous Waste	
			Aqueous	Solid
Selenium	- - - - - - - - - -	- - - - - - - - - -	EPA 3005A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B	EPA 3005A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B
Silver	- - - - - - - - - -	- - - - - - - - - -	EPA 3005A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B	EPA 3005A/6010B EPA 3010A/6010B SM 3030C/EPA 6010B

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In recognition of the successful completion of the A2LA evaluation process that includes an assessment of the laboratory's compliance with ISO/IEC 17025:2005, the 2003 NELAC Chapter 5 Standard, and the requirements of the Department of Defense Environmental Laboratory Accreditation Program (DoD ELAP) as detailed in version 4.2 of the DoD Quality System Manual for Environmental Laboratories (QSM); accreditation is granted to this laboratory to perform recognized EPA methods as defined on the associated A2LA Environmental Scope of Accreditation. This accreditation demonstrates technical competence for this defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009*).

AMERICAN ASSOCIATION FOR LABORATORY ACCREDITATION
CORPORATE SEAL 1978
DISTRICT OF COLUMBIA
A2LA

Presented this 5th day of April 2011.

Peter Unger

President & CEO
For the Accreditation Council
Certificate Number 0399.01
Valid to February 28, 2013
Revised June 1, 2012

For the tests or types of tests to which this accreditation applies, please refer to the laboratory's Environmental Scope of Accreditation.

APPENDIX J

Chemical Data Quality Review, ADEC Checklists and Sample Summary Sheet

TABLE OF CONTENTS

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TABLES

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ACRONYMS AND ABBREVIATIONS

ADEC	Alaska Department of Environmental Conservation
Bristol	Bristol Environmental Remediation Services, LLC
BTEX	benzene, toluene, ethylbenzene, and xylenes
CCV	continuing calibration verification
COC	chain-of-custody
DCB	decachlorobiphenyl
DL	detection limit
DoD	Department of Defense
DQO	data quality objective
DRO	diesel-range organics
GRO	gasoline-range organics
HTRW	hazardous, toxic, and radioactive waste
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
LOD	limit of detection
LOQ	limit of quantitation
MBs	method blanks
MI	*MULTI INCREMENT®*
MOC	Main Operations Complex
MS	matrix spike
MSD	matrix spike duplicate
NE Cape	Northeast Cape, St. Lawrence Island, Alaska
PAHs	polynuclear aromatic hydrocarbons
PCBs	polychlorinated biphenyls
QAPP	Quality Assurance Project Plan
QC	quality control
Report	Data Verification Report
RL	reporting limit
RPD	relative percent difference
RRO	residual-range organics
SGC	silica gel cleanup
SIM	selected ion mode

ACRONYMS AND ABBREVIATIONS (continued)

SVOCs	semivolatile organic compounds
SW	U.S. EPA Solid Waste Method
TA-Denver	TestAmerica Laboratories, Inc., Denver, Colorado
TA-Tacoma	TestAmerica Laboratories, Inc., Tacoma, Washington
TA-Savannah	TestAmerica Laboratories, Inc., Savannah, Georgia
TCLP	toxicity characteristic leaching procedure
TCMX	tetrachloro-m-xylene
TOC	total organic carbon
USACE	US Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound

1.0 INTRODUCTION

This Data Verification Report (Report) has been completed on the submitted data packages in accordance with an agreement between Bristol Environmental Remediation Services, LLC (Bristol), and the US Army Corps of Engineers (USACE), Alaska District. As per this agreement, all laboratory results were generated as part of work on the Remedial Actions at Northeast Cape (NE Cape), St. Lawrence Island, Alaska. The USACE assigned this project to Bristol under Contract No. W911KB-06-D-0007.

Data verification for this report was performed by AECOM Inc., on the data collected as part of the Remedial Actions at NE Cape in 2012 at Sites 8, 10, 13, 21, 31, the Main Operations Complex (MOC), the Bulk Bag Area (BG), the Radar Dome Road Area, and the drum samples. Data verification is a process for evaluating the completeness, correctness, consistency, compliance with method procedures and quality control (QC) requirements, and identification of anomalous data. The reported project sample values, as well as any method laboratory control samples extracted or prepared with the project samples were reviewed. Specifically, the following items were reviewed in this data verification:

- Sample receipt conditions:
  - Sample preservation,
  - Cooler temperatures upon receipt,
  - Chain-of-custody (CoC) condition/correspondence to submitted sample set, and
  - Presence/absence of custody seals.
- Extraction and analytical procedures:
  - Holding times,
  - Method blanks (MBs),
  - Laboratory control samples (LCSs)/laboratory control sample duplicates (LCSDs),
  - Matrix spike (MS)/matrix spike duplicate (MSD),
  - Duplicate samples, and
  - Surrogate recoveries.

- Sampling procedures:
  - Field blanks,
  - Trip blanks,
  - Equipment blanks, and
  - Field duplicate samples.
- Correspondence to method criteria and project data quality objectives (DQOs)

Unless otherwise discussed in this document, the above parameters were within control limits specified in the NE Cape HTRW Remedial Actions Quality Assurance Project Plan Addendum, Revision 2 (QAPP) dated August 2012. If control limits were not specified in the QAPP, laboratory control limits were used for review. In some instances, quality control information beyond QAPP specifications were reported (e.g., additional surrogates). This information was not used for data review unless specifically noted.

No information on internal standards, calibrations, instrument tunes, chromatograms, quantitation reports, spectra, summaries identifying any analytical irregularities and the subsequent corrective action taken by the laboratories, and results from any other analytical procedures other than those listed above were reviewed and are not included in this Report. Laboratory narratives were examined and any documented calibration or other QC outliers were included as appropriate in this Report.

Data verification was performed in accordance with:

- NE Cape HTRW Remedial Actions Northeast Cape, St. Lawrence Island, Alaska Quality Assurance Project Plan (QAPP), Revision 2, (August, 2012);
- Department of Defense (DoD) Quality Systems Manual, Version 4.2 (2010); and
- Alaska Department of Environmental Conservation (ADEC) Technical Memorandum: *Environmental Laboratory and Quality Assurance Requirements* (Updated March 2009).

Precision and accuracy were assessed by comparing surrogate, MS/MSD and LCS/LCSD recoveries and relative percent differences (RPDs) to the QAPP-specified control limits. Control limits for waste samples were not included in the QAPP and laboratory specified limits were used for this matrix. The frequency of QC samples was compared to the frequency specified in the QAPP. The MS/MSDs performed on non-project samples are not applicable, and were not evaluated.

The reviewed data sets include data from samples collected for the NE Cape Remedial Actions from July through September 2012 which were analyzed by TestAmerica Laboratories, Inc., Tacoma, Washington (TA-Tacoma), TestAmerica Laboratories, Inc., Denver, Colorado (TA-Denver), and TestAmerica Laboratories Inc., Savannah, Georgia (TA- Savannah). TA-Denver was specified as a backup for overflow samples in the QAPP. TA- Savannah performed methane, glycol, and total halogen analysis. The following methods were utilized for the analysis of the samples:

- Benzene, toluene, ethylbenzene, and xylenes (BTEX) by U.S. Environmental Protection Agency (USEPA) Solid Waste (SW-846) Methods 5030B/8260B;
- Volatile organic compounds (VOCs) by U.S. Environmental Protection Agency (USEPA) Solid Waste (SW-846) Methods 5035/8260B;
- Gasoline-range organics (GRO) by ADEC method AK101;
- Diesel-range organics (DRO) and residual-range organics (RRO) by ADEC method AK102/103;
- DRO and RRO by ADEC method AK102/103 with silica gel clean-up;
- Methane by RSK 175;
- Glycols by SW-846 method SW846 method 8015B (or 8015C); with direct aqueous injection;
- Semivolatile organic compounds (SVOCs) by SW-846 method 3580A/8270C;
- Polynuclear aromatic hydrocarbons (PAHs) by SW-846 method 3510C (or 3520C)/8270C (waters) and 3550B/8270C (soils) with selected ion mode (SIM);
- Polychlorinated biphenyls (PCBs) by SW-846 method 3510C/8082 (waters) and either 3550B or 3550C/8082 or 8082A (soils and wipe);
- Total organic carbon (TOC)-Quad by SW-846 9060;
- Metals by SW-846 methods 3005A/6020 (waters) or 3050B/6020 (soils);
- Mercury by SW-846 methods 7470A (waters) or 7471A (soils);
- TCLP Metals by SW-646 methods 1311/3010A/6010B/7470A;

- Ignitability by SW846 method 1020A;
- pH by SW846 method 9045C;
- Total Halogens by SW-846 method 9056A.
- Incremental sample preparation (soil) in conjunction with the preparation and analytical methods listed above for DRO and PCBs.

The sites sampled, laboratory work order numbers, and laboratory used for analysis are presented in Table 1-0.

Table 1-0 Laboratory Work Order Numbers

Site	Sample Matrix	Work Order Number	Laboratory
Site 8	Soil	580-34748-1	TA-Tacoma
	Water	580-34648-1	TA-Tacoma
		580-34747-1	TASG
Site 10	Soil	580-34609-1	TA-Tacoma for VOCs, GRO, DRO/RRO, PCBs, PAHs, and metals
		580-34609-1	TA- Savannah for ethylene glycol
		580-35021-1	TA-Tacoma
Site 13	Soil	280-33320-1	TA-Denver
		280-33360-2	TA-Denver
		580-34101-1	TA-Tacoma
		580-34330-1	TA-Tacoma
		580-34374-1	TA-Tacoma
		580-34746-1	TA-Tacoma
		580-34680-1	TA-Tacoma
Site 21	Soil	580-34550-1	TA-Tacoma
		580-34828-1	TA-Tacoma
	Water	580-34828-1	TA-Tacoma

Table 1-0 Laboratory Work Order Numbers (continued)

Site	Sample Matrix	Work Order Number	Laboratory
Site 31	Soil	280-33320-1	TA-Denver
		280-33360-2	TA-Denver
		580-34373-1	TA-Tacoma
		580-34675-1	TA-Tacoma
		580-34683-1	TA-Tacoma
MOC	Soil	580-34205-1	TA-Tacoma
		580-34447-1	TA-Tacoma
		580-34594-1	TA-Tacoma
		580-34607-1	TA-Tacoma
		580-34677-1	TA-Tacoma
		580-34820-1	TA-Tacoma
		580-35168-1	TA-Tacoma
MOC	Water	280-33360-1	TA-Denver
		580-33899-1	TA-Tacoma (all analyses except methane)
		580-33899-1	TA-Savannah - methane
		580-34446-1	TA-Tacoma
		580-34481-1	TA-Tacoma
Bulk Bag Area (BG)	Solid	580-33899-1	TA-Tacoma
		580-34086-1	TA-Tacoma
		580-34335-1	TA-Tacoma
Radar Dome	Soil	580-34701-1	TA-Tacoma
Drum Samples	Waste	580-34380-1	TA-Tacoma
		580-34825-1	TA-Tacoma (all analyses except glycols and total halogen)
		580-34825-1	TA- Savannah - glycols and total halogen

Notes:
MI = *MULTI INCREMENT*®
MOC = Main Operations Complex
TA-Denver = TestAmerica Denver, Colorado
TA-Savannah = TestAmerica Savannah, Georgia
TA-Tacoma = TestAmerica Tacoma, Washington

Two of the above laboratory work orders (580-33360-1 and 580-35168-1) include samples for Site 28. Quality control information for the Site 28 samples are discussed in the Site 28 Phase I Sediment Removal Chemical Data Verification Report.

Analytical results tables are presented in Appendix F. The tables include sample IDs, which reference the year (12), the project (NC) for NE Cape, the site (e.g. -08 for site 8), the matrix (SS for subsurface soil, WA for water) and the sample location or LocID. The LocID indicates the specific site at NE Cape, as well as a specific location within the sites.

Data qualifiers assigned during the data review are included on the results tables in Appendix F. The following data qualifiers may be used to identify data points when data verification determines that results should be qualified because of a potential bias in the result, or a deviation from method or QAPP QC procedures:

- J – Positive result is less than the LOQ and is considered an estimate.
- ND (LOD) – Analyte result is less than the detection limit (DL). The non-detected result has the limit of detection (LOD) in parentheses.
- R – Analyte result is rejected – result is not usable. Note that "R" replaces the chemical result (no result shall be reported with an "R" flag).
- B – Analyte result is considered a high estimated value due to contamination present in the method or trip blank. Results less than 10 times the reported method blank concentration will be B flagged to indicate bias.
- MH, ML, MN – Analyte result is considered an estimated value biased (high, low, uncertain) due to matrix effects).
- QH, QL, QN – Analyte result is considered an estimated value biased (high, low, uncertain) due to a quality control failure such as surrogate recoveries outside of acceptance limits.

When both a Q and M qualifier apply to a single result, a judgment was made and the qualifier considered to have the most affect on the data was used.

2.0 DATA VERIFICATION

Data verification was performed for samples collected from each site as follows:

- Site 8: 30 water samples and four soil samples including one soil field duplicate, four water field duplicates, plus one trip blank;
- Site 10: Six bulk waste soil samples and 37 soil samples including four soil duplicates, one waste field duplicate, plus five trip blanks;
- Site 13: 235 soil samples including 22 field duplicates, four rock samples including one duplicate, and two wipe samples;
- Site 21: Two water samples and 21 soil samples including three soil field duplicates and one water field duplicate;
- Site 31: 225 soil samples including 27 field duplicates and three rock samples;
- MOC: Ten groundwater samples including one field duplicate, 12 surface water samples including three duplicates, 167 soil samples including 14 field duplicates and nine bulk waste soil samples, plus three aqueous trip blanks;
- Bulk Bag Area (BG) *MULTI INCREMENT®* (MI) Sampling: 16 soil samples including four replicates;
- Radar Dome: Nine soil samples including one field duplicate;
- Drums Samples: 14 waste samples.

Field sample numbers, corresponding laboratory numbers, and analyses are presented in Tables 2-0.1 through 2-0.9. Notes defining acronyms used on the tables follow Table 2-0.9.

Table 2-0.1 Site 8

Field Sample Identification	Laboratory Sample Number	Location ID	Methane (RSK 175)	TOC (9060)	DRO/RRO (AK102/103)	DRO/RRO with Silica Gel (AK102/103)	PAHs (8270C SIM)	Remarks
Site 8 Water:								
12NC08WA001	580-34747-1	WA08-001	X					
12NC08WA002	580-34747-2	WA08-002	X					
12NC08WA003	580-34747-3	WA08-003	X					
12NC08WA004	580-34747-4	WA08-004	X					
12NC08WA005	580-34747-5	WA08-005	X					
12NC08WA006	580-34747-6	WA08-006	X					
12NC08WA007	580-34747-7	WA08-007	X					
12NC08WA008	580-34747-8	WA08-008	X					
12NC08WA009	580-34747-9	WA08-009	X					FD of 12NC08WA008
12NC08WA010	580-34747-10	WA08-010	X					
12NC08WA011	580-34747-11	WA08-011	X					
12NC08WA012	580-34747-12	WA08-012	X					
12NC08WA013	580-34747-13	WA08-013	X					
12NC08WA014	580-34747-14	WA08-014	X					
12NC08WA015	580-34747-15	WA08-015	X					
12NC08WA016	580-34747-16	WA08-016	X					
12NC08WA017	580-34747-17	WA08-017	X					
12NC08WA018	580-34747-18	WA08-018	X					FD of 12NC08WA017
12NC08WA019	580-34747-19	WA08-019	X					
12NC08WA020	580-34747-20	WA08-020	X					
12NC08WA021	580-34747-21	WA08-021	X					
12NC08WA022	580-34747-22	WA08-022	X					

Table 2-0.1 Site 8 (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	Methane (RSK 175)	TOC (9060)	DRO/RRO (AK102/103)	DRO/RRO with Silica Gel (AK102/103)	PAHs (8270C SIM)	Remarks
Site 8 Water:								
12NC08WA023	580-34747-23	WA08-023	X					
12NC08WA024	580-34747-24	WA08-024	X					FD of 12NC08WA023
12NC08WA025	580-34747-25	WA08-025	X					
12NC08WA026	580-34747-26	WA08-026	X					
12NC08WA027	580-34747-27	WA08-027	X					
Trip Blank 082912	580-34747-28		X					
Site 8 Surface Water:								
12NC08SWA01	580-34648-1	12NC08-01			X		X	MS/MSD
12NC08SWA02	580-34648-2	12NC08-02			X		X	
12NC08SWA03	580-34648-3	12NC08-03			X		X	FD of 12NC08SWA02
Site 8 Soil Composite:								
12NC08SS001	580-34748-1	SS08-01		X	X	X	X	MS/MSD for TOC
12NC08SS002	580-34748-2	SS08-02		X	X	X	X	FD of 12NC08SS001
12NC08SS003	580-34748-3	SS08-03		X	X	X	X	MS/MSD for DRO/RRO
12NC08SS004	580-34748-4	SS08-04		X	X	X	X	

Table 2-0.2 Site 10

Field Sample Identification	Laboratory Sample Number	Location ID	VOCs (SW8260B)	Ethylene Glycol (DW8015C)	GRO (AK101)	DRO/RRO (AK102/103)	PAHs (8270C SIM)	PCB (SW8082)	Total Metals (SW6020/7471A)	Remarks
Site 10 Bulk Waste Soil Samples:										
12NC10BW01	580-35021-1	12NC10BW	X							MS/MSD
12NC10BW02	580-35021-2	12NC10BW	X							
12NC10BW03	580-35021-3	12NC10BW	X							FD of 12NC10BW02
12NC10BW04	580-35021-4	12NC10BW	X							
12NC10BW05	580-35021-5	12NC10BW	X							
12NC10BW06	580-35021-6	12NC10BW	X							
TripBlank 091712	580-35021-7		X							
Site 10 Soil Samples:										
12NC10SS001	580-34609-1	10SS001	X	X	X	X	X	X	X	
12NC10SS002	580-34609-2	10SS002	X	X	X	X	X	X	X	
12NC10SS003	580-34609-3	10SS003	X	X	X	X	X	X	X	
12NC10SS004	580-34609-4	10SS004	X	X	X	X	X	X	X	
12NC10SS005	580-34609-5	10SS005	X	X	X	X	X	X	X	
12NC10SS006	580-34609-6	10SS006	X	X	X	X	X	X	X	
12NC10SS007	580-34609-7	10SS007	X	X	X	X	X	X	X	MS/MSD for VOCs, PAHs, ethylene glycol, GRO, PCBs, DRO/RRO, metals
12NC10SS008	580-34609-8	10SS008	X	X	X	X	X	X	X	
12NC10SS009	580-34609-9	10SS009	X	X	X	X	X	X	X	
12NC10SS010	580-34609-10	10SS010	X	X	X	X	X	X	X	
12NC10SS011	580-34609-11	10SS011	X	X	X	X	X	X	X	
12NC10SS012	580-34609-12	10SS012	X	X	X	X	X	X	X	

Table 2-0.2 Site 10 (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	VOCs (SW8260B)	Ethylene Glycol (DW8015C)	GRO (AK101)	DRO/RRO (AK102/103)	PAHs (8270C SIM)	PCB (SW8082)	Total Metals (SW6020/7471A)	Remarks
Site 10 Soil Samples:										
12NC10SS013	580-34609-13	10SS013	X	X	X	X	X	X	X	
12NC10SS014	580-34609-14	10SS014	X	X	X	X	X	X	X	MS/MSD for VOCs, PAHs, ethylene glycol, GRO, PCBs, DRO/RRO, metals
12NC10SS015	580-34609-15	10SS015	X	X	X	X	X	X	X	
12NC10SS016	580-34609-16	10SS016	X	X	X	X	X	X	X	
12NC10SS017	580-34609-17	10SS017	X	X	X	X	X	X	X	
12NC10SS018	580-34609-18	10SS005	X	X	X	X	X	X	X	FD of 12NC10SS005
12NC10SS019	580-34609-19	10SS016	X	X	X	X	X	X	X	FD of 12NC10SS016
12NC10SS020	580-34609-20	10SS020	X	X	X	X	X	X	X	
12NC10SS021	580-34609-21	10SS021	X	X	X	X	X	X	X	
12NC10SS022	580-34609-22	10SS022	X	X	X	X	X	X	X	
12NC10SS023	580-34609-23	10SS023	X	X	X	X	X	X	X	
12NC10SS024	580-34609-24	10SS024	X	X	X	X	X	X	X	
12NC10SS025	580-34609-25	10SS025	X	X	X	X	X	X	X	
12NC10SS026	580-34609-26	10SS026	X	X	X	X	X	X	X	
12NC10SS027	580-34609-27	10SS027	X	X	X	X	X	X	X	
12NC10SS028	580-34609-28	10SS028	X	X	X	X	X	X	X	
12NC10SS029	580-34609-29	10SS029	X	X	X	X	X	X	X	
12NC10SS030	580-34609-30	10SS030	X	X	X	X	X	X	X	
12NC10SS031	580-34609-31	10SS031	X	X	X	X	X	X	X	
12NC10SS032	580-34609-32	10SS030	X	X	X	X	X	X	X	FD of 12NC10SS030

Table 2-0.2 Site 10 (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	VOCs (SW8260B)	Ethylene Glycol (DW8015C)	GRO (AK101)	DRO/RRO (AK102/103)	PAHs (8270C SIM)	PCB (SW8082)	Total Metals (SW6020/7471A)	Remarks
Site 10 Soil Samples:										
12NC10SS033	580-34609-33	10SS033	X	X	X	X	X	X	X	
12NC10SS034	580-34609-34	10SS034	X	X	X	X	X	X	X	MS/MSD for PCBs
12NC10SS035	580-34609-35	10SS035	X	X	X	X	X	X	X	
12NC10SS036	580-34609-36	10SS036	X	X	X	X	X	X	X	
12NC10SS037	580-34609-37	10SS037	X	X	X	X	X	X	X	FD of 12NC10SS036
TripBlank082012-01	580-34609-38		X		X					
TripBlank082012-02	580-34609-39		X		X					
TripBlank082012-03	580-34609-40		X		X					
TripBlank082012-04	580-34609-41		X		X					

Table 2-0.3 Site 13 Soils and Wipes

Field Sample Identification	Laboratory Sample Number	Location ID	PCB (SW8082)	Remarks
12NC13ROCK-1	280-33360-1	13Rock-1	X	MS/MSD
12NC13ROCK-2	280-33360-2	13Rock-2	X	
12NC13ROCK-3	280-33360-3	13Rock-3	X	
12NC13ROCK-4	280-33360-4	13Rock-4	X	FD of 12NC13Rock-1
12NC13WS001	280-33320-1	013-WS001	X	Wipe Sample
12NC13WS002	280-33320-2	013-WS002	X	Wipe Sample
12NC13SS001	580-34101-1	013-1	X	MS/MSD
12NC13SS002	580-34101-2	013-2	X	FD of 12NC13SS001
12NC13SS003	580-34330-1	013-2	X	
12NC13SS004	580-34330-2	013-3	X	
12NC13SS005	580-34330-3	013-4	X	
12NC13SS006	580-34330-4	013-5	X	
12NC13SS007	580-34330-5	013-6	X	
12NC13SS008	580-34330-6	013-7	X	
12NC13SS009	580-34330-7	013-7	X	FD of 12NC13SS008
12NC13SS010	580-34330-8	013-8	X	
12NC13SS011	580-34330-9	013-9	X	
12NC13SS012	580-34330-10	013-10	X	
12NC13SS013	580-34330-11	013-11	X	
12NC13SS014	580-34330-12	013-12	X	
12NC13SS015	580-34330-13	013-13	X	
12NC13SS016	580-34330-14	013-14	X	
12NC13SS017	580-34330-15	013-15	X	
12NC13SS018	580-34330-16	013-16	X	MS/MSD
12NC13SS019	580-34330-17	013-17	X	
12NC13SS020	580-34330-18	013-18	X	
12NC13SS021	580-34330-19	013-19	X	
12NC13SS022	580-34330-20	013-20	X	

Table 2-0.3 Site 13 Soils and Wipes (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	PCB (SW8082)	Remarks
12NC13SS023	580-34330-21	013-21	X	
12NC13SS024	580-34330-22	013-22	X	
12NC13SS025	580-34330-23	013-23	X	
12NC13SS026	580-34330-24	013-17	X	FD of 12NC13SS019
12NC13SS027	580-34330-25	013-24	X	
12NC13SS028	580-34330-26	013-25	X	MS/MSD
12NC13SS029	580-34330-27	013-26	X	
12NC13SS030	580-34330-28	013-27	X	
12NC13SS031	580-34330-29	013-28	X	
12NC13SS032	580-34330-30	013-29	X	
12NC13SS033	580-34330-31	013-30	X	
12NC13SS034	580-34330-32	013-31	X	
12NC13SS035	580-34330-33	013-32	X	
12NC13SS036	580-34330-34	013-33	X	
12NC13SS037	580-34330-35	013-34	X	
12NC13SS038	580-34330-36	013-35	X	
12NC13SS039	580-34330-37	013-36	X	
12NC13SS040	580-34330-38	013-37	X	
12NC13SS041	580-34330-39	013-38	X	
12NC13SS042	580-34330-40	013-29	X	FD of 12NC13SS032
12NC13SS043	580-34330-41	013-28	X	FD of 12NC13SS031
12NC13SS044	580-34330-42	013-27	X	FD of 12NC13SS030
12NC13SS045	580-34330-43	013-33	X	FD of 12NC13SS036
12NC13SS046	580-34330-44	013-39	X	
12NC13SS047	580-34330-45	013-40	X	
12NC13SS048	580-34330-46	013-41	X	
12NC13SS049	580-34330-47	013-42	X	
12NC13SS050	580-34330-48	013-43	X	

Table 2-0.3 Site 13 Soils and Wipes (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	PCB (SW8082)	Remarks
12NC13SS051	580-34330-49	013-44	X	
12NC13SS052	580-34330-50	013-45	X	
12NC13SS053	580-34330-51	013-46	X	
12NC13SS054	580-34330-52	013-47	X	
12NC13SS055	580-34330-53	013-48	X	
12NC13SS056	580-34330-54	013-49	X	
12NC13SS057	580-34330-55	013-50	X	
12NC13SS058	580-34330-56	013-51	X	
12NC13SS059	580-34330-57	013-52	X	
12NC13SS060	580-34330-58	013-53	X	
12NC13SS061	580-34330-59	013-54	X	MS/MSD
12NC13SS062	580-34330-60	013-55	X	MS/MSD
12NC13SS063	580-34330-61	013-56	X	MS/MSD
12NC13SS0064	580-34374-1	013-057	X	
12NC13SS0065	580-34374-2	013-058	X	
12NC13SS0066	580-34374-3	013-059	X	
12NC13SS0067	580-34374-4	013-060	X	
12NC13SS0068	580-34374-5	013-061	X	
12NC13SS0069	580-34374-6	013-062	X	
12NC13SS0070	580-34374-7	013-063	X	
12NC13SS0071	580-34374-8	013-064	X	
12NC13SS0072	580-34374-9	013-065	X	
12NC13SS0073	580-34374-10	013-066	X	
12NC13SS0074	580-34374-11	013-067	X	
12NC13SS0075	580-34374-12	013-068	X	
12NC13SS076	580-34374-13	013-069	X	
12NC13SS077	580-34374-14	013-070	X	
12NC13SS078	580-34374-15	013-071	X	

Table 2-0.3 Site 13 Soils and Wipes (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	PCB (SW8082)	Remarks
12NC13SS079	580-34374-16	013-072	X	
12NC13SS080	580-34374-17	013-073	X	
12NC13SS081	580-34374-18	013-073	X	FD of 12NC13SS080
12NC13SS082	580-34374-19	013-074	X	
12NC13SS083	580-34374-20	013-074	X	FD of 12NC13SS082
12NC13SS084	580-34374-21	013-075	X	
12NC13SS085	580-34374-22	013-076	X	
12NC13SS086	580-34374-23	013-077	X	
12NC13SS087	580-34374-24	013-078	X	
12NC13SS088	580-34374-25	013-079	X	
12NC13SS089	580-34374-26	013-080	X	
12NC13SS090	580-34374-27	013-081	X	
12NC13SS091	580-34374-28	013-082	X	
12NC13SS092	580-34374-29	013-083	X	
12NC13SS093	580-34374-30	013-084	X	MS/MSD
12NC13SS094	580-34374-31	013-085	X	MS/MSD
12NC13SS095	580-34374-32	013-086	X	
12NC13SS096	580-34374-33	013-087	X	
12NC13SS097	580-34374-34	013-088	X	
12NC13SS098	580-34374-35	013-089	X	
12NC13SS099	580-34374-36	013-090	X	
12NC13SS100	580-34374-37	013-091	X	
12NC13SS101	580-34374-38	013-092	X	
12NC13SS102	580-34374-39	013-093	X	
12NC13SS103	580-34374-40	013-094	X	MS/MSD
12NC13SS104	580-34374-41	013-095	X	
12NC13SS105	580-34374-42	013-096	X	
12NC13SS106	580-34374-43	013-097	X	

Table 2-0.3 Site 13 Soils and Wipes (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	PCB (SW8082)	Remarks
12NC13SS107	580-34374-44	013-097	X	FD of 12NC13SS106
12NC13SS108	580-34374-45	013-098	X	MS/MSD
12NC13SS109	580-34374-46	013-099	X	
12NC13SS110	580-34374-47	013-100	X	
12NC13SS111	580-34374-48	013-101	X	
12NC13SS112	580-34374-49	013-103	X	
12NC13SS113	580-34374-50	013-104	X	
12NC13SS114	580-34374-51	013-105	X	
12NC13SS115	580-34374-52	013-106	X	
12NC13SS116	580-34374-53	013-107	X	
12NC13SS117	580-34374-54	013-108	X	
12NC13SS118	580-34374-55	013-109	X	
12NC13SS119	580-34374-56	013-110	X	
12NC13SS120	580-34374-57	013-111	X	
12NC13SS121	580-34374-58	013-112	X	
12NC13SS122	580-34374-59	013-113	X	
12NC13SS123	580-34374-60	013-114	X	
12NC13SS124	580-34374-61	013-115	X	
12NC13SS125	580-34374-62	013-116	X	
12NC13SS126	580-34374-63	013-117	X	
12NC13SS127	580-34374-64	013-118	X	
12NC13SS128	580-34374-65	013-119	X	
12NC13SS129	580-34374-66	013-119	X	FD of 12NC13SS128
12NC13SS130	580-34374-67	013-120	X	
12NC13SS131	580-34374-68	013-120	X	FD of 12NC13SS130
12NC13SS132	580-34374-69	013-121	X	
12NC13SS133	580-34374-70	013-121	X	FD of 12NC13SS132
12NC13SS134	580-34374-71	013-122	X	MS/MSD

Table 2-0.3 Site 13 Soils and Wipes (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	PCB (SW8082)	Remarks
12NC13SS135	580-34374-72	013-123	X	
12NC13SS136	580-34374-73	013-123	X	FD of 12NC13SS135
12NC13SS137	580-34374-74	013-124	X	MS/MSD
12NC13SS138	580-34374-75	013-125	X	
12NC13SS139	580-34374-76	013-126	X	
12NC13SS140	580-34374-77	013-127	X	
12NC13SS141	580-34374-78	013-128	X	
12NC13SS142	580-34374-79	013-129	X	
12NC13SS143	580-34680-1	013-143	X	
12NC13SS144	580-34680-2	013-144	X	FD of 12NC13SS143
12NC13SS145	580-34680-3	013-145	X	
12NC13SS146	580-34680-4	013-146	X	
12NC13SS147	580-34680-5	013-147	X	
12NC13SS148	580-34680-6	013-148	X	
12NC13SS149	580-34680-7	013-149	X	
12NC13SS150	580-34680-8	013-150	X	
12NC13SS151	580-34680-9	013-151	X	
12NC13SS152	580-34680-10	013-152	X	
12NC13SS153	580-34680-11	013-153	X	
12NC13SS154	580-34680-12	013-154	X	
12NC13SS155	580-34680-13	013-155	X	
12NC13SS156	580-34680-14	013-156	X	
12NC13SS157	580-34680-15	013-157	X	
12NC13SS158	580-34680-16	013-158	X	
12NC13SS159	580-34680-17	013-159	X	
12NC13SS160	580-34680-18	013-160	X	
12NC13SS161	580-34680-19	013-161	X	FD of 12NC13SS160
12NC13SS162	580-34680-20	013-162	X	

Table 2-0.3 Site 13 Soils and Wipes (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	PCB (SW8082)	Remarks
12NC13SS163	580-34680-21	013-163	X	FD of 12NC13SS162
12NC13SS164	580-34680-22	013-164	X	
12NC13SS165	580-34680-23	013-165	X	
12NC13SS166	580-34680-24	013-166	X	
12NC13SS167	580-34680-25	013-167	X	
12NC13SS168	580-34680-26	013-168	X	
12NC13SS169	580-34680-27	013-169	X	
12NC13SS170	580-34680-28	013-170	X	
12NC13SS171	580-34680-29	013-171	X	
12NC13SS172	580-34680-30	013-172	X	
12NC13SS173	580-34680-31	013-173	X	
12NC13SS174	580-34680-32	013-174	X	
12NC13SS175	580-34680-33	013-175	X	
12NC13SS176	580-34680-34	013-176	X	
12NC13SS177	580-34680-35	013-177	X	FD of 12NC13SS176
12NC13SS178	580-34680-36	013-178	X	
12NC13SS179	580-34680-37	013-179	X	
12NC13SS180	580-34680-38	013-180	X	MS/MSD
12NC13SS181	580-34680-39	013-181	X	
12NC13SS182	580-34680-40	013-182	X	
12NC13SS183	580-34680-41	013-183	X	
12NC13SS184	580-34680-42	013-184	X	
12NC13SS185	580-34680-43	013-185	X	FD of 12NC13SS184
12NC13SS186	580-34680-44	013-186	X	
12NC13SS187	580-34680-45	013-187	X	
12NC13SS188	580-34680-46	013-188	X	MS/MSD
12NC13SS189	580-34680-47	013-189	X	MS/MSD
12NC13SS190	580-34680-48	013-190	X	MS/MSD

Table 2-0.3 Site 13 Soils and Wipes (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	PCB (SW8082)	Remarks
12NC13SS191	580-34680-49	013-191	X	
12NC13SS192	580-34680-50	013-192	X	
12NC13SS193	580-34680-51	013-193	X	
12NC13SS194	580-34680-52	013-194	X	
12NC13SS195	580-34680-53	013-195	X	
12NC13SS196	580-34680-54	013-196	X	
12NC13SS197	580-34680-55	013-197	X	
12NC13SS198	580-34680-56	013-198	X	
12NC13SS199	580-34680-57	013-199	X	
12NC13SS200	580-34680-58	013-200	X	
12NC13SS201	580-34680-59	013-201	X	
12NC13SS202	580-34680-60	013-202	X	
12NC13SS203	580-34680-61	013-203	X	
12NC13SS204	580-34680-62	013-204	X	
12NC13SS205	580-34746-1	013-205	X	
12NC13SS206	580-34680-64	013-206	X	
12NC13SS207	580-34680-65	013-207	X	
12NC13SS208	580-34680-66	013-208	X	
12NC13SS209	580-34680-67	013-209	X	
12NC13SS210	580-34680-68	013-210	X	
12NC13SS211	580-34680-69	013-211	X	
12NC13SS212	580-34746-2	013-212	X	
12NC13SS213	580-34680-71	013-213	X	
12NC13SS214	580-34746-3	013-214	X	MS/MSD
12NC13SS215	580-34746-4	013-215	X	
12NC13SS216	580-34746-5	013-216	X	
12NC13SS217	580-34746-6	013-217	X	
12NC13SS218	580-34746-7	013-218	X	

Table 2-0.3 Site 13 Soils and Wipes (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	PCB (SW8082)	Remarks
12NC13SS219	580-34746-8	013-219	X	
12NC13SS220	580-34746-9	013-220	X	
12NC13SS221	580-34746-10	013-221	X	FD of 12NC13SS215
12NC13SS222	280-33320-3	013-222	X	
12NC13SS223	280-33320-4	013-223	X	
12NC13SS224	280-33320-5	013-224	X	
12NC13SS225	280-33320-6	013-225	X	
12NC13SS226	280-33320-7	013-226	X	
12NC13SS227	280-33320-8	013-227	X	
12NC13SS228	280-33320-9	013-228	X	
12NC13SS229	280-33320-10	013-229	X	
12NC13SS230	280-33320-11	013-230	X	
12NC13SS231	280-33320-12	013-231	X	
12NC13SS232	280-33320-13	013-232	X	MS/MSD
12NC13SS233	280-33320-14	013-233	X	
12NC13SS234	280-33320-15	013-234	X	FD of 12NC13SS227
12NC13SS235	280-33320-16	013-235	X	FD of 12NC13SS229

Table 2-0.4 Site 21

Field Sample Identification	Laboratory Sample Number	Location ID	Arsenic (6020)	Remarks
Site 21 Water Samples:				
12NC21WA001	580-34828-8	12N21W001	X	MS/MSD
12NC21WA002	580-34828-9	12N21W002	X	FD of 12NC21WA001
Site 21 Soil Samples:				
12NC21SS001	580-34550-1	NC21SS001	X	
12NC21SS002	580-34550-2	NC21SS002	X	
12NC21SS003	580-34550-3	NC21SS003	X	
12NC21SS004	580-34550-4	NC21SS004	X	
12NC21SS005	580-34550-5	NC21SS005	X	
12NC21SS006	580-34550-6	NC21SS006	X	
12NC21SS007	580-34550-7	NC21SS007	X	
12NC21SS008	580-34550-8	NC21SS008	X	
12NC21SS009	580-34550-9	NC21SS009	X	
12NC21SS010	580-34550-10	NC21SS010	X	
12NC21SS011	580-34550-11	NC21SS011	X	FD of 12NC21SS008
12NC21SS012	580-34550-12	NC21SS012	X	MS/MSD
12NC21SS013	580-34550-13	NC21SS013	X	
12NC21SS014	580-34550-14	NC21SS014	X	FD of 12NC21SS013
12NC21SS015	580-34828-1	12N21BW1	X	
12NC21SS016	580-34828-2	12N21BW2	X	FD of 12NC21SS015
12NC21SS017	580-34828-3	12N21S017	X	
12NC21SS018	580-34828-4	12N21S018	X	
12NC21SS019	580-34828-5	12N21S019	X	MS/MSD
12NC21SS020	580-34828-6	12N21S020	X	
12NC21SS021	580-34828-7	12N21S021	X	

Table 2-0.5 Site 31 Soils

Field Sample Identification	Laboratory Sample Number	Location ID	PCB (SW8082)	Remarks
12NC31ROCK-1	280-33360-5	31Rock-1	X	
12NC31ROCK-2	280-33360-6	31Rock-2	X	
12NC31ROCK-3	280-33360-7	31Rock-3	X	
12NC31SS001	580-34373-1	031-001	X	
12NC31SS002	580-34373-2	031-002	X	
12NC31SS003	580-34373-3	031-003	X	
12NC31SS004	580-34373-4	031-004	X	
12NC31SS005	580-34373-5	031-005	X	
12NC31SS006	580-34373-6	031-006	X	
12NC31SS007	580-34373-7	031-007	X	
12NC31SS008	580-34373-8	031-008	X	
12NC31SS009	580-34373-9	031-009	X	
12NC31SS010	580-34373-10	031-010	X	
12NC31SS011	580-34373-11	031-011	X	
12NC31SS012	580-34373-12	031-012	X	
12NC31SS013	580-34373-13	031-013	X	MS/MSD
12NC31SS014	580-34373-14	031-014	X	MS/MSD
12NC31SS015	580-34373-15	031-015	X	
12NC31SS016	580-34373-16	031-016	X	
12NC31SS017	580-34373-17	031-017	X	
12NC31SS018	580-34373-18	031-018	X	Lab Duplicate
12NC31SS019	580-34373-19	031-019	X	
12NC31SS020	580-34373-20	031-020	X	
12NC31SS021	580-34373-21	031-021	X	
12NC31SS022	580-34373-22	031-022	X	
12NC31SS023	580-34373-23	031-023	X	
12NC31SS024	580-34373-24	031-024	X	
12NC31SS025	580-34373-25	031-025	X	

Table 2-0.5 Site 31 Soils (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	PCB (SW8082)	Remarks
12NC31SS026	580-34373-26	031-026	X	
12NC31SS027	580-34373-27	031-024	X	FD of 12NC31SS024
12NC31SS028	580-34373-28	031-025	X	FD of 12NC31SS025
12NC31SS029	580-34373-29	031-026	X	FD of 12NC31SS026
12NC31SS030	580-34683-1	31-030	X	
12NC31SS031	580-34683-2	31-031	X	
12NC31SS032	580-34683-3	31-032	X	
12NC31SS033	580-34683-4	31-033	X	
12NC31SS034	580-34683-5	31-034	X	
12NC31SS035	580-34683-6	31-035	X	
12NC31SS036	580-34683-7	31-036	X	
12NC31SS037	580-34683-8	31-037	X	
12NC31SS038	580-34683-9	31-038	X	
12NC31SS039	580-34683-10	31-039	X	
12NC31SS040	580-34683-11	31-040	X	
12NC31SS041	580-34683-12	31-041	X	
12NC31SS042	580-34683-13	31-042	X	
12NC31SS043	580-34683-14	31-043	X	MS/MSD
12NC31SS044	580-34683-15	31-044	X	
12NC31SS045	580-34683-16	31-045	X	
12NC31SS046	580-34683-17	31-046	X	
12NC31SS047	580-34683-18	31-047	X	
12NC31SS048	580-34683-19	31-048	X	
12NC31SS049	580-34683-20	31-049	X	
12NC31SS050	580-34683-21	31-050	X	
12NC31SS051	580-34683-22	31-051	X	
12NC31SS052	580-34683-23	31-052	X	FD of 12NC31SS051
12NC31SS053	580-34683-24	31-053	X	

Table 2-0.5 Site 31 Soils (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	PCB (SW8082)	Remarks
12NC31SS054	580-34683-25	31-054	X	
12NC31SS055	580-34683-26	31-055	X	
12NC31SS056	580-34683-27	31-056	X	
12NC31SS057	580-34683-28	31-057	X	
12NC31SS058	580-34683-29	31-058	X	
12NC31SS059	580-34683-30	31-059	X	
12NC31SS060	580-34683-31	31-060	X	
12NC31SS061	580-34683-32	31-061	X	
12NC31SS062	580-34683-33	31-062	X	
12NC31SS063	580-34683-34	31-063	X	MS/MSD
12NC31SS064	580-34683-35	31-064	X	
12NC31SS065	580-34683-36	31-065	X	
12NC31SS066	580-34683-37	31-066	X	FD of 12NC31SS065
12NC31SS067	580-34683-38	31-067	X	
12NC31SS068	580-34683-39	31-068	X	FD of 12NC31SS067
12NC31SS069	580-34683-40	31-069	X	
12NC31SS070	580-34683-41	31-070	X	
12NC31SS071	580-34683-42	31-071	X	
12NC31SS072	580-34683-43	31-072	X	
12NC31SS073	580-34683-44	31-073	X	
12NC31SS074	580-34683-45	31-074	X	
12NC31SS075	580-34683-46	31-075	X	
12NC31SS076	580-34683-47	31-076	X	
12NC31SS077	580-34683-48	31-077	X	
12NC31SS078	580-34683-49	31-078	X	MS/MSD
12NC31SS079	580-34683-50	31-079	X	
12NC31SS080	580-34683-51	31-080	X	
12NC31SS081	580-34683-52	31-081	X	

Table 2-0.5 Site 31 Soils (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	PCB (SW8082)	Remarks
12NC31SS082	580-34683-53	31-082	X	
12NC31SS083	580-34683-54	31-083	X	MS/MSD
12NC31SS084	580-34683-55	31-084	X	
12NC31SS085	580-34683-56	31-085	X	
12NC31SS086	580-34683-57	31-086	X	
12NC31SS087	580-34683-58	31-087	X	
12NC31SS088	580-34683-59	31-088	X	
12NC31SS089	580-34683-60	31-089	X	
12NC31SS090	580-34683-61	31-090	X	FD of 12NC31SS089
12NC31SS091	580-34683-62	31-091	X	
12NC31SS092	580-34683-63	31-092	X	
12NC31SS093	580-34683-64	31-093	X	
12NC31SS094	580-34683-65	31-094	X	
12NC31SS095	580-34683-66	31-095	X	
12NC31SS096	580-34683-67	31-096	X	
12NC31SS097	580-34683-68	31-097	X	
12NC31SS098	580-34683-69	31-098	X	
12NC31SS099	580-34683-70	31-099	X	
12NC31SS100	580-34683-71	31-100	X	
12NC31SS101	580-34683-72	31-101	X	
12NC31SS102	580-34683-73	31-102	X	
12NC31SS103	580-34683-74	31-103	X	
12NC31SS104	580-34683-75	31-104	X	
12NC31SS105	580-34683-76	31-105	X	
12NC31SS106	580-34683-77	31-106	X	
12NC31SS107	580-34683-78	31-107	X	
12NC31SS108	580-34683-79	31-108	X	
12NC31SS109	580-34683-80	31-109	X	

Table 2-0.5 Site 31 Soils (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	PCB (SW8082)	Remarks
12NC31SS110	580-34683-81	31-110	X	
12NC31SS111	580-34683-82	31-111	X	
12NC31SS112	580-34683-83	31-112	X	
12NC31SS113	580-34683-84	31-113	X	MS/MSD
12NC31SS114	580-34675-1	31-114	X	
12NC31SS115	580-34675-2	31-115	X	
12NC31SS116	580-34675-3	31-116	X	
12NC31SS117	580-34675-4	31-117	X	
12NC31SS118	580-34675-5	31-118	X	
12NC31SS119	580-34675-6	31-119	X	
12NC31SS120	580-34675-7	31-120	X	
12NC31SS121	580-34675-8	31-121	X	
12NC31SS122	580-34675-9	31-122	X	
12NC31SS123	580-34675-10	31-123	X	
12NC31SS124	580-34675-11	31-124	X	
12NC31SS125	580-34675-12	31-125	X	
12NC31SS126	580-34675-13	31-126	X	FD of 12NC31SS123
12NC31SS127	580-34675-14	31-127	X	FD of 12NC31SS124
12NC31SS128	580-34675-15	31-128	X	FD of 12NC31SS125
12NC31SS129	580-34675-16	31-129	X	
12NC31SS130	580-34675-17	31-130	X	
12NC31SS131	580-34675-18	31-131	X	
12NC31SS132	580-34675-19	31-132	X	
12NC31SS133	580-34675-20	31-133	X	
12NC31SS134	580-34675-21	31-134	X	
12NC31SS135	580-34675-22	31-135	X	
12NC31SS136	580-34675-23	31-136	X	
12NC31SS137	580-34675-24	31-137	X	

Table 2-0.5 Site 31 Soils (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	PCB (SW8082)	Remarks
12NC31SS138	580-34675-25	31-138	X	
12NC31SS139	580-34675-26	31-139	X	MS/MSD
12NC31SS140	580-34675-27	31-140	X	MS/MSD
12NC31SS141	580-34675-28	31-141	X	MS/MSD
12NC31SS142	580-34675-29	31-142	X	MS/MSD
12NC31SS143	580-34675-30	31-143	X	
12NC31SS144	580-34675-31	31-144	X	
12NC31SS145	580-34675-32	31-145	X	
12NC31SS146	580-34675-33	31-146	X	
12NC31SS147	580-34675-34	31-147	X	
12NC31SS148	580-34675-35	31-148	X	FD of 12NC31SS147
12NC31SS149	580-34675-36	31-149	X	MS/MSD
12NC31SS150	580-34675-37	31-150	X	MS/MSD
12NC31SS151	580-34675-38	31-151	X	
12NC31SS152	580-34675-39	31-152	X	FD of 12NC31SS151
12NC31SS153	580-34675-40	31-153	X	
12NC31SS154	580-34675-41	31-154	X	
12NC31SS155	580-34675-42	31-155	X	FD of 12NC31SS154
12NC31SS156	580-34675-43	31-156	X	
12NC31SS157	580-34675-44	31-157	X	FD of 12NC31SS156
12NC31SS158	580-34675-45	31-158	X	
12NC31SS159	580-34675-46	31-159	X	
12NC31SS160	580-34675-47	31-160	X	
12NC31SS161	580-34675-48	31-161	X	FD of 12NC31SS160
12NC31SS162	580-34675-49	31-162	X	
12NC31SS163	580-34675-50	31-163	X	FD of 12NC31SS162
12NC31SS164	580-34675-51	31-164	X	
12NC31SS165	580-34675-52	31-165	X	

Table 2-0.5 Site 31 Soils (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	PCB (SW8082)	Remarks
12NC31SS166	580-34675-53	31-166	X	
12NC31SS167	580-34675-54	31-167	X	
12NC31SS168	580-34675-55	31-168	X	
12NC31SS169	580-34675-56	31-169	X	
12NC31SS170	580-34675-57	31-170	X	
12NC31SS171	580-34675-58	31-171	X	
12NC31SS172	580-34675-59	31-172	X	
12NC31SS173	580-34675-60	31-173	X	
12NC31SS174	580-34675-61	31-174	X	
12NC31SS175	580-34675-62	31-175	X	
12NC31SS176	580-34675-63	31-176	X	
12NC31SS177	580-34675-64	31-177	X	
12NC31SS178	580-34675-65	31-178	X	MS/MSD
12NC31SS179	580-34675-66	31-179	X	
12NC31SS180	580-34675-67	31-180	X	
12NC31SS181	580-34675-68	31-181	X	
12NC31SS182	580-34675-69	31-182	X	
12NC31SS183	580-34675-70	31-183	X	
12NC31SS184	580-34675-71	31-184	X	FD of 12NC31SS177
12NC31SS185	580-34675-72	31-185	X	FD of 12NC31SS179
12NC31SS186	580-34675-73	31-186	X	FD of 12NC31SS180
12NC31SS187	580-34675-74	31-187	X	FD of 12NC31SS181
12NC31SS188	580-34675-75	31-188	X	FD of 12NC31SS182
12NC31SS189	580-34675-76	31-189	X	FD of 12NC31SS183
12NC31SS190	580-34675-77	31-190	X	
12NC31SS191	580-34675-78	31-191	X	FD of 12NC31SS190
12NC31SS192	580-34675-79	31-192	X	
12NC31SS193	580-34675-80	31-193	X	FD of 12NC31SS192

Table 2-0.5 Site 31 Soils (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	PCB (SW8082)	Remarks
12NC31SS194	280-33320-17	031-194	X	
12NC31SS195	280-33320-18	031-195	X	
12NC31SS196	280-33320-19	031-196	X	
12NC31SS197	280-33320-20	031-197	X	
12NC31SS198	280-33320-21	031-198	X	
12NC31SS199	280-33320-22	031-199	X	
12NC31SS200	280-33320-23	031-200	X	
12NC31SS201	280-33320-24	031-201	X	
12NC31SS202	280-33320-25	031-202	X	
12NC31SS203	280-33320-26	031-203	X	
12NC31SS204	280-33320-27	031-204	X	MS/MSD
12NC31SS205	280-33320-28	031-205	X	
12NC31SS206	280-33320-29	031-206	X	
12NC31SS207	280-33320-30	031-207	X	
12NC31SS208	280-33320-31	031-208	X	
12NC31SS209	280-33320-32	031-209	X	
12NC31SS210	280-33320-33	031-210	X	
12NC31SS211	280-33320-34	031-211	X	
12NC31SS212	280-33320-35	031-212	X	
12NC31SS213	280-33320-36	031-213	X	
12NC31SS214	280-33320-37	031-214	X	
12NC31SS215	280-33320-38	031-215	X	
12NC31SS216	280-33320-39	031-216	X	
12NC31SS217	280-33320-40	031-217	X	
12NC31SS218	280-33320-41	031-218	X	
12NC31SS219	280-33320-42	031-219	X	
12NC31SS220	280-33320-43	031-220	X	
12NC31SS221	280-33320-44	031-221	X	

Table 2-0.5 Site 31 Soils (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	PCB (SW8082)	Remarks
12NC31SS222	280-33320-45	031-222	X	MS/MSD
12NC31SS223	280-33320-46	031-223	X	FD of 12NC31SS197
12NC31SS224	280-33320-47	031-224	X	FD of 12NC31SS202
12NC31SS225	280-33320-48	031-225	X	FD of 12NC31SS204

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Table 2-0.6 Site MOC

Field Sample Identification	Laboratory Sample Number	Location ID	BTEX (SW8260B)	Methane (RSK 175)	GRO (AK101)	DRO/RRO (AK102/103)	PAHs (8270C SIM)	PCB (SW8082)	Total Metals (SW6020/7470A)	Dissolved Metals (SW6020/7470A))	Remarks
MOC Ground Water:											
12NCMOCWA001	580-33899-1	22MW2	X	X	X	X	X	X	X	X	MS/MSD
12NCMOCWA002	580-33899-2	26MW1	X	X	X	X	X	X	X	X	
12NCMOCWA003	580-33899-3	20MW1	X	X	X	X	X	X	X	X	
12NCMOCWA004	580-33899-4	17MW1	X	X	X	X	X	X	X	X	
12NCMOCWA005	580-33899-5	MW88-10	X	X	X	X	X	X	X	X	
12NCMOCWA006	580-33899-6	MW88-1	X	X	X	X	X	X	X	X	
12NCMOCWA007	580-33899-7	MW10-1	X	X	X	X	X	X	X	X	
12NCMOCWA008	580-33899-8	MW88-4	X	X	X	X	X	X	X	X	
12NCMOCWA009	580-33899-9	MW88-4	X	X	X	X	X	X	X	X	FD of 12NCMOCWA008
12NCMOCWA010	580-33899-10	MW88-5	X	X	X	X	X	X	X	X	
071112 Trip Blank 01	580-33899-11		X		X						
071112 Trip Blank 02	580-33899-12			X							

Table 2-0.6 Site MOC (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	BTEX (SW8260B)	Methane (RSK 175)	GRO (AK101)	DRO/RRO (AK102/103)	PAHs (8270C SIM)	PCB (SW8082)	Total Metals (SW6020/7470A)	Dissolved Metals (SW6020/7470A))	Remarks
MOC Surface Water:											
12NCMOCSWA001	580-33899-13	MOCSW01				X					
12NCMOCSWA002	580-33899-14	MOCSW02				X					
12NCMOCSWA003	580-33899-15	MOCSW03				X					MS/MSD
12NCMOCSWA005	580-34481-1	MOCSW01				X					
12NCMOCSWA006	580-34481-2	MOCSW02				X					
12NCMOCSWA007	580-34481-3	MOCSW03				X					MS/MSD
12NCMOCSWA008	580-34481-4	MOCSW01				X					FD of 12NCMOCSWA005
12NCMOCSWA009	580-34446-1	MOCSW-04	X				X				MS/MSD
12NCMOCSWA009	280-33360-12	28-W-03				X					
12NCMOCSWA010	580-34446-2	MOCSW-04	X				X				FD of 12NCMOCSWA009
12NCMOCSWA010	280-33360-13	MOCSW02				X					

Table 2-0.6 Site MOC (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	BTEX (SW8260B)	Methane (RSK 175)	GRO (AK101)	DRO/RRO (AK102/103)	PAHs (8270C SIM)	PCB (SW8082)	Total Metals (SW6020/7470A)	Dissolved Metals (SW6020/7470A))	Remarks
MOC Surface Water:											
12NCMOCSWA011	280-33360-14	MOCSW03				X					
12NCMOCSWA012	280-33360-15	MOCSW01				X					FD of 12NCMOCSWA009
Trip Blank 081212	580-34446-3		X								
MOC Soil:											
12NCMOCSS001	580-34205-1	MOCSS001				X					
12NCMOCSS002	580-34205-2	MOCSS002				X					MS/MSD
12NCMOCSS003	580-34205-3	MOCSS003				X					
12NCMOCSS004	580-34205-4	MOCSS001A				X					FD of 12NCMOCSS001
12NCMOCSS005	580-34205-5	MOCSS005				X					
12NCMOCSS006	580-34205-6	MOCSS006				X					FD of 12NCMOCSS005

Table 2-0.6 Site MOC (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	BTEX (SW8260B)	Methane (RSK 175)	GRO (AK101)	DRO/RRO (AK102/103)	PAHs (8270C SIM)	PCB (SW8082)	Total Metals (SW6020/7470A)	Dissolved Metals (SW6020/7470A))	Remarks
MOC Soil:											
12NCMOCSS007	580-34205-7	MOCSS007				X					
12NCMOCSS008	580-34205-8	MOCSS008				X					
12NCMOCSS009	580-34205-9	MOCSS009				X					
12NCMOCSS010	580-34205-10	MOCSS010				X					
12NCMOCSS011	580-34205-11	MOCSS011				X					
12NCMOCSS012	580-34205-12	MOCSS012				X					
12NCMOCSS013	580-34205-13	MOCSS013				X					
12NCMOCSS014	580-34205-14	MOCSS014				X					
12NCMOCSS015	580-34205-15	MOCSS015				X					
12NCMOCSS016	580-34205-16	MOCSS016				X					
12NCMOCSS017	580-34205-17	MOCSS017				X					
12NCMOCSS018	580-34205-18	MOCSS018				X					MS/MSD

Table 2-0.6 Site MOC (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	BTEX (SW8260B)	Methane (RSK 175)	GRO (AK101)	DRO/RRO (AK102/103)	PAHs (8270C SIM)	PCB (SW8082)	Total Metals (SW6020/7470A)	Dissolved Metals (SW6020/7470A))	Remarks
MOC Soil:											
12NCMOCSS019	580-34205-19	MOCSS019				X					MS/MSD
12NCMOCSS020	580-34205-20	MOCSS020				X					
12NCMOCSS021	580-34205-21	MOCSS021				X					
12NCMOCSS022	580-34205-22	MOCSS022				X					
12NCMOCSS023	580-34205-23	MOCSS023				X					
12NCMOCSS024	580-34205-24	MOCSS024				X					
12NCMOCSS025	580-34205-25	MOCSS024A				X					FD of 12NCMOCSS024
12NCMOCSS026	580-34205-26	MOCSS026				X					FD of 12NCMOCSS019
12NCMOCSS027	580-34205-27	MOCSS027				X					
12NCMOCSS028	580-34205-28	MOCSS028				X					
12NCMOCSS030	580-34447-1	MOCSS030				X					

Table 2-0.6 Site MOC (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	BTEX (SW8260B)	Methane (RSK 175)	GRO (AK101)	DRO/RRO (AK102/103)	PAHs (8270C SIM)	PCB (SW8082)	Total Metals (SW6020/7470A)	Dissolved Metals (SW6020/7470A))	Remarks
MOC Soil:											
12NCMOCSS031	580-34447-2	MOCSS031				X					MS/MSD
12NCMOCSS032	580-34447-3	MOCSS032				X					
12NCMOCSS033	580-34447-4	MOCSS033				X					
12NCMOCSS034	580-34447-5	MOCSS034				X					
12NCMOCSS035	580-34447-6	MOCSS035				X					
12NCMOCSS036	580-34447-7	MOCSS036				X					
12NCMOCSS037	580-34447-8	MOCSS037				X					
12NCMOCSS038	580-34447-9	MOCSS038				X					
12NCMOCSS039	580-34447-10	MOCSS039				X					
12NCMOCSS040	580-34447-11	MOCSS040				X					
12NCMOCSS041	580-34447-12	MOCSS041				X					FD of 12NCMOCSS040
12NCMOCSS042	580-34447-13	MOCSS042				X					

Table 2-0.6 Site MOC (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	BTEX (SW8260B)	Methane (RSK 175)	GRO (AK101)	DRO/RRO (AK102/103)	PAHs (8270C SIM)	PCB (SW8082)	Total Metals (SW6020/7470A)	Dissolved Metals (SW6020/7470A))	Remarks
MOC Soil:											
12NCMOCSS043	580-34447-14	MOCSS043				X					
12NCMOCSS044	580-34447-15	MOCSS044				X					
12NCMOCSS045	580-34447-16	MOCSS045				X					
12NCMOCSS046	580-34447-17	MOCSS046				X					
12NCMOCSS047	580-34447-18	MOCSS047				X					
12NCMOCSS048	580-34447-19	MOCSS048				X					
12NCMOCSS049	580-34447-20	MOCSS049				X					
12NCMOCSS050	580-34447-21	MOCSS050				X					
12NCMOCSS051	580-34447-22	MOCSS051				X					
12NCMOCSS052	580-34447-23	MOCSS052				X					
12NCMOCSS053	580-34447-24	MOCSS053				X					
12NCMOCSS054	580-34447-25	MOCSS054				X					
12NCMOCSS055	580-34447-26	MOCSS055				X					

Table 2-0.6 Site MOC (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	BTEX (SW8260B)	Methane (RSK 175)	GRO (AK101)	DRO/RRO (AK102/103)	PAHs (8270C SIM)	PCB (SW8082)	Total Metals (SW6020/7470A)	Dissolved Metals (SW6020/7470A))	Remarks
MOC Soil:											
12NCMOCSS056	580-34447-27	MOCSS056				X					
12NCMOCSS057	580-34447-28	MOCSS057				X					MS/MSD
12NCMOCSS058	580-34447-29	MOCSS058				X					
12NCMOCSS059	580-34447-30	MOCSS059				X					
12NCMOCSS060	580-34447-31	MOCSS060				X					
12NCMOCSS061	580-34447-32	MOCSS061				X					
12NCMOCSS062	580-34447-33	MOCSS062				X					FD of 12NCMOCSS045
12NCMOCSS063	580-34447-34	MOCSS063				X					
12NCMOCSS064	580-34447-35	MOCSS064				X					
12NCMOCSS065	580-34447-36	MOCSS065				X					
12NCMOCSS066	580-34447-37	MOCSS066				X					

Table 2-0.6 Site MOC (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	BTEX (SW8260B)	Methane (RSK 175)	GRO (AK101)	DRO/RRO (AK102/103)	PAHs (8270C SIM)	PCB (SW8082)	Total Metals (SW6020/7470A)	Dissolved Metals (SW6020/7470A))	Remarks
MOC Soil:											
12NCMOCSS067	580-34447-38	MOCSS067				X					
12NCMOCSS068	580-34447-39	MOCSS068				X					FD of 12NCMOCSS065
12NCMOCSS069	580-34447-40	MOCSS069				X					
12NCMOCSS070	580-34447-41	MOCSS070				X					
12NCMOCSS071	580-34447-42	MOCSS071				X					
12NCMOCSS072	580-34447-43	MOCSS072				X					FD of 12NCMOCSS059
12NCMOCSS073	580-34607-1	MOCSS073				X					
12NCMOCSS074	580-34447-44	MOCSS074				X					MS/MSD
12NCMOCSS075	580-34607-2	MOCSS075				X					
12NCMOCSS076	580-34607-3	MOCSS076				X					
12NCMOCSS077	580-34607-4	MOCSS077				X					
12NCMOCSS078	580-34607-5	MOCSS078				X					

Table 2-0.6 Site MOC (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	BTEX (SW8260B)	Methane (RSK 175)	GRO (AK101)	DRO/RRO (AK102/103)	PAHs (8270C SIM)	PCB (SW8082)	Total Metals (SW6020/7470A)	Dissolved Metals (SW6020/7470A))	Remarks
MOC Soil:											
12NCMOCSS079	580-34607-6	MOCSS079				X					FD of 12NCMOCSS073
12NCMOCSS080	580-34607-7	MOCSS080				X					
12NCMOCSS081	580-34607-8	MOCSS081				X					FD of 12NCMOCSS080
12NCMOCSS082	580-34607-9	MOCSS082				X					MS/MSD
12NCMOCSS083	580-34594-1	12MOCS083				X					
12NCMOCSS090	580-34594-8	12MOCS090				X					
12NCMOCSS094	580-34594-12	12MOCS094				X					
12NCMOCSS098	580-34594-16	12MOCS098				X					
12NCMOCSS099	580-34594-17	12MOCS099				X					FD of MOCSS098
12NCMOCSS104	580-34594-22	12MOCS104				X					MS/MSD
12NCMOCSS108	580-34594-26	12MOCS108				X					

Table 2-0.6 Site MOC (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	BTEX (SW8260B)	Methane (RSK 175)	GRO (AK101)	DRO/RRO (AK102/103)	PAHs (8270C SIM)	PCB (SW8082)	Total Metals (SW6020/7470A)	Dissolved Metals (SW6020/7470A))	Remarks
MOC Soil:											
12NCMOCSS117	580-34594-35	12MOCS117				X					
12NCMOCSS128	580-34677-7	MOC-128				X					
12NCMOCSS129	580-34677-8	MOC-129				X					FD of 12NCMOCSS128
12NCMOCSS133	580-34677-12	MOC-133				X					MS/MSD
12NCMOCSS136	580-34677-15	MOC-136				X					MS/MSD
12NCMOCSS140	580-34677-19	MOC-140				X					
12NCMOCSS146	580-34677-25	MOC-146				X					
12NCMOCSS150	580-34820-10	MOCSS150				X					
12NCMOCSS151	580-34820-11	MOCSS151				X					
12NCMOCSS152	580-34820-12	MOCSS152				X					
12NCMOCSS153	580-34820-13	MOCSS153				X					FD of 12NCMOCSS152

Table 2-0.6 Site MOC (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	BTEX (SW8260B)	Methane (RSK 175)	GRO (AK101)	DRO/RRO (AK102/103)	PAHs (8270C SIM)	PCB (SW8082)	Total Metals (SW6020/7470A)	Dissolved Metals (SW6020/7470A))	Remarks
MOC Soil:											
12NCMOCSS154	580-34820-14	MOCSS154				X					
12NCMOCSS155	580-34820-15	MOCSS155				X					
12NCMOCSS156	580-34820-16	MOCSS156				X					
12NCMOCSS157	580-34820-17	MOCSS157				X					
12NCMOCSS158	580-34820-18	MOCSS158				X					MS/MSD
12NCMOCSS159	580-34820-1	MOCSS159				X					
12NCMOCSS160	580-34820-2	MOCSS160				X					
12NCMOCSS161	580-34820-3	MOCSS161				X					
12NCMOCSS162	580-34820-4	MOCSS162				X					
12NCMOCSS163	580-34820-5	MOCSS163				X					
12NCMOCSS164	580-34820-6	MOCSS164				X					FD of 12NCMOCSS163
12NCMOCSS165	580-34820-7	MOCSS165				X					

Table 2-0.6 Site MOC (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	BTEX (SW8260B)	Methane (RSK 175)	GRO (AK101)	DRO/RRO (AK102/103)	PAHs (8270C SIM)	PCB (SW8082)	Total Metals (SW6020/7470A)	Dissolved Metals (SW6020/7470A))	Remarks
MOC Soil:											
12NCMOCSS166	580-34820-8	MOCSS166				X					
12NCMOCSS167	580-34820-9	MOCSS167				X					
Bulk Waste Soil											
12NCMOCBW221	580-35168-1	MOCBW221				X					
12NCMOCBW222	580-35168-2	MOCBW222				X					
12NCMOCBW223	580-35168-3	MOCBW223				X					
12NCMOCBW224	580-35168-4	MOCBW224				X					
12NCMOCBW225	580-35168-5	MOCBW225				X					
12NCMOCBW226	580-35168-6	MOCBW226				X					
12NCMOCBW227	580-35168-7	MOCBW227				X					
12NCMOCBW228	580-35168-8	MOCBW228				X					
12NCMOCBW229	580-35168-9	MOCBW229				X					

(Intentionally blank)

Table 2-0.7 Bulk Bag Area MI Sampling

Field Sample Identification	Laboratory Sample Number	Location ID	DRO (AK102/103)	PCB (SW8082)	Remarks
Bulk Bag Area MI Sampling (soils):					
12NCBGSS01	580-33899-16	CB-1	X	X	MS/MSD
12NCBGSS02	580-33899-17	CB-2	X	X	
12NCBGSS03	580-33899-18	CB-2	X	X	Field Rep of 12NCBGSS02
12NCBGSS04	580-33899-19	CB-2	X	X	Field Rep of 12NCBGSS02
12NCBGSS05	580-33899-20	CB-3	X	X	
12NCBGSS06	580-33899-21	CB-4	X	X	
12NCBGSS07	580-33899-22	CB-5	X	X	
12NCBGSS08	580-33899-23	CB-6	X	X	
12NCBGSS09	580-33899-24	MOC-BS-1	X	X	
12NCBGSS10	580-34086-1	S6-1	X	X	MS/MSD
12NCBGSS11	580-34086-2	S6-2	X	X	
12NCBGSS12	580-34086-3	S6-3	X	X	
12NCBGSS13	580-34086-4	S6-4	X	X	
12NCBGSS14	580-34335-1	MOC-BS-2	X	X	MS/MSD
12NCBGSS15	580-34335-2	MOC-BS-2	X	X	Field Rep of 12NCBGSS14
12NCBGSS16	580-34335-3	MOC-BS-2	X	X	Field Rep of 12NCBGSS14

Table 2-0.8 Radar Dome Road Samples

Field Sample Identification	Laboratory Sample Number	Location ID	BTEX (SW8260B)	GRO(AK101)	DRO/RRO (AK102/103)	PAHs (8270C SIM)	PCB (SW8082)	Total Metals (SW6020/7471A)	Remarks
Radar Dome Road Soil Samples:									
12NCRDSS01	580-34701-1	RD-01	X	X	X	X	X	X	
12NCRDSS02	580-34701-2	RD-02	X	X	X	X	X	X	
12NCRDSS03	580-34701-3	RD-03	X	X	X	X	X	X	MS/MSD
12NCRDSS04	580-34701-4	RD-04	X	X	X	X	X	X	
12NCRDSS05	580-34701-5	RD-05	X	X	X	X	X	X	
12NCRDSS06	580-34701-6	RD-06	X	X	X	X	X	X	
12NCRDSS07	580-34701-7	RD-07	X	X	X	X	X	X	
12NCRDSS08	580-34701-8	RD-08	X	X	X	X	X	X	FD of 12NCRDSS02
AV00225	580-34701-0	AV00225	X	X					Trip Blank

Table 2-0.9 Drum Samples

Field Sample Identification	Laboratory Sample Number	Location ID	VOCs (SW8260B)	Ethylene Glycol (DW8015C)	DRO/RRO (AK102/103)	SVOCs (8270C SIM)	PCB (SW8082)	Total Metals (As, Cd, Cr, Pb) (6010B)	TCLP Metals (SW1311/6010B7470A)	Flashpoint, pH, Halogens	Remarks
Drum (Waste) Samples:											
12NCDRUM01	580-34380-1	12NCDRUM01					X	X		X	MS/MSD for metals; No pH for this sample
12NCDRUMO2	580-34825-1	DRUM02	X	X	X	X	X		X	X	
12NCDRUMO3	580-34825-2	DRUM03	X	X	X	X	X		X	X	
12NCDRUMO4	580-34825-3	DRUM04	X	X	X	X	X		X	X	
12NCDRUMO5	580-34825-4	DRUM05	X	X	X	X	X		X	X	
12NCDRUMO6	580-34825-5	DRUM06	X	X	X	X	X		X	X	MS/MSD for mercury
12NCDRUMO7	580-34825-6	DRUM07	X	X	X	X	X		X	X	
12NCDRUMO8	580-34825-7	DRUM08	X	X	X	X	X		X	X	
12NCDRUMO9	580-34825-8	DRUM09	X	X	X	X	X		X	X	
12NCDRUMO10	580-34825-9	DRUM10	X	X	X	X	X		X	X	

Table 2-0.9 Drum Samples (continued)

Field Sample Identification	Laboratory Sample Number	Location ID	VOCs (SW8260B)	Ethylene Glycol (DW8015C)	DRO/RRO (AK102/103)	SVOCs (8270C SIM)	PCB (SW8082)	Total Metals (As, Cd, Cr, Pb) (6010B)	TCLP Metals (SW1311/6010B7470A)	Flashpoint, pH, Halogens	Remarks
Drum (Waste) Samples:											
12NCDRUMO11	580-34825-10	DRUM11	X	X	X	X	X		X	X	
12NCDRUMO12	580-34825-11	DRUM12	X	X	X	X	X		X	X	
12NCDRUMO13	580-34825-12	DRUM13	X	X	X	X	X		X	X	
12NCDRUMO14	580-34825-13	DRUM14	X	X	X	X	X		X	X	

Notes:
AK = State of Alaska Test Method
BTEX = benzene, toluene, ethylbenzene, xylene
DRO = diesel range organics
FD = field duplicate
GRO = gasoline range organics
ID = identifier
MI *MULTI INCREMENT*®
MOC = Main Operations Complex
MS = matrix spike
MSD = matrix spike duplicate
PAHs = polynuclear aromatic hydrocarbons
PCBs = polychlorinated biphenyls
RRO = residual range organics
SIM = selective ion monitoring
SVOCs = semivolatile organic compounds
TCLP = Toxicity Characteristic Leaching Procedure
TOC = total organic carbon
VOCs = volatile organic compounds

2.1 SAMPLE RECEIPT CONDITIONS

Samples were shipped from the project site via Bering Air, who forwarded samples on to the laboratory via Alaska Airlines Goldstreak or Northern Air Cargo with custody seals intact until receipt by the laboratory. With the exceptions listed below, samples were received within 0-6 degrees Celsius and in good condition.

Site 8 (Lab Work Order 580-34648-1): One unpreserved amber bottle for sample 12NC08SWA01 was received broken. The laboratory was able to proceed with analysis with the remaining sample volume.

Site 8 (Lab Work Order 580-34747-1): The case narrative indicated that the container labels noted the samples were water while the CoC listed some samples as soils. All samples were logged in as waters per the container label.

Site 10 (Lab Work Order 580-35021-1): The trip blank collection date was listed as 9-16-12 on the CoC and 9-17-12 on the container. The trip blank was logged in per the CoC date of 9-16-12. In addition, one sample was received with an illegible label; it was determined to be sample 12NC10BW01 through the process of elimination.

Site 10 (Lab Work Order 580-35609-1): A number of sample labeling discrepancies occurred for samples included in work order 580-34609-1 as listed below.

- The Trip Blank label was completely illegible; the ID was smeared. Through the process of elimination, the sample was identified as Trip Blank 082012-04.
- The container label for the following samples did not match the information listed on the CoC: 12NC10SS021 (580-34609-21), 12NC10SS024 (580-34609-24), 12NC10SS026 (580-34609-26), 12NC10SS029 (580-34609-29), and 12NC10SS030 (580-34609-30). The container labels listed an ID of 1055, the sample IDs were corrected upon consultation with Bristol personnel. The CoC listed an ID of 10SS. Samples were logged in by the laboratory according to the CoC.
- There was no sample time on the container for sample TripBlank082012-03 (580-34609-40). The sample was logged in according to the CoC.

Site 13 (Lab Work Order 580-34330-1): A number of sample labeling discrepancies occurred for samples included in work order 580-34330-1 as listed below.

The sample container information did not match the CoC for the following samples:

- 12NC13SS030: label listed sampling time as 10:25, COC listed it as 10:28;
- 12NC13SS005, 12NC13SS007, 12NC13SS012, 12NC13SS021, 12NC13SS027, and 12NC13SS034: sampling times not recorded on sample containers, but were recorded on CoC;
- 12NC13SS027, 12NC13SS028 MS&MSD, and 12NC13SS029: label listed sampling date as 8/4/12, CoC listed it as 8/5/12;
- 12NC13SS030, 12NC13SS035, and 12NC13SS037: label listed sampling date as 8/12, CoC listed it as 8/5/12.

All samples were logged in according to the data listed on the CoC.

- The container labels for the following did not match the information listed on the CoC for samples 12NC13SS052, though -063, plus the associated MS/MSDs. The container labels listed a date of 08/05/2012 for samples 50-61. The CoC listed varying dates from 08/06/2012 to 08/17/2012. Since most of these dates for these samples were in the future and had not occurred yet, the samples were logged in according to the dates on the container labels.

Site 13 (Lab Work Order 580-34374-1): A number of sample labeling discrepancies occurred for samples included in work order 580-34374-1 as listed below.

- Sample 12NC13SS111 was listed on the COC twice with the same information. Only one container was received so the laboratory assumed that the sample had been mistakenly written on the CoC twice.
- The container labels did not match the CoC for the following samples: 12NC13SS088, through -099, and the associated MS/MSDs. The container labels listed a sampling date of 08/07/2012 while the CoC listed a date of 8/5/12. Also, the sampling times on the container labels for the following samples did not match the CoC: 12NC13SS137, through -142 (plus the MS/MSDs). All samples were logged in per the CoC.

Site 13 (Lab Work Order 580-34680-1): A number of sample labeling discrepancies occurred for samples included in work order 580-34680-1 as listed below.

- The container label for samples 12NC13SS160 and 12NC13SS161 did not match the information listed on the COC. Slight discrepancies in the sample times were noted. Both samples were logged in with the collection times listed on the COC which is corroborated by the sample summary table.
- The case narrative stated that samples 1213205 and 12NC13SS212 were listed on the CoC but were not received due to error while packing the coolers for shipment. Samples 12NC13SS205 and 12NC13SS212 were included in another sample shipment.

Site 13 (Lab Work Order 580-34680-1): The container label for sample 12NC13SS214 did not match the CoC. The container label listed the collection date as 8/28/12, while, the CoC listed the date as 8/29/12. The sample was logged in with the sample collected date listed on the CoC.

Site 21 (Lab Work Order 580-34828-1): The filtered water samples collected for metals analysis were not preserved in the field and required preservation upon sample receipt.

Site 31 (Lab Work Order 580-34373-1): The case narrative indicated that page 3 of 3 of the CoC was not signed and dated; however, during review of custody documentation provided in the data package, it was found that all pages of the CoC were signed and dated appropriately.

Site 31 (Lab Work Order 580-34675-1): The sample collection dates listed on the CoC did not match the collection listed in the labels for samples 12NC31SS124 and 12NC31SS150. In addition, the sample time listed on the CoC did not match the time found on the sample label for 12NC31SS162. The samples were logged in according to the CoC.

Site 31 (Lab Work Order 580-34683-1): Discrepancies were found in the sample time listed on CoC as compared to the sample label for samples 12NC31SS101, 12NC31SS084, and 12NC31SS054 through 12NC31SS060. These samples were logged in with the sample collection time listed on CoC.

For samples 12NC31SS079 through 12NC31SS089 as well as 12NC31SS091 through 12NC31SS101, the date on the COC did not match the date on the container labels. Sample dates were logged in according to the sample labels since these dates were corroborated by the sampler's notes and sample summary table.

MOC Site

Lab Work Order 580-33899-1 (water samples): Two of the 1-liter ambers for sample 12NCMOCWA003 were received broken. The sample was noted for MS/MSD on the CoC and extra volume was collected. The case narrative stated that sufficient sample volume remained in the unbroken containers to perform the analysis and MS/MSD spiking for all the requested analyses.

Lab Work Order 580-34205-1: The container labels for the two extra jars submitted for MS/MSD did not match the CoC and the true parent sample could not be determined. The container labels list the ID as 12NCMOCSS018 and the time as 15:35. The COC lists the ID as 12NCMOCSS008 and the time as 14:45. The lab had been directed that when containers for MS/MSD did not match the COC or parent container, they should not be used. After communication with Bristol, an MS/MSD was added to sample 12NCMOCSS018 from the one jar provided. However, it was prepped in a different batch from the parent sample as the parent sample had already been prepped.

Lab Work Order 580-34446-1: The CoC had a collection date of 09/12/2012, while the container labels had a date of 08/12/2012, and no time stated for the trip blank. The samples were logged in per the collection date and times on the container labels.

Lab Work Order 580-34447-1: Sample 12NCMOCSS060 did not have a container label on the soil jar, however, the sample ID was marked on the lid.

Lab Work Order 580-34481-1: The cooler receipt temperature was noted as 6.9 °C; however, the temperature blank was 3.4 °C and no qualification is required based on sample receipt.

Lab Work Order 580-35168-1: The CoC listed the collection dates for samples 12NC28BW01 and Trip blank 092312-1 as 9/1212012 and 9/2132012, respectively. Since these are most likely typographical errors, the sample was logged in per the dates on the sample container.

Bulk Bag Area (Lab Work Order 580-34086-1): The container label for 12NCBGSS12 did not match the information listed on the CoC. The container labels listed a sample ID of 12NCBGSS13 and the CoC lists a sample ID of 12NCBGSS12. The sample was logged in according to CoC.

Radar Dome Road Samples (Lab Work Order 580-34701-1): The container label for sample AV00225 did not match the information listed on the CoC. The container label for this sample was not filled out but the ID was written on the lid of the container. The sample date was logged in per the CoC and the time was assigned as 1200 AM. Sample AV00225 was a trip blank prepared by the laboratory.

Drum Samples (Lab Work Order 580-34825-1): The container labels for sample 12NCDRUMO10 (580-34825-9) listed a sampling date of 9/1/12; while the CoC listed a date of 9/2/12. The sample was logged in per the CoC.

2.2 BTEX ANALYSES

TestAmerica analyzed samples for BTEX by SW-846 method 8260B. The sample QC batches are summarized in Table 2-2.1.

Table 2-2.1 BTEX QC Batches

Site	QC Batch	QC Batch Date	Matrix
MOC	580-115604	08/23/2012	Water
MOC	580-118260	08/23/2012	Water
Radar Dome	580-119182	09/04/12	Soil

Notes:
BTEX = benzene, toluene, ethylbenzene, and xylenes
MOC = Main Operations Complex
QC = quality control

Required QC for an analytical batch of up to 20 samples includes an MB, LCS/LCSD, and MS/MSD pair. A MB, LCS/LCSD, and project MS/MSD pair were analyzed with each batch with the following exception:

- An LCSD was not included for batch 580-119182. Precision was assessed using the associated project MS/MSD pair and was within QAPP limits.

The following items were reviewed and met QAPP criteria: holding times, MB, surrogate recoveries, LCS/LCSD recoveries and RPDs, and MS/MSD recoveries and RPDs.

The laboratory reported surrogate recoveries for fluorobenzene, trifluorotoluene, and ethylbenzene-d10 rather than the QAPP specified surrogates 1,2-dichloroethane-d4 and dibromofluoromethane for water samples reported in work orders 580-34446-1 and 580-33899-1. This discrepancy has not affected data quality and qualifiers were not assigned.

For soils, all QAPP specified surrogates were analyzed as well as three additional surrogates. The data review was performed using surrogates and control limits provided on QAPP Table 12-5 (i.e. 4-bromofluorobenzene and toluene-d_8). The QAPP surrogates were in control.

The laboratory indicated in the case narrative for work order 580-34446-1 that ion 50 results for one of the BFB tunes were slightly less than criteria. Since the values round to the acceptable tune criteria, the results are acceptable and do not require qualification.

2.3 VOC ANALYSES

TestAmerica analyzed samples for VOCs by SW-846 method 8260B. The sample preparation QC batches are summarized in Table 2-3.1.

Table 2-3.1 VOC QC Batches

Site	QC Batch	QC Batch Date	Matrix
Site 10	580-121247	9/29/12	Soil
Site 10	580-118819	8/29/12	Soil
Site 10	580-118887	8/29/12	Soil
Site 10	580-119114	8/31/12	Soil
Site 10 Drums	580-120040	9/14/12	Waste
Site 10 Drums	580-120044	9/14/12	Waste

Notes:

QC = quality control

Required QC for an analytical batch of up to 20 samples includes an MB, LCS, and MS/MSD pair. An MB, LCS/LCSD and project MS/MSD were analyzed with each batch with the following exceptions:

- LCSDs were not included for the Site 10 QC batches. Precision was assessed using the MS/MSD.
- A non-project sample was used for the MS/MSD pair for QC batch 580-119114. This batch included a single trip blank and an MS/MSD would not have been appropriate. Results for the non-project MS/MSD were not reviewed.
- A MS/MSD was not associated with waste samples analyzed in batches 580-120040 and 580-120044. However, a project specific laboratory duplicate was included for sample 12NCDRUMO13 and was in control.

The following items were reviewed and outliers are discussed below: holding times, surrogate recoveries, MBs, LCS recoveries, and MS/MSD recoveries and RPDs.

Holding times for VOC waste samples were evaluating using the SW-846 specified holding time of 14 days for this matrix. VOC waste samples 12NCDRUMO2, 12NCDRUMO3, 12NCDRUMO4, 12NCDRUMO5, 12NCDRUMO6, 12NCDRUMO7, 12NCDRUMO9, and 12NCDRUMO14 were analyzed 10 days over holding time and results were qualified QL.

For soil analysis, the QAPP requires only surrogates 4-bromofluorobenzene and toluene-d8. The laboratory reported three extra surrogates (fluorobenzene, trifluorotoluene, and ethylbenzene-d10) for soil samples. The QAPP surrogates were within limits and results were not qualified, with the following exception:

Sample No.	Lab ID	Surrogate	%R	Control Limits
12NC10SS029	580-34609-29	4-Bromofluorobenzene	83	85-120

Note:
%R = percent recovery

All VOCs results associated with the low surrogate recovery were QL qualified to indicate an estimated result with a low bias.

VOCs were detected in the method blanks as follows:

Analyte	Units	Concentration	Limit of Quantitation	Analysis Batch
Site 10:				
Methylene Chloride	µg/kg	76.6	40	580-118819
1,2,4-Trimethylbenzene	µg/kg	11.5	40	580-118819
Acetone	µg/kg	204	400	580-118819
m,p-Xylene	µg/kg	**20.8**	40	580-118819
Naphthalene	µg/kg	13.5	40	580-118819
N-Propylbenzene	µg/kg	16.3	40	580-118819
o-Xylene	µg/kg	16.4	40	580-118819
p-Isopropyltoluene	µg/kg	13.7	40	580-118819
1,2,4-Trimethylbenzene	µg/kg	11.6	40	580-118887
m,p-Xylene	µg/kg	**21**	40	580-118887
Methylene Chloride	µg/kg	15.3	40	580-118887
Naphthalene	µg/kg	12.7	40	580-118887
N-Propylbenzene	µg/kg	16.3	40	580-118887
o-Xylene	µg/kg	16.5	40	580-118887
Benzene	µg/kg	4.79	16	580-119114

Analyte	Units	Concentration	Limit of Quantitation	Analysis Batch
Naphthalene	µg/kg	17.6	40	580-119114
Drum (Waste) Samples:				
Carbon disulfide	µg/L	0.34 J	1	580-120040
Hexachlorobutadiene	µg/L	0.891 J	1	580-120040
m & p-Xylene	µg/L	0.301 J	2	580-120040
n-Butylbenzene	µg/L	0.297 J	1	580-120040
Carbon disulfide	µg/kg	15.2 J	40	580-120044
m & p-Xylene	µg/kg	13.1 J	40	580-120044

A variance was granted to accept the method blank detections for Site 10 shown in bold in email correspondence dated September 11, 2012. Associated sample results were 20 times lower than ADEC cleanup levels.

Due to the high blank concentrations, methylene chloride and acetone were re-analyzed for batch 580-118819 with no acetone or methylene chloride detected in the re-analysis method blank. For the initial run, the continuing calibration verification (CCV) for acetone also exceeded control limits, with a high bias. Re-analysis occurred between 2 to 3 days outside of hold time requirements. Both the acetone and methylene chloride results were reported from the re-analysis and were QL qualified to indicate the analysis occurred outside the holding time. Acetone and methylene chloride results reported from the initial run on 8/29/2012 should not be reported. The blank contamination is believed to be due to activities in the laboratory and not due to the presence of acetone or methylene chloride in the site soils. The results are still presented with positive sample results B qualified to indicate blank contamination at concentrations less than 10 times the reported concentrations in the project samples.

For all other method blank detections, associated results detected at concentrations less than 10x the blank concentration were B qualified and have the potential for high bias.

The LCS for batch 580-121247 had a high 1,2-dichloropropane recovery. The laboratory reported a recovery of 127%, while the acceptable limits are 70 to 120%. Results were not detected and did not require qualification.

The LCS for preparation batches 580-11887 and 580-119114 had low recoveries for cis-1,3-dichloropropene. The laboratory reported recoveries of 69% and 65%, respectively, while the acceptable limits are 70-125%. Associated results were QL qualified to indicate they are estimated result with a low bias.

MS/MSD recoveries and RPDs were outside control limits as follows:

Spiked Sample	Analyte	%R	%R Control Limits	RPD	RPD Control Limits
12NC10BW01	1,1,2,2-Tetrachloroethane	143/--	55-130	--	<30
	1,2,4-Trimethylbenzene	187/--	65-135	--	<30
	1,3,5-Trimethylbenzene	140/--	65-135	--	<30
	sec-Butylbenzene	131/--	65-130	--	<30
	n-Butylbenzene	339/265	65-140	--	<30
	Naphthalene	134/--	40-125	--	<30
12NC10SS007	1,1-Dichloroethane	134/135	75-125	--	<30
12NC10SS014	Bromomethane	180/--	30-160	49	<30
	Methyl tert-butyl ether	--/--	59-137	34	<30

Notes:
-- - In control
na – not applicable
%R = percent recovery
RPD = releative percent difference

Recoveries for the associated LCSs were in control and qualification (MH) was limited to detected results for the spiked sample to indicate an estimated value due to matrix, with a high bias. Results associated with high RPDs were not detected and qualification was not required.

The continuing calibration verification (CCV) for 1,2,3-trichloropropane, chloroethane, and bromomethane recovered above the upper control limit for analytical batch 580-

119010. Associated results were not detected. No further action was required per a variance documented in email correspondence dated 9/11/12.

The laboratory indicated in the case narrative for Work Order 580-35021-1 that ion 176 results for one of the BFB tunes were slightly less than criteria. Since the values round to the acceptable tune criteria, the results are acceptable and do not require qualification.

The CCV for analytical batch 580-121249 exceeded the control criteria low for carbon disulfide (-23.6%) and high for acetone (26.6%). A variance was granted to accept the acetone and carbon disulfide data in email correspondence dated October 10, 2012 and samples were not re-analyzed. All associated carbon disulfide results were QL qualified to indicate an estimated result with a potential low bias and detected acetone results were QH qualified to indicate an estimated result with a potential high bias.

The trip blank, Tripblank082012-04, was re-analyzed outside hold time criteria for trichlorofluoromethane due to a deficient calibration for the initial analysis. Trichlorofluoromethane results in all associated samples were not detected and the trip blank information was not needed to evaluate contamination during shipping. The result was qualified QL to indicate the hold time exceedance.

Only the methanol preserved container was submitted for VOC analysis on Site 10 bulk waste samples and percent moisture could not be determined. Results were reported on a wet weight basis. All affected samples were used to aid in disposal decisions and the sampled materials were accepted for disposal by Columbia Ridge Landfill in Arlington, Oregon. Results were usable for project purposes.

2.4 METHANE ANALYSES

TestAmerica analyzed samples for methane by RSK 175. The sample QC batches are summarized in Table 2-4.1.

Table 2-4.1 Methane QC Batches

Site	QC Batch	QC Batch Date	Matrix
Site 8	680-248739	09/04/2012	Water
Site 8	680-248866	09/05/2012	Water
Site 8	680-248993	09/06/2012	Water
Site 8	680-248996	09/06/2012	Water
Site 8	680-249074	09/06/2012	Water
Site 8	680-249075	09/06/2012	Water
MOC	680-243400	07/16/2012	Water
MOC	680-243416	07/16/2012	Water

Notes:
MOC = Main Operations Complex
QC = quality control

Required QC for an analytical batch of up to 20 samples includes an MB, LCS/LCSD, and MS/MSD pair. A MB and LCS/LCSD pair were analyzed with each batch. Only one MS/MSD was analyzed and was performed on a MOC water sample. MS/MSDs were not requested per CoC for Site 8.

The following items were reviewed and met QAPP criteria: holding times, MB, LCS and LCSD recoveries, and MS/MSD recoveries and RPDs.

For batch 680-249075, the laboratory reported an LCS/LCSD RPD of 27%, while the acceptable limit is 20%. Associated detected results were QN qualified to indicate an estimated value with an unknown bias.

The laboratory listed the LCS/LCSD and MS/MSD recovery limits as 75 to 125% and the RPD limit as 30%, while the QAPP recovery limits are 80 to 120%, and the RPD limit is 20%. The QAPP limits were used during review.

2.5 GLYCOL ANALYSES

TestAmerica analyzed samples for glycols by SW-846 method 8015B. The QC batches are summarized in Table 2-5.1.

Table 2-5.1 Glycol Batches

Site	QC Batch	QC Batch Date	Matrix
Site 10	680-247905	8/27/2012	Soil
Site 10	680-247911	8/27/2012	Soil
Site 10	680-248004	8/28/2012	Soil
Site 10	680-248173	8/29/2012	Soil
Site 10 Drum Samples	680-249498	09/12/2012	Waste

Notes:
QC = quality control

QC requirements for glycols were not specified in the QAPP as it was not initially identified as a compound of concern until the drum contents were visually characterized. For each analytical batch of up to 20 samples, a MB and LCS/LCSD pair were analyzed. Two MS/MSDs were analyzed with batch 680-247905.

The following items were reviewed and met QAPP criteria: LCS/LCSD recoveries and RPDs, and MS/MSD recoveries and RPDs.

The laboratory noted that samples 12NCDRUMO2, 12NCDRUMO3, 12NCDRUMO4, and 12NCDRUMO6 received outside of holding time requirements. Samples were analyzed 22 days after collection and were qualified QL.

Ethylene glycol was detected in the method blank for batch 680-249498 at a concentration of 1.7 J mg/kg. The ethylene glycol result for sample 12NCDRUMO11 was within 10 time the method blank concentration and qualified B.

The closing CCV associated with batch 680-249498 did not meet quality control limit. Sample matrix is suspected to have contributed to this failure and results were not qualified since the LCS/LCSD was in control.

2.6 GRO ANALYSES

TestAmerica analyzed samples for GRO by ADEC method AK101. The sample QC batches are summarized in Table 2-6.1.

Table 2-6.1 GRO QC Batches

Site	QC Batch	QC Batch Date	Matrix
MOC	580-115603	18-July-12	Water
Site 10	580-118538	26-Aug-12	Soil
Site 10	580-118644	27-Aug-12	Soil
Site 10	580-118863	29-Aug-12	Soil
Radar Dome	580-119182	04-Sep-12	Soil

Notes:
GRO = gasoline-range organics
QC = quality control

Required QC for an analytical batch of up to 20 samples includes an MB, LCS/LCSD, and MS/MSD pair. A MB, LCS/LCSD pair and project MS/MSD pair were performed with each QC batch with the exception that no MS/MSD was included with QC batch 580-118863. This batch included a single trip blank and an MS/MSD would not have been appropriate.

The following items were reviewed and met QAPP criteria: holding times, MBs, LCS/LCSD recoveries and RPDs, and MS/MSD recoveries and RPDs.

The QAPP specified the surrogate a,a,a-trifluorotoluene for GRO analysis. TestAmerica also reported surrogate recoveries for 4-bromofluorobenzene. Since this was not a QAPP required surrogate, recoveries for this surrogate were not evaluated.
a,a,a-Trifluorotoluene surrogate recoveries were outside QAPP control limits as follows:

Site	Field Sample ID	Surrogate	%R	Criteria
Site 10	12NC10SS005	Trifluorotoluene	32	50-150
Site 10	12NC10SS006	Trifluorotoluene	26	50-150
Site 10	12NC10SS007	Trifluorotoluene	30	50-150
Site 10	12NC10SS008	Trifluorotoluene	33	50-150
Site 10	12NC10SS012	Trifluorotoluene	37	50-150
Site 10	12NC10SS018	Trifluorotoluene	35	50-150
Site 10	TripBlank082012-04	Trifluorotoluene	165	50-150

Note:
%R = percent recovery

Detected sample results associated with the field surrogate not meeting the lower control limit were qualified ML to indicate a potential for low bias due to percent moisture in samples ranging from 32 to 57%. TripBlank 082012-04 results were QH qualified to indicate high bias as no moisture was present in the trip blank.

MS/MSD control limits provided by the laboratory were not those specified in the QAPP. Recoveries and RPDs were within the QAPP Table 12-1 and 12-10 control limits.

2.7 SVOC Analyses

TestAmerica analyzed samples by method SW-846 8270C. The extraction batches are summarized in Table 2-7.1.

Table 2-7.1 SVOC QC Batches

Site	QC Batch	QC Batch Dates	Matrix
Site 10 Drum Samples	580-120087	09/14/2012	Waste

Notes:
QC = quality control
SVOC = semivolatile organic compounds

Required QC for an analytical batch of up to 20 samples includes an MB, LCS/LCSD, and MS/MSD pair. A MB and LCS/LCSD pair were performed with each QC batch. A MS/MSD was not submitted from the field for the drum waste samples.

The following items were reviewed and met QAPP criteria: MBs, surrogate recoveries, and LCS/LCSD recoveries and RPDs.

Holding times for SVOC waste samples were evaluating using the SW-846 specified holding time of 14 days to extraction, and 40 days from extraction to analysis for waste samples. SVOC waste samples 12NCDRUMO2, 12NCDRUMO3, 12NCDRUMO4, 12NCDRUMO5, 12NCDRUMO6, 12NCDRUMO7, 12NCDRUMO9, and 12NCDRUMO14 were extracted 10 days over holding time and results were qualified QL.

2.8 PCB Analyses

TestAmerica analyzed samples by method SW-846 8082. The extraction batches are summarized in Table 2-8.1.

Table 2-8.1 PCB QC Batches

Site	QC Batch	QC Batch Dates	Matrix
Site 10 Drum Samples	580-119712	11-Sep-12	Waste
Site 10	580-118530	8/26/2012	Soil
Site 10	580-118653	8/27/2012	Soil
Site 10	580-118716	8/28/2012	Soil
Site 13	280-135157	30-Aug-12	Soil
Site 13	280-135169	30-Aug-12	Soil
Site 13	280-135180	30-Aug-12	Soil
Site 13	280-137843	18-Sep-12	Wipe
Site 13	580-116419	30-Jul-12	Soil
Site 13 and Bulk Bag Area (CBG)	580-117619	14-Aug-12	Soil MI
Site 13	580-117724	15-Aug-12	Soil
Site 13	580-117734	15-Aug-12	Soil
Site 13	580-117746	15-Aug-12	Soil
Site 13	580-118021	20-Aug-12	Soil
Site 13	580-118025	20-Aug-12	Soil
Site 13	580-118049	20-Aug-12	Soil
Site 13	580-118070	20-Aug-12	Soil
Site 13	580-119462	06-Sep-12	Soil
Site 13 and 31	280-137499	16-Sep-12	Soil
Site 13 and 31	280-135116	30-Aug-12	Soil
Site 13 and 31	280-137865	18-Sep-12	Soil
Site 31	280-137500	16-Sep-12	Soil
Site 31	280-137601	17-Sep-12	Soil
Site 31	280-134972	29-Aug-12	Soil

Table 2-8.1 PCB QC Batches (continued)

Site	QC Batch	QC Batch Dates	Matrix
Site 31	280-134973	29-Aug-12	Soil
Site 31	280-134983	29-Aug-12	Soil
Site 31	280-134984	29-Aug-12	Soil
Site 31	580-117372	10-Aug-12	Soil
Site 31	580-117426	11-Aug-12	Soil
Site 31	580-119216	4-Sep-12	Soil
Site 31	580-119226	4-Sep-12	Soil
Site 31	580-119234	4-Sep-12	Soil
Site 31	580-119337	5-Sep-12	Soil
Site 31	580-119370	5-Sep-12	Soil
MOC	580-115276	13-Jul-12	Water
MOC	580-115878	22-Jul-12	Water
Bulk Bag Area (BG)	580-115726	19-Jul-12	Soil
Bulk Bag Area (CBG)	580-116299	27-Jul-12	Soil MI
Radar Dome	580-119544	07-Sep-12	Soil
Drums	580-118098	21-Aug-12	Waste

Notes:
MI = *MULTI INCREMENT®*
MOC = Main Operations Complex
PCB = polychlorinated biphenyl
QC = quality control

Required QC for an analytical batch of up to 20 samples includes an MB, LCS, and MS/MSD pair. A MB, LCS/LCSD, and project MS/MSD pair was analyzed with each batch with the exception that an MS/MSD pair was not associated with the following QC extraction batches:

- Batch 280-137843 included only wipe samples, and a MS/MSD cannot be performed on wipe samples.
- Batches 580-118021and 580-119216: The MS/MSDs reported were not project samples and were not reviewed.
- MS/MSD analyses for prep batches, 580-117426 (soil sample) and 580-118098 and 580-119712 (waste samples) were not requested and not analyzed.

The following items were reviewed and met QAPP criteria: holding times, MBs and LCS/LCSD recoveries.

The laboratory indicated that many of the samples required sulfuric acid cleanup to reduce matrix interferences. Mercury cleanup by method 3660A was also used, but to a lesser extent.

In preparation batch 280-135180 for method 3550C/8082A samples 12NC13SS207 (580-34680-65), 12NC13SS208 (580-34680-66) and 12NC13SS210 (580-34680-68) contained standing water. Associated QC results were acceptable and the presence of water did not affect the sample results.

The Bulk Bag Area (BG) soil samples were prepared using multi incremental methodology.

2.8.1 Holding Times

The QAPP hold time criteria of 40 days from extraction to analysis was met for all samples.

2.8.2 Surrogate Recoveries

Some of the samples were diluted due to the presence of either target or non-target analytes. Surrogate recoveries were evaluated for samples analyzed at a dilution of 4x or less. For dilutions greater than 4x, the surrogates were considered to be diluted out and recoveries were not evaluated. In addition, only recoveries from the primary column, from which the results were reported, were used to qualify data since secondary column results are used for confirmation purposes only. Surrogate recoveries were outside the QAPP control limits for DCB on the primary column as follows:

Site	Field Sample ID	Surrogate	%R	Criteria	
13	12NC13SS022	DCB	150	60-125	Diluted out (10x)
13	12NC13SS047	DCB	128	60-125	Diluted out (10x)
31	12NC31SS019	DCB	128	60-125	Diluted out (10x)
31	12NC31SS061	DCB	194	60-125	Diluted out (50x)
31	12NC31SS105	DCB	132	60-125	Diluted out (10x)
31	12NC31SS115	DCB	131	60-125	Diluted out (8x)
31	12NC31SS119	DCB	32	60-125	Diluted out (50x)
31	12NC31SS120	DCB	10	60-125	Diluted out (50x)
31	12NC31SS157	DCB	32	60-125	Diluted out (40x)
31	12NC31SS175	DCB	0	60-125	Diluted out (200x)

Notes:
DCB = decachlorobiphenyl
%R = percent recovery

Results did not require qualification, since the DCB surrogate was diluted out. Since tetrachloro-m-xylene (TCMX) is a secondary surrogate, and the DCB surrogate is more representative of PCBs, results were not qualified due to TCMX recoveries.

The DCB surrogate recovery was not reported for sample 12NC31SS184 for the secondary column. Results were not qualified since the primary column surrogate recovery was in control.

For SDG 280-33320-1, the surrogate summary had the secondary column recoveries listed first, while they were identified as primary recovery results in the laboratory report and case narrative. This discrepancy has not affected data quality.

The QAPP specifies the addition of two surrogates for PCB determination. However, for SDGs 280-33320, 580-34675, 580-34680, and 580-34683 the lab followed the method which requires only one surrogate, DCB, with an optional second surrogate, TCMX. The surrogate DCB is more closely associated with PCBs and no action was required due to the lack of TCMX recovery information.

2.8.3 LCS/LCSD RPDs

Two batches of soil samples had LCS/LCSD RPDs above the QAPP limit of 20% as summarized below.

QC Batch	Analyte	RPD	RPD Limit	Results Qualified
280-137601	PCB-1016	22	20	None, associated results were not detected.
	PCB-1260	22	20	12NC31SS222, 12NC31SS223, 12NC31SS225
580-117734	PCB-1016	22	20	None, associated results were not detected.

Detected results associated with RPD exceedances were qualified QN to indicate an estimated value with unknown bias.

The LCS/LCSD RPD limit for soils was listed as 30% in lab reports, while QAPP lists 20%. The QAPP limit was used during review.

2.8.4 MS/MSD Recoveries and RPDs

MS/MSD recoveries were outside QAPP Table 12-4 and 12-13 control limits as shown below. A dash indicates results were within control limits.

Spiked Client ID	Lab ID	PCB-1016 %R MS/MSD (RPD) Limits: 40-140 (<20%)	PCB-1260 %R MS/MSD (RPD) Limits: 60-130 (<20%)
Soil Samples:			
12NC10SS034	580-34609-34	--	56%/43%
12NC13SS061	580-34330-59	--	na, >4x spike
12NC13SS093	580-34374-30	--	(26%)
12NC13SS103	580-34374-40	(28%)	na, >4x spike
12NC13SS134	580-34374-71	--	na, >4x spike
12NC13SS137	580-34374-74	--	--/12% (28%)
12NC13SS180	580-34680-38	--	na, >4x spike
12NC13SS188	580-34680-46	--	--/46%
12NC13SS189	580-34680-47	na, diluted out	na, diluted out
12NC13SS190	580-34680-48	na, diluted out	na, diluted out
12NC13SS232	280-33320-13	na, diluted out	na, >4x spike

Spiked Client ID	Lab ID	PCB-1016 %R MS/MSD (RPD) Limits: 40-140 (<20%)	PCB-1260 %R MS/MSD (RPD) Limits: 60-130 (<20%)
12NC31SS013	580-34373-13	--	--46% (30%)
12NC31SS014	580-34373-14	--	137%/--
12NC31SS063	580-34683-34	--	133%/--
12NC31SS139	580-34675-26	--	144%/175%
12NC31SS140	580-34675-27	--	132%/--
12NC31SS141	580-34675-28	na, diluted out	na, diluted out
12NC31SS149	580-34675-36	--	-86%/-61%
12NC31SS150	580-34675-37	--	222%/155% (27%)
12NCBGSS01	580-33899-16	8507%/5544% (43%)	--/164% (30%)
12NCBGSS10	580-34086-1	156%/158%	--
12NCBGSS14	580-34335-1	--	(27%)

Spiked Client ID	Lab ID	PCB-1016 %R MS/MSD (RPD) Limits: 25-145 (<30%)	PCB-1260 %R MS/MSD (RPD) Limits: 30-145 (<30%)
Water Samples:			
12NCMOCWA001	580-33899-1	26/-- (99%)	18/-- (124%)
12NCMOCWA001 RE	580-33899-1 RE	--	--

Notes:

-- = In control

na = not applicable
%R = percent recovery

RPD = releative percent difference

LCS/LCSD recoveries were in control and qualification was limited to the spiked samples. Detected results associated with an exceedance of the upper control limit were qualified MH to indicate a potential for high bias and all results associated with an exceedance of a lower control limit were ML qualified to indicate the potential for low bias. Detected results associated solely with a RPD exceedances were MN qualified. Sample 12NCMOCWA001 was re-extracted and re-analyzed with acceptable MS/MSD recoveries and results were not qualified.

When the source sample concentration exceeds the spike concentration by greater than 4x or the sample was analyzed at a dilution >4x, recoveries were not applicable (na) and recovery and RPD information were not evaluated.

The MS/MSD RPD limit for soils was 30% in lab reports, while QAPP lists 20%. The QAPP limit was used during review.

2.8.5 Laboratory Replicates

The following MS/MSD pair results were evaluated as laboratory replicates due to the high concentrations of PCB-1260 present in the samples (the spiking concentration added was not significant). Good agreement was generally observed between the MS and MSDs indicates that laboratory procedures were acceptable.

Spiked Client ID	PCB-1260 Parent Sample	PCB-1260 MS	PCB-1260 MSD
12NC13SS190	6	6.82	6.38
12NC13SS232	0.62	0.513	0.63
12NC31SS013	0.15	0.272	0.201
12NC31SS141	3.8	2.99	3.16
12NC31SS149	0.2	0.141	0.157

2.8.6 Continuing Calibration Verifications

The laboratory narrative indicated a failing CCV with a high bias for the DCB surrogate in analytical batches 280-138086 and 280-135518 on the secondary column. Since results were reported from the primary column, with the DCB surrogate in control, results were not qualified.

The laboratory narrative indicated the CCV for the confirmation (secondary) column was biased high for PCB-1016 and PCB-1260 for analysis batches 280-135508, 280-135656, 280-135711, and 280-135484. Results were reported from the primary column which was in control.

For batch 280-135484 the laboratory narrative indicated the surrogate DCB was biased high in the CCV. Surrogate recoveries in the associated samples were in control; therefore, results were not qualified.

2.8.7 Shared PCB Peaks

The laboratory narrative indicated that the following samples contained more than one PCB with shared peaks. Detected PCB results for these samples were qualified as estimated with an unknown bias (MN):

Site	Field ID	Lab ID	Detected PCBs
10	12NC10SS016	580-34609-16	PCB-1254, 1260
10	12NC10SS019	580-34609-19	PCB-1254, 1260
10	12NC10SS034	580-34609-34	PCB-1254, 1260
13	12NC13SS218	580-34746-7	PCB-1254, 1260

2.8.8 Quantitation

Several of the peaks used to quantify PCB-1260 in samples 12NC13SS191 (580-34680-49), 12NC31SS115 (580-34675-2), 12NC31SS119 (580-34675-6), 12NC31SS120 (580-34675-7) and 12NC31SS148 (580-34675-35) were above the calibration range on the confirmation column. Results were not qualified since the results were reported from the primary column and the RPD between the two columns was less than 40%.

PCB-1260 results for samples 12NC13SS104, 12NC13SS105, 12NC13SS123, and 12NC31SS019 were reported from both the secondary column during undiluted analysis and the primary column during 10 times dilution analysis. Results from the dilution analysis should be used since the undiluted results exceeded the calibration range of the instrument.

Samples 12NCMOCWA001 through -010 (work order 580-33899-1) were re-extracted and re-analyzed due to low recoveries for the MS/MSD. The MS/MSD recoveries were in control for the re-extracted batch. The results for both data sets were not detected and the preferred results are the original data set.

2.9 PAH ANALYSES

TestAmerica analyzed samples by SW-846 method 8270C SIM for PAHs. The extraction batches are summarized in Table 2-9-1.

Table 2-9.1 PAH QC Batches

Site	QC Batch	QC Batch Dates	Matrix
Site 8	580-118681	28-Aug-12	Water
Site 8	580-119556	07-Sep-12	Soil
Site 8	580-119835	12-Sep-12	Soil
Site 10	580-118540	26-Aug-12	Soil
Site 10	580-118664	27-Aug-12	Soil
MOC	580-115234	13-Jul-12	Water
MOC	580-117774	16-Aug-12	Water
Radar Dome	580-119556	07-Sep-12	Soil

Notes:
MOC = Main Operations Complex
PAH = polynuclear aromatic hydrocarbons
QC = quality control

Required QC for an analytical batch of up to 20 samples includes an MB, LCS/LCSD, and MS/MSD pair. A MB, LCS/LCSD, and project MS/MSD pair were performed with each QC batch, with the following exceptions.

- The MS/MSD for batch 580-119835 was not performed on a project sample, and was not reviewed.
- A LCSD was not included for batch 580-118681.

The following items were reviewed and met QAPP criteria: holding times, LCS/LCSD RPDs, and MS/MSD RPDs.

PAH compounds were detected in the method blanks as shown below. Associated samples results were not detected and did not require qualification.

Site	Laboratory Work Order	Preparation Batch	Analytes	Units	Concentration
MOC	580-34446-1	580-117774	Pyrene	ug/Kg	0.0342 J

For work orders 580-33899-1, 580-34648-1, and 580-34701-1 the laboratory reported only the terphenyl-d14 surrogate, while the QAPP also requires 2-fluorobiphenyl and nitrobenzene-d5. The raw data was reviewed and adequate instrument response was found for 2-fluorobiphenyl and nitrobenzene-d5 and results were not qualified.

LCS/LCSD recoveries were outside laboratory control limits as follows:

Site	Batch	Analyte	LCS/LCSD %R	Control Limits
Site 8	580-119556	Acenaphthylene	109/--	45-105
		Anthracene	111/--	55-105
Site 10	580-118540	Acenaphthylene	107/--	45-105
		Anthracene	107/--	55-105
	580-118664	Acenaphthylene	108/110	45-105
		Anthracene	--/106	55-105

Notes:
-- - In control
%R = percent recovery

Detected results associated with an exceedance of the upper control limit were qualified QH to indicate a potential for high bias. Detected concentrations were well below cleanup levels and variances for the LCS/LCSD results were granted in email correspondences dated 9/4/12 and 9/17/12.

MS/MSD recoveries were outside laboratory control limits as follows:

Site	Sample	Analyte	MS/MSD %R	Control Limits
Site 10	12NC10SS014	Acenaphthylene	106/--	45-105
Radar Dome Road	12NCRDSS03	Acenaphthylene	109/110	45-105
		Anthracene	109/109	55-105
		Benzo[a]anthracene	--/111	50-110

Note: %R = percent recovery

Results for sample 12NC10SS014 and 12NCRDSS03 were not detected for the compounds listed above and did not require qualification.

Ten soil samples from Site 10 were analyzed at a 10x dilution due to the nature of the sample matrix. Reporting limits achieved were well below site-specific cleanup criteria and data usability is not affected.

2.10 DRO/RRO ANALYSES

TestAmerica analyzed samples for DRO/RRO following ADEC methods AK102/103. The QC batches are summarized in Table 2-10.1.

Table 2-10.1 DRO/RRO QC Batches

Site	Analysis	QC Batch	QC Batch Date	Matrix
Site 8	DRO/RRO	580-119324	05-Sep-12	Water
Site 8	DRO/RRO	580-119523	07-Sep-12	Soil
Site 8	DRO/RRO	580-119832	12-Sep-12	Soil
Site 8	DRO/RRO with silica gel cleanup	580-119523	07-Sep-12	Soil
Site 8	DRO/RRO with silica gel cleanup	580-119832	12-Sep-12	Soil
Site 10	DRO/RRO	580-118534	26-Aug-12	Soil
Site 10	DRO/RRO	580-118660	27-Aug-12	Soil
Bulk Bag Area (BG)	DRO	580-115720	19-Jul-12	Soil MI
Bulk Bag Area (BG)	DRO	580-115750	19-Jul-12	Soil MI
MOC	DRO/RRO	280-138169	20-Sep-12	Water
MOC	DRO/RRO	580-115450	17-Jul-12	Water
MOC	DRO/RRO	580-116571	31-Jul-12	Soil
MOC	DRO/RRO	580-116581	31-Jul-12	Soil
MOC	DRO/RRO	580-116701	01-Aug-12	Soil
MOC	DRO/RRO	580-118024	20-Aug-12	Soil

Table 2-10.1 DRO/RRO QC Batches (continued)

Site	Analysis	QC Batch	QC Batch Date	Matrix
MOC	DRO/RRO	580-118064	20-Aug-12	Soil
MOC	DRO/RRO	580-118134	21-Aug-12	Soil
MOC	DRO/RRO	580-118262	22-Aug-12	Water
MOC	DRO/RRO	580-118264	22-Aug-12	Soil
MOC	DRO/RRO	580-118486	24-Aug-12	Soil
MOC	DRO/RRO	580-118965	30-Aug-12	Soil
MOC	DRO/RRO	580-119421	06-Sep-12	Soil
MOC	DRO/RRO	580-119685	10-Sep-12	Soil
MOC	DRO/RRO	580-121392	01-Oct-12	Soil
Bulk Bag Area	DRO	580-115720	19-Jul-12	Soil MI
Bulk Bag Area	DRO	580-115750	19-Jul-12	Soil MI
Bulk Bag Area	DRO	580-117634	12-Aug-12	Soil MI
Bulk Bag Area	DRO/RRO	580-116298	27-Jul-12	Soil
Radar Dome	DRO/RRO	580-118965	30-Aug-12	Soil
Radar Dome	DRO/RRO	580-119523	07-Sep-12	Soil
Radar Dome	DRO/RRO	580-119936	13-Sep-12	Soil
Drum Samples	DRO/RRO	580-119798	11-Sep-12	Waste

Notes:
DRO = diesel-range organics
MI = *MULTI INCREMENT*®
MOC = Main Operations Complex
QC = quality control
RRO = residual range organics

Required QC for a batch of up to 20 samples includes an MB, LCS /LCSD, and MS/MSD pair. A MB, LCS/LCSD, and project MS/MSD pair were performed with each QC batch, except as noted below.

- A LCSD was not performed for batch 580-118262
- The MS/MSDs reported for batches 580-115750 and 580-121392 were not performed on a project samples and were not evaluated.
- MS/MSDs were not performed for batches 580-118024 and 580-119936 (soil samples) and 580-119798 (waste samples).

The following items were reviewed and met QAPP criteria: LCS/LCSD recoveries and RPDs.

The Bulk Bag Area (BG) soil samples were prepared using incremental methodology.

Samples 12NCBGS14 through -16 were prepared outside of hold time for DRO analysis. The samples were received with only 2 days of hold time remaining, which, according to the case narrative, was insufficient time to perform the MI sample preparation and extraction. DRO results for samples 12NCBGS14 through -16 were QL flagged to indicate preparation occurred outside of holding time.

Eight drum samples were noted by the laboratory as being analyzed past the 14 day holding time by six or seven days. DRO and RRO results for these samples were QL qualified and have the potential for a low bias.

DRO and RRO were detected in the batch method blanks as shown below. Associated detected results <10 times the blank concentrations were qualified B to indicate the potential for a false positive or high bias.

Site	Laboratory Work Order	Matrix	Preparation Batch	Analytes	Units	Concentration
Site 8	580-34648-1	Water	580-119324	DRO	mg/L	0.0279 J
Site 8	580-34748-1	Soil	580-119832	DRO	mg/kg	2.65 J
Site 8	580-34748-1	Soil	580-119523	DRO	mg/kg	3.37 J
Site 8	580-34748-1	Soil	580-119832	RRO with SGC	mg/kg	23.8 J
Site 10	580-34609-1	Soil	580-118534	DRO	mg/kg	6.4 J
Site 10	580-34609-1	Soil	580-118534	RRO	mg/kg	12.6 J
Site 10	580-34609-1	Soil	580-118660	DRO	mg/kg	8.06 J
Site 10	580-34609-1	Soil	580-118660	RRO	mg/kg	14.1 J
MOC	580-34447-1	Soil	580-118024	DRO	mg/kg	2.63 J
MOC	580-34447-1	Soil	580-118064	DRO	mg/kg	5.41 J
MOC	580-34447-1	Soil	580-118064	RRO	mg/kg	11.6 J
MOC	580-34447-1	Soil	580-118134	RRO	mg/kg	15.8 J
MOC	580-34447-1	Soil	580-118264	DRO	mg/kg	6.62 J

Site	Laboratory Work Order	Matrix	Preparation Batch	Analytes	Units	Concentration
MOC	580-34447-1	Soil	580-118264	RRO	mg/kg	30.8 J
MOC	580-34481-1	Water	580-118262	DRO	mg/L	0.0281 J
MOC	580-34594-1	Soil	580-118965	DRO	mg/kg	5.17 J
MOC	580-34607-1	Soil	580-118486	DRO	mg/kg	5.45 J
Bulk Bag Area	580-34086-1	Soil	580-116298	DRO	mg/kg	0.837 J
Radar Dome	580-34701-1	Soil	580-119936	DRO	mg/kg	5.13 J
Radar Dome	580-34701-1	Soil	580-119523	DRO	mg/kg	3.37 J
Radar Dome	580-34701-1	Soil	580-118965	DRO	mg/kg	5.17 J
Drum Samples	580-34825-1	Waste	580-119798	DRO	mg/kg	429 J

Note:
SGC=silica gel cleanup

For the initial analysis of samples in batch 580-118264 performed on 8/25/12, the case narrative indicated that DRO and RRO were detected in the continuing calibration blank (CCB #3) at levels that were above the DL but below ½ the LOQ. Samples in batch 580-118264 were reanalyzed (with the exception of 12NCMOCSS065 and 12NCMOCSS068) with no detects in the method blanks. Results were not qualified if they were associated with the re-analyzed method blank.

Many samples were diluted due to the presence of either target or non-target analytes. Surrogate recoveries were evaluated for samples analyzed at a dilution of 4x or less. For dilutions greater than 4x, the surrogates were considered to be diluted out and recoveries were not evaluated. Surrogate recoveries for samples analyzed at a dilution of 4x or less were outside QAPP control limits as follows:

Site	Sample No.	Affected Analyte	Surrogate	%R	Control Limits
Site 8	12NC08SS004	RRO	n-Triacontane-d62	163	50-150
MOC	12NCMOCBW222	RRO	n-Triacontane-d62	173	50-150
MOC	12NCMOCBW229	RRO	n-Triacontane-d62	162	50-150
MOC	12NCMOCSS146	RRO	n-Triacontane-d62	188	50-150
Radar Dome	12NCRDSS02	RRO	n-Triacontane-d62	166	50-150
Radar Dome	12NCRDSS04	RRO	n-Triacontane-d62	37	50-150
Radar Dome	12NCRDSS04	DRO	o-Terphenyl	32	50-150

Note:
%R = percent recovery

Detected results associated with an exceedance of the upper control limit were qualified QH to indicate a potential for high bias. Sample 12NCRDSS04 was re-extracted due to low surrogate recoveries and the re-extraction was performed 5 days over holding time. Surrogates were in control for the re-extraction and the re-extraction results were reported. Results for the re-extraction were qualified QL for holding time exceedence with potential low bias. The original results were not reported.

For batch 280-33360-1 the laboratory reported the surrogate n-octacosane, rather than n-triacontane-d62 for RRO analyses. Laboratory control limits were used to evaluate the n-octacosane recoveries.

The MS/MSD recovery limits for both waters and soils, and the RPD limits for waters that were listed on the laboratory reports did not match those listed in the QAPP. The MS/MSD recovery and RPD limits listed in the QAPP were used during review.
No qualifiers were assigned to MS/MSD recoveries outside control limits if the sample concentration was >4x the spike concentration, or analyzed at a dilution >4x. The MS/MSD spiked samples this rule applies to were:

Site	Spiked Sample	Analyte	Reason
MOC	12NCMOCSS002	DRO	high sample concentration
MOC	12NCMOCSS019	DRO	high sample concentration
MOC	12NCMOCSS031	DRO	high sample concentration
MOC	12NCMOCSS082	DRO	high sample concentration
MOC	12NCMOCSS133	DRO	high sample concentration
MOC	12NCMOCSS136	DRO	high sample concentration
MOC	12NCMOCSWA003	DRO	high sample concentration

MS/MSD recoveries were outside QAPP Table 12-2, 12-3, 12-11 and 12-12 control limits as follows:

Site	Spiked Sample	Analyte	%R (RPD)	Control Limits
Site 8	12NC08SS003	DRO with SGC	--/128	72-128
Site 8	12NC08SS003	RRO	136/129	53-116
Site 10	12NC10SS014	RRO	149/-- (25)	53-116 (20)
MOC	12NCMOCSS082	RRO	--/139 (22)	53-116 (20)
MOC	12NCMOCSS136	RRO	152/174	53-116
Bulk Bag Area	12NCBGSS01	DRO	--/11 (145)	72-128 (20)

Notes:
-- = In control
%R = percent recovery
RPD = releative percent difference
SGC = silica gel cleanup

Detected results with an exceedance of the upper control limit were MH qualified to indicate the potential for high bias due to matrix. Results associated with sample concentrations greater than 4x the spike concentration were not qualified since the spike addition is negligible in relation to the sample concentration. For sample 12NCBGSS01, the MSD spike and surrogate concentrations had similar low recoveries (11% and 15% respectively). The parent sample surrogate recovery and the MS recovery were within acceptance limits and laboratory preparation error is suspected. No qualifiers were assigned. When outliers were observed, recoveries and RPDs for the associated LCS/LCSD pairs were in control and qualification was limited to the spiked sample.

The case narratives provided qualitative information with regards to the type of petroleum identified, if the pattern appeared weathered or degraded, or was possible biogenic interference.

2.11 TOC Analyses

TestAmerica analyzed samples for TOC-Quad by SW-846 method 9060. The QC batches are summarized in Table 2-11.1.

Table 2-11.1 TOC QC Batches

Site	QC Batch	QC Batch Date	Matrix
Site 8	580-120006	09/12/2012	Soil

A MB, LCS/LCSD, MS/MSD, and laboratory duplicate were analyzed with each batch. The following items were reviewed and met QAPP criteria: holding time, MB, and LCS/LCSD %Rs and RPD, MS/MSD %R and RPD, and laboratory duplicate RPDs.

LCS/LCSD recovery and RPD limits listed on the laboratory report did not match those in the QAPP. The QAPP limits were used.

2.12 Total and Dissolved Metals Analyses

TestAmerica analyzed water and soil samples by SW-846 method 6020 and the drum waste samples were analyzed for TCLP Metals by SW-846 methods 1311/6010B. Water samples were analyzed for both total and dissolved (field filtered) metals. SDG 58034828, which contained Site 21 surface water samples, did not have the dissolved arsenic samples field filtered and instead had the laboratory filter the samples. The dissolved arsenic results are flagged QL due to filtering in the lab. The QC batches are summarized in Table 2-12.1.

Table 2-12.1 Total and Dissolved Metals QC Batches

Site	QC Batch	QC Batch Date	Matrix
Site 10	580-118517	8/25/2012	Soil
Site 10	580-118520	8/25/2012	Soil
Site 21	580-118176	08/21/2012	Soil
Site 21	580-119896	09/12/2012	Soil
Site 21	580-119871	09/12/2012	Water
MOC	580-115972	07/23/2012	Water
Radar Dome	580-119220	09/04/2012	Soil
Drum Sample	580-118244	08/22/2012	Waste
Drum Sample	580-119689	09/11/2012	Waste
Drum Sample	580-119753	09/11/2012	Waste

Note:
MOC = Main Operations Complex
QC = quality control

Required QC for a batch of up to 20 samples includes an MB, LCS/LCSD, and MS/MSD pair. A MB, LCS/LCSD and project MS/MSD were analyzed per batch, except as noted below. In addition, laboratory duplicates were reported.

- MS/MSDs were not requested per CoC for the waste samples batches 580-119689 and 580-119753 and MS/MSDs were performed on non-project samples.

The following items were reviewed and met QAPP limits: holding time, LCS/LCSD %Rs and RPDs.

Metals were detected in the method blanks as shown below. Associated detected results were <10 times the blank concentrations and were qualified B to indicate the potential for a false positive or high bias.

Site	Laboratory Work Order	Matrix	Preparation Batch	Analytes	Units	Concentration
10	580-34609-1	Soil	580-118520	Cadmium	mg/Kg	0.0148 J
Drum	580-34825-1	Waste	580-119689	Nickel	mg/L	0.00960 J
Drum	580-34825-1	Waste	580-119753	Barium	mg/L	0.00220 J

MS/MSD recoveries were outside QAPP Table 12-7 and 12-16 control limits as follows:

Spiked Sample	Analyte	%R	%R Control Limits	RPD	RPD Control Limits	Comments
12NC10SS014	Barium	--/122	80-120	--	<20	
(580-34609-14)	Chromium	136/128	80-120	--	<20	
	Vanadium	123/129	80-120	--	<20	
	Zinc	-202/-270	80-120	23	<20	Sample concentration >4x spike concentration
12NCRDSS03 (580-34701-3)	Zinc	--/124	80-120	--	<20	

Notes:
-- = In control
%R = percent recovery
RPD = releative percent difference

Associated LCS/LCSD recoveries were in control and qualification was limited to the spiked sample. Detected results associated with high spike recoveries were MH qualified to indicate bias due to a matrix effect. No qualification for high recovery was required if the sample concentration was >4x the spike concentration since the spike concentration was negligible compared to the sample concentration. The zinc result for sample 12NC10SS014 was qualified due to the high MS/MSD RPD as estimated with an unknown bias (MN).

Laboratory duplicates were evaluated using the QAPP precision criteria. In addition, low level detects that were within ± LOQ were considered acceptable.

For Site 10, laboratory work order 580-34609-1, batch 580-118520, the laboratory duplicate for cadmium had an RPD of 21% which is outside the control limits of <20%. The project sample was used as the laboratory duplicate. This sample result was QN qualified to indicate the matrix may be non-homogenous.

2.13 MERCURY ANALYSES

TestAmerica analyzed mercury in soil samples by SW-846 method 7471A and total and dissolved mercury in water samples by SW-846 method 7470A. The drum waste samples were analyzed for TCLP Metals by SW-846 methods 1311/7470A. The QC batches are summarized in Table 2-13.1.

Table 2-13.1 Mercury QC Batches

Site	QC Batch	QC Batch Date	Matrix
Site 10	580-118474	8/24/2012	Soil
Site 10	580-118477	8/27/2012	Soil
MOC	580-116034	07/24/2012	Water
Radar Dome	580-119205	09/04/2012	Soil
Drum Samples	580-119635	09/10/2012	Waste

Note:
MOC = Main Operations Complex
QC = quality control

Required QC for a batch of up to 20 samples includes an MB, LCS/LCSD, and MS/MSD pair. A MB, LCS/LCSD and project MS/MSD were analyzed per batch. In addition, a laboratory duplicate was reported.

The following items were reviewed and met QAPP criteria: hold time, MB, LCS/LCSD recoveries and RPDs, and MS/MSD RPDs.

MS/MSD recoveries for the waste samples were evaluated using laboratory control limits. Recoveries were outside control limits as follows:

Site	Spiked Sample	Analyte	%R	Control Limits
Drum	12NCDRUMO6	Mercury	42/43	50-150

Note:
%R = percent recovery

Recoveries for the associated LCS/LCSD pair were in control and qualification (ML) was limited to the spiked sample to indicate an estimated value due to matrix, with a low bias.

For Site 10, laboratory work order 580-34609-1, batches 580-118474 and 580-118477, the laboratory duplicate had an RPD of 21% and 32%, respectively, which is outside the control limits of <20%. Project samples were used as the laboratory duplicates. These sample results were QN qualified to indicate the matrix may be non-homogenous.

The laboratory duplicate RPD for sample 12NCRDSS03 was 24%, and above the QAPP limit of 20%; however, the results were less than the LOQ and are acceptable. In addition, the MS/MSD RPD was in control.

2.14 Ignitability, Total Halogens, and pH Analyses

TestAmerica analyzed samples for ignitability, total halogens and pH by SW-846 methods 1020A, 9056, and 9045C. The QC batches are summarized in Table 2-14.1.

Table 2-14.1 Ignitability, Total Halogens and pH QC Batches

Site	Analysis	QC Batch	QC Batch Date	Matrix
Drum Samples	Ignitablility	580-117538	08/13/2012	Waste
Drum Samples	Ignitablility	580-119747	09/10/2012	Waste
Drum Samples	Total Halogens	680-247733	08/13/2012	Waste

A LCS/LCSD and laboratory duplicate were analyzed for ignitability with each batch; a laboratory duplicate was analyzed for each pH batch; and a MB, LCS, and laboratory duplicate were analyzed for each batch for total halogen analysis. These parameters were not included in the QAPP and were reviewed using laboratory control limits. The following items were reviewed and met laboratory criteria, if applicable to the method: holding time, MB, LCS %Rs, and laboratory duplicate RPDs.

2.15 Field QA / QC

Field QC samples included field duplicate pairs, MS/MSD pairs, and trip blanks. The same methods used to analyze the investigative samples were used to analyze the field QC samples.

2.15.1 Field Sample Duplicates

Comparison of field sample duplicate results to the associated parent sample results provides precision information for the overall sample collection and analytical process, including possible variability related to sample collection, handling, shipping, storage, preparation, and analysis. The RPD between the primary (parent) sample and field duplicate sample also accounts for the variation of target analyte concentrations within a matrix. This variability is assessed by evaluating the calculated RPDs between the field duplicates and the associated parent samples. If target analytes were detected in one sample greater than the LOQ and not detected in the duplicate, both detected and non-detected results should be flagged to indicate imprecision. Data which is J flagged was detected between the LOQ and the DL and an RPD were not calculated. The RPD assessment criteria in the QAPP of ≤30% for water matrices and ≤50% for soils was used to evaluate the field duplicates. For J flagged results, criteria of ±LOQ was used.

For MI samples, one primary and two field replicate samples were collected; therefore, the calculation is percent relative standard deviation (%RSD), not RPD. The RSD assessment criteria was <30% RSD.

Field Duplicate Frequencies

Field sample duplicate pairs are required by the QAPP at a rate of 10 percent. Field duplicates were collected at each site at the following frequencies per method and matrix:

- Site 8:
  - Three field duplicate pairs were collected for 24 water samples for methane analysis at a frequency of 12%.

- One field duplicate pair was associated with the two surface water samples collected for DRO/RRO and PAHs at a frequency of 50%.
- One field duplicate pair was collected for three soil samples for TOC, DRO/RRO, DRO/RRO with silica gel cleanup, and PAHs, at a frequency of 33%.

- Site 10:
  - One field duplicate pair was associated with five bulk soil samples collected for VOCs at a frequency of 20%.
  - Four field duplicate pairs were collected for 33 soil samples at a frequency of 12% for VOCs, PAHs, ethylene glycol, GRO, PCBs, DRO/RRO, and metals analysis.
- Site 13:
  - Twenty-two soil field duplicate pairs per a total of 213 samples were collected for PCBs by 8082 at a frequency of 10%.
  - One rock duplicate pair per three rock samples was collected for PCBs by 8082 at a frequency of 33%.
- Site 21:
  - One field duplicate pair was collected for one water sample for arsenic analysis at a frequency of 100%.
  - Three field duplicate pairs were collected for 18 soil samples for arsenic at a frequency of 17%.
- Site 31: Twenty-seven soil field duplicate pairs per a total of 201 samples were collected for PCBs by 8082 at a frequency of 13%.
- MOC Site:
  - One field duplicate pair was collected for nine groundwater samples for the analysis of BTEX, methane, GRO, DRO/RRO, PCBs, PAHs, and metals at a frequency of 11%.
  - Two field duplicate pairs were collected for 10 surface water samples for the analysis of DRO/RRO for a frequency of 20%; and one field duplicate pair was collected for one surface water sample for BTEX and PAHs for a frequency of 100%.
  - Fourteen field duplicate pairs were collected for 108 soil samples for the analysis of DRO/RRO at a frequency of 13%.

- Bulk Bag Area MI Sampling: Two triplicate sample sets were collected for twelve MI soil samples at a frequency of 17% for DRO and PCBs.
- Radar Dome Road Site: One field duplicate pair was collected for seven soil samples for BTEX, DRO/RRO, PCBs, PAHs, and metals at a frequency of 14%.

Field duplicates were not collected for waste samples, since these results were used for disposal purposes.

Field Duplicate RPDs

Table 2-15.1 lists the RPDs calculated between the field duplicate and parent sample results for target analytes that were detected above the LOQ in both the parent and field duplicate sample.

Table 2-15.2 lists the %RSD calculated between the primary sample and two replicate samples with target analytes that were detected above the LOQ.

Table 2-15.1 Field Sample Duplicate Pair Results

Parent Sample ID/ Laboratory Sample ID	Field duplicate Sample ID/ Laboratory Sample ID	Compound	Units	Parent Field Sample Result	Field duplicate Result	RPD (%)
Site 8:						
12NC08WA008 (580-34747-8)	12NC08WA009 (580-34747-9)	Methane	µg/L	1.4	1.2	15
12NC08WA017 (580-34747-17)	12NC08WA018 (580-34747-18)	Methane	µg/L	21	20	5
12NC08WA023 (580-34747-23)	12NC08WA024 (580-34747-24)	Methane	µg/L	60	51	16
12NC08SWA02 (580-34648-2)	12NC08SWA03 (580-34648-3)	1-Methylnaphthalene	µg/L	1.7	1.3	27
		2-Methylnaphthalene	µg/L	1	0.33	**101**
		Acenaphthene	µg/L	0.072 J	0.074 J	nc
		Acenaphthylene	µg/L	ND (0.072)	0.033 J	nc
		Fluorene	µg/L	0.12	0.19	**45**
		Naphthalene	µg/L	0.82	0.17	**131**
		DRO	mg/L	0.34	0.37	8
		RRO	mg/L	0.42	0.48	13

Table 2-15.1 Field Sample Duplicate Pair Results (continued)

Parent Sample ID/ Laboratory Sample ID	Field duplicate Sample ID/ Laboratory Sample ID	Compound	Units	Parent Field Sample Result	Field duplicate Result	RPD (%)
Site 8:						
12NC08SS001 (580-34748-1)	12NC08SS002 (580-34748-2)	1-Methylnaphthalene	µg/kg	2200	2400	9
		2-Methylnaphthalene	µg/kg	1700	1900	11
		Acenaphthene	µg/kg	120	130	8
		Anthracene	µg/kg	**27**	**ND (4.7)**	**nc**
		Benzo[a]anthracene	µg/kg	3.5 J	8.3 J	nc
		Benzo[a]pyrene	µg/kg	ND (4.3)	6.6 J	nc
		Benzo[b]fluoranthene	µg/kg	8.2 J	7.1 J	nc
		Benzo[g,h,i]perylene	µg/kg	4.6 J	ND (4.7)	nc
		Chrysene	µg/kg	17	19	11
		Fluoranthene	µg/kg	11	11	0
		Fluorene	µg/kg	230	220	4
		Naphthalene	µg/kg	630	710	12
		Phenanthrene	µg/kg	180	180	0
		Pyrene	µg/kg	18	16	12
		Total Organic Carbon - Quad	mg/kg	110000	120000	9
		DRO	mg/kg	2900	2500	15
		RRO	mg/kg	2400	2200	9
		DRO w/SGC	mg/kg	2700	2200	20
		RRO w/SGC	mg/kg	680	570	18

Table 2-15.1 Field Sample Duplicate Pair Results (continued)

Parent Sample ID/ Laboratory Sample ID	Field duplicate Sample ID/ Laboratory Sample ID	Compound	Units	Parent Field Sample Result	Field duplicate Result	RPD (%)
Site 10:						
12NC10BW02 (580-35021-2)	12NC10BW03 (580-35021-3)	2-Butanone (MEK)	µg/kg	130 J	ND (150)	nc
		Methyl tert-butyl ether	µg/kg	**230**	**ND (15)**	**nc**
		Naphthalene	µg/kg	ND (13)	5.9 J	nc
12NC10SS005 580-34609-5	12NC10SS018 580-34609-18	Arsenic	mg/kg	3.1	3.2	3
		Barium	mg/kg	63	74	16
		Cadmium	mg/kg	0.25 J	0.36 J	nc
		Chromium	mg/kg	18	21	15
		Lead	mg/kg	19	19	0
		Nickel	mg/kg	7.6	8.7	13
		Selenium	mg/kg	2.6	3.3	24
		Silver	mg/kg	0.22 J	0.22 J	nc
		Vanadium	mg/kg	28	33	16
		Zinc	mg/kg	41	43	5
		Mercury	mg/kg	0.033	0.041	22
		Acetone	µg/kg	340 J	370 J	nc
		m,p-Xylene	µg/kg	23 J	ND (32)	nc
		Methyl tert-butyl ether	µg/kg	**390**	**ND (47)**	**nc**
		Methylene Chloride	µg/kg	12 J	22 J	nc
		Fluoranthene	µg/kg	ND (4.4)	5.1 J	nc
12NC10SS005 580-34609-5 (continued)	12NC10SS018 580-34609-18 (continued)	Fluorene	µg/kg	ND (4.4)	8.1 J	nc
		Phenanthrene	µg/kg	3.1 J	6.0 J	nc
		DRO	mg/kg	**72**	**130**	**57**
		RRO	mg/kg	**470**	**800**	**52**

Table 2-15.1 Field Sample Duplicate Pair Results (continued)

Parent Sample ID/ Laboratory Sample ID	Field duplicate Sample ID/ Laboratory Sample ID	Compound	Units	Parent Field Sample Result	Field duplicate Result	RPD (%)
Site 10:						
12NC10SS016 580-34609-16	12NC10SS019 580-34609-19	Arsenic	mg/kg	5.8	6.6	13
		Barium	mg/kg	65	64	2
		Cadmium	mg/kg	0.21 J	0.22 J	nc
		Chromium	mg/kg	22	22	0
		Lead	mg/kg	26	28	7
		Nickel	mg/kg	12	12	0
		Selenium	mg/kg	1.3	1.3	0
		Silver	mg/kg	0.14 J	0.14 J	nc
		Vanadium	mg/kg	36	37	3
		Zinc	mg/kg	60	67	11
		Mercury	mg/kg	0.033	0.037	11
		PCB-1254	mg/kg	0.024	0.037	43
		PCB-1260	mg/kg	0.013 J	0.018	nc
		1,2,4-Trimethylbenzene	µg/kg	26	35	30
		1,3,5-Trimethylbenzene	µg/kg	12 J	16 J	nc
		Acetone	µg/kg	68 J	170 J	nc
		Isopropylbenzene	µg/kg	6.7 J	8.8 J	nc
		m,p-Xylene	µg/kg	17 J	26 J	nc
		Methylene Chloride	µg/kg	6.0 J	8.9 J	nc
		Naphthalene	µg/kg	9.2 J	11 J	nc
		N-Propylbenzene	µg/kg	13 J	16 J	nc
		o-Xylene	µg/kg	15 J	20 J	nc
		p-Isopropyltoluene	µg/kg	9.1 J	12 J	nc
		sec-Butylbenzene	µg/kg	6.6 J	9.2 J	nc
		1-Methylnaphthalene	µg/kg	4 .0 J	4 .0 J	nc

Table 2-15.1 Field Sample Duplicate Pair Results (continued)

Parent Sample ID/ Laboratory Sample ID	Field duplicate Sample ID/ Laboratory Sample ID	Compound	Units	Parent Field Sample Result	Field duplicate Result	RPD (%)
Site 10:						
12NC10SS016 580-34609-16 (continued)	12NC10SS019 580-34609-19 (continued)	2-Methylnaphthalene	µg/kg	4.5 J	8.9	nc
		Benzo[a]anthracene	µg/kg	ND (3.7)	5.3 J	nc
		Chrysene	µg/kg	**ND (3.7)**	**11**	**nc**
		Fluoranthene	µg/kg	**ND (3.7)**	**13**	**nc**
		Phenanthrene	µg/kg	51	72	34
		Pyrene	µg/kg	5.9 J	15	nc
		GRO	mg/kg	0.37 J	ND (0.83)	nc
		DRO	mg/kg	3000	3700	21
		RRO	mg/kg	1400	1700	19
12NC10SS030 580-34609-30	12NC10SS032 580-34609-32	Arsenic	mg/kg	6.1	5.7	7
		Barium	mg/kg	44	36	20
		Cadmium	mg/kg	0.42	0.35	18
		Chromium	mg/kg	9.9	8.9	11
		Lead	mg/kg	64	53	19
		Nickel	mg/kg	7.2	6.4	12
		Selenium	mg/kg	1.2	1.1	9
		Silver	mg/kg	0.16 J	0.14 J	nc
		Vanadium	mg/kg	23	20	14
		Zinc	mg/kg	170	110	43
		Mercury	mg/kg	0.011 J	0.0067 J	nc
		Ethylene glycol	mg/kg	15000	16000	6
		1,2,4-Trimethylbenzene	µg/kg	6.6 J	6.6 J	nc
		1,3,5-Trimethylbenzene	µg/kg	4.9 J	4.4 J	nc

Table 2-15.1 Field Sample Duplicate Pair Results (continued)

Parent Sample ID/ Laboratory Sample ID	Field duplicate Sample ID/ Laboratory Sample ID	Compound	Units	Parent Field Sample Result	Field duplicate Result	RPD (%)
Site 10:						
12NC10SS030 580-34609-30 (continued)	12NC10SS032 580-34609-32 (continued)	Acetone	µg/kg	1300	890	37
		m,p-Xylene	µg/kg	13 J	12 J	nc
		Methylene Chloride	µg/kg	10 J	8.9 J	nc
		Naphthalene	µg/kg	8.2 J	11 J	nc
		o-Xylene	µg/kg	8.4 J	7.8 J	nc
		p-Isopropyltoluene	µg/kg	6.6 J	ND (13)	nc
		Styrene	µg/kg	6.5 J	5.8 J	nc
		Tetrachloroethene	µg/kg	25	23	8
		Trichloroethene	µg/kg	2.3 J	2.5 J	nc
		1-Methylnaphthalene	µg/kg	ND (27)	20	nc
		2-Methylnaphthalene	µg/kg	38 J	ND (27)	nc
		Chrysene	µg/kg	260	270	4
		Fluoranthene	µg/kg	89	110	21
		Phenanthrene	µg/kg	77	65	17
		Pyrene	µg/kg	220	260	17
		GRO	mg/kg	0.42 J	0.32 J	nc
		DRO	mg/kg	4900	5100	4
		RRO	mg/kg	1300	1400	7
12NC10SS036 580-34609-36	12NC10SS037 580-34609-37	Arsenic	mg/kg	6.8	6.8	0
		Barium	mg/kg	54	50	8
		Cadmium	mg/kg	0.3	0.27	11
		Chromium	mg/kg	17	16	6
		Lead	mg/kg	49	45	9
		Nickel	mg/kg	11	11	0
		Selenium	mg/kg	1.3	1.4	7
		Silver	mg/kg	0.18 J	0.16 J	nc

Table 2-15.1 Field Sample Duplicate Pair Results (continued)

Parent Sample ID / Laboratory Sample ID	Field duplicate Sample ID / Laboratory Sample ID	Compound	Units	Parent Field Sample Result	Field duplicate Result	RPD (%)
Site 10:						
12NC10SS036 580-34609-36 (continued)	12NC10SS037 580-34609-37 (continued)	Vanadium	mg/kg	29	30	3
		Zinc	mg/kg	92	100	8
		Mercury	mg/kg	0.028	0.031	10
		Ethylene glycol	mg/kg	39000	40000	3
		1,2,4-Trimethylbenzene	µg/kg	15 J	13 J	nc
		1,3,5-Trimethylbenzene	µg/kg	10 J	11 J	nc
		4-Methyl-2-pentanone	µg/kg	27 J	30 J	nc
		Acetone	µg/kg	130 J	160 J	nc
		2-Butanone (MEK)	µg/kg	100 J	ND (150)	nc
		Isopropylbenzene	µg/kg	5.8	5.4 J	nc
		m,p-Xylene	µg/kg	17 J	16 J	nc
		Methylene Chloride	µg/kg	22	19 J	nc
		Methyl tert-butyl ether	µg/kg	**240**	**ND (15)**	**nc**
		Naphthalene	µg/kg	20	18 J	nc
		N-Propylbenzene	µg/kg	9.2 J	8.8 J	nc
		o-Xylene	µg/kg	11 J	11 J	nc
		p-Isopropyltoluene	µg/kg	9.7 J	8.4 J	nc
		sec-Butylbenzene	µg/kg	5.8 J	5.3J	nc
		tert-Butylbenzene	µg/kg	ND (15)	6.2 J	nc
		Tetrachloroethene	µg/kg	160	130	21
		Toluene	µg/kg	7.6 J	7.2 J	nc
		Trichloroethene	µg/kg	7.1 J	6.2 J	nc
		1-Methylnaphthalene	µg/kg	53 J	62	nc
		2-Methylnaphthalene	µg/kg	100	120	18

Table 2-15.1 Field Sample Duplicate Pair Results (continued)

Parent Sample ID/ Laboratory Sample ID	Field duplicate Sample ID/ Laboratory Sample ID	Compound	Units	Parent Field Sample Result	Field duplicate Result	RPD (%)
Site 10:						
12NC10SS036 580-34609-36 (continued)	12NC10SS037 580-34609-37 (continued)	Chrysene	µg/kg	330	360	9
		Fluoranthene	µg/kg	59 J	71	nc
		Naphthalene	µg/kg	51 J	63	nc
		Phenanthrene	µg/kg	130	150	14
		Pyrene	µg/kg	320	420	27
		GRO	mg/kg	0.55 J	0.55 J	nc
		DRO	mg/kg	4300	4800	11
		RRO	mg/kg	1100	1300	17
Site 13:						
12NC13ROCK-1 (280-33360-1)	12NC13ROCK-4 (280-33360-4)	PCBs	mg/kg	All ND	All ND	-
12NC13SS001 (580-34101-1)	12NC13SS002 (580-34101-2)	PCB-1260	mg/kg	0.007 J	0.0056 J	nc
12NC13SS008 (580-34330-6)	12NC13SS009 (580-34330-7)	PCB-1260	mg/kg	0.74	0.76	3
12NC13SS019 (580-34330-17)	12NC13SS026 (580-34330-24)	PCB-1260	mg/kg	0.75	0.33	**78**
12NC13SS030 (580-34330-28)	12NC13SS044 (580-34330-42)	PCB-1260	mg/kg	0.017	0.019	11
12NC13SS031 (580-34330-29)	12NC13SS043 (580-34330-41)	PCB-1260	mg/kg	0.39	0.38	3
12NC13SS030 (580-34330-28)	12NC13SS044 (580-34330-42)	PCB-1260	mg/kg	0.017	0.019	11
12NC13SS032 (580-34330-30)	12NC13SS042 (580-34330-40)	PCB-1260	mg/kg	0.35	0.48	31
12NC13SS036 (580-34330-34)	12NC13SS045 (580-34330-43)	PCB-1260	mg/kg	0.12	0.13	8
12NC13SS080 (580-34374-17)	12NC13SS081 (580-34374-18)	PCB-1260	mg/kg	0.004 J	ND (0.006)	nc
12NC13SS082 (580-34374-19)	12NC13SS083 (580-34374-20)	PCB-1260	mg/kg	0.11	0.093	17

Table 2-15.1 Field Sample Duplicate Pair Results (continued)

Parent Sample ID/ Laboratory Sample ID	Field duplicate Sample ID/ Laboratory Sample ID	Compound	Units	Parent Field Sample Result	Field duplicate Result	RPD (%)
Site 13:						
12NC13SS106 (580-34374-43)	12NC13SS107 (580-34374-44)	PCB-1260	mg/kg	0.011	0.013	17
12NC13SS128 (580-34374-65)	12NC13SS129 (580-34374-66)	PCB-1260	mg/kg	0.23	0.49	**72**
12NC13SS130 (580-34374-67)	12NC13SS131 (580-34374-68)	PCB-1260	mg/kg	0.2	0.2	0
12NC13SS132 (580-34374-69)	12NC13SS133 (580-34374-70)	PCB-1260	mg/kg	0.21	0.25	17
12NC13SS135 (580-34374-72)	12NC13SS136 (580-34374-73)	PCB-1260	mg/kg	0.23	0.25	8
12NC13SS143 (580-34680-1)	12NC13SS144 (580-34680-2)	PCB-1260	mg/kg	0.29 J	0.46 J	nc
12NC13SS160 (580-34680-18)	12NC13SS161 (580-34680-19)	PCB-1260	mg/kg	0.01 J	0.01 J	nc
12NC13SS162 (580-34680-20)	12NC13SS163 (580-34680-21)	PCBs	mg/kg	All ND	All ND	-
12NC13SS176 (580-34680-34)	12NC13SS177 (580-34680-35)	PCB-1260	mg/kg	0.024 J	0.011 J	nc
12NC13SS184 (580-34680-42)	12NC13SS185 (580-34680-43)	PCB-1260	mg/kg	0.004 J	0.0046 J	nc
12NC13SS215 (580-34746-4)	12NC13SS221 (580-34746-10)	PCB-1260	mg/kg	**0.011**	**ND (0.0052)**	**nc**
12NC13SS227 (280-33320-8)	12NC13SS234 (280-33320-15)	PCBs	mg/kg	All ND	All ND	-
12NC13SS229 (280-33320-10)	12NC13SS235 (280-33320-16)	PCBs	mg/kg	All ND	All ND	-
Site 21:						
12NC21SS008 (580-34550-8)	12NC21SS011 (580-34550-11)	Arsenic	mg/kg	3.3	4.7	35
12NC21SS013 (580-34550-13)	12NC21SS014 (580-34550-14)	Arsenic	mg/kg	29	22	27

Table 2-15.1 Field Sample Duplicate Pair Results (continued)

Parent Sample ID / Laboratory Sample ID	Field duplicate Sample ID / Laboratory Sample ID	Compound	Units	Parent Field Sample Result	Field duplicate Result	RPD (%)
Site 21:						
12NC21SS015 (580-34828-1)	12NC21SS016 (580-34828-2)	Arsenic	mg/kg	46	38	19
12NC21WA001 (580-34828-8)	12NC21WA002 (580-34828-9)	Arsenic, total	mg/L	0.0052	0.0049 J	nc
Site 31:						
12NC31SS024 (580-34373-24)	12NC31SS027 (580-34373-27)	PCB-1260	mg/kg	0.011	0.0055 J	nc
12NC31SS025 (580-34373-25)	12NC31SS028 (580-34373-28)	PCB-1260	mg/kg	0.56	0.85	41
12NC31SS026 (580-34373-26)	12NC31SS029 (580-34373-29)	PCB-1260	mg/kg	0.68	0.59	14
12NC31SS051 (580-34683-22)	12NC31SS052 (580-34683-23)	PCB-1260	mg/kg	4.9	4.7	4
12NC31SS065 (580-34683-36)	12NC31SS066 (580-34683-37)	PCB-1260	mg/kg	0.83	1.2	36
12NC31SS067 (580-34683-38)	12NC31SS068 (580-34683-39)	PCB-1260	mg/kg	0.12	0.089	30
12NC31SS089 (580-34683-60)	12NC31SS090 (580-34683-61)	PCB-1260	mg/kg	0.0079 J	0.0077 J	nc
12NC31SS123 (580-34675-10)	12NC31SS126 (580-34675-13)	PCB-1260	mg/kg	0.096	0.054	**56**
12NC31SS124 (580-34675-11)	12NC31SS127 (580-34675-14)	PCB-1260	mg/kg	0.36	0.36	0
12NC31SS125 (580-34675-12)	12NC31SS128 (580-34675-15)	PCB-1260	mg/kg	0.18 J	0.17 J	nc
12NC31SS147 (580-34675-34)	12NC31SS148 (580-34675-35)	PCB-1260	mg/kg	2.4 J	2	nc
12NC31SS151 (580-34675-38)	12NC31SS152 (580-34675-39)	PCB-1260	mg/kg	0.024 J	0.061	nc
12NC31SS154 (580-34675-41)	12NC31SS155 (580-34675-42)	PCB-1260	mg/kg	0.71	1.1	43

Table 2-15.1 Field Sample Duplicate Pair Results (continued)

Parent Sample ID/ Laboratory Sample ID	Field duplicate Sample ID/ Laboratory Sample ID	Compound	Units	Parent Field Sample Result	Field duplicate Result	RPD (%)
Site 31:						
12NC31SS156 (580-34675-43)	12NC31SS157 (580-34675-44)	PCB-1260	mg/kg	4.1	7.6 J	nc
12NC31SS160 (580-34675-47)	12NC31SS161 (580-34675-48)	PCB-1260	mg/kg	0.1	0.11	10
12NC31SS162 (580-34675-49)	12NC31SS163 (580-34675-50)	PCB-1260	mg/kg	0.012 J	0.018 J	nc
12NC31SS177 (580-34675-64)	12NC31SS184 (580-34675-71)	PCB-1260	mg/kg	**0.11**	**ND (0.011)**	**nc**
12NC31SS179 (580-34675-66)	12NC31SS185 (580-34675-72)	PCB-1260	mg/kg	**ND (0.011)**	**0.06**	**nc**
12NC31SS180 (580-34675-67)	12NC31SS186 (580-34675-73)	PCB-1260	mg/kg	0.012 J	0.012 J	0
12NC31SS181 (580-34675-68)	12NC31SS187 (580-34675-74)	PCB-1260	mg/kg	0.013 J	0.025 J	nc
12NC31SS182 (580-34675-69)	12NC31SS188 (580-34675-75)	PCB-1260	mg/kg	5.1	5.3	4
12NC31SS183 (580-34675-70)	12NC31SS189 (580-34675-76)	PCB-1260	mg/kg	0.46	0.46	0
12NC31SS190 (580-34675-77)	12NC31SS191 (580-34675-78)	PCB-1260	mg/kg	0.16	0.16	0
12NC31SS192 (580-34675-79)	12NC31SS193 (580-34675-80)	PCB-1260	mg/kg	1.9	2.2	15
12NC31SS197 (280-33320-20)	12NC31SS223 (280-33320-46)	PCB-1260	mg/kg	0.02 J	0.012 J	nc
12NC31SS202 (280-33320-25)	12NC31SS224 (280-33320-47)	PCBs	mg/kg	All ND	All ND	-
12NC31SS204 (280-33320-27)	12NC31SS225 (280-33320-48)	PCB-1260	mg/kg	**ND (0.01)**	**0.14**	**nc**

Table 2-15.1 Field Sample Duplicate Pair Results (continued)

Parent Sample ID / Laboratory Sample ID	Field duplicate Sample ID / Laboratory Sample ID	Compound	Units	Parent Field Sample Result	Field duplicate Result	RPD (%)
MOC:						
12NCMOCSS001 (580-34205-1)	12NCMOCSS004 (580-34205-4)	DRO	mg/kg	6000	4100	38
		RRO	mg/kg	62	42 J	nc
12NCMOCSS005 (580-34205-5)	12NCMOCSS006 (580-34205-6)	DRO	mg/kg	1800	2300	24
		RRO	mg/kg	58	71	20
12NCMOCSS019 (580-34205-19)	12NCMOCSS026 (580-34205-26)	DRO	mg/kg	3500 J	2400	nc
		RRO	mg/kg	56 J	52 J	nc
12NCMOCSS024 (580-34205-24)	12NCMOCSS025 (580-34205-25)	DRO	mg/kg	1400	1500	7
		RRO	mg/kg	50 J	46 J	nc
12NCMOCSS040 (580-34447-11)	12NCMOCSS041 (580-34447-12)	DRO	mg/kg	6400	6500	2
		RRO	mg/kg	140	100	33
12NCMOCSS045 (580-34447-16)	12NCMOCSS062 (580-34447-33)	DRO	mg/kg	6400	8600	29
		RRO	mg/kg	49 J	48 J	nc
12NCMOCSS059 (580-34447-30)	12NCMOCSS072 (580-34447-43)	DRO	mg/kg	130	3300	**185**
		RRO	mg/kg	350	750	**73**
12NCMOCSS065 (580-34447-36)	12NCMOCSS068 (580-34447-39)	DRO	mg/kg	1000	570	**55**
		RRO	mg/kg	46 J	39 J	nc
12NCMOCSS073 (580-34607-1)	12NCMOCSS079 (580-34607-6)	DRO	mg/kg	370	660	**56**
		RRO	mg/kg	610	780	24
12NCMOCSS080 (580-34607-7)	12NCMOCSS081 (580-34607-8)	DRO	mg/kg	2600	1900	31
		RRO	mg/kg	740	540	31
12NCMOCSS098 (580-34594-16)	12NCMOCSS099 (580-34594-17)	DRO	mg/kg	2600	5600	**73**
		RRO	mg/kg	80	120	40
12NCMOCSS128 (580-34677-7)	12NCMOCSS129 (580-34677-8)	DRO	mg/kg	72000	110000	42
		RRO	mg/kg	4400	7300	50
12NCMOCSS152 (580-34820-12)	12NCMOCSS153 (580-34820-13)	DRO	mg/kg	290	200	37
		RRO	mg/kg	2400	1600	40
12NCMOCSS163 (580-34820-5)	12NCMOCSS164 (580-34820-6)	DRO	mg/kg	2500	2400	4
		RRO	mg/kg	34 J	38 J	nc

Table 2-15.1 Field Sample Duplicate Pair Results (continued)

Parent Sample ID/ Laboratory Sample ID	Field duplicate Sample ID/ Laboratory Sample ID	Compound	Units	Parent Field Sample Result	Field duplicate Result	RPD (%)
MOC:						
12NCMOCSWA005 (580-34481-1)	12NCMOCSWA008 (580-34481-4)	DRO	mg/L	6.7	7	4
		RRO	mg/L	3.6	4	11
12NCMOCSWA009 (580-34446-1)	12NCMOCSWA010 (580-34446-2)	BTEX	µg/L	All ND	All ND	--
		1-Methylnaphthalene	µg/L	0.036 J	ND (0.072)	nc
		Naphthalene	µg/L	ND (0.072)	0.036 J	nc
12NCMOCSWA009 (280-33360-12) (continued)	12NCMOCSWA012 (280-33360-15) (continued)	DRO	mg/L	4.9	5.6	13
		RRO	mg/L	1.8	1.9	5
12NCMOCWA008 (580-33899-8)	12NCMOCWA009 (580-33899-9)	Arsenic (dissolved)	mg/L	0.0038 J	0.011	nc
		Barium (dissolved)	mg/L	0.023	0.028	20
		Chromium (dissolved)	mg/L	ND (0.0015)	0.0014 J	nc
		Lead (dissolved)	mg/L	ND (0.00025)	0.0019 J	nc
		Vanadium (dissolved)	mg/L	ND (0.005)	0.005 J	nc
		Zinc (dissolved)	mg/L	**ND (0.005)**	**0.0095**	**nc**
		Arsenic (total)	mg/L	0.011	0.011	0
		Barium (total)	mg/L	0.027	0.028	4
		Chromium (total)	mg/L	0.0015 J	0.0014 J	nc
		Lead (total)	mg/L	0.0019 J	ND (0.00025)	nc
		Zinc (total)	mg/L	**0.0098**	**ND (0.005)**	**nc**
		Mercury (dissolved)	mg/L	0.000052 J	0.000047 J	nc
		Mercury (total)	mg/L	0.000074 J	ND (0.0001)	nc
		PCBs	µg/L	All ND	All ND	--
		Benzene	µg/L	4.8	4.2	13
		Ethylbenzene	µg/L	27	26	4

Table 2-15.1 Field Sample Duplicate Pair Results (continued)

Parent Sample ID/ Laboratory Sample ID	Field duplicate Sample ID/ Laboratory Sample ID	Compound	Units	Parent Field Sample Result	Field duplicate Result	RPD (%)
Radar Dome Road:						
12NCRDSS02 (580-34701-2)	12NCRDSS08 (580-34701-8)	Arsenic	mg/kg	3.1	3.7	18
		Barium	mg/kg	45	59	27
		Cadmium	mg/kg	0.17 J	0.18 J	nc
		Chromium	mg/kg	5.6	5.5	2
		Lead	mg/kg	39	45	14
		Nickel	mg/kg	3.6	4.1	13
		Selenium	mg/kg	1.4	1.6	13
		Silver	mg/kg	0.043 J	0.054 J	nc
		Vanadium	mg/kg	22	23	4
		Zinc	mg/kg	59	64	8
		Mercury	mg/kg	0.024	0.018 J	nc
		PCBs	µg/L	All ND	All ND	--
		BTEX	µg/L	All ND	All ND	--
		Phenanthrene	µg/kg	ND (3.1)	2 J	nc
		GRO	mg/kg	All ND	All ND	--
		DRO	mg/kg	12 J	11 J	nc
		RRO	mg/kg	39 J	71	nc

Notes:
BOLD = Exceeds acceptance criteria
J = Detected at a concentration less than the LOQ
MH = Estimated biased high due to matrix
QH = estimated with a high bias
QL = estimated with a low bias

µg/kg = micrograms per kilogram
µg/L = micrograms per liter
DRO = diesel range organics
field dup = field duplicate
GRO = gasoline range organics
ID = identifier
LOQ = limit or quantitation
mg/kg = milligrams per kilogram
mg/L = milligrams per liter
MOC = Main Operations Complex
nc = not calculated, one or more concentration below the LOQ
ND ( ) = not detected. Value in parenthesis is the limit of detection.
PCBs = polychlorinated biphenyls
RPD = relative percent difference
RRO = residual range organics
w/SGC = with silica gel cleanup

Table 2-15.2 Field Sample Triplicate Results

FD ID Location (Lab ID)	Target Analytes	Units	Parent Result	First Replicate Result	Second Replicate Result	RSD (%)
12NCBGSS02 12NCBGSS03 12NCBGSS04 (580-33899-17) (580-33899-18) (580-33899-19)	PCB-1260	mg/kg	0.0012 J	0.002 J	0.0023 J	nc
	Diesel range organics	mg/kg	0.81 J	0.93 J	0.89 J	nc
12NCBGSS14 12NCBGSS15 12NCBGSS16 (580-34335-1) (580-34335-2) (580-34335-3)	Diesel range organics	mg/kg	120	10	190	**85**
	PCB-1260	mg/kg	0.016	0.024	0.022	20

Notes:
BOLD = Exceeds acceptance criteria
J = The analyte was positively identified at a concentration below the LOQ and is considered estimated
% = percent
ID = identifier
LOQ = limit of quantitation
mg/kg = milligrams per kilogram
nc = not calculated, one or more concentration below the LOQ
RSD = relative standard deviation

The field duplicate RPDs and field triplicate RSDs were within control limits with the exceptions shown in bold on Tables 2-15.1 and 2-15.2. For these results, the parent, duplicate, and triplicate sample results, as applicable, were QN qualified to indicate estimated results with an unknown bias. In addition, if one of the pair had a detection above the LOQ and was non-detected in the duplicate pair, both results were QN qualified to indicate estimated results with an unknown bias.

For Site 8 samples, field duplicates were collected for groundwater, surface water and soil and the following was observed:

- For groundwater, the three field duplicates for methane analysis were in control indicating good field precision was attained.
- For surface water, one field duplicate was used to assess field precision and 2-methylnaphthalene, fluorene, and naphthalene had RPDs exceeding the 50% criteria. These results were QN qualified to indicate a QC outlier with an unknown directional bias.

- For soil, one field duplicate was used to assess field precision and anthracene was detected above the LOQ in the parent sample, but not the duplicate. The detected result was substantially less than the Site-Specific Cleanup Criteria on Table 15-1 of the QAPP and no qualifiers were assigned.

For Site 10 soil samples, field duplicate precision achieved was acceptable with the exception of the following outliers:

- The RPD between the parent and duplicate sample for one of the four duplicate pairs exceeded the soil criteria of 50% for DRO and RRO. The sample and duplicate were QN qualified to indicate the QC outlier with an unknown directional bias.
- Two of the four duplicate results had detects in the sample but not the duplicate pair for methyl tert-butyl ether. The difference between the two values exceeded the LOQ and the samples and duplicates were QN qualified to indicate the QC outlier with an unknown directional bias.
- Chrysene and fluoranthene were not detected or at concentrations less than the LOQ (J flagged) and the difference between the parent and duplicate samples was greater than the LOQ. Detected results were substantially less than the Site-Specific Cleanup Criteria on Table 15-1 of the QAPP and no qualifiers were assigned.

For Site 13, only two of the 23 duplicate pairs exceeded the RPD criteria of 50%, and one duplicate pair had a detect in the parent sample above the LOQ, and was not detected in the duplicate. For Site 31, only one of the twenty-seven duplicate pairs exceeded the RPD criteria of 50%, and three duplicate pairs had a detect in one of the pairs above the LOQ, and was not detected in the duplicate. In addition, very few of the Site 13 and 31 duplicate pairs bracketed the screening criteria, and those bracketing the criteria had acceptable precision results. Precision for Sites 13 and 31 was generally good.

For Site 21, one water duplicate and three soil duplicates were used to assess precision for arsenic. RPDs were with QAPP limits and no qualifiers were assigned.

For the MOC site, the surface water field duplicate was in control and did not require qualification. The groundwater field duplicate had a total zinc detect above the LOQ in the parent sample, but was not detected in the duplicate and QN qualified. The dissolved zinc result for this pair was above the LOQ in the duplicate and not detected in the parent sample and results were QN qualified. Fourteen field duplicate pairs were provided for soils for DRO/RRO analysis. Four of the DRO and one of the RRO duplicates exceeded the RPD criteria of 50% and were QN qualified.

For the Radar Dome Road site, the soil field duplicate was in control and did not require qualification.

For the Bulk Bag Area MI Sampling, two locations were collected in triplicate to assess precision. One DRO result exceeded the 30% RSD criteria and the triplicate results were QN qualified.

2.15.2 Matrix Spikes and Matrix Spike Duplicates

The MS/MSD samples are spiked in the laboratory with known concentrations of target analytes. The MS/MSD sample results provide information on possible matrix effects encountered during sample extraction, digestion, and analysis. Analytical results from MS/MSD samples are used to evaluate the sample matrix, method efficiency and applicability, accuracy, and precision. Accuracy was assessed by calculating the percent recovery of the target analytes added to the primary sample; precision was assessed by calculating the RPD for the MS/MSD sample pairs.

The MS/MSD sample pairs are required by the QAPP at a rate of one MS/MSD pair per extraction batch per matrix. Bristol had supplied extra sample volumes to meet the MS/MSD requirements for all samples except waste samples, however, the laboratory did not follow the MS/MSD requirement in all instances and this is noted in this section. The MS/MSD sample pairs were collected at the following frequencies:

- Site 8:
  - No MS/MSD pairs were collected from Site 8 for the methane analysis. LCS/LCSDs were used to assess accuracy and precision the for methane samples.

- One MS/MSD pair was collected for two surface water samples at a frequency of 50% for DRO/RRO and PAHs.
- One MS/MSD pair was analyzed for three soil samples at a frequency of 33% for TOC and DRO/RRO. MS/MSDs were not included for DRO/RRO with silica gel cleanup and PAHs.

- Site 10:
  - One MS/MSD pair was a collected for five bulk waste soil samples at a frequency of 20% for VOCs.
  - Two soil MS/MSD pairs were collected for 33 soil samples at a frequency of 6% for VOCs, PAHs, ethylene glycol, GRO, PCBs, DRO/RRO, and metals analysis.
- Site 13: 19 soil MS/MSD pairs were collected for 241 soil samples at a frequency of 8% for PCBs.
- Site 21:
  - One MS/MSD pair was a collected for one surface water sample at a frequency of 100% for arsenic.
  - One MS/MSD pair was collected for 18 soil samples at a frequency of 6% for arsenic.
- Site 31: 16 soil MS/MSD pairs were collected for 228 samples at a frequency of 7% for PCBs.
- MOC:
  - One groundwater MS/MSD was collected for nine samples at a frequency of 11% for BTEX, methane, GRO, DRO/RRO, PCBs, PAHs, and metals.
  - Two surface water MS/MSDs were collected for ten samples at a frequency of 20% for DRO/RRO.
  - One surface water MS/MSD was collected for one sample at a frequency of 100% for BTEX and PAHs.
  - Eleven soil MS/MSDs were collected for 108 soil samples at a frequency of 10% for DRO/RRO.
- Bulk Bag Area MI Sampling: Three soil MS/MSD pairs were collected for 12 soil samples at a frequency of 25% for DRO/RRO and PCBs analysis.
- Radar Dome Road Site: One soil MS/MSD pair was collected for seven soil samples at a frequency of 14% for BTEX, DRO/RRO, PCBs, PAHs, and metals analysis.
- Drum Samples: MS/MSDs were not collected for the 14 waste samples; however, the laboratory reported one project specific MS/MSD for metals.

The MS and MSD recoveries and RPDs are discussed in Sections 2.2 through 2.14.

2.15.3 Trip Blanks

Aqueous and soil trip blanks are included in shipments containing samples which are submitted to the laboratory for VOC, BTEX, and GRO analyses. Trip blanks are collected to assess the potential for VOC, BTEX, or GRO cross-contamination introduced by sample bottles, from sample handling during field operations, shipping, or storage at the laboratory.

Trip blanks were included with shipments containing samples for VOC, BTEX, and GRO analysis and were free of target analytes with the exceptions noted below.

Sample ID	Lab ID	Analyte	Units	Result
Site 10:				
TripBlank082012-01	580-34609-38	1,1-Dichloroethene	µg/kg	9.6 J
		Benzene	µg/kg	5.3 J
		Methylene Chloride	µg/kg	42
		Toluene	µg/kg	15 J
		1,2,4-Trimethylbenzene	µg/kg	13 J
		1,3, 5-Trimethylbenzene	µg/kg	10 J
		Gasoline Range Organics	µg/kg	1.1 J
		N-Propylbenzene	µg/kg	17 J
		o-Xylene	µg/kg	19 J
		m,p-Xylene	µg/kg	28 J
		Naphthalene	µg/kg	13 J
		Styrene	µg/kg	15 J
TripBlank082012-02	580-34609-39	1,2,4-Trimethylbenzene	µg/kg	13 J
		Gasoline Range Organics	µg/kg	0.83 J
		Methylene Chloride	µg/kg	29 J
		N-Propylbenzene	µg/kg	17 J
		o-Xylene	µg/kg	18 J
		m,p-Xylene	µg/kg	26 J
		Styrene	µg/kg	15 J

Sample ID	Lab ID	Analyte	Units	Result
TripBlank082012-03	580-34609-40	1,2,4-Trimethylbenzene	µg/kg	13 J
		Gasoline Range Organics	mg/kg	0.48 J
		N-Propylbenzene	µg/kg	17 J
		o-Xylene	µg/kg	17 J
		m,p-Xylene	µg/kg	27 J
		Methylene Chloride	µg/kg	40
		Styrene	µg/kg	14 J
TripBlank082012-04	580-34609-41	Gasoline Range Organics	mg/kg	1.9 J
		Naphthalene	µg/kg	18 J
MOC Groundwater:				
071112 Trip Blank 01	580-33899-11	Toluene	µg/L	0.15 J

Associated results <10 times the trip blank concentration were B qualified and have the potential for a high bias. The majority of detected results associated with the trip blank detections had been B qualified due to method blank contamination and further qualifiers were not required.

2.16 Sample Qualifiers

Sample qualifiers are presented in Table 2-16.

Table 2-16 Sample Qualifiers

Field Sample Identification	Laboratory Sample Number	Compounds Affected	Reason	Flag	Bias
Site 8:					
12NC08WA002	580-34747-2	Methane	High LCS/LCSD RPD	QN	Unknown
12NC08SWA01	580-34648-1	DRO	Method Blank	B	High
12NC08SWA02 12NC08SWA03	580-34648-2 580-34648-3	2-Methylnaphthalene Fluorene Naphthalene	Field duplicate imprecision	QN	Unknown
12NC08SS004	580-34748-1	RRO	High surrogate recovery	QH	High

Table 2-16 Sample Qualifiers (continued)

Field Sample Identification	Laboratory Sample Number	Compounds Affected	Reason	Flag	Bias
Site 8:					
12NC08SS003	580-34748-3	DRO DRO w/SGC RRO	High MS or MSD recovery	MH	High
12NC08SS001	580-34748-1	Anthracene	High LCS recovery	QH	High
12NC08SS001 12NC08SS002	580-34748-1 580-34748-2	Anthracene	Field duplicate imprecision	QN	Unknown
Site 10:					
12NC10BW01	580-35021-1	1,2,4-Trimethylbenzene 1,3,5-Trimethylbenzene Naphthalene	High MS/MSD recoveries	MH	High
12NC10SS029	580-34609-29	All VOCs	Low surrogate recovery	QL	Low
12NC10SS001 12NC10SS002 12NC10SS003 12NC10SS004 12NC10SS005 12NC10SS006 12NC10SS007 12NC10SS008 12NC10SS009 12NC10SS010 12NC10SS011 12NC10SS012 12NC10SS013 12NC10SS015 12NC10SS016 12NC10SS017 12NC10SS018 12NC10SS019 12NC10SS020	580-34609-1 580-34609-2 580-34609-3 580-34609-4 580-34609-5 580-34609-6 580-34609-7 580-34609-8 580-34609-9 580-34609-10 580-34609-11 580-34609-12 580-34609-13 580-34609-15 580-34609-16 580-34609-17 580-34609-18 580-34609-19 580-34609-20	Acetone Methylene Chloride (Analyzed 9/4/2012)	Hold time exceedance	QL	Low
TripBlank082012-04	580-34609-41	Trichlorofluoromethane (Analyzed 9/5/12)	Hold time exceedance	QL	Low

Table 2-16 Sample Qualifiers (continued)

Field Sample Identification	Laboratory Sample Number	Compounds Affected	Reason	Flag	Bias
Site 10:					
12NC10SS001	580-34609-1	1,2,4-Trimethylbenzene	Method blank contamination	B	High
12NC10SS013	580-34609-13				
12NC10SS014	580-34609-14				
12NC10SS015	580-34609-15				
12NC10SS016	580-34609-16				
12NC10SS017	580-34609-17				
12NC10SS019	580-34609-19				
12NC10SS021	580-34609-21				
12NC10SS022	580-34609-22				
12NC10SS023	580-34609-23				
12NC10SS027	580-34609-27				
12NC10SS029	580-34609-29				
12NC10SS030	580-34609-30				
12NC10SS032	580-34609-32				
12NC10SS036	580-34609-36				
12NC10SS037	580-34609-37				
TripBlank082012-01	580-34609-38				
TripBlank082012-02	580-34609-39				
TripBlank082012-03	580-34609-40				
12NC10SS001	580-34609-1	m,p-Xylene	Method blank contamination	B	High
12NC10SS002	580-34609-2				
12NC10SS003	580-34609-3				
12NC10SS005	580-34609-5				
12NC10SS007	580-34609-7				
12NC10SS009	580-34609-9				
12NC10SS011	580-34609-11				
12NC10SS013	580-34609-13				
12NC10SS014	580-34609-14				
12NC10SS015	580-34609-15				
12NC10SS016	580-34609-16				
12NC10SS017	580-34609-17				
12NC10SS019	580-34609-19				
12NC10SS021	580-34609-21				
12NC10SS022	580-34609-22				
12NC10SS027	580-34609-27				
12NC10SS028	580-34609-28				

Table 2-16 Sample Qualifiers (continued)

Field Sample Identification	Laboratory Sample Number	Compounds Affected	Reason	Flag	Bias
Site 10:					
12NC10SS029 12NC10SS030 12NC10SS031 12NC10SS032 12NC10SS033 12NC10SS034 12NC10SS036 12NC10SS037 TripBlank082012-01 TripBlank082012-02 TripBlank082012-03	580-34609-29 580-34609-30 580-34609-31 580-34609-32 580-34609-33 580-34609-34 580-34609-36 580-34609-37 580-34609-38 580-34609-39 580-34609-40	m,p-Xylene	Method blank contamination	B	High
12NC10SS014 12NC10SS021 12NC10SS022 12NC10SS023 12NC10SS024 12NC10SS025 12NC10SS026 12NC10SS027 12NC10SS028 12NC10SS029 12NC10SS030 12NC10SS031 12NC10SS032 12NC10SS033 12NC10SS034 12NC10SS035 12NC10SS036 12NC10SS037 TripBlank082012-02 TripBlank082012-03	580-34609-14 580-34609-21 580-34609-22 580-34609-23 580-34609-24 580-34609-25 580-34609-26 580-34609-27 580-34609-28 580-34609-29 580-34609-30 580-34609-31 580-34609-32 580-34609-33 580-34609-34 580-34609-35 580-34609-36 580-34609-37 580-34609-39 580-34609-40	Methylene Chloride	Method blank and trip blank contamination	B	High

Table 2-16 Sample Qualifiers (continued)

Field Sample Identification	Laboratory Sample Number	Compounds Affected	Reason	Flag	Bias
Site 10:					
12NC10SS002 12NC10SS013 12NC10SS014 12NC10SS015 12NC10SS016 12NC10SS019 12NC10SS030 12NC10SS032 12NC10SS035 12NC10SS036 12NC10SS037 TripBlank082012-01 TripBlank082012-04	580-34609-2 580-34609-13 580-34609-14 580-34609-15 580-34609-16 580-34609-19 580-34609-30 580-34609-32 580-34609-35 580-34609-36 580-34609-37 580-34609-38 580-34609-41	Naphthalene	Method blank contamination	B	High
12NC10SS001 12NC10SS003 12NC10SS014 12NC10SS015 12NC10SS016 12NC10SS019 12NC10SS021 12NC10SS028 12NC10SS036 12NC10SS037 TripBlank082012-01 TripBlank082012-02 TripBlank082012-03	580-34609-1 580-34609-3 580-34609-14 580-34609-15 580-34609-16 580-34609-19 580-34609-21 580-34609-28 580-34609-36 580-34609-37 580-34609-38 580-34609-39 580-34609-40	N-Propylbenzene	Method blank contamination	B	High
12NC10SS001 12NC10SS003 12NC10SS011 12NC10SS013 12NC10SS014 12NC10SS015 12NC10SS016 12NC10SS017 12NC10SS019 12NC10SS028	580-34609-1 580-34609-3 580-34609-11 580-34609-13 580-34609-14 580-34609-15 580-34609-16 580-34609-17 580-34609-19 580-34609-28	o-Xylene	Method blank contamination	B	High

Table 2-16 Sample Qualifiers (continued)

Field Sample Identification	Laboratory Sample Number	Compounds Affected	Reason	Flag	Bias
Site 10:					
12NC10SS030 12NC10SS031 12NC10SS032 12NC10SS036 12NC10SS037 TripBlank082012-01 TripBlank082012-02 TripBlank082012-03	580-34609-30 580-34609-31 580-34609-32 580-34609-36 580-34609-37 580-34609-38 580-34609-39 580-34609-40	o-Xylene	Method blank contamination	B	High
12NC10SS011 12NC10SS013 12NC10SS015 12NC10SS016 12NC10SS019	580-34609-11 580-34609-13 580-34609-15 580-34609-16 580-34609-19	p-Isopropyltoluene	Method blank contamination	B	High
12NC10SS014 12NC10SS021 12NC10SS022 12NC10SS023 12NC10SS024 12NC10SS025 12NC10SS026 12NC10SS027 12NC10SS028 12NC10SS029 12NC10SS030 12NC10SS031 12NC10SS032 12NC10SS033 12NC10SS034 12NC10SS035 12NC10SS036 12NC10SS037 TripBlank082012-02 TripBlank082012-03 TripBlank082012-04	580-34609-14 580-34609-21 580-34609-22 580-34609-23 580-34609-24 580-34609-25 580-34609-26 580-34609-27 580-34609-28 580-34609-29 580-34609-30 580-34609-31 580-34609-32 580-34609-33 580-34609-34 580-34609-35 580-34609-36 580-34609-37 580-34609-39 580-34609-40 580-34609-41	cis-1,3-Dichloropropene	Low LCS recovery	QL	Low

Table 2-16 Sample Qualifiers (continued)

Field Sample Identification	Laboratory Sample Number	Compounds Affected	Reason	Flag	Bias
Site 10:					
12NC10BW04	580-35021-4	Acetone	High CCV recovery	QH	High
12NC10BW01 12NC10BW02 12NC10BW03 12NC10BW04 12NC10BW05 12NC10BW06 TripBlank 091712	580-35021-1 580-35021-2 580-35021-3 580-35021-4 580-35021-5 580-35021-6 580-35021-7	Carbon Disulfide	Low CCV recovery	QL	Low
12NC10SS001 12NC10SS002 12NC10SS003 12NC10SS004 12NC10SS005 12NC10SS006 12NC10SS007 12NC10SS008 12NC10SS009 12NC10SS010 12NC10SS011 12NC10SS012 12NC10SS013 12NC10SS015 12NC10SS016 12NC10SS017 12NC10SS018 12NC10SS019 12NC10SS020	580-34609-1 580-34609-2 580-34609-3 580-34609-4 580-34609-5 580-34609-6 580-34609-7 580-34609-8 580-34609-9 580-34609-10 580-34609-11 580-34609-12 580-34609-13 580-34609-15 580-34609-16 580-34609-17 580-34609-18 580-34609-19 580-34609-20	Methylene Chloride	Trip blank contamination	B	High
12NC10SS014 12NC10SS030 12NC10SS032	580-34609-14 580-34609-30 580-34609-32	Styrene	Trip blank contamination	B	High
12NC10SS014	580-34609-14	Anthracene	High LCS recovery	QH	High
12NC10SS013 12NC10SS034	580-34609-13 580-34609-34	Acenaphthylene	High LCS recovery	QH	High

Table 2-16 Sample Qualifiers (continued)

Field Sample Identification	Laboratory Sample Number	Compounds Affected	Reason	Flag	Bias
Site 10:					
12NC10SS005 12NC10SS006 12NC10SS007 12NC10SS008 12NC10SS012 12NC10SS018	580-34609-5 580-34609-6 580-34609-7 580-34609-8 580-34609-12 580-34609-18	Gasoline Range Organics	Low surrogate recovery	ML	Low
TripBlank082012-04	580-34609-41	Gasoline Range Organics	High surrogate recovery	QH	High
12NC10SS001 12NC10SS014 12NC10SS016 12NC10SS026 12NC10SS027 12NC10SS028 12NC10SS030 12NC10SS031 12NC10SS032 12NC10SS036 12NC10SS037	580-34609-1 580-34609-14 580-34609-16 580-34609-26 580-34609-27 580-34609-28 580-34609-30 580-34609-31 580-34609-32 580-34609-36 580-34609-37	Gasoline Range Organics	Trip Blank Contamination	B	High
12NC10SS034	580-34609-34	PCB-1254	Multiple PCBs, Shared Peaks	MN	Unknown
12NC10SS034	580-34609-34	PCB-1260	Low MS/MSD recovery and shared peaks	ML	Low
12NC10SS016 12NC10SS019	580-34609-16 580-34609-19	PCB-1254 PCB-1260	Multiple PCBs, Shared Peaks	MN	Unknown

Table 2-16 Sample Qualifiers (continued)

Field Sample Identification	Laboratory Sample Number	Compounds Affected	Reason	Flag	Bias
Site 10:					
12NC10SS009 12NC10SS010 12NC10SS014 12NC10SS020 12NC10SS021 12NC10SS022 12NC10SS023 12NC10SS024 12NC10SS025 12NC10SS026 12NC10SS027 12NC10SS031	580-34609-9 580-34609-10 580-34609-14 580-34609-20 580-34609-21 580-34609-22 580-34609-23 580-34609-24 580-34609-25 580-34609-26 580-34609-27 580-34609-31	DRO	Method blank contamination	B	High
12NC10SS010 12NC10SS020 12NC10SS021 12NC10SS026 12NC10SS027 12NC10SS031	580-34609-10 580-34609-20 580-34609-21 580-34609-26 580-34609-27 580-34609-31	RRO	Method blank contamination	B	High
12NC10SS014	580-34609-14	RRO	High MS recovery and high MS/MSD RPD	MH	High
12NC10SS022 12NC10SS025	580-34609-22 580-34609-25	Cadmium	Method blank contamination	B	High
12NC10SS014	580-34609-14	Cadmium	High laboratory duplicate RPD	QN	Unknown
12NC10SS014	580-34609-14	Barium Chromium Vanadium	High MS or MSD recovery	MH	High
12NC10SS014	580-34609-14	Zinc	High MS/MSD RPD	MN	Unknown
12NC10SS007 12NC10SS014	580-34609-7 580-34609-14	Mercury	High laboratory duplicate RPD	QN	Unknown
12NC10SS005 12NC10SS018	580-34609-5 580-34609-18	DRO RRO Methyl tert-butyl ether	Field duplicate imprecision	QN	Unknown

Table 2-16 Sample Qualifiers (continued)

Field Sample Identification	Laboratory Sample Number	Compounds Affected	Reason	Flag	Bias
Site 10:					
12NC10SS036 12NC10SS037	580-34609-36 580-34609-37	Methyl tert-butyl ether	Field duplicate imprecision	QN	Unknown
12NC10BW02 12NC10BW03	580-35021-2 580-35021-3	Methyl tert-butyl ether	Field duplicate imprecision	QN	Unknown
Site 13:					
12NC13SS019 12NC13SS026 12NC13SS128 12NC13SS129 12NC13SS215 12NC13SS221	580-34330-17 580-34330-24 580-34374-65 580-34374-66 580-34746-4 580-34746-10	PCB-1260	Field duplicate imprecision	QN	Unknown
12NC13SS093	580-34374-30	PCB-1260	High MS/MSD RPD	MN	Unknown
12NC13SS137	580-34374-74	PCB-1260	Low MSD recovery and High MS/MSD RPD	ML	Low
12NC13SS188	580-34680-46	PCB-1260	Low MSD recovery	ML	Low
12NC13SS218	580-34746-7	PCB-1254 PCB-1260	Multiple PCBs, Shared peaks	MN	Unknown
Site 21					
12NC21WA001 12NC21WA002	580-34828-8 580-34828-9	Dissolved arsenic	Not field filtered	QL	Low
Site 31:					
12NC31SS222 12NC31SS223 12NC31SS225	280-33320-45 280-33320-46 280-33320-48	PCB-1260	High LCS/LCSD RPD	QN	Unknown
12NC31SS013	580-34373-13	PCB-1260	Low MSD recovery and high MS/MSD RPD	ML	Low
12NC31SS014 12NC31SS063 12NC31SS140	580-34373-14 580-34683-34 580-34675-27	PCB-1260	High MS recovery	MH	High
12NC31SS139	580-34675-26	PCB-1260	High MS/MSD recoveries	MH	High
12NC31SS149	580-34675-36	PCB-1260	Low MS/MSD recoveries	ML	Low

Table 2-16 Sample Qualifiers (continued)

Field Sample Identification	Laboratory Sample Number	Compounds Affected	Reason	Flag	Bias
Site 31:					
12NC31SS150	580-34675-37	PCB-1260	High MS/MSD recoveries and RPD	MH	High
12NC31SS123 12NC31SS126 12NC31SS177 12NC31SS179 12NC31SS184 12NC31SS185 12NC31SS204 12NC31SS225	580-34675-10 580-34675-13 580-34675-64 580-34675-66 580-34675-71 580-34675-72 280-33320-27 280-33320-48	PCB-1260	Field duplicate imprecision	QN	Unknown
MOC Water:					
12NCMOCWA008 12NCMOCWA009 12NCMOCWA010	580-33899-8 580-33899-9 580-33899-10	Toluene	Trip Blank	B	High
12NCMOCWA008 12NCMOCWA009	580-33899-8 580-33899-9	Zinc (total and dissolved)	Field duplicate imprecision	QN	Unknown
MOC Soils:					
12NCMOCSS042 12NCMOCSS067 12NCMOCSS075 12NCMOCSS076 12NCMOCSS104 12NCMOCSS108	580-34447-13 580-34447-38 580-34607-2 580-34607-3 580-34594-22 580-34594-26	DRO	Method Blank	B	High
12NCMOCSS030 12NCMOCSS032 12NCMOCSS034 12NCMOCSS035 12NCMOCSS041 12NCMOCSS044 12NCMOCSS045 12NCMOCSS047 12NCMOCSS048 12NCMOCSS049 12NCMOCSS050	580-34447-1 580-34447-3 580-34447-5 580-34447-6 580-34447-12 580-34447-15 580-34447-16 580-34447-18 580-34447-19 580-34447-20 580-34447-21	RRO	Method Blank	B	High

Table 2-16 Sample Qualifiers (continued)

Field Sample Identification	Laboratory Sample Number	Compounds Affected	Reason	Flag	Bias
MOC Soils:					
12NCMOCSS051 12NCMOCSS052 12NCMOCSS053 12NCMOCSS054 12NCMOCSS055 12NCMOCSS056 12NCMOCSS058 12NCMOCSS061 12NCMOCSS065 12NCMOCSS068	580-34447-22 580-34447-23 580-34447-24 580-34447-25 580-34447-26 580-34447-27 580-34447-29 580-34447-32 580-34447-36 580-34447-39	RRO	Method Blank	B	High
12NCMOCSS146 12NCMOCBW222 12NCMOCBW229	580-34677-25 580-35168-2 580-35168-9	RRO	High surrogate recovery	QH	High
12NCMOCSS082	580-34607-9	RRO	High MSD recovery and RPD	MH	High
12NCMOCSS136	580-34677-15	RRO	High MS/MSD recovery	MH	High
12NCMOCSS059 12NCMOCSS072 12NCMOCSS065 12NCMOCSS068 12NCMOCSS073 12NCMOCSS079 12NCMOCSS098 12NCMOCSS099	580-34447-30 580-34447-43 580-34447-36 580-34447-39 580-34607-1 580-34607-6 580-34594-16 580-34594-17	DRO	Field duplicate imprecision	QN	Unknown
12NCMOCSS059 12NCMOCSS072	580-34447-30 580-34447-43	RRO	Field duplicate imprecision	QN	Unknown
Bulk Bag Area (BG):					
12NCBGSS01	580-33899-16	PCB 1260	High MSD recovery and RPD	MH	High
12NCBGSS14	580-34335-1	PCB 1260	High MS/MSD RPD	MN	Unknown
12NCBGSS14 12NCBGSS15 12NCBGSS16	580-34335-1 580-34335-2 580-34335-3	DRO	Holding Time Exceedance and field duplicate imprecision	QL, QN	Low

Table 2-16 Sample Qualifiers (continued)

Field Sample Identification	Laboratory Sample Number	Compounds Affected	Reason	Flag	Bias
Radar Dome:					
12NCRDSS01 12NCRDSS02 12NCRDSS03 12NCRDSS05 12NCRDSS06 12NCRDSS07 12NCRDSS08	580-34701-1 580-34701-2 580-34701-3 580-34701-5 580-34701-6 580-34701-7 580-34701-8	DRO	Method Blank	B	High
12NCRDSS02	580-34701-2	RRO	High surrogate recovery	QH	High
12NCRDSS04 RE	580-34701-4 RE	DRO	Method Blank Holding Time Exceedance	B QL	Unknown
12NCRDSS04 RE	580-34701-4 RE	RRO	Holding Time Exceedance	QL	Low
12NCRDSS03	580-34701-3	Zinc	High MSD recovery	MH	High
Drum Samples:					
12NCDRUMO2 12NCDRUMO3 12NCDRUMO4 12NCDRUMO5 12NCDRUMO6 12NCDRUMO7 12NCDRUMO9 12NCDRUMO14	580-34825-1 580-34825-2 580-34825-3 580-34825-4 580-34825-5 580-34825-6 580-34825-8 580-34825-13	VOCs SVOCs DRO RRO	Holding Time Exceedance	QL	Low
12NCDRUMO2 12NCDRUMO3 12NCDRUMO4 12NCDRUMO5 12NCDRUMO6 12NCDRUMO8 12NCDRUMO9 12NCDRUMO10 12NCDRUMO11	580-34825-1 580-34825-2 580-34825-3 580-34825-4 580-34825-5 580-34825-7 580-34825-8 580-34825-9 580-34825-10	m,p-Xylene	Method Blank	B	High

Table 2-16 Sample Qualifiers (continued)

Field Sample Identification	Laboratory Sample Number	Compounds Affected	Reason	Flag	Bias
Drum Samples:					
12NCDRUMO2 12NCDRUMO3 12NCDRUMO4 12NCDRUMO6	580-34825-1 580-34825-2 580-34825-3 580-34825-5	Ethylene Glycol Propylene Glycol	Holding Time Exceedance	QL	Low
12NCDRUMO11	580-34825-10	Ethylene Glycol	Method Blank	B	High
12NCDRUMO2 12NCDRUMO7 12NCDRUMO9 12NCDRUMO10 12NCDRUMO11	580-34825-1 580-34825-6 580-34825-8 580-34825-9 580-34825-10	DRO	Method Blank	B	High
12NCDRUMO2	580-34825-1	Nickel	Method Blank	B	High
12NCDRUMO4 12NCDRUMO5	580-34825-3 580-34825-5	Barium	Method Blank	B	High
12NCDRUMO6	580-34825-5	Mercury	Low MS/MSD recoveries	ML	Low

(Intentionally blank)

3.0 SENSITIVITY AND QUANTITATION LIMITS

Sensitivity is the capability of a test method or instrument to discriminate between measurement responses that represent different levels (e.g., concentrations) of a variable of interest. Examples of QC measures for determining sensitivity include laboratory-fortified blanks, DL, LOD, limit of quantitation (LOQ) studies, and the lowest calibration standards at or below the LOQ. In order to meet the needs of the data users, the project data must meet the measurement performance criteria for sensitivity and project LOQs. Analytical factors, such as dilutions, may elevate the reporting limits for all target constituents when the sample extract is diluted in order to raise the anlyte concentration to within the instrument calibration range. Other factors, such as high moisture content, may also elevate reporting limits above their empirical concentrations.

Overall sensitivity and reporting for the project was acceptable with minor exceptions. Non-detect PCB results exceeded the 1 mg/kg cleanup level fot two PCB soil sample results collected at Site 31 (Table F18). Aroclor 1260 exceeded the cleanup levels for both PCB soil results; the sample extract was diluted to 1/50 to analyze the Aroclor 1260 within the calibration range. The results were usable for demonstrating that further removal and analysis was required to meet cleanup levels. The two sample locations were further excavated and the results indicated that cleanup goals had been met.

After the drums were removed, soil samples were collected from the in-place soil immediately surrounding the drums at Site 10. Non-detect results for 1,2,3-Trichloropropane, 1,2-Dibromoethane, 1,2-Dichloroethane, bromodichloroethane, bromomethane, carbon disulfide, chlorobenzene, chloromethane, and tetrachloroethene exceeded cleanup levels. The results of the drum liquids analyses did not indicate the presence of the above-listed analytes, with the exception of tetrachloroethene. Tetrachloroethene was reported above cleanup levels in samples 12NC10SS0036 and 12NC10SS0037, which were field duplicates. All Site 10 post excavation results are presented in Table F24. Sample 12NC10SS018 and 12NC10SS007 were non-detect at 24 and 25 µg/kg, respectively; the cleanup level is 24 µg/kg. The DLs for both samples were reported below the cleanup level. In addition, sample 12NC10SS018 was a field duplicate of sample 12NC10SS005 and the results were non-detect for tetrachloroethene at 17 µg/kg. The duplicate result met sensitivity requirement.

The overall project sensitivity was met with the above-noted exceptions. With the exception of tetrachloroethene, none of the above-noted VOCs were detected in the drum liquid contents.

4.0 SUMMARY

This Report evaluates the analytical data generated during the NE Cape Remedial Actions conducted during July through September 2012. This assessment evaluated whether program objectives and data quality goals were met. The assessment reviewed sample receipt conditions, extraction and analytical procedures, sampling procedures, and correspondence to method criteria and project DQOs. The following conclusions were drawn based on this assessment of the analytical data:

- Sample receipt conditions were acceptable based on temperatures upon receipt and CoC correspondence to submitted sample set. There were instances when the information on the container labels did not match the CoC. For these instances, the laboratory made a determination as to which information to use and provided documentation in the laboratory narrative. Amber bottles were received broken for two samples; however, the laboratory was able to proceed with analysis using the remaining bottles.
- Holding times were met with the following exceptions noted below. Results exceeding hold times were QL qualified.
  - Site 10 soil samples for acetone and methylene chloride required re-analysis due to method blank contamination at greater than ½ the LOQ and a CCV exceedance for acetone. Reanalysis for 19 soil samples was performed outside of hold time. The methylene chloride and acetone detections are believed to be due to laboratory contamination, the results are still presented with B flag qualifiers.
  - One trip blank result for trichlorofluoromethane was reanalyzed due to an initial calibration exceedance and the reanalysis was performed over hold time.
  - Three Bulk Bag Area MI samples were prepared outside of hold time for DRO analysis due to mis-communication between Bristol and the laboratory.
  - DRO/RRO results for one Radar Dome Road soil sample that was re-extracted outside of hold time due to low surrogate recoveries.
  - Eight waste drum samples were analyzed or extracted over hold time for VOCs, SVOCs, DRO, and RRO and four waste drum samples were analyzed over hold time for glycols.
- Extraction and analytical procedures were acceptable based on MBs, LCS/LCSDs, MS/MSDs, and surrogates except as noted below:

- Detected results were qualified as estimated with a high bias (QH) due to high surrogate recoveries as follows:
  - Detected GRO in one trip blank sample, and
  - Detected RRO in three soil samples and two bulk waste soil samples
- Detected results were qualified as estimated with a high bias (QH) due to high LCS and/or LCSD recoveries as follows:
  - Detected anthracene in two soil samples
  - Detected acenaphthylene in two soil samples
- Results were qualified as estimated with a low bias (QL) due to low surrogate recoveries as follows:
  - All VOC results for one soil sample,
  - GRO results for six soil samples
- Results were qualified as estimated with a low bias (QL) due to low LCS recoveries as follows:
  - cis-1,3-Dichloropropene results for 18 soil samples and 3 trip blank samples
- Results were qualified as estimated with an unknown bias (QN) due to LCS/LCSD RPD or laboratory duplicate RPD exceedances are as follows:
  - PCB-1260 results for three soil samples,
  - Methane for one water samples,
  - Cadmium for one soil sample, and
  - Mercury results for two soil samples
- The following results were B qualified due to associated method blank contamination at a concentration <10x the sample concentration:
  - 1,2,4-Trimethylbenzene results for 16 soil samples and three trip blanks,
  - Methylene chloride results for18 soil samples and two trip blanks,
  - N-Propylbenzene results for ten soil samples and three trip blanks,
  - Naphthalene results for 11 soil samples and two trip blanks,
  - p-Isopropyltoluene results for five soil samples,
  - m,p-Xylene results for 25 soil samples, nine drum waste samples, and three trip blanks,
  - o-Xylene results for 15 soil samples and three trip blanks,
  - The ethylene glycol result for one waste sample,
  - DRO results for 26 soil samples, one water sample, and five waste samples,
  - RRO results for 27 soil samples,
  - Cadmium results for two soil samples, and

    - Nickel results for one waste sample and barium results for two waste samples.

- Samples were qualified due to either high (MH) or low (ML) MS/MSD recoveries to indicate potential bias due to a matrix effect. Qualification was limited to the spiked samples since associated LCS/LCSD results were in control. An MN qualifier was used to indicate a matrix effect with an unknown bias when both a high and low MS/MSD recovery were observed or for a high MS/MSD RPD, unassociated with bias. Qualified results were:
    - 1,2,4-Trimethylbenzene, 1,3,5-trimethylbenzene, and naphthalene results for one bulk waste soil sample were MH qualified,
    - DRO, DRO w/SGC, and RRO results for one soil sample were MH qualified,
    - Three RRO soil results were MH qualified,
    - PCB-1260 results for five soil samples were ML qualified,
    - PCB-1260 results for six soil samples were MH qualified.
    - Two PCB-1260 result were MN qualified;
    - Barium, chromium, and vanadium were MH qualified in one soil sample
    - One zinc result was MH qualified,
    - One zinc result was MN qualified,
    - Mercury was ML qualified in one waste sample.

- Sample qualifiers were assigned based on information in the laboratory narratives as follows:
  - The acetone result for one bulk waste sample was QH qualified due to a high CCV recovery,
  - Carbon disulfide results for six bulk waste samples and one trip blank were QL qualified due to a low CCV recovery.
  - Four PCB-1254 and three PCB-1260 results were MN qualified because they shared peaks and quantitation was an estimate.
- Multiple sample results were reported when sample concentrations exceeded the calibration range of the instrument, or were samples re-extracted and/or re-analyzed as summarized below:
  - Acetone and methylene chloride results for batch 580-118819 were re-analyzed due to detects in the method blank and an acetone CCV exceedance. Results for the re-analysis should be used and results from the initial run should not be reported. The reruns met analytical control criteria but were analyzed outside of hold time.

- PCB-1260 results for samples 12NC13SS104, 12NC13SS105, 12NC13SS123, and 12NC31SS019 were reported from both the secondary column during undiluted analysis and the primary column during 10 times dilution analysis. Results from the dilution analysis were used since the undiluted results exceeded the calibration range of the instrument.
- PCB samples 12NCMOCWA001 through -010 (work order 580-33899-1) were re-extracted and re-analyzed due to low recoveries in for MS/MSD. The MS/MSD recoveries were in control for the re-extracted batch. The results for both data sets were not detected and the preferred results are the original data set.
- DRO/RRO sample 12NCRDSS04 was re-extracted due to surrogate recoveries and the re-extraction was performed 5 days outside of hold time. Surrogates were in control for the re-extraction and the re-extraction results should be used.

• Field quality control results met QAPP criteria with the following exceptions:
  - Imprecision was observed in field duplicate samples for:
    - Methyl tert-butyl ether in three soil duplicate pairs,
    - 2-Methylnaphthalene, fluorene, and naphthalene in one water field duplicate pair,
    - DRO in five soil duplicate pairs,
    - RRO in two soil duplicate pairs,
    - PCB-1260 in seven soil duplicate pairs,
    - DRO in one triplicate set, and
    - Zinc (total and dissolved) in one water duplicate pair

• In all cases, the majority of duplicate sample results met the control criteria and qualification as estimated with an unknown bias (QN) was limited to the field duplicate pair or triplicate set, as applicable.
  - The following results were B qualified due to associated trip blank contamination at a concentration <10x the sample concentration:
    - Methylene chloride results for 19 soil samples,
    - Toluene results for three water samples,
    - Styrene results for two soil samples, and
    - GRO results for 11 soil samples.

Based on this review, the analytical data generated during the NE Cape Remedial Action at Sites 8, 10, 13, 21, 31, and the MOC, as well as the Bulk Bag Area samples, Radar Dome Road samples, and the drum samples are complete, correct, consistent, and compliant with method procedures and QC requirements, and are usable as qualified.

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ADEC Checklists

Laboratory Data Review Checklist

Completed by: Julie Sharp-Dahl

Title: Chemist   Date: 11/21/2012

CS Report Name: Northeast Cape   Report Date: 9/21/12

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma   Laboratory Report Number: 580-33320

ADEC File Number: 475.38.013   ADEC RecKey Number: Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.)   Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X NA (Please explain.)   Comments:

      Samples were not transferred to another lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.)   Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.)   Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐NA (Please explain.)   Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes ☐ No ☐NA (Please explain.)   Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes No NA (Please explain.) Comments:

All samples received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
Yes X No NA (Please explain.) Comments:

No discrepancies.

e. Data quality or usability affected? (Please explain.)
Comments:

No. See above.

4. <u>Case Narrative</u>
a. Present and understandable?
X Yes No NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes No NA (Please explain.) Comments:

Most topics – such as method blank contamination, surrogate recoveries, LCS/LCSD recoveries, and MS/MSD recoveries, addressed in the case narrative are addressed further in the following sections or in the QA summary.

c. Were all corrective actions documented?
X Yes No NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?
Comments:

All results are usable for project purposes with qualifiers applied to results with quality control issues. No results were rejected.

5. <u>Samples Results</u>
a. Correct analyses performed/reported as requested on COC?
X Yes No NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
X Yes □ No □ NA (Please explain.) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No NA (Please explain.)
Comments:

e. Data quality or usability affected?
Comments:

No.

6. <u>QC Samples</u>
a. Method Blank
i. One method blank reported per matrix, analysis and 20 samples?
X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes No □NA (Please explain.) Comments:

All method blank results were non-detect.

iii. If above PQL, what samples are affected?
Comments:

Not Applicable.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
Yes □ No X□NA (Please explain.) Comments:

No qualifications necessary.

v. Data quality or usability affected? (Please explain.)
Comments:

No effect on data quality or usability.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X Yes □ No □NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

□Yes □ No □X NA (Please explain.) Comments:

Only organics in this SDG.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

X Yes □ No □NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes X No □NA (Please explain.) Comments:

The LCS/LCSD RPDs for PCB-1016 and PCB-1260 for batch 280-137601 were both 22% and were above the QAPP limit of 20%.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

12NC31SS220 through -225.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes □ No □X NA (Please explain.) Comments:

Detected results for the samples listed above were qualified and flagged QN (PCB-1260 for samples 12NC31SS222, 12NC31SS223, and 12NC31SS225).

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Sample results are usable with qualification for project purposes.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
Yes X No□NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

DCB %Rs from the secondary column analysis for samples 12NC31SS195, -197, -200, -223, -225, were above criteria and the %R for one sample (-231) was below criteria; %R from the primary column met criteria. Note that the %R of the surrogate from the primary column and secondary column, does not match the sample report page – it appears that the laboratory mixed up the %R of DCB from the primary and secondary columns. In addition, The QAPP specifies the addition of two surrogates for PCB determination. However, the lab followed the method which requires only one surrogate, DCB, with an optional second surrogate, tetrachloro-m-xylene (TCX). The surrogate DCB is more closely associated with PCBs and no action was required due to the lack of TCX recovery information.

□Yes □ X No NA (Please explain.) Comments:

All results were reported from the primary column analysis.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Data quality and usability are not affected.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
Yes □ No X□NA (Please explain.) Comments:

No volatile samples in this SDG.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
Yes □ No X□NA (Please explain.) Comments:

Not Applicable.

iii. All results less than PQL?
Yes No X NA (Please explain.) Comments:

Not Applicable

iv. If above PQL, what samples are affected?
Comments:

Not Applicable.

v. Data quality or usability affected? (Please explain.)
Comments:

Data quality and usability are not affected.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X Yes No NA (Please explain.) Comments:

ii. Submitted blind to lab?
X Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

X Yes No NA (Please explain.) Comments:

Most of the duplicated results were estimated (below the LOQ) or non-detect with the exception of results for field duplicates 12NC31SS204 and -225 for which a RPD cannot be calculated because these results include a detected result above the LOQ for PCB-1260 and a not detectable result, respectively. These results were QN qualified on the basis of field duplicate RPD.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

See above.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

i. All results less than PQL?

□Yes □ No X□NA (Please explain.) Comments:

Not Applicable.

ii. If above PQL, what samples are affected?

Comments:

Not Applicable

iii. Data quality or usability affected? (Please explain.)

Comments:

Not Applicable

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

X Yes □ No □NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Project Chemist | Date: 11-27-12

CS Report Name: NE Cape 2012 HTRW | Report Date: 9/25/2012

Consultant Firm: Bristol Environmental

Laboratory Name: TestAmerica-Denver | Laboratory Report Number: 280-33360-2

ADEC File Number: 475.38.013 | ADEC RecKey Number: Haz ID. 212

1. Laboratory
    a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
       X Yes ☐ No ☐NA (Please explain.) Comments:

    b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
       X Yes ☐ No ☐NA (Please explain.) Comments:

       Samples were shipped directly to TA-Denver and all analyses were performed by TA-Denver.

2. Chain of Custody (COC)
    a. COC information completed, signed, and dated (including released/received by)?
       X Yes ☐ No ☐NA (Please explain.) Comments:

       The work order was split up with rocks to be analyzed for PCBs only on a rush basis split from the rest of the work order. The rest of the work order was reported under 280-33360-1.

    b. Correct analyses requested?
       X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
    a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
       X Yes ☐ No ☐NA (Please explain.) Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

X Yes No NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

XYes No NA (Please explain.) Comments:

Login Sample Receipt Checklist indicates no issues with sample condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes X No NA (Please explain.) Comments:

No discrepancies were noted

e. Data quality or usability affected? (Please explain.)

Comments:

Data quality was not affected by sample shipment and usable without qualification.

4. Case Narrative

a. Present and understandable?

X Yes No NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

X Yes No NA (Please explain.) Comments:

No discrepancies were noted.

c. Were all corrective actions documented?

X Yes No NA (Please explain.) Comments:

No corrective actions were required.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Sample results are usable without qualification.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

X Yes No NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes No NA (Please explain.) Comments:

Yes, PCBs do not have a holding time per ADEC field sampling guidance.

c. All soils reported on a dry weight basis?
XYes No NA (Please explain.) Comments:

The matrix was rocks and results were reported on a dry-weight basis.

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes No NA (Please explain.) Comments:

e. Data quality or usability affected?
Comments:

Sample results are usable without qualification.

6. QC Samples
a. Method Blank
i. One method blank reported per matrix, analysis and 20 samples?
X Yes No NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes No NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?
Comments:

Not applicable

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
Yes X No NA (Please explain.) Comments:

No data flags were required.

v. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable without qualification in respect to method blank analysis.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
☐Yes ☐ No X NA (Please explain.) Comments:

Samples were analyzed with LCS/LCSD and MS/MSD from project samples. Only PCB analyses reported in this SDG.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
X Yes ☐ No ☐NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X Yes ☐ No ☐NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

All QC met control limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
☐Yes ☐ No x NA (Please explain.) Comments:

No data flags were assigned as all spiked QC was in control.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable without qualification in respect to LCS/LCSD and MS/MSD recoveries and precision.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
X Yes ☐ No ☐NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
☐Yes ☐ No X NA (Please explain.) Comments:

All surrogate recoveries were within control limits.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Sample results are usable without qualification with respect to surrogate recoveries in project samples and lab QC.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
☐Yes ☐ No X☐NA (Please explain.) Comments:

Samples were analyzed for PCBs only so no trip blank.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
☐Yes ☐ No X NA (Please explain.) Comments:

Samples were analyzed for PCBs only so no trip blank.

iii. All results less than PQL?
☐Yes ☐ No X NA (Please explain.) Comments:

No trip blank required.

iv. If above PQL, what samples are affected?

Comments:

Not applicable

v. Data quality or usability affected? (Please explain.)

Comments:

Not applicable, no trip blank.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X Yes ☐ No ☐NA (Please explain.) Comments:

One duplicate was submitted in this SDG of seven samples.

ii. Submitted blind to lab?

X Yes ☐ No ☐NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

X Yes ☐ No ☐NA (Please explain.) Comments:

All results were non-detect for PCBs so no valid comparison could be made.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Sample results are usable without qualification in respect to field duplicates.

f. Decontamination or Equipment Blank (If not used explain why).

☐Yes ☐ No X NA (Please explain.) Comments:

Samples were hand collected so no equipment blank was required.

i. All results less than PQL?

☐Yes ☐ No X NA (Please explain.) Comments:

No equipment blank.

ii. If above PQL, what samples are affected?

Comments:

Not applicable.

iii. Data quality or usability affected? (Please explain.)

Comments:

Not applicable.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes ☐ No ☐NA (Please explain.) Comments:

No data flags were required, all results are usable without qualification.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Project Chemist

Date: 11-27-12

CS Report Name: NE Cape 2012 HTRW report

Report Date: 8/14/12

Consultant Firm: Bristol Environmental

Laboratory Name: TestAmerica-Tacoma

Laboratory Report Number: 580-33899

ADEC File Number: 475.38.013

ADEC RecKey Number: Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes □ No □NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      X Yes □ No □NA (Please explain.) Comments:

      Methane by RSS-175 was performed by TA-Savannah, an ADEC CS accredited lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes □ No □NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes □ No □NA (Please explain.) Comments:

      Sample coolers were received with some coolers less than 2 degrees C; no samples were frozen or affected by the slightly depressed temperatures.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
X Yes No NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes No NA (Please explain.) Comments:

Sample 12NCMOCWA003 was received with 2 broken 1-liter containers. The sample was noted for MS/MSD on the CoC. The case narrative stated there was still sufficient sample in the unbroken containers to perform MS/MSD spiking for all the requested analyses.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
Yes X No NA (Please explain.) Comments:

No discrepancies other than those listed in this section (slightly depressed cooler temps and broken containers) were noted in the case narrative and sample receipt forms.

e. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable without qualification in respect to sample shipment and documentation.

4. Case Narrative

a. Present and understandable?
X Yes No NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes No NA (Please explain.) Comments:

MS/MSD recoveries and or RPDs failed for PCBs (water), DRO (MI soil) and DRO/RRO (water). Some surrogates were outside of control limits as well.

c. Were all corrective actions documented?
X Yes No NA (Please explain.) Comments:

No corrective actions were required for MS/MSD failures as LCS/LCSD samples were in control for all analyses.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes with qualification of the parent samples used for MS/MSD that had failing QC.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. All applicable holding times met?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   c. All soils reported on a dry weight basis?
      X Yes ☐ No ☐NA (Please explain.) Comments:

MI samples were reported on an as received basis after drying on trays per MI sample prep SOPs.

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   e. Data quality or usability affected?
      Comments:

Sample results are usable for project purposes without qualification in respect to holding times and reporting levels.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      X Yes ☐ No ☐NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      X Yes ☐ No ☐NA (Please explain.) Comments:

      iii. If above PQL, what samples are affected?
      Comments:

Not applicable, all method blanks were non-detect.

      iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
      ☐Yes ☐ No X NA (Please explain.) Comments:

All method blanks were non-detect

v. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable without qualification in respect to method blanks.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
X Yes ☐ No ☐NA (Please explain.) Comments:

LCS/LCSD reported on all analyses.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
☐ Yes X No ☐NA (Please explain.) Comments:

Sample 12NCMOCWA001MS/MSD had recoveries and RPDs outside of control limits for PCB analysis. Samples were re-extracted with acceptable MS/MSD results so no qualification is necessary. Sample 12NCMOCSWA003 had MS recoveries greater than acceptance limits, the original sample concentration was greater than 4 times the spike concentration so no qualification is necessary. Sample 12NCBGSS01 (MI sample) had a low MSD recovery and RPD outside of control limits for DRO analysis, the parent sample surrogate recovery was within acceptance limits. The MSD spike and surrogate concentrations had similar low recoveries (11% and 15% respectively) and laboratory preparation error is suspected so no qualification is necessary. All MI soil samples had acceptable surrogate recoveries for DRO. Sample 12NCBGSS01 had PCB 1016 spike recoveries greatly outside of acceptance limits, along with a high RPD. The PCB 1260 MSD recovery was also high for 12NCBGSS01. The PCB-1016 parent sample result was not detected and did not require qualification, while the detect for PCB 1260 was qualified MH. Sample 12NCMOCWA007 MS/MSD had recoveries outside of limits for DRO/RRO analyses. The concentration of the original sample (12NCMOCWA007) was greater than 4 times the spike concentration so no qualification is necessary for this sample. The other samples were flagged MN for matrix interference with no directional bias.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
☐Yes X No ☐NA (Please explain.) Comments:

Failed RPDs are noted above in accuracy, which affected the RPDs.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Sample 12NCBGSS01 had PCB-1260 results flagged MH for high MSD recovery and RPD.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

X Yes ☐ No ☐NA (Please explain.) Comments:

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Sample results are usable with some qualifications on parent samples due to MS/MSD recoveries or RPDs outside of acceptance limits.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

☐Yes X No ☐NA (Please explain.) Comments:

TCMX, the secondary surrogate for PCB analyses has recoveries on both columns greatly exceed control limits, likely due to non-target analyte interference. Decachlorobiphenyl, which is the primary surrogate for PCB analysis, was within control limits. Results are reported without qualification for surrogate recoveries.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

☐Yes X No ☐NA (Please explain.) Comments:

See above, non-target analyte interference of TCMX.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

Sample results are usable without qualification in respect to surrogate recoveries.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
X Yes No NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
X Yes No NA (Please explain.) Comments:

It is indicated by the headspace being checked on the sample receipt form for cooler 012.

iii. All results less than PQL?
X Yes No NA (Please explain.) Comments:

Toluene was detected in the trip blank at 0.15 ug/L (detection limit).

iv. If above PQL, what samples are affected?
Comments:

Samples 12NCMOCWA008, -009 and -010 are B flagged. All other results are non-detect for toluene.

v. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes with above noted qualification. The sample positive flagged sample results are greater than 1000 times below cleanup level.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X Yes No NA (Please explain.) Comments:

ii. Submitted blind to lab?

X Yes ☐ No ☐NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$RPD\ (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

☐Yes X No ☐NA (Please explain.) Comments:

Samples 12NCBGSS02, -03 and -04 were MI sample replicates with PCB 1260 detected below the LOQ (J flagged) and an RSD of 31%. Because the results for 1260 were below the LOQ and the RSD was a marginal exceedance no flags were assigned due to RSD outside of control limits. All other field duplicates were within RPD limits.
Samples 12NCMOCWA008 & -009 were MOC water duplicates. The zinc values (total and dissolved) had detects above the LOQ in one of the samples, and was not detected in the duplicate. Results were QN qualified.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:
See above.

f. Decontamination or Equipment Blank (If not used explain why).

☐Yes X No ☐NA (Please explain.) Comments:

All samples were collected with disposable sampling equipment except the groundwater samples. No equipment blank was requested in the scope of work or QAPP.

i. All results less than PQL?

☐Yes ☐ No ☐NA (Please explain.) Comments:

Not applicable

ii. If above PQL, what samples are affected?

Comments:

Not applicable

iii. Data quality or usability affected? (Please explain.)

Comments:

Data quality was not affected without an equipment blank. Samples were collected from lowest historical detections to more contaminated wells per the QAPP.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

   a. Defined and appropriate?

      X Yes No NA (Please explain.)   Comments:

Flags are defined in the data tables and Chemical Data Quality Review (CDQR).

Laboratory Data Review Checklist

Completed by:	Keather McLoone		
Title:	Project Chemist	Date:	10/11/2012
CS Report Name:	Northeast Cape (MI)	Report Date:	8/15/12
Consultant Firm:	Bristol Environmental Remediation Services		
Laboratory Name:	TestAmerica-Tacoma	Laboratory Report Number:	580-34086
ADEC File Number:	475.38.013	ADEC RecKey Number:	Haz ID. 212

1. Laboratory
    a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
    X Yes □ No □NA (Please explain.) Comments:

    b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
    □Yes □ No X NA (Please explain.) Comments:

    Samples were not transferred to another lab.

2. Chain of Custody (COC)
    a. COC information completed, signed, and dated (including released/received by)?
    X Yes □ No □NA (Please explain.) Comments:

    b. Correct analyses requested?
    X Yes □ No □NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
    a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
    X Yes □ No □NA (Please explain.) Comments:

    b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
    X Yes □ No □NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes ☐ No NA (Please explain.) Comments:

All samples received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes ☐ No ☐ NA (Please explain.) Comments:

The container label for 12NCBGSS12 did not match the information listed on the COC. The container labels lists a sample ID of 12NCBGSS13 and the COC lists a sample ID of 12NCBGSS12. The sample was logged in according to COC.

e. Data quality or usability affected? (Please explain.)
Comments:

Results are usable without qualification.

4. <u>Case Narrative</u>

a. Present and understandable?
X Yes ☐ No ☐NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes ☐ No ☐NA (Please explain.) Comments:

Most topics addressed in the case narrative are addressed further in the following sections or in the QA summary - the topics were method blank contamination and MS/MSD recoveries.

c. Were all corrective actions documented?
X Yes ☐ No ☐NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?
Comments:

All results are usable for project purposes with qualifiers applied to results with quality control issues. No results were rejected.

5. <u>Samples Results</u>

a. Correct analyses performed/reported as requested on COC?
X Yes ☐ No ☐NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes No ☐NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
Yes X☐ No☐ NA (Please explain.) Comments:

MI samples.

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes ☐ No NA (Please explain.)
Comments:

e. Data quality or usability affected?
Comments:

No.

6. QC Samples
a. Method Blank
i. One method blank reported per matrix, analysis and 20 samples?
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes No ☐NA (Please explain.) Comments:

All method blank results were less than the LOQ but DRO was detected between the DL and ½ the LOQ in MB 580-116298/1-A.

iii. If above PQL, what samples are affected?
Comments:

All associated samples results are greater than ten times the 0.837 mg/kg in the MB.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
Yes ☐ No X☐NA (Please explain.) Comments:

No qualifications necessary.

v. Data quality or usability affected? (Please explain.)
Comments:

No effect on data quality or usability.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes No NA (Please explain.)   Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
Yes No X NA (Please explain.)   Comments:

Only organics in this SDG.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
Yes X No NA (Please explain.)   Comments:

PCB-1016 MS/MSD recoveries for sample 12NCBGSS10 were high; however, PCB 1016 results for sample 12NCBGSS10 were not detected and did not require qualification.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X Yes No NA (Please explain.)   Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

See above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes No X NA (Please explain.)   Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

See above.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes No NA (Please explain.)   Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

X□Yes No □NA (Please explain.) Comments:

All sample surrogates were within acceptance criteria.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

□Yes □ No X NA (Please explain.) Comments:

No qualifications on this basis.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

No effect on sample data quality or usability on this basis.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes □ No X□NA (Please explain.) Comments:

No volatile samples in this SDG.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes □ No X□NA (Please explain.) Comments:

No volatile samples in this SDG.

iii. All results less than PQL?

Yes □ No X NA (Please explain.) Comments:

No volatile samples in this SDG..

iv. If above PQL, what samples are affected?

Comments:

See above.

v. Data quality or usability affected? (Please explain.)

Comments:

See above.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
Yes No X NA (Please explain.) Comments:

No field duplicates were submitted with this SDG containing MI samples. Duplicate frequency calculated on a project basis, rather than per SDG.

ii. Submitted blind to lab?
Yes No X NA (Please explain.) Comments:

See above.

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$RPD\ (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

☐ Yes No X NA (Please explain.) Comments:

See above.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

No qualifications on this basis for this SDG.

f. Decontamination or Equipment Blank (If not used explain why).

☐Yes ☐ No X☐NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

i. All results less than PQL?

☐Yes ☐ No X☐NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

ii. If above PQL, what samples are affected?

Comments:

n/a

iii. Data quality or usability affected? (Please explain.)

Comments:

n/a

7. <u>Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)</u>
   a. Defined and appropriate?
      X Yes ☐ No ☐NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by: Keather McLoone

Title: Project Chemist Date: 11/16/2012

CS Report Name: Northeast Cape (Site 28) Report Date: 8/02/12

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma Laboratory Report Number: 580-34101

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes □ No □NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      □Yes □ No X NA (Please explain.) Comments:

      Samples were not transferred to another lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes □ No □NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes □ No □NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes No NA (Please explain.) Comments:

All samples received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
Yes No X NA (Please explain.) Comments:

There were no difficulties with the analyses as noted in case narrative.

e. Data quality or usability affected? (Please explain.)
Comments:

Results are usable without qualification.

4. Case Narrative
a. Present and understandable?
X Yes No NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
Yes No XNA (Please explain.) Comments:

No difficulties with the analyses or other issues noted.

c. Were all corrective actions documented?
Yes No X NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?
Comments:

See above.

5. Samples Results
a. Correct analyses performed/reported as requested on COC?
X Yes No NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes No NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
X Yes No NA (Please explain.)   Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes No NA (Please explain.)
Comments:

e. Data quality or usability affected?
Comments:

No.

6. QC Samples
a. Method Blank
i. One method blank reported per matrix, analysis and 20 samples?
X Yes No NA (Please explain.)   Comments:

ii. All method blank results less than PQL?
X Yes No NA (Please explain.)   Comments:

iii. If above PQL, what samples are affected?
Comments:

No method blank contamination.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
Yes No X NA (Please explain.)   Comments:

No qualifications necessary.

v. Data quality or usability affected? (Please explain.)
Comments:

No effect on data quality or usability.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes No NA (Please explain.)   Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No X NA (Please explain.) Comments:

Only organics in this SDG.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

X Yes No NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

X Yes No NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

n/a

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No X NA (Please explain.) Comments:

No exceedances or qualifications on this basis.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

n/a

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

X Yes No NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

X Yes No NA (Please explain.) Comments:

All sample surrogates were within acceptance criteria.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

□Yes □ No X NA (Please explain.) Comments:

No qualifications on this basis.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

No effect on sample data quality or usability on this basis.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes □ No X□NA (Please explain.) Comments:

No volatile samples in this SDG.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes □ No X□NA (Please explain.) Comments:

No volatile samples in this SDG.

iii. All results less than PQL?

Yes □ No X NA (Please explain.) Comments:

No volatile samples in this SDG..

iv. If above PQL, what samples are affected?

Comments:

See above.

v. Data quality or usability affected? (Please explain.)

Comments:

See above.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No X NA (Please explain.) Comments:

One duplicate was submitted in this SDG of two samples.

ii. Submitted blind to lab?

X Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

□ Yes No X NA (Please explain.) Comments:

Both the field duplicate and parent sample were less than the LOQ. Precision was not calculated and is considered acceptable.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

No qualifications on this basis for this SDG.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

i. All results less than PQL?

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

ii. If above PQL, what samples are affected?

Comments:

n/a

iii. Data quality or usability affected? (Please explain.)

Comments:

n/a

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes No NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by: Keather McLoone

Title: Project Chemist Date: 11/6/2012

CS Report Name: Northeast Cape (MOC) Report Date: 8/13/12

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma Laboratory Report Number: 580-34205

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X NA (Please explain.) Comments:

      Samples were not transferred to another lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

      The laboratory recorded the cooler temperature at 0.2 degrees Celsius; however, there were no broken containers or ice noted; therefore, no impact to data usability.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
X Yes No NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes No NA (Please explain.) Comments:

All samples received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes No   NA (Please explain.) Comments:

The container labels for the two extra jars submitted for MS/MSD on 12NCMOCSS00 did not match the information listed on the COC. The container labels list the ID as 12NCMOCSS018 and the time as 15:35. The COC lists the ID as 12NCMOCSS008 and the time as 14:45. The lab had been directed that when containers for MS/MSD did not match COC or parent container, they should not be used. After communication with Bristol, a MS/MSD was added to sample 12NCMOCSS018 from the one jar provided. However, it was prepped in a different batch from the parent sample as the parent sample has already been prepped.

e. Data quality or usability affected? (Please explain.)
Comments:

Results are usable without qualification.

4. Case Narrative

a. Present and understandable?
X Yes No NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes No NA (Please explain.) Comments:

The only topic addressed in the case narrative, other than fuel pattern notations, was MS/MSD recoveries which will be addressed in the QA summary

c. Were all corrective actions documented?
X Yes No NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?
Comments:

All results are usable for project purposes with qualifiers applied to results with quality control issues. No results were rejected.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
      X Yes □ No □NA (Please explain.) Comments:

   b. All applicable holding times met?
      X Yes No □NA (Please explain.) Comments:

   c. All soils reported on a dry weight basis?
      X Yes □ No □ NA (Please explain.) Comments:

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      X Yes □ No NA (Please explain.)
      Comments:

   e. Data quality or usability affected?
      Comments:

      No.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      X Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      X Yes No □NA (Please explain.) Comments:

      iii. If above PQL, what samples are affected?
      Comments:

      iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
      Yes □ No X□NA (Please explain.) Comments:

      No qualifications necessary.

v. Data quality or usability affected? (Please explain.)
Comments:

No effect on data quality or usability.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
☐X Yes ☐ No ☐ NA (Please explain.) Comments:

Percent moisture and percent solids are the only non-organic results.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
X☐Yes ☐ No ☐NA (Please explain.) Comments:

DRO MS/MSD recoveries were outside criteria for samples 12NCMOCSS002 and -019; however, sample concentrations were greater than 4 times the spike concentration and results were not qualified.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X Yes No ☐NA (Please explain.) Comments:

The DRO RPD for sample 12NCMOCSS019 was outside criteria; however, the sample concentration was greater than 4 times the spike concentration and results were not qualified.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

n/a

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐X NA (Please explain.) Comments:

No exceedances or qualifications on this basis.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

n/a

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
X☐Yes No ☐NA (Please explain.) Comments:

All sample surrogates were within acceptance criteria.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
☐Yes ☐ No X NA (Please explain.) Comments:

No qualifications on this basis.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

No effect on sample data quality or usability on this basis.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
Yes ☐ No X☐NA (Please explain.) Comments:

No volatile samples in this SDG.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
Yes ☐ No X☐NA (Please explain.) Comments:

No volatile samples in this SDG.

iii. All results less than PQL?
Yes ☐ No X NA (Please explain.) Comments:

No volatile samples in this SDG..

iv. If above PQL, what samples are affected?

Comments:

See above.

v. Data quality or usability affected? (Please explain.)

Comments:

See above.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No NA (Please explain.) Comments:

Four soil field duplicates submitted in this SDG of 28 samples. Duplicate frequency calculated on a project basis, rather than per SDG.

ii. Submitted blind to lab?

X Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

☐X Yes No NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

No qualifications on this basis for this SDG.

f. Decontamination or Equipment Blank (If not used explain why).

☐Yes ☐ No X☐NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

i. All results less than PQL?

☐Yes ☐ No X☐NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

ii. If above PQL, what samples are affected?

Comments:

n/a

iii. Data quality or usability affected? (Please explain.)

Comments:

n/a

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes ☐ No ☐NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by:	Julie Sharp-Dahl		
Title:	Chemist	Date:	11/14/2012
CS Report Name:	Northeast Cape	Report Date:	8/20/12
Consultant Firm:	Bristol Environmental Remediation Services		
Laboratory Name:	TestAmerica-Tacoma	Laboratory Report Number:	580-34330
ADEC File Number:	475.38.013	ADEC RecKey Number:	Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X NA (Please explain.) Comments:

      Samples were not transferred to another lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes No NA (Please explain.) Comments:

All samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes No NA (Please explain.) Comments:

The sample container did not match the COC for the following samples (discrepancy): 12NC13SS030 (label listed sampling time as 10:25, COC listed it as 10:28); 12NC13SS005, 12NC13SS007, 12NC13SS012, 12NC13SS021, 12NC13SS027, and 12NC13SS034 (sampling times not recorded on sample containers, but were recorded on COC); 12NC13SS027, 12NC13SS028 MS&MSD, and 12NC13SS029 (label listed sampling date as 8/4/12, COC listed it as 8/5/12); 12NC13SS030, 12NC13SS035, and 12NC13SS037 (label listed sampling date as 8/12, COC listed it as 8/5/12). All samples were logged in according to the data listed on the COC. The container labels for the following did not match the information listed on the COC. 12NC13SS052, 12NC13SS053, 12NC13SS054, 12NC13SS055, 12NC13SS056, 12NC13SS057, 12NC13SS058, 12NC13SS059, 12NC13SS060, 12NC13SS061 and the MS and MSD containers, 12NC13SS062 and the MS and MSD containers, 12NC13SS063 and the MS and MSD containers. The container labels listed a date of 08/05/2012 for samples 50-61. The COC listed varying dates from 08/06/2012 to 08/17/2012. Since most of these dates for these samples are in the future/have not come yet, the samples were logged in according to the dates on the container labels.

e. Data quality or usability affected? (Please explain.)
Comments:

No. Sample were extracted and analyzed within hold time.

4. <u>Case Narrative</u>
a. Present and understandable?
X Yes No NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes No NA (Please explain.) Comments:

MS/MSD recoveries are addressed in the case narrative are addressed further in the QA summary.

c. Were all corrective actions documented?
X Yes No NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

All results are usable for project purposes with qualifiers applied to results with quality control issues. No results were rejected.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

X Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?

X Yes No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?

X Yes □ No □ NA (Please explain.) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

X Yes □ No NA (Please explain.)

Comments:

e. Data quality or usability affected?

Comments:

No.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?

X Yes No □NA (Please explain.) Comments:

All method blank results were less than the LOQ.

iii. If above PQL, what samples are affected?

See above.

Comments:

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
Yes No☐ X NA (Please explain.) Comments:

No qualifications necessary since all method blank results were notn-detect.

v. Data quality or usability affected? (Please explain.)
Comments:

No effect on data quality or usability.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes ☐ No ☐NA (Please explain.) Comments:

LCS/LCSDs were reported as specified above.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
☐Yes ☐No ☐X NA (Please explain.) Comments:

No samples were submitted for metals or inorganic analyses.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
X Yes ☐ No ☐NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
Yes X No ☐NA (Please explain.) Comments:

The LCS/LCSD RPDs for PCB-1016 for batch 580-117734 was 22% and was above the QAPP limit of 20%.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

PCB-1016 results for samples 12NC13SS027 through -046

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes No X NA (Please explain.) Comments:

Associated PCB-1016 results were not detected and did not require qualification.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Data usability is not affected.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes No NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
Yes X No NA (Please explain.) Comments:

%R of DCB during re-analysis of samples 12NC13SS022 (10x dilution) and 12NC13SS047 (10x dilution), as well as 12NC13SS063MSD for both the primary and the secondary column confirmation were above criteria. %R of TCX for the secondary column confirmation was above criteria for sample12NC13SS047 (prior to 10X dilution). However, the reported results are associated with acceptable surrogate recoveries; therefore, no qualifications are necessary on this basis.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
Yes No X NA (Please explain.) Comments:

See above.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Data quality and usability are not affected.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

No samples for volatiles analysis were collected.

Yes No X NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No X NA (Please explain.) Comments:

iii. All results less than PQL?

Yes No X NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

Not Applicable.

v. Data quality or usability affected? (Please explain.)

Comments:

Not Applicable.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X Yes No NA (Please explain.) Comments:

Six soil field duplicates were included in this shipment of 61 samples.

ii. Submitted blind to lab?

X Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

 Yes X No NA (Please explain.) Comments:

Out of the 6 field duplicates submitted under this SDG, one set did not meet the <50% RPD. Samples 12NC13SS019 and 12NC13SS026 had an RPD of 78% for PCB-1260. These results are flagged QN to indicate estimated results without a directional bias.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

See above.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □ X No NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

i. All results less than PQL?

□Yes □ No X□NA (Please explain.) Comments:

Not Applicable.

ii. If above PQL, what samples are affected?

Comments:

Not Applicable

iii. Data quality or usability affected? (Please explain.)

Comments:

Not Applicable

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?

X Yes □ No □NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by: Julie Sharp-Dahl

Title: Chemist   Date: 11/14/2012

CS Report Name: Northeast Cape   Report Date: 8/23/12

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma   Laboratory Report Number: 580-34335

ADEC File Number: 475.38.013   ADEC RecKey Number: Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.)   Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X NA (Please explain.)   Comments:

      Samples were not transferred to another lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.)   Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.)   Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐NA (Please explain.)   Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes ☐ No ☐NA (Please explain.)   Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes ☐ No NA (Please explain.) Comments:

All samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
Yes X No ☐ NA (Please explain.) Comments:

e. Data quality or usability affected? (Please explain.)
Comments:

Not Applicable.

4. Case Narrative
   a. Present and understandable?
   X Yes ☐ No ☐NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes ☐ No ☐NA (Please explain.) Comments:

There were no analytical difficulties noted in the case narrative other than holding times which is discussed below.

c. Were all corrective actions documented?
X Yes ☐ No ☐NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?
Comments:

All results are usable for project purposes with qualifiers applied to results with quality control issues. No results were rejected.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
   X Yes ☐ No ☐NA (Please explain.) Comments:

b. All applicable holding times met?

Yes X No □NA (Please explain.) Comments:

Samples 12NCBGS14 through -16 were prepared outside of hold time for DRO analysis. The samples were received within only 2 days of hold time remaining, which, according to the case narrative, was insufficient time to perform the MI sample preparation and extraction. DRO results for samples 12NCBGS14 through -16 were H flagged to indicate preparation occurred outside of holding time.

c. All soils reported on a dry weight basis?

X Yes □ No □ NA (Please explain.) Comments:

Data report pages indicate that the sample was not dry weight corrected. However, the MI preparation method requires the samples to be air dried prior to particle size reduction, extraction, and analysis. So the sample data is reported on a dry weight basis even though the report pages state otherwise.

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

X Yes □ No NA (Please explain.)

Comments:

e. Data quality or usability affected?

Comments:

Not Applicable.

6. <u>QC Samples</u>

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?

X Yes No □NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?

Comments:

Not Applicable.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

Yes No□ X NA (Please explain.) Comments:

No samples affected.

v. Data quality or usability affected? (Please explain.)
Comments:

No effect on data quality or usability.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes ☐ No ☐NA (Please explain.) Comments:

LCS/LCSDs were reported for both 8082 and AK102.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
☐Yes ☐No ☐X NA (Please explain.) Comments:

No samples were submitted for metals analysis.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
X Yes ☐ No ☐NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X Yes No ☐NA (Please explain.) Comments:

The PCB-1260 MS/MSD RPD for sample 12NCBGSS14 was above the QAPP limit of 20%.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

For PCB-1260 sample 12NCBGSS14 is affected.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
X Yes ☐ No ☐NA (Please explain.) Comments:

The PCB-1260 results for sample 12NCBGSS14 was qualified MN.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Results are usable as qualified.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes No NA (Please explain.)   Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
X Yes No NA (Please explain.)   Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
Yes No X NA (Please explain.)   Comments:

Not Applicable.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Data quality and usability are not affected.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
Yes No X NA (Please explain.)   Comments:

No samples for volatiles analysis were collected.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
Yes No X NA (Please explain.)   Comments:

iii. All results less than PQL?
Yes No X NA (Please explain.)   Comments:

iv. If above PQL, what samples are affected?
Comments:

Not Applicable.

v. Data quality or usability affected? (Please explain.)

Comments:

Not Applicable.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes X No NA (Please explain.) Comments:

Field replicates (2) were submitted with the parent sample.

ii. Submitted blind to lab?

X Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%) = Absolute value of: } \frac{(R_1\text{-}R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

☐ Yes X No NA (Please explain.) Comments:

The samples submitted represent one primary and two field replicate samples therefore the calculation is %RSD, not %RPD. The RSD for PCB-1260 was 20%, while the RSD for DRO was 85%. The project specific %RSD for the MI samples is <30%

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The DRO RSD being greater than 35% indicates that the data distribution is likely non-normal and the confidence in the representativeness of the MI sample results are diminished. However, the 95% UCL, standard deviation , and mean will also be calculated and discussed in the report. All three replicate results were all below Cleanup Level at 10, 120, and 190 mg/kg. The DRO results are flagged QN to indicate estimated results with unknown bias for samples 12NCBGSS14, 12NCBGSS15, and 12NCBGSS16.

f. Decontamination or Equipment Blank (If not used explain why).

All three samples represented the same decision unit so the sampling equipment did not need to be decontaminated between samples.

□Yes □ X No NA (Please explain.) Comments:

i. All results less than PQL?

□Yes □ No X□NA (Please explain.) Comments:

Not Applicable.

ii. If above PQL, what samples are affected?

Comments:

Not Applicable

iii. Data quality or usability affected? (Please explain.)

Comments:

Not Applicable

7. <u>Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)</u>
   a. Defined and appropriate?
      X Yes □ No □NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by:	Julie Sharp-Dahl		
Title:	Chemist	Date:	11/14/2012
CS Report Name:	Northeast Cape	Report Date:	8/22/12
Consultant Firm:	Bristol Environmental Remediation Services		
Laboratory Name:	TestAmerica-Tacoma	Laboratory Report Number:	580-34373
ADEC File Number:	475.38.013	ADEC RecKey Number:	Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X NA (Please explain.) Comments:

      Samples were not transferred to another lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

      Case narrative states that page 3 of 3 of the COC was not signed and dated on the relinquished line however all pages of the COC in the back of the data package are signed and dated appropriately.

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
X Yes No NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes No NA (Please explain.) Comments:

All samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
Yes X No NA (Please explain.) Comments:

No discrepancies were documented..

e. Data quality or usability affected? (Please explain.)
Comments:

See above.

4. Case Narrative
a. Present and understandable?
X Yes No NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes No NA (Please explain.) Comments:

MS/MSD recoveries and RPDs are addressed in the case narrative and in Section 6 (b).

c. Were all corrective actions documented?
X Yes No NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?
Comments:

All results are usable for project purposes with qualifiers applied to results with quality control issues. No results were rejected.

5. Samples Results
a. Correct analyses performed/reported as requested on COC?
X Yes No NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
X Yes □ No □ NA (Please explain.) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No NA (Please explain.)
Comments:

e. Data quality or usability affected?
Comments:

No.

6. <u>QC Samples</u>
a. Method Blank
i. One method blank reported per matrix, analysis and 20 samples?
X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes No □NA (Please explain.) Comments:

All method blank results were less than the LOQ.

iii. If above PQL, what samples are affected?
Comments:

See above.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
Yes No□ X NA (Please explain.) Comments:

No qualifications necessary.

v. Data quality or usability affected? (Please explain.)
Comments:

No. Method blank results were below the LOQ.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X Yes No NA (Please explain.) Comments:

Both the LCS and LCSDs were reported.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No X NA (Please explain.) Comments:

No samples were submitted for metals analysis.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes X No NA (Please explain.) Comments:

Spiked sample 12NC31SS013 had a PCB-1260 MSD recovery of 46% which was below the QAPP limits of 60 to 130%. Spiked sample 12NC31SS014 had a PCB-1260 MS recovery of 137% which was above the QAPP limits of 60 to 130%.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes X No NA (Please explain.) Comments:

Spiked sample 12NC31SS013 had a PCB-1260 MS/MSD RPD of 30%, which was above the QAPP limit of 20%.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

12NC31SS013 and 12NC31SS014.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No X NA (Please explain.) Comments:

The PCB-1260 result for sample 12NC31SS013 was qualified ML and the PCB-1260 result for sample 12NC31SS014 was MH qualified.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Results are usable as qualified.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes No NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
Yes X No NA (Please explain.) Comments:

DCB %R for sample 12NC31SS019 from the confirmation column was above criteria. All other %R met criteria.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
Yes X No NA (Please explain.) Comments:

The laboratory did not flag the results for sample 12NC31SS019.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Data quality and usability are not affected. The %RPD between the results obtained for PCB-1260 on the primary and confirmation column were within 40% and the results were reported from the column with the acceptable recoveries.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
Yes No X NA (Please explain.) Comments:

No samples for volatiles analysis were collected.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
Yes No X NA (Please explain.) Comments:

iii. All results less than PQL?
Yes No X NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

Not Applicable.

v. Data quality or usability affected? (Please explain.)

Comments:

Not Applicable.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X Yes No NA (Please explain.) Comments:

Three soil field duplicates were submitted in this shipment of 29 samples.

ii. Submitted blind to lab?

X Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

☐ Yes X No NA (Please explain.) Comments:

The RPD met criteria for 2 of the 3 field duplicate pairs.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The %RPD for PCB-1260 in samples 12NC31SS024 and -027 was 67% however one of the two results was J flagged for being below the LOQ. No qualifications are necessary due to the inherent poor precision below the LOQ.

f. Decontamination or Equipment Blank (If not used explain why).

☐Yes ☐ X No NA (Please explain.) Comments:

Disposable sampling equipment was used.

i. All results less than PQL?

☐Yes ☐ No X☐NA (Please explain.) Comments:

Not Applicable.

ii. If above PQL, what samples are affected?

Comments:

Not Applicable

iii. Data quality or usability affected? (Please explain.)

Comments:

Not Applicable

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?

      X Yes ☐ No ☐NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by: Julie Sharp-Dahl

Title: Chemist

Date: 11/15/2012

CS Report Name: Northeast Cape

Report Date: 8/23/12

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma

Laboratory Report Number: 580-34374

ADEC File Number: 475.38.013

ADEC RecKey Number: Haz ID. 212

1. Laboratory
    a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
    X Yes ☐ No ☐NA (Please explain.) Comments:

    b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
    ☐Yes ☐ No X NA (Please explain.) Comments:

    Samples were not transferred to another lab.

2. Chain of Custody (COC)
    a. COC information completed, signed, and dated (including released/received by)?
    X Yes ☐ No ☐NA (Please explain.) Comments:

    b. Correct analyses requested?
    X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
    a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
    X Yes ☐ No ☐NA (Please explain.) Comments:

    b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
    X Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes No NA (Please explain.) Comments:

All samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes No NA (Please explain.) Comments:

Sample 12NC13SS111 was listed on the COC twice with the same information. Only one container was received so the lab assumed that the sample had been mistakenly written on the COC twice. The container labels did not match the COC for the following samples: 12NC13SS088, 12NC13SS089, 12NC13SS090, 12NC13SS091, 12NC13SS092, 12NC13SS093, 12NC13SS093MS, 12NC13SS093MSD, 12NC13SS094, 12NC13SS094MS, 12NC13SS094MSD, 12NC13SS095, 12NC13SS096, 12NC13SS097, 12NC13SS098 and 12NC13SS099. The container labels listed a sampling date of 08/07/2012 while the COC listed a date of 8/5/12. Also, the sampling times on the container labels for the following samples did not match the COC: 12NC13SS137, 12NC13SS137MS, 12NC13SS137 MSD, 12NC13SS138, 12NC13SS139, 12NC13SS140, 12NC13SS141 and 12NC13SS142. All samples were logged in per the COC.

e. Data quality or usability affected? (Please explain.)
Comments:

No. Samples were extracted and analyzed within hold time.

4. Case Narrative
a. Present and understandable?
X Yes No NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes No NA (Please explain.) Comments:

MS/MSD recoveries are addressed in the case narrative and are addressed further in the QA summary.

c. Were all corrective actions documented?
X Yes No NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?
Comments:

All results are usable for project purposes with qualifiers applied to results with quality control issues. No results were rejected.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
      X Yes No NA (Please explain.) Comments:

   b. All applicable holding times met?
      X Yes No NA (Please explain.) Comments:

   c. All soils reported on a dry weight basis?
      X Yes No NA (Please explain.) Comments:

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      X Yes No NA (Please explain.)
      Comments:

   e. Data quality or usability affected?
      Comments:

      No.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      X Yes No NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      X Yes No NA (Please explain.) Comments:

      All method blank results were less than the LOQ.

      iii. If above PQL, what samples are affected?
      Comments:

      See above.

      iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
      Yes No X NA (Please explain.) Comments:

      No qualifications necessary.

v. Data quality or usability affected? (Please explain.)
Comments:

No. Method blank results were non- detect.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
☐Yes ☐No ☐X NA (Please explain.) Comments:

No samples were submitted for metals/inorganics .

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
Yes X No ☐NA (Please explain.) Comments:

The PCB-1260 MS/MSD recoveries were outside criteria for samples 12NC13SS103 and 12NC13SS134; however, the sample concentration was more than 4 times the spike level so no qualification is necessary. The PCB-1260 MSD recovery for sample 12NC13SS137 was 12% and below the QAPP limits of 60 to 130%. The PCB-1260 result for sample 12NC13SS137 was qualified ML.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
Yes X No☐NA (Please explain.) Comments:

The %RPD between the MS/MSD PCB-1260 results for sample 12NC13SS103 was above criteria, as was the %R in both the MS/MSD. The sample concentration was more than 4 times the spike level so no qualification is necessary. In addition, the PCB-1016 RPD was above the QAPP MS/MSD RPD limit of 20% at 28%. PCB-1016 was not detected in sample 12NC13SS103 and results did not require qualification.The PCB-1260 MS/MSD RPD for sample 12NC13SS093 was 26% and was above the QAPP limit of 20%. The PCB-1260 result for sample 12NC13SS093 was qualified MN. The PCB-1260 MS/MSD RPD for sample 12NC13SS137 was 28% and was above the QAPP limit of 20%. The PCB-1260 result for sample 12NC13SS137 was previously qualified ML due to a low MSD recovery and further qualifications were not made.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

Sample 12NC13SS103, 12NC13SS093, and 12NC13SS137.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
X Yes No X NA (Please explain.) Comments:

See discussion above.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Results are usable as qualified.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes No NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
Yes X No NA (Please explain.) Comments:

%R for surrogates reported from the primary column were within criteria. %R of TCX from the confirmation analysis for sample 12NC13SS089 was above criteria, and the %R of DCB from the confirmation analysis for sample 12NC13SS095 was below criteria. Results were reported from the primary column with acceptable recoveries and the results are usable without qualification.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
Yes X No NA (Please explain.) Comments:

The laboratory did not flag the results for these two samples.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

No. Results are usable without qualification in respect to surrogate recoveries.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

No samples for volatiles analysis were collected.

Yes No X NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
Yes No X NA (Please explain.) Comments:

iii. All results less than PQL?
Yes No X NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?
Comments:

Not Applicable.

v. Data quality or usability affected? (Please explain.)
Comments:

Not Applicable.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X Yes No NA (Please explain.) Comments:

Seven sets of soil field duplicates was submitted with this SDG containing 79 samples. Duplicate frequency calculated on a project basis, rather than per SDG.

ii. Submitted blind to lab?
X Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

 Yes X No NA (Please explain.) Comments:

The %RPD between primary and QC samples 12NCSS128 and -129 for PCB-1260 was above criteria. All other field duplicate results met the %RPD criteria.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

These results should be considered estimated with unknown bias and are flagged QN. Usability is not affected since both results were well below the Cleanup Level.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □ X No NA (Please explain.) Comments:

Disposable sampling equipment was used.

i. All results less than PQL?

□Yes □ No X□NA (Please explain.) Comments:

Not Applicable.

ii. If above PQL, what samples are affected?

Comments:

Not Applicable

iii. Data quality or usability affected? (Please explain.)

Comments:

Not Applicable

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

X Yes □ No □NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Project Chemist

Date: 11-27-12

CS Report Name: NE Cape HTRW 2012

Report Date: 8/31/12

Consultant Firm: Bristol Environmental

Laboratory Name: TestAmerica-Tacoma

Laboratory Report Number: 580-34380

ADEC File Number: 475.38.013

ADEC RecKey Number: Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      X Yes ☐ No ☐NA (Please explain.) Comments:

      Total Halogens (EPA 9056) was performed by TA-Savannah, which is ADEC CS approved.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      XYes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

      The sample was noted on the CoC for oil burning specs (OBS), which included EPA methods 8082 (PCBs), metals by 6010, ignitability (SW 1020A), and total halogens by EPA method 9056.

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
X Yes ☐ No ☐NA (Please explain.) Comments:

Sample was a liquid matrix from a drum, no preservation other than cool to 4 degrees C +/- 2 degrees.

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes ☐ No ☐NA (Please explain.) Comments:

All samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
☐Yes X No ☐NA (Please explain.) Comments:

No discrepancies were noted.

e. Data quality or usability affected? (Please explain.)
Comments:

Results are usable without qualification in respect to sample shipment and documentation.

4. Case Narrative

a. Present and understandable?
X Yes ☐ No ☐NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
☐Yes X No ☐NA (Please explain.) Comments:

No discrepancies were noted, all results are usable without qualification.

c. Were all corrective actions documented?
☐Yes X No ☐NA (Please explain.) Comments:

No corrective actions were required. All QC and analyses were in control.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable without qualification.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?
X Yes ☐ No ☐NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes ☐ No ☐NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
☐Yes ☐ No X NA (Please explain.) Comments:

Sample was a liquid matrix from drum contents; it is believed to be used motor oil.

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes ☐ No ☐NA (Please explain.) Comments:

Results are usable to assure proper characterization and disposal per RCRA specifications.

e. Data quality or usability affected?
Comments:

Sample results are usable without qualification for project purposes and drum disposal.

6. <u>QC Samples</u>
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      X Yes ☐ No ☐NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes ☐ No ☐NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?
Comments:

Not applicable.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
☐Yes X No ☐NA (Please explain.) Comments:

Sample results were not affected by method blank analyses, all method blank results were non-detect.

v. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable without qualification in respect to method blank analyses and reporting.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
☐Yes ☐ No ☐NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
X Yes ☐ No ☐NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X Yes ☐ No ☐NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

All %R and RPDs were within control limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
☐Yes X No ☐NA (Please explain.) Comments:

No data flags were assigned based on sample analysis and QC.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable without qualification in respect to LCS/LCSD and MS/MSD recoveries.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

X Yes ☐ No ☐NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

☐Yes ☐ No X NA (Please explain.) Comments:

No data flags were assigned based on sample or QC surrogate recoveries.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

Sample results are usable without qualification in respect to surrogate recoveries.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

☐Yes ☐ No X NA (Please explain.) Comments:

No trip blanks accompanied the sample as no volatile analyses were requested or performed.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

☐Yes ☐ No X NA (Please explain.) Comments:

No trip blank submitted.

iii. All results less than PQL?

☐Yes ☐ No X NA (Please explain.) Comments:

No trip blank

iv. If above PQL, what samples are affected?

Comments:

Not applicable, no trip blank.

v. Data quality or usability affected? (Please explain.)

Comments:

Not applicable, no trip blank.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
☐Yes ☐ No X NA (Please explain.) Comments:

No field duplicate submitted with this SDG.

ii. Submitted blind to lab?
☐Yes ☐ No X NA (Please explain.) Comments:

No field duplicate submitted with this SDG.

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$RPD\ (\%) = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

☐Yes ☐ No X (Please explain.) Comments:

No field dupe.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Field duplicates were submitted with other SDGs from this project area.

f. Decontamination or Equipment Blank (If not used explain why).

☐Yes ☐ No X NA (Please explain.) Comments:

Sample was collected with disposable collection device (pipette).

i. All results less than PQL?

☐Yes ☐ No X NA (Please explain.) Comments:

No decon or equipment blank.

ii. If above PQL, what samples are affected?

Comments:

Not applicable.

iii. Data quality or usability affected? (Please explain.)

Comments:

Not applicable, no equipment or decon blank.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes ☐ No ☐NA (Please explain.) Comments:

No results were flagged based on any analyses in this SDG other than J flags for cadmium and lead being reported at concentrations less than the LOQ.

Laboratory Data Review Checklist

Completed by: Lyndsey Kleppin

Title: Project Geologist | Date: 11/06/2012

CS Report Name: 2012 Northeast Cape HTRW report | Report Date: 8/27/12

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma | Laboratory Report Number: 580-34446

ADEC File Number: 475.38.013 | ADEC RecKey Number: Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X NA (Please explain.) Comments:

      Samples were not transferred to another lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes ☐ No NA (Please explain.) Comments:

All samples received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes ☐ No ☐ NA (Please explain.) Comments:

COC has a date of 09/12/2012, container labels have a date of 08/12/2012, and no time stated for trip blanks. Logged in per container labels.

e. Data quality or usability affected? (Please explain.)
Comments:

Results are usable without qualification.

4. <u>Case Narrative</u>

a. Present and understandable?
X Yes ☐ No ☐NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes ☐ No ☐NA (Please explain.) Comments:

Method blank contamination and MS/MSD recoveries.

c. Were all corrective actions documented?
X Yes ☐ No ☐NA (Please explain.) Comments:

Data flags were applied to affected sample results.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

All results are usable for project purposes with qualifiers applied to results with quality control issues. No results were rejected.

5. <u>Samples Results</u>

a. Correct analyses performed/reported as requested on COC?
X Yes ☐ No ☐NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes No ☐NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?

□Yes □ No X NA (Please explain.) Comments:

Water samples.

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

X Yes □ No NA (Please explain.)

Comments:

e. Data quality or usability affected?

Comments:

No.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?

X Yes No □NA (Please explain.) Comments:

All method blank results were less than the LOQ but pyrene was detected between the DL and ½ the LOQ in MB 580-117774/1-A. However, both the associated sample results were not detected; therefore, there are no qualifications necessary on this basis.

iii. If above PQL, what samples are affected?

Comments:

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

□ Yes X No □NA (Please explain.) Comments:

v. Data quality or usability affected? (Please explain.)

Comments:

No effect on data quality or usability.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
☐Yes ☐ No ☐X NA (Please explain.) Comments:

Only organics in this SDG.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
X Yes ☐ No ☐NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X Yes ☐ No ☐NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes X No ☐ NA (Please explain.) Comments:

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

□Yes X No □NA (Please explain.) Comments:

Terphenyl-d14 failed the surrogate recovery criteria low for 12NCMOCSWA009MS/MSD.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

□ Yes X No □NA (Please explain.) Comments:

Low surrogate recovery on a QC sample did not warrant data flagging of the primary sample.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

No effect on sample data quality or usability on this basis.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

X Yes □ No □NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

X Yes □ No □NA (Please explain.) Comments:

iii. All results less than PQL?

X Yes □ No □NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

v. Data quality or usability affected? (Please explain.)

Comments:

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X Yes No NA (Please explain.) Comments:

ii. Submitted blind to lab?
X Yes □No □NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

X Yes □ No □ NA (Please explain.) Comments:

1- Methylnaphthalene and Naphthalene R%= 66.7

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

No; for both analyses, the the primary and duplicate sample had concentration below the LOQ.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □ No X NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

i. All results less than PQL?

□Yes □ No X NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

ii. If above PQL, what samples are affected?

Comments:

n/a

iii. Data quality or usability affected? (Please explain.)

Comments:

n/a

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes ☐ No ☐NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary.

Laboratory Data Review Checklist

Completed by:	Keather McLoone		
Title:	Project Chemist	Date:	11/16/2012
CS Report Name:	Northeast Cape	Report Date:	9/11/12
Consultant Firm:	Bristol Environmental Remediation Services		
Laboratory Name:	TestAmerica-Tacoma	Laboratory Report Number:	580-34447
ADEC File Number:	475.38.013	ADEC RecKey Number:	Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes No NA (Please explain.)   Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      Yes No X NA (Please explain.)   Comments:

      Samples were not transferred.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes No NA (Please explain.)   Comments:

   b. Correct analyses requested?
      X Yes No NA (Please explain.)   Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes No NA (Please explain.)   Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      Yes No X NA (Please explain.)   Comments:

      No sample preservation, other than temperature, required.

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes No NA (Please explain.) Comments:

All samples received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes No NA (Please explain.) Comments:

Sample 12NCMOCSS060 did not have a container label on the soil jar, but the sample ID was marked on the lid.

e. Data quality or usability affected? (Please explain.)
Comments:

Results are usable without qualification.

4. Case Narrative
a. Present and understandable?
X Yes No NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes No NA (Please explain.) Comments:

MB detections and MS recovery are addressed further in the following sections or in the QA summary.

c. Were all corrective actions documented?
X Yes No NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?
Comments:

All results are usable for project purposes with qualifiers applied to results with quality control issues. No results were rejected.

5. Samples Results
a. Correct analyses performed/reported as requested on COC?
X Yes No NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes No NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?

X Yes No NA (Please explain.) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

X Yes No NA (Please explain.)

Comments:

e. Data quality or usability affected?

Comments:

No.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

X Yes No NA (Please explain.) Comments:

ii. All method blank results less than PQL?

X Yes No NA (Please explain.) Comments:

All method blanks were less than the LOQ; however, DRO was detected in three method blanks and RRO was detected in three also. DRO was detected in method blank MB 580-118024/1-A. DRO and RRO were detected in method blank MB 580-118064/1-A. RRO was detected in method blank MB 580-118134/1-A. DRO and RRO were detected in method blank MB 580-118264/1-A. MB 580-118264/1-A was re-analyzed along with all samples in the prep batch with detections, the MB was non-detect for DRO and RRO on re-analysis so the rerun results are accepted without qualification. Results within 10 times the method blank concentration were qualified B.

iii. If above PQL, what samples are affected?

Comments:

Method blank results were less than the PQL. Sample results less than 10 times the reported concentration in the method blank are B flagged to indicate potential high bias.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

X Yes No NA (Please explain.) Comments:

Affected sample results are B flagged.

v. Data quality or usability affected? (Please explain.)
Comments:

Affected sample results are usable for project purposes though a potential for high bias as indicated by the reported concentrations in the method blank.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
☐X Yes ☐ No ☐ NA (Please explain.) Comments:

Percent moisture and percent solids are the only non-organic results.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
X☐Yes ☐ No ☐NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X Yes No ☐NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

n/a

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐X NA (Please explain.) Comments:

No exceedances or qualifications on this basis.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

n/a

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes No NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
X Yes No NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
X Yes No NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

See above.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
Yes No X NA (Please explain.) Comments:

No volatile samples in this SDG.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
Yes No X NA (Please explain.) Comments:

No volatile samples in this SDG.

iii. All results less than PQL?
Yes No X NA (Please explain.) Comments:

No volatile samples in this SDG..

iv. If above PQL, what samples are affected?
Comments:

See above.

v. Data quality or usability affected? (Please explain.)

Comments:

See above.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

Yes No NA (Please explain.) Comments:

Four soil field duplicates submitted in this SDG of 44 samples. Duplicate frequency calculated on a project basis, rather than per SDG. 10% frequency met.

ii. Submitted blind to lab?

X Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

☐ Yes X No NA (Please explain.) Comments:

The RPD for duplicate pair 12NCMOCSS065 and 12NCMOCSS068 DRO results is 54.8% , The DRO RPD for duplicate pair 12NCMOCSS059 and -072 was 185% and the RRO RPD was 73%. The results with greater than 50% RPD are flagged QN to indicate one or more QC criteria failed without a direction bias.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

See above.

f. Decontamination or Equipment Blank (If not used explain why).

☐Yes ☐ No X☐NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

i. All results less than PQL?

☐Yes ☐ No X☐NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

ii. If above PQL, what samples are affected?

Comments:

n/a

iii. Data quality or usability affected? (Please explain.)

Comments:

n/a

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes ☐ No ☐NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by: Keather McLoone

Title: Project Chemist — Date: 11/16/2012

CS Report Name: Northeast Cape (MOC) — Report Date: 8/31/12

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma — Laboratory Report Number: 580-34481

ADEC File Number: 475.38.013 — ADEC RecKey Number: Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X NA (Please explain.) Comments:

      Samples were not transferred to another lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      Yes ☐X No☐NA (Please explain.) Comments:

      Cooler temperature noted at 6.9 degrees Celsius; however, the temperature blank was 3.4 degrees Celsius; therefore, there are no qualifications on this basis.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
X Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes ☐ No NA (Please explain.) Comments:

All samples received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
Yes ☐ No ☐ X NA (Please explain.) Comments:

There were no difficulties with the analyses as noted in case narrative.

e. Data quality or usability affected? (Please explain.)
Comments:

Results are usable without qualification.

4. Case Narrative
   a. Present and understandable?
   X Yes ☐ No ☐NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes ☐ No ☐NA (Please explain.) Comments:

Method blank contamination was the only analytical issue noted in the case narrative.

c. Were all corrective actions documented?
Yes ☐ No X NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?
Comments:

See method blank section.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
   X Yes ☐ No ☐NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes No □NA (Please explain.) Comments:

.

c. All soils reported on a dry weight basis?
X Yes □ No □ NA (Please explain.) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No NA (Please explain.)
Comments:

e. Data quality or usability affected?
Comments:

No.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      X Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      X Yes No □NA (Please explain.) Comments:

All method blanks less than the LOQ; however, DRO was detected in method blank MB 580-118262/1-A in between the LOQ and DL. However, there were no associated sample results within ten times the amount in the method blank; therefore, no qualifications are necessary for method blanks.

      iii. If above PQL, what samples are affected?
      Comments:

No method blank contamination.

      iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
      Yes □ No X□NA (Please explain.) Comments:

No qualifications necessary.

      v. Data quality or usability affected? (Please explain.)
      Comments:

No effect on data quality or usability.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes No NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
Yes No X NA (Please explain.) Comments:

Only organics in this SDG.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
X Yes No NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X Yes No NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

n/a

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes No X NA (Please explain.) Comments:

No exceedances or qualifications on this basis.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

n/a

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes No NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

X□Yes No □NA (Please explain.) Comments:

All sample surrogates were within acceptance criteria.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

□Yes □ No X NA (Please explain.) Comments:

No qualifications on this basis.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

No effect on sample data quality or usability on this basis.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes □ No X□NA (Please explain.) Comments:

No volatile samples in this SDG.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes □ No X□NA (Please explain.) Comments:

No volatile samples in this SDG.

iii. All results less than PQL?

Yes □ No X NA (Please explain.) Comments:

No volatile samples in this SDG..

iv. If above PQL, what samples are affected?

Comments:

See above.

v. Data quality or usability affected? (Please explain.)

Comments:

See above.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X Yes No NA (Please explain.) Comments:

One field duplicates wassubmitted with this SDG containing 4 samples. Duplicate frequency calculated on a project basis, rather than per SDG.

ii. Submitted blind to lab?
X Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$RPD\ (\%) = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

X□ Yes No NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

No qualifications on this basis for this SDG.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

i. All results less than PQL?

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

ii. If above PQL, what samples are affected?

Comments:

n/a

iii. Data quality or usability affected? (Please explain.)

Comments:

n/a

7. <u>Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)</u>
   a. Defined and appropriate?
      X Yes ☐ No ☐NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by: Keather McLoone

Title: Project Chemist Date: 11/16/2012

CS Report Name: Northeast Cape (Site 21) Report Date: 8/27/12

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma Laboratory Report Number: 580-34550

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID. 212

1. Laboratory
    a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
    X Yes No NA (Please explain.) Comments:

    b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
    Yes No X NA (Please explain.) Comments:

    Samples were not transferred to another lab.

2. Chain of Custody (COC)
    a. COC information completed, signed, and dated (including released/received by)?
    X Yes No NA (Please explain.) Comments:

    b. Correct analyses requested?
    X Yes No NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
    a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
    X Yes No NA (Please explain.) Comments:

    b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
    X Yes No NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes No NA (Please explain.) Comments:

All samples received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
Yes No X NA (Please explain.) Comments:

No discrepancies notes.

e. Data quality or usability affected? (Please explain.)
Comments:

Results are usable without qualification.

4. <u>Case Narrative</u>
a. Present and understandable?
X Yes No NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
Yes No XNA (Please explain.) Comments:

There were no difficulties with the analyses as noted in case narrative.

c. Were all corrective actions documented?
Yes No X NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?
Comments:

See above.

5. <u>Samples Results</u>
a. Correct analyses performed/reported as requested on COC?
X Yes No NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes No NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?

X Yes ☐ No ☐ NA (Please explain.) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

X Yes ☐ No NA (Please explain.)

Comments:

e. Data quality or usability affected?

Comments:

No.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

X Yes ☐ No ☐NA (Please explain.) Comments:

ii. All method blank results less than PQL?

X Yes No ☐NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?

Comments:

No method blank contamination.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

Yes ☐ No X☐NA (Please explain.) Comments:

No qualifications necessary.

v. Data quality or usability affected? (Please explain.)

Comments:

No effect on data quality or usability.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
Yes No X NA (Please explain.) Comments:

Only organics in this SDG.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
X Yes No NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X Yes No NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

n/a

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes No X NA (Please explain.) Comments:

No exceedances or qualifications on this basis.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

n/a

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes No NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
X Yes No NA (Please explain.) Comments:

All sample surrogates were within acceptance criteria.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
☐Yes ☐ No X NA (Please explain.) Comments:

No qualifications on this basis.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

No effect on sample data quality or usability on this basis.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
Yes ☐ No X☐NA (Please explain.) Comments:

No volatile samples in this SDG.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
Yes ☐ No X☐NA (Please explain.) Comments:

No volatile samples in this SDG.

iii. All results less than PQL?
Yes ☐ No X NA (Please explain.) Comments:

No volatile samples in this SDG..

iv. If above PQL, what samples are affected?
Comments:

See above.

v. Data quality or usability affected? (Please explain.)
Comments:

See above.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X Yes No NA (Please explain.) Comments:

Two field duplicates were submitted with this SDG containing 15 samples. Duplicate frequency calculated on a project basis, rather than per SDG.

ii. Submitted blind to lab?
X Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

□X Yes No NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

No qualifications on this basis for this SDG.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

i. All results less than PQL?

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

ii. If above PQL, what samples are affected?

Comments:

n/a

iii. Data quality or usability affected? (Please explain.)

Comments:

n/a

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes ☐ No ☐NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by: Keather McLoone

Title: Project Chemist Date: 11/16/2012

CS Report Name: Northeast Cape (Site 10) Report Date: 9/5/12

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma Laboratory Report Number: 580-34594

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X NA (Please explain.) Comments:

      Samples were not transferred to another lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes ☐ No NA (Please explain.) Comments:

All samples received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
Yes ☐ No ☐ X NA (Please explain.) Comments:

No discrepancies notes.

e. Data quality or usability affected? (Please explain.)
Comments:

Results are usable without qualification.

4. Case Narrative
   a. Present and understandable?
   X Yes ☐ No ☐NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes ☐ No ☐NA (Please explain.) Comments:

Method blank contamination is discussed below.

c. Were all corrective actions documented?
Yes ☐ No X NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?
Comments:

See above.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
   X Yes ☐ No ☐NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes No ☐NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?

X Yes No NA (Please explain.)   Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

X Yes No NA (Please explain.)

Comments:

e. Data quality or usability affected?

Comments:

No.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

X Yes No NA (Please explain.)   Comments:

ii. All method blank results less than PQL?

X Yes No NA (Please explain.)   Comments:

iii. If above PQL, what samples are affected?

Comments:

No method blanks above LOQ; however one DRO method blank was detected between the LOQ and DL. DRO was detected in method blank MB 580-118965/1-A. Two sample results, 12NCMOCSS104 and 12NCMOCSS108, were within ten times the concentration in the blank. These results are B flagged.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

X Yes No NA (Please explain.)   Comments:

Affected sample results are B flagged.

v. Data quality or usability affected? (Please explain.)

Comments:

Affected sample results are usable for project purposes though a potential for high bias as indicated by the reported concentrations in the method blank.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
☐Yes ☐ No ☐X NA (Please explain.) Comments:

Only organics in this SDG.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
X☐Yes ☐ No ☐NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X Yes No ☐NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

n/a

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐X NA (Please explain.) Comments:

No exceedances or qualifications on this basis.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

n/a

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

X□Yes No □NA (Please explain.) Comments:

All sample surrogates were within acceptance criteria.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

□Yes □ No X NA (Please explain.) Comments:

No qualifications on this basis.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

No effect on sample data quality or usability on this basis.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes □ No X□NA (Please explain.) Comments:

No volatile samples in this SDG.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes □ No X□NA (Please explain.) Comments:

No volatile samples in this SDG.

iii. All results less than PQL?

Yes □ No X NA (Please explain.) Comments:

No volatile samples in this SDG..

iv. If above PQL, what samples are affected?

Comments:

See above.

v. Data quality or usability affected? (Please explain.)

Comments:

See above.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
Yes No X NA (Please explain.) Comments:

One field duplicates wass submitted with this SDG containing 8 samples. Duplicate frequency calculated on a project basis, rather than per SDG.

ii. Submitted blind to lab?
Yes No X NA (Please explain.) Comments:

See above.

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

□ Yes X No NA (Please explain.) Comments:

The DRO RPD for 12NCMOCSS098 and 12NCMOCSS099 is 73.2%; therefore, these results are flagged QN to indicate estimated results without a directional bias.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

See above.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

i. All results less than PQL?

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

ii. If above PQL, what samples are affected?

Comments:

n/a

iii. Data quality or usability affected? (Please explain.)

Comments:

n/a

7. <u>Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)</u>
   a. Defined and appropriate?
      X Yes ☐ No ☐NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by:	Keather McLoone		
Title:	Project Chemist	Date:	11/19/2012
CS Report Name:	Northeast Cape (MOC)	Report Date:	9/6/12
Consultant Firm:	Bristol Environmental Remediation Services		
Laboratory Name:	TestAmerica-Tacoma	Laboratory Report Number:	580-34607
ADEC File Number:	475.38.013	ADEC RecKey Number:	Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X NA (Please explain.) Comments:

      Samples were not transferred to another lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes No ☐NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes No NA (Please explain.) Comments:

All samples received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
Yes No X NA (Please explain.) Comments:

No discrepancies noted.

e. Data quality or usability affected? (Please explain.)
Comments:

Results are usable without qualification.

4. Case Narrative

a. Present and understandable?
X Yes No NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes No NA (Please explain.) Comments:

Method blank contamination and MS/MSD are the two issues that could impact data quality that are mentioned in the case narrative. Method blanks are discussed below and MS/MSD will be discussed in the QA Summary.

c. Were all corrective actions documented?
X Yes No NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?
Comments:

See above.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?
X Yes No NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes No NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
X Yes No NA (Please explain.) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes No NA (Please explain.)
Comments:

e. Data quality or usability affected?
Comments:

No.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?
X Yes No NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes No NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?
Comments:

No method blanks above LOQ; however one DRO method blank was detected between the LOQ and DL. DRO was detected in method blank MB 580-121091/21-A. Two samples, 12NCMOCSS075 and 12NCMOCSS076, had reported DRO concentrations within ten times the amount in the method blank. These results are B flagged.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
X Yes No NA (Please explain.) Comments:

Affected sample results are B flagged.

v. Data quality or usability affected? (Please explain.)
Comments:

Affected sample results are usable for project purposes though a potential for high bias as indicated by the reported concentrations in the method blank.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes No NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
 Yes No X NA (Please explain.) Comments:

Only organic analyses reported in this SDG

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
Yes X No NA (Please explain.) Comments:

For spiked sample 12NCMOCSS082, the DRO MS and MSD recovered high and the RRO MSD recovered high. The DRO sample concentration was greater than four times the spike concentration and DRO results were not qualified. The RRO result was MH qualified.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
Yes X No NA (Please explain.) Comments:

For spiked sample 12NCMOCSS082, the MS/MSD RPD was 22% which exceeds the control limit of <20%. The RRO result had been MH qualified due to a high MSD recovery and further qualifiers were not assigned.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

RRO for sample 12NCMOCSS082

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
See above. Yes No X NA (Please explain.) Comments:

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:
Usable as qualified.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes No NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

X☐Yes No ☐NA (Please explain.) Comments:

All sample surrogates were within acceptance criteria.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

☐Yes ☐ No X NA (Please explain.) Comments:

No qualifications on this basis.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

No effect on sample data quality or usability on this basis.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes ☐ No X NA (Please explain.) Comments:

No volatiles samples in this SDG

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes ☐ No X☐NA (Please explain.) Comments:

See above.

iii. All results less than PQL?

Yes ☐ No X NA (Please explain.) Comments:

See above.

iv. If above PQL, what samples are affected?

Comments:

See above.

v. Data quality or usability affected? (Please explain.)

Comments:

See above.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X Yes No NA (Please explain.) Comments:

Two sets of field duplicates were submitted with this SDG containing 9 samples. Duplicate frequency calculated on a project basis, rather than per SDG.

ii. Submitted blind to lab?
X Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$RPD\ (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

□ Yes X No NA (Please explain.) Comments:

Samples 12NCMOCSS073 and -079 failed to meet RPD criteria for DRO and are flagged QN for not meeting QC criteria with no directional bias.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

While field duplicates 12NCMOCSS073 and -079 failed to meet RPD criteria for DRO, both sets of results were greater than 10 times below cleanup criteria and the results are usable with qualification.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

i. All results less than PQL?

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

ii. If above PQL, what samples are affected?

Comments:

n/a

iii. Data quality or usability affected? (Please explain.)

Comments:

n/a

7. <u>Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)</u>
   a. Defined and appropriate?
      X Yes ☐ No ☐NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by:	Marty Hannah		
Title:	Project chemist	Date:	11-28-12
CS Report Name:	NE Cape 2012 HTRW	Report Date:	9-20-12
Consultant Firm:	Bristol Environmental		
Laboratory Name:	TestAmerica-Tacoma	Laboratory Report Number:	580-34609
ADEC File Number:	475.38.013	ADEC RecKey Number:	Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes No NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      X Yes No NA (Please explain.) Comments:

      Glycol analysis by SW 8015C was performed by TestAmerica-Savannah, which is an ADEC CS accredited laboratory.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes No NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes No NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes No NA (Please explain.) Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
X Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes ☐ No ☐NA (Please explain.) Comments:

All samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes ☐ No ☐NA (Please explain.) Comments:

The container labels on several samples mis-matched the CoC, the SS on the soil sample label was likely mistaken for 55 according to the case narrative. The trip blank sample label was smeared and could not be read, they determined it by elimination. Samples were logged in per the CoC.

e. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification in respect to sample shipment and documentation.

4. <u>Case Narrative</u>
a. Present and understandable?
X Yes ☐ No ☐NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes ☐ No ☐NA (Please explain.) Comments:

There were multiple failures with 8260 analyses as noted in the case narrative (high CCVs, surrogates, method blank contamination, analytes out in MS/MSDs) along with high LCS recoveries for 8270-SIM and DRO detections in the method blank. These items are further described and discussed in the sections below.

c. Were all corrective actions documented?
X Yes ☐ No ☐NA (Please explain.) Comments:

Some samples were re-extracted (8260 VOCs) and/or reanalyzed due to QC failures including failed LCSs and CCVs. Refer to case narrative or CDQR for further descriptions.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes with some qualifications of affected samples.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
      X Yes No NA (Please explain.) Comments:

   b. All applicable holding times met?
      Yes X No NA (Please explain.) Comments:

Some samples were re-analyzed after holding time, both sets of data were reported by laboratory. Nineteen acetone and methylene chloride results are flagged H as the results analyzed on 9/4/12 were selected to be included in the HTRW report (see method blank section for more details).

   c. All soils reported on a dry weight basis?
      X Yes No NA (Please explain.) Comments:

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      Yes X No NA (Please explain.) Comments:

1,2,3-trichloropropane, 1,2-dibromoethane, 1,2 dichloroethane, bromodichloroethane, bromomethane, chlorobenzene and chloromethane were reported non-detect in nearly all samples at concentrations greater than the ADEC cleanup level. 1,2,3-trichloropropane, 1,2-dibromoethane, 1,2 dichloroethane, bromodichloroethane, bromomethane, carbon disulfide, chlorobenzene and chloromethane, these analytes were not detected in any samples collected from the drum liquids. Non-detect results exceeding ADEC cleanup levels are bolded in the data table. Tetrachloroethene and carbon disulfide were detected and reported in the drum contents but not in the surrounding soil. The soil was removed after sampling and placed on a liner. The results will not be used for closure as more sampling and soil removal will take place in 2013.

   e. Data quality or usability affected?
      Comments:

Sample results are usable for project purposes with above noted reporting levels exceeding cleanup levels. Because the drum contents which this soil surrounded had been characterized it can be safely assumed that the 3 aforementioned analytes were not present in the soil.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      X Yes No NA (Please explain.) Comments:

ii. All method blank results less than PQL?
□Yes X No □NA (Please explain.) Comments:

Method blank associated with in prep batch 580-118819/analytical batch 118842 had methylene chloride detected above the LOQ and acetone, 1,2,4-Trimethylbenzene, m,p-Xylene, Naphthalene, N-Propylbenzene, o-Xylene, and p-Isopropyltoluene detected below the LOQ but above the DL. Methylene chloride was detected in all the associated samples at concentrations within ten times the amount in the blank and is likely due to laboratory contamination. The CCV for acetone also exceeded control limits with a high bias for the original analysis. Samples were re-analyzed outside of hold for methylene chloride and acetone with no detections in the method blank and acceptable CCV results. Therefore, acetone and methylene chloride results for the re-analysis will be reported and will be flagged for being outside of holding time. The other analytes in this prep batch were only reported once and all detected results were within ten times the amount in the method blank; therefore, all associated detected results for these six compounds are B flagged.

Method blank 580-118887/1-A had methylene chloride, 1,2,4-Trimethylbenzene, m,p-Xylene, Naphthalene, N-Propylbenzene, and o-Xylene detected between the LOQ and DL. All associated detected results were within ten times the amount in the method blank, except for 1,2,4-Trimethylbenzene and Naphthalene in sample 12NC10SS028, and should be B flagged.

Method blank MB 580-119114/1-A had benzene and naphthalene detected between the LOQ and DL. The only associated detected sample result was naphthalene in TripBlank082012-04.

Both the method blanks associated with DRO and RRO analyses had results detected between the LOQ and DL. Associated sample results are within ten times the amount in their respective method blanks and should be B flagged.

Cadmium was detected in method blank 580-118520/21-A. Results for 12NC10SS22 and 12NC10SS025, were reported within ten times the amount in the blank and should be B flagged.

iii. If above PQL, what samples are affected?
Comments:

All samples except 12NC10SS031 had both acetone and methylene chloride detected. –SS031 did not have methylene chloride detected in the sample. Samples-SS006,-SS007,-SS008, –SS010, –SS011, -SS036 and –SS037 had methylene chloride reported above cleanup levels but it is believed to be due to lab contamination based on the trip blanks.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
X Yes □ No □NA (Please explain.) Comments:

Sample results affected by method blank contamination are B flagged.

v. Data quality or usability affected? (Please explain.)
Comments:

Acetone concentrations were well below soil cleanup levels and the above noted samples exceeded cleanup levels for methylene chloride. The results for all samples with reportable concentrations of acetone and methylene chloride are believed to be due to lab contamination, although for acetone, associated blanks were not detected and results are reported without a B qualifier. The samples with mehthylene chloride results above cleanup level should be considered suspect and not related the site. The results are still reported for review.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X Yes No NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

X Yes No NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes X No NA (Please explain.) Comments:

The 8270 LCS in batch 580-118818 had high recoveries for anthracene and acenaphthylene, samples were ND. The 8270 LCS/LCSD in batch 580-118942 exceeded upper control limits for anthracene and acenaphthylene. These analytes were detected in samples at concentrations well below cleanup levels and results are qualified QH for lab quality issue with potential high bias. The 8260 LCS in prep batches 580-119010 and 580-119114 were less than the lower control limits for cis 1,3-dichloropropene. All results included with these batches are qualified QL for lab quality issue with potential low bias.

Barium, chromium, and vanadium had high MS and or MSD recoveries for sample 12NC10SS014 and zinc had low recoveries and a high RPD.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

X Yes No NA (Please explain.) Comments:

All LCS/LCSDs met RPD limits. MS/MSDs failed RPD limits for 8260 on sample 12NC10SS007 in prep batch 580-118842 for 1,1-Dichloroethane, the sample was ND so no qualification. 8260 MS/MSD on sample 12NC10SS014 failed RPD for bromomethane and MTBE in batch 580-119152, results were ND so no qualification. The PCB MS/MSD on sample12NC10SS034 in prep batch 580-118913 failed RPD, sample was non-detect so no qualification. MS/MSD failed RRO in sample 12NC10SS014 in prep batch 580-118809, the RRO MS recovery was also high. RRO was detected and the sample result was flagged MH for matrix interference with a high bias. Laboratory duplicates had high RPDs for cadmium and mercury. The samples used for the duplicates were QN qualified. Zinc had a high RPD for one MS/MSD pair. The spiked sample was MN qualified.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

Sample 12NC10SS014 was flagged MH for RRO to indicate potential matrix interference. The cadmium result for sample 12NC10SS014 and the mercury results for samples 12NC10SS007 and 12NC10SS014 were QN qualified. The zinc result for sample 12NC10SS014 was MN qualified. Barium, chromium and vanadium results for 12NC10SS014 were MH qualified.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
X Yes ☐ No ☐NA (Please explain.) Comments:

Noted above.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Sample results are usable for project purposes with some qualifications.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
☐Yes x No ☐NA (Please explain.) Comments:

Trifluorotoluene, the AK101 (GRO) field surrogate had low recoveries in the 8260 analysis. 8260 does not require field surrogate. All surrogates added at the lab were within control for 8260 with the exception of BFB for sample –SS029 which had a recovery below the QAPP limits and is flagged QL on the basis of surrogate recovery. For GRO analyses, samples 12NC10SS005, -SS006, -SS007 (including MS/MSD), -SS008, -SS012, and –SS018 had trifluorotoluene (field surrogate) fail low for surrogate. BFB, a surrogate added at the lab, was within control. Sample results are flagged ML for low surrogate recovery due to moisture contents of 32 to 57 percent. All affected GRO samples were non-detect and had greater than 20% moisture. TripBlank082012-04 had a recovery of TFT by AK101; therefore, this GRO should be considered biased high and flagged QH. Sample 12NC10SS029 8260 analysis recovered BFB below acceptance limits; therefore, this sample's VOC results should be considered estimated with a low bias and are flagged QL.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
X Yes ☐ No ☐NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

Sample results are usable for project purposes with some qualifications as described above.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

X Yes ☐ No ☐NA (Please explain.) Comments:

All coolers contained trip blanks with samples noted on CoC.

iii. All results less than PQL?

☐Yes X No ☐NA (Please explain.) Comments:

GRO was detected in all four trip blanks between the LOQ and DL. All but one sample, 12NC10SS013, was detected within ten times the amount in the associated trip blank. These results should be B flagged on the basis of trip blank contamination.

TripBlank082012-01also had eleven other compounds detected between the LOQ and DL, including the methylene chloride result that was a rerun and reported outside of holding time. Acetone was reported above the LOQ in this trip blank for the original run but not in the re-analysis; the re-analyzed result was selected for use. The m&p-xylene result in this trip blank is also B flagged due to method blank contamination. The compounds that warrant a B flag in associated sample results due to trip blank contamination include all associated detected methylene chloride, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, Naphthalene, N-Propylbenzene, and o-Xylene results.

TripBlank082012-02 also had six compounds other than GRO detected between the LOQ and DL. The m&p-xylene result was B flagged due to method blank contamination. All the associated detected results for 1,2,4-Trimethylbenzene, Methylene Chloride, N-Propylbenzene, o-Xylene, and Styrene were previously qualified B due to laboratory contamination.

TripBlank082012-03 also had six compounds other than GRO detected between the LOQ and DL. The m&p-xylene result was B flagged due to method blank contamination. All the associated detected results for 1,2,4-Trimethylbenzene, Methylene Chloride, N-Propylbenzene, o-Xylene, and Styrene were previously qualified B due to laboratory contamination. The one exception is the 1,2,4-Trimethylbenzene result for sample 12NC10SS028 which is more than ten times the amount in the associated trip blank.

TripBlank082012-04 had detectable naphthalene; however, associated detected results were qualified due to method blank contamination and further qualification was not required.

iv. If above PQL, what samples are affected?

Comments:

Nearly every sample submitted had reportable concentrations of methylene chloride and acetone, some above the LOQ and some below. Nearly all methylene chloride results are B flagged with potential high bias. Acetone was not detected in the re-analyzed method and trip blank and the associated re-analyzed samples did not require qualification.

v. Data quality or usability affected? (Please explain.)

Comments:

The results are usable for project purposes though some of the methylene chloride results are above cleanup levels. The results are used to guide interim removal actions and will not be used for closure. More removal and sampling will occur in 2013.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X Yes ☐ No ☐NA (Please explain.) Comments:

4 sets of field duplicates were submitted with this SDG.

ii. Submitted blind to lab?

X Yes ☐ No ☐NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%) = Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

☐Yes X No ☐NA (Please explain.) Comments:

There was overall good agreement between field duplicates with the exception of DRO, RRO, and methyl tert-butyl ether in samples 12NC10SS005 and –SS018 and methyl tert-butyl ether in samples 12NC10SS036 and –SS037. These results were flagged QN for a QC outlier with no directional bias.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Sample results are usable for project purposes with above noted flagging.

f. Decontamination or Equipment Blank (If not used explain why).

☐Yes X No ☐NA (Please explain.) Comments:

Samples were collected with disposable equipment.

i. All results less than PQL?

☐Yes ☐ No X NA (Please explain.) Comments:

ii. If above PQL, what samples are affected?

Comments:

iii. Data quality or usability affected? (Please explain.)

Comments:

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?

X Yes ☐ No ☐NA (Please explain.) Comments:

Flags are described in this checklist, in the table notes and in the CDQR.
PCB-1254 and PCB-1260 results were MN qualified for samples 12NCSS16, 12NC10SS19, 12NC10SS34 due to shared peaks in the quantitation of these PCBs unless qualified due to matrix recoveries (i.e. PCB-1260 for 12NC10SS34).

Laboratory Data Review Checklist

Completed by: Julie Sharp-Dahl

Title: Chemist Date: 11/21/2012

CS Report Name: Northeast Cape Report Date: 9/12/12

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma Laboratory Report Number: 580-34648

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X NA (Please explain.) Comments:

      Samples were not transferred to another lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes ☐ No NA (Please explain.) Comments:

One unpreserved amber for sample 12NC08SWA01was received broken.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes ☐ No ☐ NA (Please explain.) Comments:

e. Data quality or usability affected? (Please explain.)
Comments:

No. There was adequate sample volume to complete all of the requested analyses.

4. Case Narrative
a. Present and understandable?
X Yes ☐ No ☐NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes ☐ No ☐NA (Please explain.) Comments:

Most topics – such as method blank contamination, LCS/LCSD recoveries, and MSD recoveries are addressed in the case narrative and are addressed further in the following sections or in the QA summary.

c. Were all corrective actions documented?
X Yes ☐ No ☐NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?
Comments:

All results are usable for project purposes with qualifiers applied to results with quality control issues. No results were rejected.

5. Samples Results
a. Correct analyses performed/reported as requested on COC?
X Yes ☐ No ☐NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes No ☐NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
Yes ☐ No ☐ X NA (Please explain.) Comments:

Samples are water samples, not soil.

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes ☐ No NA (Please explain.)
Comments:

e. Data quality or usability affected?
Comments:

No.

6. QC Samples
a. Method Blank
i. One method blank reported per matrix, analysis and 20 samples?
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes No ☐NA (Please explain.) Comments:

All method blank results were less than the LOQ; however, DRO was detected in a method blank in between the LOQ and DL. Sample 12NC08SWA01 was within ten times the amount in the method blank and the DRO results is B flagged to indicate a potential high bias.

iii. If above PQL, what samples are affected?
Comments:

See above.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
X Yes ☐ No ☐NA (Please explain.) Comments:

See above.

v. Data quality or usability affected? (Please explain.)
Comments:

See above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X Yes No NA (Please explain.)   Comments:

Only a LCS, not a LCSD, was analyzed by 8270SIM. Batch precision for this will need to rely on MS/MSD.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No X NA (Please explain.)   Comments:

Only organics in this SDG.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

X Yes No NA (Please explain.)   Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

X Yes No NA (Please explain.)   Comments:

Precision for the 8270SIM analysis will be based on the %RPD of the MS/MSD, which was within limits (both MS/MSD %R were within limits as well)

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

%R and RPD were within limits.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No X NA (Please explain.)   Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

No qualifications are necessary on the basis of the LCS/LCSD for the AK102/103 analyses and the MS/MSD for the 8270SIM analysis.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes No NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
X Yes No NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
Yes No X NA (Please explain.) Comments:

All sample surrogates were within criteria.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Data usability is not affected.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
Yes No XNA (Please explain.) Comments:

No volatile samples in this SDG.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
Yes No XNA (Please explain.) Comments:

Not Applicable.

iii. All results less than PQL?
Yes No X NA (Please explain.) Comments:

Not Applicable

iv. If above PQL, what samples are affected?
Comments:

Not Applicable.

v. Data quality or usability affected? (Please explain.)

Comments:

Not Applicable.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X Yes No NA (Please explain.) Comments:

ii. Submitted blind to lab?

X Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$RPD\ (\%) = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

□ Yes X No NA (Please explain.) Comments:

The %RPD for sample 12NC08SWA02 and field duplicate sample 12NC08SWA03 was above criteria for 3 of the PAH analytes: 2-methylnaphthalene, fluorene, naphthalene.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

These results are flagged QN to indicate estimated results without a directional bias.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected by dipping a clean sample bottle into the water so no equipment blank was required.

i. All results less than PQL?

□Yes □ No X□NA (Please explain.) Comments:

Not Applicable.

ii. If above PQL, what samples are affected?

Comments:

Not Applicable

iii. Data quality or usability affected? (Please explain.)

Comments:

Not Applicable

7. <u>Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)</u>
   a. Defined and appropriate?
      X Yes ☐ No ☐NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by: Julie Sharp-Dahl

Title: Chemist Date: 11/13/2012

CS Report Name: Northeast Cape Report Date: 9/6/12

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma Laboratory Report Number: 580-34675

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes No NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      X Yes No NA (Please explain.) Comments:

      Samples were received at TA-Tacoma and 80 samples were transferred to TA-Denver for analyses. TA-Denver is an ADEC CS accredited laboratory

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes No NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes No NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes No NA (Please explain.) Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

X Yes No NA (Please explain.)   Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

X Yes No NA (Please explain.)   Comments:

All samples received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

X Yes No NA (Please explain.)   Comments:

The container label for 12NC31SS124 listed the sampling date as 8/12, but the COC listed it as 8/23/12. The container label for 12NC31SS150 listed the sampling date as 10/24/12, but the COC listed it as 8/24/12. The container label for 12NC31SS162 listed the sampling time as10:53, but the COC listed it as10:55. The samples were logged in according to the COC.

e. Data quality or usability affected? (Please explain.)

Comments:

Results are usable without qualification. Samples were extracted and analyzed within hold time.

4. Case Narrative

a. Present and understandable?

X Yes No NA (Please explain.)   Comments:

b. Discrepancies, errors or QC failures identified by the lab?

X Yes No NA (Please explain.)   Comments:

Most topics – such as sample preparation notes, CCVs, surrogate recoveries, and MS/MSD recoveries that are addressed in the case narrative are addressed further in the following sections or in the QA summary.

c. Were all corrective actions documented?

X Yes No NA (Please explain.)   Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

All results are usable for project purposes with qualifiers applied to results with quality control issues. No results were rejected.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
      X Yes No NA (Please explain.)   Comments:

   b. All applicable holding times met?
      X Yes No NA (Please explain.)   Comments:

   c. All soils reported on a dry weight basis?
      X Yes No NA (Please explain.)   Comments:

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      Yes X No NA (Please explain.)
      Comments:

      The PCB PQLs are less than the PCB Cleanup Level for all samples analyzed, with the exception of samples 12NC31SS119, 12NC31SS120, and 12NC31SS175. Due to high levels of PCB-1260 these samples were diluted 50 times (samples 12NC31SS119 and -120) or 200 times (sample 12 NC31SS175), which resulted in a PQL greater than 1 for the non-detected PCBs.

   e. Data quality or usability affected?
      Comments:

      No. PCB-1260 results for the 3 samples listed above were all above the total PCB Cleanup Level of 1 ppm (results were all > 10 ppm).

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      X Yes No NA (Please explain.)   Comments:

      ii. All method blank results less than PQL?
      X Yes No NA (Please explain.)   Comments:

      All method blank results were less than the LOQ.

      iii. If above PQL, what samples are affected?
      Comments:

      See above.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
Yes No X NA (Please explain.) Comments:

No qualifications necessary since all method blank results were non- detect.

v. Data quality or usability affected? (Please explain.)
Comments:

No effect on data quality or usability.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes No NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
Yes No X NA (Please explain.) Comments:

Only organics in this SDG.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
Yes X No NA (Please explain.) Comments:

The PCB-1260 MS/MSD recoveries for sample 12 NC31SS139 and 12NC31SS150 and the MS recovery for sample 12NC31SS140 were above the QAPP recovery limits of 60 to 130% and the PCB-1260 results were MH qualified. The PCB-1260 MS/MSD recoveries were low for sample 12NC31SS149 and were ML qualified. The MS/MSD results for sample 12NC31SS141 were not evaluated because the MS/MSD spike was diluted out.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
Yes X No NA (Please explain.) Comments:

%RPD between the MS/MSD for PCB-1260 for sample 12NC31SS150 was above the RPD criteria Results were MH flagged due to high MS/MSD recoveries and further qualifiers were not assigned.

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

See Section iii above for affected samples.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
X Yes No NA (Please explain.) Comments:

See Section iii above for qualified samples.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Results are usable with qualifications discussed above.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes No NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
Yes X No NA (Please explain.) Comments:

DCB %R was outside of criteria for samples 12NC31SS115, -119, -120, -157, -175, -182, and -141MS/MSD, due to the level of dilution required. The dilutions were greater that 4x and since the surrogate were diluted out, they were not evaluated.

The DCB surrogate recovery was not reported for sample 12NC31SS184 for the secondary column. Results were not qualified since the primary column surrogate recovery was in control.

The QAPP specifies the addition of two surrogates for PCB determination. However, the lab followed the method which requires only one surrogate, DCB, with an optional second surrogate, tetrachloro-m-xylene (TCX). The surrogate DCB is more closely associated with PCBs and no action was required due to the lack of TCX recovery information.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
X Yes No NA (Please explain.) Comments:

See above.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

See above.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
Yes No X NA (Please explain.) Comments:

No volatile samples in this SDG.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
Yes No X NA (Please explain.) Comments:

Not Applicable.

iii. All results less than PQL?
Yes No X NA (Please explain.) Comments:

Not Applicable

iv. If above PQL, what samples are affected?
Comments:

Not Applicable.

v. Data quality or usability affected? (Please explain.)
Comments:

Not Applicable.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X Yes No NA (Please explain.) Comments:

ii. Submitted blind to lab?

X Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

 Yes X No NA (Please explain.) Comments:

There were 17 soil field duplicates in this SDG. RPDs were within the 50% criteria for all field duplicates except for the PCB-1260 results for three sample pairs: 12NC31SS123 & -126, -177 & -184, and -179 & -185. For -177 & -184, and -179 & -185, PCB-1260 was detected in one result above the LOQ and not detected in the duplicate. The PCB-1260 results for these three duplicate pairs should be flagged QN to indicate estimated results without a directional bias. The other pairs included results reported less than the LOQ; therefore, there will be no qualifications of these results due to the inherent poor precision below the LOQ.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

There is no overall impact to the project due to this data quality issue. Either both results were well below Cleanup Levels, or well above Cleanup Levels (samples 12NC31SS156 & -157 at 4.1 and 7.6 ppm PCB-1260 respectively).

f. Decontamination or Equipment Blank (If not used explain why).

Yes No XNA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

i. All results less than PQL?

Yes No XNA (Please explain.) Comments:

Not Applicable.

ii. If above PQL, what samples are affected?

Comments:

Not Applicable

iii. Data quality or usability affected? (Please explain.)

Comments:

Not Applicable

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes No NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by: Julie Sharp-Dahl

Title: Chemist Date: 11/13/2012

CS Report Name: Northeast Cape Report Date: 9/10/12

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma Laboratory Report Number: 580-34677

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X NA (Please explain.) Comments:

      Samples were not transferred to another lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes No NA (Please explain.) Comments:

All samples received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
Yes No X NA (Please explain.) Comments:

No discrepancies were documented.

e. Data quality or usability affected? (Please explain.)
Comments:

See above.

4. Case Narrative
a. Present and understandable?
X Yes No NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes No NA (Please explain.) Comments:

Most topics – such as method blank contamination, surrogate recoveries, and MSD recoveries are addressed in the case narrative and are addressed further in the following sections or in the QA summary.

c. Were all corrective actions documented?
X Yes No NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?
Comments:

All results are usable for project purposes with qualifiers applied to results with quality control issues. No results were rejected.

5. Samples Results
a. Correct analyses performed/reported as requested on COC?
X Yes No NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
X Yes □ No □ NA (Please explain.) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No NA (Please explain.)
Comments:

e. Data quality or usability affected?
Comments:

No.

6. QC Samples
a. Method Blank
i. One method blank reported per matrix, analysis and 20 samples?
X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes No □NA (Please explain.) Comments:

All method blank results were less than the LOQ; however, one method blank had DRO detected between the LOQ and the DL. All the associated sample results were greater than ten times the amount in the method blank; therefore, no qualifications are necessary on this basis.

iii. If above PQL, what samples are affected?
Comments:

See above.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
Yes □ No X□NA (Please explain.) Comments:

No qualifications necessary.

v. Data quality or usability affected? (Please explain.)
Comments:

See above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

☐Yes ☐ No ☐X NA (Please explain.) Comments:

Only organics in this SDG.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes ☐X No☐NA (Please explain.) Comments:

DRO recoveries were low for the MS for sample 12NCMOCSS133, and the DRO and RRO recoveries for sample 12NCMOCSS136 were high. DRO sample concentrations were greater than 4 times the spike concentration and results were not qualified. RRO results for sample 12NCMOCSS136 were MH qualified.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

X Yes No ☐NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

See above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes ☐ No ☐X NA (Please explain.) Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

No qualifications are necessary on the basis of the LCS/LCSD. Qualifications for MS/MSDs are discussed above.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes No NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
Yes X No NA (Please explain.) Comments:

Surrogate n-Triacontane-d62 recovery for sample 12NCMOCSS146 was above acceptance limit of 150%; evidence of matrix interference was present in the chromatogram.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
X Yes No NA (Please explain.) Comments:

This result should be flagged QH to indicate an estimated result with a high bias.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Data usability is not affected.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
Yes No XNA (Please explain.) Comments:

No volatile samples in this SDG.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
Yes No XNA (Please explain.) Comments:

See above.

iii. All results less than PQL?
Yes No X NA (Please explain.) Comments:

Not Applicable

iv. If above PQL, what samples are affected?

Comments:

Not Applicable.

v. Data quality or usability affected? (Please explain.)

Comments:

Not Applicable.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X Yes No NA (Please explain.) Comments:

ii. Submitted blind to lab?

X Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

 X Yes No NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

No. %RPD between the field duplicates met criteria.

f. Decontamination or Equipment Blank (If not used explain why).

Yes No X NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

i. All results less than PQL?

Yes No X NA (Please explain.) Comments:

Not Applicable.

ii. If above PQL, what samples are affected?

Comments:

Not Applicable

iii. Data quality or usability affected? (Please explain.)

Comments:

Not Applicable

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes □ No □NA (Please explain.)   Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by: Keather McLoone

Title: Project Chemist   Date: 11/6/2012

CS Report Name: Northeast Cape (Site 13)   Report Date: 9/20/12

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma   Laboratory Report Number: 580-34680

ADEC File Number: 475.38.013   ADEC RecKey Number: Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and <u>perform</u> all of the submitted sample analyses?
      X Yes □ No □NA (Please explain.)   Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      X□Yes □ No NA (Please explain.)   Comments:

      Samples were transferred from TA-Tacoma to TA-Denver.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes □ No □NA (Please explain.)   Comments:

   b. Correct analyses requested?
      X Yes □ No □NA (Please explain.)   Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes □ No □NA (Please explain.)   Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes □ No □NA (Please explain.)   Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes No NA (Please explain.) Comments:

All samples received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes No NA (Please explain.) Comments:

The container labels for samples 12NC13SS160 and 12NC13SS161 did not match the information listed on the COC. The container label for sample 12NC13SS160 listed the collection time as 16:52. The COC listed the collection time as 16:51. The container label for sample 12NC13SS161 listed the collection time as 16:51. The COC lists the collection time as 16:52. Both samples were logged in with the collection times listed on the COC which is corroborated by the sample summary table.

The case narrative stated that samples 1213205 and 12NC13SS212 are listed on the COC. 12NC13SS205, rather than 1213205, was included on the original CoC used for transfer of the samples from Bristol to TA-Tacoma. These original CoCs were not included in the hardcopy data package. These samples were not received by the laboratory and were included in another sample shipment.

e. Data quality or usability affected? (Please explain.)
Comments:

Results are usable without qualification.

4. Case Narrative

a. Present and understandable?
X Yes No NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes No NA (Please explain.) Comments:

Most topics addressed in the case narrative are addressed further in the following sections or in the QA summary - the topics were surrogates, cleanups and dilutions required, CCV recoveries, and MS/MSD recoveries.

c. Were all corrective actions documented?
X Yes No NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?
Comments:

All results are usable for project purposes with qualifiers applied to results with quality control issues. No results were rejected.

5. Samples Results
    a. Correct analyses performed/reported as requested on COC?
        X Yes □ No □NA (Please explain.) Comments:

    b. All applicable holding times met?
        X Yes No □NA (Please explain.) Comments:

    c. All soils reported on a dry weight basis?
        X Yes □ No □ NA (Please explain.) Comments:

    d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
        X Yes □ No NA (Please explain.)
        Comments:

    e. Data quality or usability affected?
        Comments:

        No.

6. QC Samples
    a. Method Blank
        i. One method blank reported per matrix, analysis and 20 samples?
        X Yes □ No □NA (Please explain.) Comments:

        ii. All method blank results less than PQL?
        X Yes No □NA (Please explain.) Comments:

        iii. If above PQL, what samples are affected?
        Comments:

        iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
        Yes □ No X□NA (Please explain.) Comments:

        No qualifications necessary.

v. Data quality or usability affected? (Please explain.)
Comments:

No effect on data quality or usability.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes No NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
X Yes No NA (Please explain.) Comments:

Percent moisture and percent solids are the only non-organic results.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
Yes X No NA (Please explain.) Comments:

The PCB-1260 MS/MSD recoveries were outside criteria for sample 12NC13SS180; however, the sample concentration was more than 4 times the spike level so no qualification is necessary. For sample 12NC13SS188, the PCB-1260 MSD recovery was 46%, and below the acceptable limits of 60 to 130%. The PCB-1260 result for sample 12NC13SS188 was ML qualifed to indicate a low bias. The PCB spikes for samples 12NC13SS189 and -190 were diluted out and not used to assess data quality.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X Yes No NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

See Section iii above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes No X NA (Please explain.) Comments:

Results are usable as qualified.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

n/a

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
□Yes X No □NA (Please explain.) Comments:

Recoveries of DCB Decachlorobiphenyl in analysis batch 280-135508 for samples 12NC13SS143, 12NC13SS146, 12NC13SS147, and 12NC13SS152 from preparation batch 280-135116 were below acceptance limits on the confirmation (1C) column. The recovery is within acceptance limits on the other (2C) column, indicating that the extraction process was in control. Although the surrogates are reported from both columns, the sample results were reported from the column with acceptable surrogate recoveries; therefore, no qualifications are necessary on this basis.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
□Yes □ No X NA (Please explain.) Comments:

No qualifications on this basis.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

No effect on sample data quality or usability on this basis.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
Yes □ No X□NA (Please explain.) Comments:

No volatile samples in this SDG.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
Yes □ No X□NA (Please explain.) Comments:

No volatile samples in this SDG.

iii. All results less than PQL?
Yes No X NA (Please explain.) Comments:

No volatile samples in this SDG..

iv. If above PQL, what samples are affected?
Comments:

See above.

v. Data quality or usability affected? (Please explain.)
Comments:

See above.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
Yes No NA (Please explain.) Comments:

Five soil field duplicates submitted in this SDG of 69 samples. Duplicate frequency calculated on a project basis, rather than per SDG.

ii. Submitted blind to lab?
X Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration
 Yes X No NA (Please explain.) Comments:

One duplicate pair, 12NC13SS176 and 12NC13SS177, had a RPD of 74.3 % for PCB-1260; however, these results were both reported below the LOQ. Therefore, no qualifications are necessary on this basis due to the inherent poor precision below the LOQ.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)
Comments:

No qualifications on this basis for this SDG.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

i. All results less than PQL?

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

ii. If above PQL, what samples are affected?

Comments:

n/a

iii. Data quality or usability affected? (Please explain.)

Comments:

n/a

7. <u>Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)</u>

a. Defined and appropriate?

X Yes □ No □NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by:	Keather McLoone
Title:	Project Chemist
Date:	11/7/2012
CS Report Name:	Northeast Cape (Site 31)
Report Date:	9/11/12
Consultant Firm:	Bristol Environmental Remediation Services
Laboratory Name:	TestAmerica-Tacoma
Laboratory Report Number:	580-34683
ADEC File Number:	475.38.013
ADEC RecKey Number:	Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X NA (Please explain.) Comments:

      Samples were not transferred.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      Yes ☐X No☐NA (Please explain.) Comments:

      One of the two coolers in this shipment was received at the lab at 1.5 degrees Celsius; however, there were no broken containers identified on the cooler receipt form. No qualifications necessary on this basis.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
X Yes No NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes No NA (Please explain.) Comments:

All samples received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes No NA (Please explain.) Comments:

The container label for the following samples did not match the information listed on the COC: 12NC31SS101 has a time of 17:22 on the COC but has a time of 14:25 on the container label and 12NC31SS084 has a time of 13:25 on the COC but has a time of 13:28 on the container label. 12NC31SS054 through 12NC31SS060: These samples were logged in according to the COC. For samples 12NC31SS079 through 12NC31SS089 as well as 12NC31SS091 through 12NC31SS101, the date on the COC does not match the date on the container labels. Sample dates were logged in according to the sample labels. These sample dates and times are corroborated by the samplers notes and sample summary table.

e. Data quality or usability affected? (Please explain.)
Comments:

Results are usable without qualification.

4. <u>Case Narrative</u>

a. Present and understandable?
X Yes No NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes No NA (Please explain.) Comments:

Most topics addressed in the case narrative are addressed further in the following sections or in the QA summary - the topics were surrogates, dilutions required, and MS/MSD recoveries.

c. Were all corrective actions documented?
X Yes No NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?
Comments:

All results are usable for project purposes with qualifiers applied to results with quality control issues. No results were rejected.

5. Samples Results
    a. Correct analyses performed/reported as requested on COC?
        X Yes ☐ No ☐NA (Please explain.) Comments:

    b. All applicable holding times met?
        X Yes No ☐NA (Please explain.) Comments:

    c. All soils reported on a dry weight basis?
        X Yes ☐ No ☐ NA (Please explain.) Comments:

    d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
        X Yes ☐ No NA (Please explain.)
        Comments:

    e. Data quality or usability affected?
        Comments:

        No.

6. QC Samples
    a. Method Blank
        i. One method blank reported per matrix, analysis and 20 samples?
        X Yes ☐ No ☐NA (Please explain.) Comments:

        ii. All method blank results less than PQL?
        X Yes No ☐NA (Please explain.) Comments:

        iii. If above PQL, what samples are affected?
        Comments:

        iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
        Yes ☐ No X☐NA (Please explain.) Comments:

        No qualifications necessary.

v. Data quality or usability affected? (Please explain.)
Comments:

No effect on data quality or usability.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
☐X Yes ☐ No ☐ NA (Please explain.) Comments:

Percent moisture and percent solids are the only non-organic results.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
☐Yes X☐ No☐NA (Please explain.) Comments:

The PCB-1260 MS recovery for sample 12NC31SS063 was above the QAPP limits. PCB-1260 was detected in the sample and MH qualified.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X Yes No ☐NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

See Section (iii) above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐X NA (Please explain.) Comments:

See Section (iii) above.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

Results are usable as qualified.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
☐Yes X No ☐NA (Please explain.) Comments:

Recoveries of tetrachloro-m-xylene (TCMX) for sample 12NC31SS077 was below acceptance limits on both columns, and, for sample 12NC31SS082 was below acceptance limit on the primary column.
In addition, sample 12NC31SS042 had a high (TCMX) recovery on the secondary column. DCB recoveries were in control for these samples, and since DCB is the primary surrogate and most representative of PCB recovery, results were not qualified.
DCB surrogate recoveries for samples 12NC31SS061 and 12NC31SS105 were outside criteria; however, since they were diluted out, they were not used to assess data quality.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
☐X Yes ☐ No NA (Please explain.) Comments:

see Section (ii) above.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:
See above.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
Yes ☐ No X☐NA (Please explain.) Comments:

No volatile samples in this SDG.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
Yes ☐ No X☐NA (Please explain.) Comments:

No volatile samples in this SDG.

iii. All results less than PQL?
Yes ☐ No X NA (Please explain.) Comments:

No volatile samples in this SDG.

iv. If above PQL, what samples are affected?

Comments:

See above.

v. Data quality or usability affected? (Please explain.)

Comments:

See above.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
Yes No NA (Please explain.) Comments:

Four soil field duplicates submitted in this SDG of 84 samples. Duplicate frequency calculated on a project basis, rather than per SDG.

ii. Submitted blind to lab?
X Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

X Yes No NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

f. Decontamination or Equipment Blank (If not used explain why).

All samples were collected using disposable or dedicated equipment.

☐Yes ☐ No X☐NA (Please explain.) Comments:

i. All results less than PQL?

☐Yes ☐ No X☐NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

ii. If above PQL, what samples are affected?

Comments:

n/a

iii. Data quality or usability affected? (Please explain.)

Comments:

n/a

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes ☐ No ☐NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by:	Julie Sharp-Dahl
Title:	Chemist
Date:	11/21/2012
CS Report Name:	Northeast Cape
Report Date:	9/21/12
Consultant Firm:	Bristol Environmental Remediation Services
Laboratory Name:	TestAmerica-Tacoma
Laboratory Report Number:	580-34701
ADEC File Number:	475.38.013
ADEC RecKey Number:	Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X NA (Please explain.) Comments:

      Samples were not transferred to another lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes No NA (Please explain.) Comments:

All samples received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes No NA (Please explain.) Comments:

The container label for sample AV00225 did not match the information listed on the Chain-of-Custody (COC). The container label for this sample was not filled out but the ID was written on the lid of the container. The sample date was logged in per COC and the time was assigned as 1200 AM.

e. Data quality or usability affected? (Please explain.)
Comments:

No. Sample AV00225 is a trip blank and was laboratory supplied.

4. Case Narrative
a. Present and understandable?
X Yes No NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes No NA (Please explain.) Comments:

Most topics – such as method blank contamination, surrogate recoveries, LCS/LCSD recoveries, and MSD recoveries are addressed in the case narrative and are addressed further in the following sections or in the QA summary.

c. Were all corrective actions documented?
X Yes No NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?
Comments:

All results are usable for project purposes with qualifiers applied to results with quality control issues. No results were rejected.

5. Samples Results
a. Correct analyses performed/reported as requested on COC?
X Yes No NA (Please explain.) Comments:

b. All applicable holding times met?
Yes XNo □NA (Please explain.) Comments:

The laboratory reported two sets of DRO and RRO results for sample 12NCRDSS04. The initial analysis was performed on 9/11/12 and both DRO and RRO results were associated with surrogate recoveries below acceptance criteria. The sample was re-extracted five days outside holding time and was reported with acceptable surrogate recoveries. Results for the re-extraction should be reported and results were qualified H.

c. All soils reported on a dry weight basis?
X Yes □ No □ NA (Please explain.) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No NA (Please explain.)
Comments:

e. Data quality or usability affected?
Comments:

The original analytical results from analysis within holding time with low surrogate recoveries were reported; therefore, these results should be flagged QL to indicate estimated results with a low bias.

6. <u>QC Samples</u>
a. Method Blank
i. One method blank reported per matrix, analysis and 20 samples?
X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes No □NA (Please explain.) Comments:

All method blank results were less than the LOQ; however, all three AK 102 & 103 method blanks had DRO detected between the LOQ and the DL. Each of these method blanks had at least one sample associated that was within ten times the amount in the method blank. All of the nine DRO results (eight samples, one with two sets of results reported) in this SDG are B flagged to indicate a potential high bias.

iii. If above PQL, what samples are affected?
Comments:

See above.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
Yes No X NA (Please explain.) Comments:

See above.

v. Data quality or usability affected? (Please explain.)
Comments:

See above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
- No NA (Please explain.) Comments:

The lab did not report an LCSD for 8260. For this method, batch precision evaluation will need to rely on MS/MSDs.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
X Yes No NA (Please explain.) Comments:

Both a LCS and LCSD were analyzed by 6020 and 7471.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
Yes X No NA (Please explain.) Comments:

LCS and LCSD %Rs were within criteria with the exception of acenaphthlylene and anthracene in the 8270SIM LCS, which were above criteria. However, all the associated sample results were not detected; therefore, there are no qualifications necessary on this basis. Three PAH compounds had high MS or MSD recoveries for sample 12NCRDSS03. PAH results for sample 12NCRDSS03 were not detected and did not require qualification. The MSD for sample 12NCRDSS03 had a high zinc recovery and was MH qualified.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
Yes X No NA (Please explain.) Comments:

The %RPD was within criteria for the LCS/LCSDs, MS/MSDs, and lab sample duplicates, with the exception of mercury, which was above criteria for the sample and the laboratory duplicate however both results were below the LOQ.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

The results from the sample and the lab sample duplicate were below the mercury LOQ and were estimated results. Sample 12NCRDSS03 was affected for zinc.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No X NA (Please explain.) Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Results are usable as qualified.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

X Yes No NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes X No NA (Please explain.) Comments:

%R for the RRO surrogate was above criteria for sample 12NCRDSS02. This result should be flagged QH to indicate an estimated result with a high bias. All other %R were within criteria.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

X Yes No NA (Please explain.) Comments:

See above.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

See above.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

X Yes No ☐NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

X Yes ☐ No ☐NA (Please explain.) Comments:

Single cooler in this shipment.

iii. All results less than PQL?

Yes ☐ X No NA (Please explain.) Comments:

The GRO result was above the LOQ.

iv. If above PQL, what samples are affected?

Comments:

No samples are affected since GRO was non-detect in all project samples.

v. Data quality or usability affected? (Please explain.)

Comments:

Data quality and usability are not affected since the GRO was non-detect in all project samples.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X Yes No NA (Please explain.) Comments:

ii. Submitted blind to lab?

X Yes   No   NA (Please explain.)   Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$RPD\ (\%) = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

□ Yes   X No   NA (Please explain.)   Comments:

%RPD met criteria for all analytes, with the exception of RRO however one of the RRO results was below the LOQ.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

No. One result was just below the LOQ and the other just above the LOQ, and both results were below Cleanup Levels. The highest, most conservative result will be presented.

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □ No   X□NA (Please explain.)   Comments:

All samples were collected using disposable or dedicated equipment.

i. All results less than PQL?

□Yes □ No   X□NA (Please explain.)   Comments:

Not Applicable.

ii. If above PQL, what samples are affected?

Comments:

Not Applicable

iii. Data quality or usability affected? (Please explain.)

Comments:

Not Applicable

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

X Yes □ No   □NA (Please explain.)   Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by: Julie Sharp-Dahl

Title: Chemist   Date: 11/13/2012

CS Report Name: Northeast Cape   Report Date: 9/11/12

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma   Laboratory Report Number: 580-34746

ADEC File Number: 475.38.013   ADEC RecKey Number: Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.)   Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X NA (Please explain.)   Comments:

      Samples were not transferred to another lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.)   Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.)   Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐NA (Please explain.)   Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes ☐ No ☐NA (Please explain.)   Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes No NA (Please explain.) Comments:

All samples received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes No   NA (Please explain.) Comments:

The container label for sample 12NC13SS214 did not match the COC. It listed the collection date as 8/28/12. The COC listed the date as 8/29/12. The sample was logged in with the sample collected date listed on the COC.

e. Data quality or usability affected? (Please explain.)
Comments:

No. See above.

4. Case Narrative
   a. Present and understandable?
   X Yes No NA (Please explain.) Comments:

   b. Discrepancies, errors or QC failures identified by the lab?
   X Yes No NA (Please explain.) Comments:

However, other than the discrepancy discussed above and sample 12NC13SS218 having shared Aroclor peaks, there were no other difficulties with analyses discussed.

   c. Were all corrective actions documented?
   X Yes No NA (Please explain.) Comments:

   d. What is the effect on data quality/usability according to the case narrative?
   Comments:

All results are usable for project purposes with qualifiers applied to results with quality control issues. No results were rejected.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
   X Yes No NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes No ☐NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
X Yes ☐ No ☐ NA (Please explain.) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes ☐ No NA (Please explain.)
Comments:

e. Data quality or usability affected?
Comments:

No.

6. <u>QC Samples</u>
a. Method Blank
i. One method blank reported per matrix, analysis and 20 samples?
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes No ☐NA (Please explain.) Comments:

All method blank results were less than the LOQ.

iii. If above PQL, what samples are affected?
Comments:

Not Applicable.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
Yes ☐ No X☐NA (Please explain.) Comments:

No qualifications necessary.

v. Data quality or usability affected? (Please explain.)
Comments:

No effect on data quality or usability.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

☐Yes ☐ No ☐X NA (Please explain.) Comments:

Only organics in this SDG.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

X Yes ☐ No ☐NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

X Yes No ☐NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

See above.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes ☐ No ☐X NA (Please explain.) Comments:

No qualifications are necessary on the basis of the LCS/LCSD.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

No.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

X Yes No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

□X Yes □ No NA (Please explain.) Comments:

Not Applicable.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

Data quality and usability are not affected.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes □ No X□NA (Please explain.) Comments:

No volatile samples in this SDG.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes □ No X□NA (Please explain.) Comments:

Not Applicable.

iii. All results less than PQL?

Yes □ No X NA (Please explain.) Comments:

Not Applicable

iv. If above PQL, what samples are affected?

Comments:

Not Applicable.

v. Data quality or usability affected? (Please explain.)

Comments:

Data quality and usability are not affected.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X Yes No NA (Please explain.) Comments:

One set of field duplicate was submitted with 9 primary samples.

ii. Submitted blind to lab?
X Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

☐ Yes X No NA (Please explain.) Comments:

PCB-1260 was detected in sample 12NC13SS215 above the LOQ, and was not detected in the field duplicate.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Results for sample 12NC13SS215 and 12NC13SS221 were qualified QN.

f. Decontamination or Equipment Blank (If not used explain why).

☐Yes ☐ No X☐NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

i. All results less than PQL?

☐Yes ☐ No X☐NA (Please explain.) Comments:

Not Applicable.

ii. If above PQL, what samples are affected?

Comments:

Not Applicable

iii. Data quality or usability affected? (Please explain.)

Comments:

Not Applicable

7. <u>Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)</u>
   a. Defined and appropriate?
      X Yes ☐ No ☐NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist. Sample 12NC13SS218 contained more than one PCB-Aroclor component. The PCB-1254 and PCB-1260 results are estimated due to shared peaks and MN qualified.

Laboratory Data Review Checklist

Completed by:	Keather McLoone
Title:	Project Chemist
Date:	11/19/2012
CS Report Name:	Northeast Cape (Site 8)
Report Date:	9/21/12
Consultant Firm:	Bristol Environmental Remediation Services
Laboratory Name:	TestAmerica-Tacoma
Laboratory Report Number:	580-34747
ADEC File Number:	475.38.013
ADEC RecKey Number:	Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X NA (Please explain.) Comments:

      Samples were not transferred to another lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes □ No NA (Please explain.) Comments:

All samples received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes □ No □ NA (Please explain.) Comments:

The case narrative indicated that the sample container labels identified the sample matrix as water while the COC listed the matrix as soil. Samples were logged in per the sample container labels.

e. Data quality or usability affected? (Please explain.)
Comments:

Results are usable without qualification.

4. Case Narrative
a. Present and understandable?
X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
Yes □ No X NA (Please explain.) Comments:

c. Were all corrective actions documented?
X Yes □ No NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?
Comments:

See above.

5. Samples Results
a. Correct analyses performed/reported as requested on COC?
X Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?

Yes No X NA (Please explain.) Comments:

Water samples only.

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

Yes No X NA (Please explain.)

Comments:

No cleanup level for methane.

e. Data quality or usability affected?

Comments:

No.

6. <u>QC Samples</u>

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

X Yes No NA (Please explain.) Comments:

ii. All method blank results less than PQL?

X Yes No NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?

Comments:

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

X Yes No NA (Please explain.) Comments:

v. Data quality or usability affected? (Please explain.)

Comments:

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X Yes □ No □NA (Please explain.) Comments:

No MS/MSDs were reported, however, they are required per QAPP.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

□Yes □ No □X NA (Please explain.) Comments:

Only organics in this SDG.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

X□Yes □ No □NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes XNo □NA (Please explain.) Comments:

The LCS/LCSD RPD for batch 680-249075 had an RPD of 27%, which exceeded the QAPP limit of 20%.

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

The methane result for sample 12NC08WA002 was qualified QN.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes □ No □X NA (Please explain.) Comments:

See above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

See above,

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

Yes □ No □XNA (Please explain.) Comments:

No surrogates were required for the methane analysis per the QAPP.

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits?

No surrogates were reported for methane analysis,

And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

☐Yes No X☐NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

☐Yes ☐ No X NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

X Yes ☐ No ☐NA (Please explain.) Comments:

One trip blank in this single cooler shipment.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

X Yes ☐ No ☐NA (Please explain.) Comments:

iii. All results less than PQL?

X Yes ☐ No NA (Please explain.) Comments:

Methane was not detected in the trip blank.

iv. If above PQL, what samples are affected?

Comments:

n/a

v. Data quality or usability affected? (Please explain.)

Comments:

n/a

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X Yes No NA (Please explain.) Comments:

Three sets of field duplicates were submitted with this SDG containing 28 samples. Duplicate frequency calculated on a project basis, rather than per SDG.

ii. Submitted blind to lab?
X Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

☐X Yes No NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

No qualifications on this basis for this SDG.

f. Decontamination or Equipment Blank (If not used explain why).

☐Yes ☐ No X☐NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

i. All results less than PQL?

☐Yes ☐ No X☐NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

ii. If above PQL, what samples are affected?

Comments:

n/a

iii. Data quality or usability affected? (Please explain.)

Comments:

n/a

7. <u>Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)</u>
   a. Defined and appropriate?
      X Yes ☐ No ☐NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by: Julie Sharp-Dahl

Title: Chemist Date: 11/13/2012

CS Report Name: Northeast Cape Report Date: 9/21/12

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma Laboratory Report Number: 580-34748

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID. 212

1. Laboratory
    a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
       X Yes ☐ No ☐NA (Please explain.) Comments:

    b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
       ☐Yes ☐ No X NA (Please explain.) Comments:

       Samples were not transferred to another lab.

2. Chain of Custody (COC)
    a. COC information completed, signed, and dated (including released/received by)?
       X Yes ☐ No ☐NA (Please explain.) Comments:

    b. Correct analyses requested?
       X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
    a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
       X Yes ☐ No ☐NA (Please explain.) Comments:

    b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
       X Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes ☐ No NA (Please explain.) Comments:

All samples received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
Yes X No ☐ NA (Please explain.) Comments:

No discrepancies.

e. Data quality or usability affected? (Please explain.)
Comments:

No.

4. Case Narrative
   a. Present and understandable?
   X Yes ☐ No ☐NA (Please explain.) Comments:

It is not clear from the case narrative that both AK 102/103 and AK102/103 silica gel cleanup were performed, although the rest of the hardcopy as well as the electronic data show that silica gel cleanup was performed on all four samples.

b. Discrepancies, errors or QC failures identified by the lab?
X Yes ☐ No ☐NA (Please explain.) Comments:

Most topics – such as method blank contamination, LCS/LCSD recoveries, and MS/MSD recoveries, are addressed in the case narrative are addressed further in the following sections or in the QA summary.

c. Were all corrective actions documented?
X Yes ☐ No ☐NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?
Comments:

All results are usable for project purposes with qualifiers applied to results with quality control issues. No results were rejected.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
   X Yes ☐ No ☐NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes No ☐NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
X Yes ☐ No ☐ NA (Please explain.) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes ☐ No NA (Please explain.)
Comments:

e. Data quality or usability affected?
Comments:

Data quality and usability are not affected.

6. QC Samples
a. Method Blank
i. One method blank reported per matrix, analysis and 20 samples?
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes No ☐NA (Please explain.) Comments:

All method blank results were less than the LOQ; however, two DRO method blanks and one RRO method blank contained results between the LOQ and the DL However, none of the associated sample results were within ten times the amount in their respective method blanks; therefore, no qualifications are necessary on this basis.

iii. If above PQL, what samples are affected?
Comments:

Not Applicable.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
Yes ☐ No X☐NA (Please explain.) Comments:

No qualifications necessary.

v. Data quality or usability affected? (Please explain.)
Comments:

No effect on data quality or usability.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

☐Yes ☐ No ☐X NA (Please explain.) Comments:

Only organics in this SDG.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes ☐X No☐NA (Please explain.) Comments:

By 8270SIM: the LCS %R for acenapththylene and anthracene exceeded criteria. There was one associated detected Anthracene result, sample 12NC08SS001, is flagged QH and considered estimated with a high bias.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

X Yes No ☐NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Anthracene was detected in sample 12NC08SS001.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

X Yes ☐ No ☐NA (Please explain.) Comments:

The anthracene that was detected in sample 12NC08SS001 and was QH qualified as estimated biased high due to laboratory QC failure.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Data usability is not affected.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes No NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
Yes X No NA (Please explain.) Comments:

By AK102&103: n-Triacontane-d62 %R was above criteria for sample 12NC08SS004, and for sample 12NC08SS003MS. The RRO result for sample 12NC08SS004 is flagged QH and considered an estimated result with a high bias.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
X Yes No NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

See above.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
Yes No XNA (Please explain.) Comments:

No volatile samples in this SDG.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
Yes No XNA (Please explain.) Comments:

Not Applicable.

iii. All results less than PQL?
Yes No X NA (Please explain.) Comments:

Not Applicable

iv. If above PQL, what samples are affected?

Comments:

Not Applicable.

v. Data quality or usability affected? (Please explain.)

Comments:

Not Applicable.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X Yes No NA (Please explain.) Comments:

ii. Submitted blind to lab?

X Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

 X Yes No NA (Please explain.) Comments:

All field duplicate results were within the 50% RPD for soil, with the exception of those analytes in which one result was non-detect; in these cases the RPD could not be calculated. Anthracene was detected above the LOQ in sample 12NC08SS01; however, was not detected in the field duplicate. Both results will be flagged QN.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Data quality and usability are not affected.

f. Decontamination or Equipment Blank (If not used explain why).

All samples were collected using disposable or dedicated equipment.

□Yes □ No X□NA (Please explain.) Comments:

i. All results less than PQL?

□Yes □ No X□NA (Please explain.) Comments:

Not Applicable.

ii. If above PQL, what samples are affected?

Comments:

Not Applicable

iii. Data quality or usability affected? (Please explain.)

Comments:

Not Applicable

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?

X Yes □ No □NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by:	Keather McLoone		
Title:	Project Chemist	Date:	11/8/2012
CS Report Name:	Northeast Cape (MOC G&E plume)	Report Date:	9/21/12
Consultant Firm:	Bristol Environmental Remediation Services		
Laboratory Name:	TestAmerica-Tacoma	Laboratory Report Number:	580-34820
ADEC File Number:	475.38.013	ADEC RecKey Number:	Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
   X Yes □ No □NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
   □Yes □ No X NA (Please explain.) Comments:

   Samples were not transferred.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
   X Yes □ No □NA (Please explain.) Comments:

   b. Correct analyses requested?
   X Yes □ No □NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
   Yes □X No□NA (Please explain.) Comments:

   The cooler in this shipment was received at the lab at 0.3 degrees Celsius; however, there were no broken containers or ice noted. No qualifications necessary on this basis.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

X Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

X Yes ☐ No NA (Please explain.) Comments:

All samples received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes ☐ No ☐ X NA (Please explain.) Comments:

No discrepancies.

e. Data quality or usability affected? (Please explain.)

Comments:

Results are usable without qualification.

4. Case Narrative

a. Present and understandable?

X Yes ☐ No ☐NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

Yes ☐ No X☐NA (Please explain.) Comments:

The case narrative mostly discusses the fuel patterns. No difficulties with analyses were noted.

c. Were all corrective actions documented?

X Yes ☐ No ☐NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

All results are usable for project purposes with qualifiers applied to results with quality control issues. No results were rejected.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

X Yes ☐ No ☐NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
X Yes □ No □ NA (Please explain.) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No NA (Please explain.)
Comments:

e. Data quality or usability affected?
Comments:

No.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      X Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      X Yes No □NA (Please explain.) Comments:

      iii. If above PQL, what samples are affected?
      Comments:

      iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
      Yes □ No X□NA (Please explain.) Comments:

      No qualifications necessary.

      v. Data quality or usability affected? (Please explain.)
      Comments:

      No effect on data quality or usability.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
☐X Yes ☐ No ☐ NA (Please explain.) Comments:

Percent moisture and percent solids are the only non-organic results.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
X☐Yes ☐ No ☐NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)
X Yes No ☐NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?
Comments:

n/a

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
Yes ☐ No ☐X NA (Please explain.) Comments:

No exceedances or qualifications on this basis.

vii. Data quality or usability affected? (Use comment box to explain.)
Comments:

n/a

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

☐X Yes No ☐NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

☐ Yes ☐ No X NA (Please explain.) Comments:

No surrogate issues.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

See above.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes ☐ No X☐NA (Please explain.) Comments:

No volatile samples in this SDG.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes ☐ No X☐NA (Please explain.) Comments:

No volatile samples in this SDG.

iii. All results less than PQL?

Yes ☐ No X NA (Please explain.) Comments:

No volatile samples in this SDG..

iv. If above PQL, what samples are affected?

Comments:

See above.

v. Data quality or usability affected? (Please explain.)

Comments:

See above.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
Yes No NA (Please explain.) Comments:

Two soil field duplicates submitted in this SDG of 18 samples. Duplicate frequency calculated on a project basis, rather than per SDG.

ii. Submitted blind to lab?
X Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

□X Yes No NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

f. Decontamination or Equipment Blank (If not used explain why).

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

i. All results less than PQL?

□Yes □ No X□NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

ii. If above PQL, what samples are affected?

Comments:

n/a

iii. Data quality or usability affected? (Please explain.)

Comments:

n/a

7. <u>Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)</u>
   a. Defined and appropriate?
      X Yes ☐ No ☐NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Project Chemist

Date: 11-30-12

CS Report Name: NE Cape 2012 HTRW report

Report Date: 9-26-12

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma

Laboratory Report Number: 580-34825

ADEC File Number: 475.38.013

ADEC RecKey Number: Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes □ No □NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      X Yes □ No □NA (Please explain.) Comments:

      Total halogens and glycol were analyzed at TestAmerica-Savannah, an ADEC CS accredited lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes □ No □NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes □ No □NA (Please explain.) Comments:

      The cooler temperature was 0.3 degrees C, the temperature blank was 2.7 degrees C. The samples were waste samples collected from the drums at Site 10. The lab did not note any issues with breakage or ice; therefore, there is no qualification necessary on this basis.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
X Yes □ No □NA (Please explain.) Comments:

Samples were shipped in single containers with cool to 4 degrees C as preservation.

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes □ No □NA (Please explain.) Comments:

All samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes □ No □NA (Please explain.) Comments:

The only noted discrepancy was the collection date on 12NCDRUM010, which had 9/1/12 listed on the container and 9/2/12 on the CoC. Samples were logged in per the CoC.

e. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification in respect to sample shipping and documentation. The analytical results were used for drum waste characterization and disposal purposes only.

4. <u>Case Narrative</u>

a. Present and understandable?
X Yes □ No □NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes □ No □NA (Please explain.) Comments:

The closing CCV for glycol analysis was outside of control limits, likely due to the sample matrix, which appeared to be a combination of glycol and motor oil in several samples. The laboratory extracted the glycol with deionized water to eliminate petroleum constituents in the sample. Other QC issues are described in the following sections or in the QA summary (method blank contamination and failed MS/MSDs).

c. Were all corrective actions documented?
X Yes □ No □NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable for project purposes with some qualifications due to minor QC issues. The main purpose of the analyses was for waste characterization and disposal.

5. Samples Results
   a. Correct analyses performed/reported as requested on COC?
      X Yes □ No □NA (Please explain.) Comments:

   b. All applicable holding times met?
      □Yes X No □NA (Please explain.) Comments:

Holding times for VOC waste samples were evaluating using the SW-846 specified holding time of 14 days for this matrix; and SVOCs were evaluated using the holding times of 14 day to extraction and 40 days from extraction to analysis. VOC and SVOC waste samples 12NCDRUMO2, 12NCDRUMO3, 12NCDRUMO4, 12NCDRUMO5, 12NCDRUMO6, 12NCDRUMO7, 12NCDRUMO9, and 12NCDRUMO14 were analyzed 10 days over holding time for VOCs and extracted 10 days over hold time for SVOCs. Samples were H qualified.
Holding times for DRO and RRO waste samples exceeded the 14 day to extraction holding time with extraction occurring 6 or 7 days over holding time for samples 12NCDRUMO2, 12NCDRUMO3, 12NCDRUMO4, 12NCDRUMO5, 12NCDRUMO6, 12NCDRUMO7, 12NCDRUMO9, and 12NCDRUMO14. Samples were H qualified.
The 8015C DAI analyses on samples 12NCDRUM02, -DRUM03,- DRUM04 and -DRUM06 were noted as analyzed past holding time in the laboratory narrative. Samples were H qualified.

   c. All soils reported on a dry weight basis?
      □Yes □ No X NA (Please explain.) Comments:

Samples were liquids from the drum contents at Site 10 and were reported “as-received”.

   d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
      X Yes □ No □NA (Please explain.) Comments:

Results were used to distinguish the waste drums as hazardous or non-hazardous as stated on Table 101 of CFR40 SubpartC.261.21 thru 24.

   e. Data quality or usability affected?
      Comments:

Sample results are usable for project purposes with some data qualifications. The results will be used for disposal purposes.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes ☐ No ☐NA (Please explain.) Comments:

There were no method blanks with detectable results greater than the LOQ; however, there were two 6010B method blanks, one 8015, two 8260, and one DRO method blank with results detected between the LOQ and the DL.

iii. If above PQL, what samples are affected?
Comments:

Samples 12NCDRUM02 thru -06 and -08 thru -11had m & p xylenes B flagged for blank contamination in MB 580-120040/5, some samples were diluted up to 1000x and that was factored into the B flags. This blank also had detections of carbon disulfide, n-butylbenzene and hexchlorobutadiene, which were not detected in any samples. The method blank in batch 580-120044/1had reportable concentrations of carbon disulfide and m &p xylenes, samples extracted with this method blank had concentrations of carbon disulfide and xylenes greater than 10 times the concentration in the MB, even with the dilutions factored in.
Ethylene glycol was detected in the MB for glycol analysis, all samples analyzed with the MB except sample 12NCDRUM011had concentrations of glycol greater than 10 times the concentration reported in the MB. Sample 12NCDRUM011 was B flagged.
DRO was detected in MB 580-119798/1-A at a concentration of 429 mg/kg, samples 12NCDRUM02, -07, -09, -10 and -11 were B flagged for reported concentrations less than 10 times the concentration in the method blank.
Nickel was detected in MB 580-119604/1-C (leachate blank) at a concentration less than ½ the LOQ (0.0096 mg/L), the method extraction blank MB 580-119753/13-A detected barium in the method blank at 0.0022 mg/kg. Barium results for samples 12NCDRUM04 and -05 and nickel results for sample 12NCDRUM02 were B flagged as their results were less than 10 times greater than the concentration reported in the method blank.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
X Yes ☐ No ☐NA (Please explain.) Comments:

See above

v. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes, which is characterization and disposal of the drum contents.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

X Yes □ No □NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

X Yes X No □NA (Please explain.) Comments:

The recovery values of the MS/MSD on sample 12NCDRUM06 for mercury were below acceptance limits. The LCS/LCSD was within acceptance limits so only sample 12NCDRUM06 was flagged ML for matrix interference. The sample result was non-detect for mercury. All LCS/LCSDs for all analyses were within control limits.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

X Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

X Yes □ No □NA (Please explain.) Comments:

Noted above.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Sample results are usable for project purposes, which is waste characterization and disposal, with above noted flags.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

X Yes □ No □NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
Yes No X NA (Please explain.) Comments:

All surrogates were within control limits.

iv. Data quality or usability affected? (Use the comment box to explain.)
Comments:

Sample results are usable without qualification in respect to surrogate recoveries.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)
Yes X No NA (Please explain.) Comments:

Samples were waste samples, no trip blank accompanied the samples.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)
Yes No X NA (Please explain.) Comments:

No trip blank

iii. All results less than PQL?
Yes No NA (Please explain.) Comments:

Not applicable

iv. If above PQL, what samples are affected?
Comments:

Not applicable

v. Data quality or usability affected? (Please explain.)
Comments:

Not applicable.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
Yes X No NA (Please explain.) Comments:

These are waste samples, no field duplicate was collected.

ii. Submitted blind to lab?

□Yes □ No □NA (Please explain.) Comments:

Not applicable

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

$$RPD (\%) = \text{Absolute value of: } \frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

□Yes □ No □NA (Please explain.) Comments:

Not applicable

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Data quality and usability were not affected by

f. Decontamination or Equipment Blank (If not used explain why).

□Yes X No □NA (Please explain.) Comments:

Samples were collected with disposable sample equipment.

i. All results less than PQL?

□Yes □ No □NA (Please explain.) Comments:

No equipment blank required.

ii. If above PQL, what samples are affected?

Comments:

No equipment blank required.

iii. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable without an equipment blank as samples were collected with disposable equipment.

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      X Yes No NA (Please explain.) Comments:

Flags are described above and in the CDQR as well as on the data table.

Laboratory Data Review Checklist

Completed by: Keather McLoone

Title: Project Chemist Date: 11/19/2012

CS Report Name: Northeast Cape (Site 21) Report Date: 9/24/12

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma Laboratory Report Number: 580-34828

ADEC File Number: 475.38.013 ADEC RecKey Number: Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes □ No □NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      □Yes □ No X NA (Please explain.) Comments:

      Samples were not transferred to another lab.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes □ No □NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes □ No □NA (Please explain.) Comments:

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

Yes ☐ X No ☐NA (Please explain.) Comments:

The water samples collected for metals analysis were not preserved in the field and required preservation upon sample receipt.

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

X Yes ☐ No NA (Please explain.) Comments:

All samples received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes ☐ No ☐ X NA (Please explain.) Comments:

No discrepancies notes.

e. Data quality or usability affected? (Please explain.)

Comments:

Results are usable without qualification.

4. Case Narrative

a. Present and understandable?

X Yes ☐ No ☐NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

Yes ☐ No X NA (Please explain.) Comments:

c. Were all corrective actions documented?

X Yes ☐ No NA (Please explain.) Comments:

d. What is the effect on data quality/usability according to the case narrative?

Comments:

See above.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

X Yes ☐ No ☐NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
X Yes □ No □ NA (Please explain.) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No NA (Please explain.)
Comments:

e. Data quality or usability affected?
Comments:

No.

6. QC Samples
   a. Method Blank
      i. One method blank reported per matrix, analysis and 20 samples?
      X Yes □ No □NA (Please explain.) Comments:

      ii. All method blank results less than PQL?
      X Yes No □NA (Please explain.) Comments:

      iii. If above PQL, what samples are affected?
      Comments:

      iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
      X Yes □ No □NA (Please explain.) Comments:

      v. Data quality or usability affected? (Please explain.)
      Comments:

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes No X NA (Please explain.) Comments:

Only arsenic results in this SDG.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

X Yes No NA (Please explain.) Comments:

Lab reported both LCS/LCSD and sample duplicate results.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

X Yes No NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

X Yes No NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

n/a

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No X NA (Please explain.) Comments:

No exceedances or qualifications on this basis.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

n/a

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

X Yes No NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

Yes No X NA (Please explain.) Comments:

No surrogates associated with arsenic analyses.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

Yes No X NA (Please explain.) Comments:

No qualifications on this basis.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

No effect on sample data quality or usability on this basis.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

Yes No X NA (Please explain.) Comments:

No volatile samples in this shipment.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes No X NA (Please explain.) Comments:

See above.

iii. All results less than PQL?

Yes No XNA (Please explain.) Comments:

See above.

iv. If above PQL, what samples are affected?

Comments:

See above.

v. Data quality or usability affected? (Please explain.)

Comments:

See above.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X Yes No NA (Please explain.) Comments:

One set of soil field duplicates and one set of water field duplicates were submitted with this SDG containing 7 soil samples and two water samples. Duplicate frequency calculated on a project basis, rather than per SDG.

ii. Submitted blind to lab?
X Yes No NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$RPD\ (\%) = \text{Absolute value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

☐X Yes No NA (Please explain.) Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

No qualifications on this basis for this SDG.

f. Decontamination or Equipment Blank (If not used explain why).

☐Yes ☐ No X☐NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

i. All results less than PQL?

☐Yes ☐ No X☐NA (Please explain.) Comments:

All samples were collected using disposable or dedicated equipment.

ii. If above PQL, what samples are affected?

Comments:

n/a

iii. Data quality or usability affected? (Please explain.)

Comments:

n/a

7. <u>Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)</u>
   a. Defined and appropriate?
      X Yes ☐ No ☐NA (Please explain.) Comments:

Flags/qualifiers are on the data tables and are also discussed in the QA summary, which was not prepared until after this checklist.

Laboratory Data Review Checklist

Completed by:	Marty Hannah		
Title:	Project Chemist	Date:	12-3-12
CS Report Name:	2012 NE Cape HTRW Report	Report Date:	10-12-12
Consultant Firm:	Bristol Environmental Remediation Services		
Laboratory Name:	TestAmerica-Tacoma	Laboratory Report Number:	580-35021
ADEC File Number:	473.38.013	ADEC RecKey Number:	Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes □ No □NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      □Yes □ No X NA (Please explain.) Comments:

      All analyses were performed at TestAmerica-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes □ No □NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes □ No □NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      □Yes X No □NA (Please explain.) Comments:

      Samples were delivered to TestAmerica Anchorage at 2.1 degrees C and forwarded to TA-Tacoma where they arrived were a cooler temperature of 1.3 degrees C and a temperature blank at 0.9 degrees C. The slightly depressed cooler temperature had no affect on this shipment of only methanol preserved samples.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

X Yes ☐ No ☐NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

X Yes ☐ No ☐NA (Please explain.) Comments:

All samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

X Yes ☐ No ☐NA (Please explain.) Comments:

One sample was received with an illegible label, it was determined to be sample 12NC10BW01 through elimination. Three containers were submitted for 12NC10BW01 as it was also noted on the CoC to be analyzed for MS/MSD.

The trip blank collection date was listed as 9-16-12 on the CoC and 9-17-12 on the container. The trip blank was logged in per the CoC date of 9-16-12. Note: there is no holding time for trip blanks.

e. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes without qualification in respect to sample shipment and documentation.

4. <u>Case Narrative</u>

a. Present and understandable?

X Yes ☐ No ☐NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

X Yes ☐ No ☐NA (Please explain.) Comments:

No LCSD was analyzed as has been requested for the entire project, an MS/MSD was performed for 8260 analyses. Batch precision will need to rely on MS/MSD RPD.

The BFB tune was slightly below criteria, the laboratory noted it was due to a rounding error.

The CCV for analytical batch 580-121249 had a low recovery for carbon disulfide and a high recovery for acetone. No carbon disulfide was detected in any samples and acetone was reported below the LOQ in sample 12NC10BW04, which was already J flagged for reported concentrations below the LOQ. All associated carbon disulfide results were QL qualified and the detected acetone result was QH qualified.

Surrogates and MS/MSDs are discussed in later sections.

c. Were all corrective actions documented?
X Yes ☐ No ☐NA (Please explain.) Comments:

No corrective actions were required, variances were granted for the LCS having a high recovery for 1,2-dichloropropane, which was not detected in any samples. The CCV with carbon disulfide and acetone outside of control limits was also accepted with a variance granted by the USACE chemist.

d. What is the effect on data quality/usability according to the case narrative?
Comments:

Sample results are usable as qualified.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?
X Yes ☐ No ☐NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes ☐ No ☐NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
☐Yes X No ☐NA (Please explain.) Comments:

No unpreserved sample was submitted with the methanol preserved samples to determine percent solids.

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes ☐ No ☐NA (Please explain.) Comments:

e. Data quality or usability affected?
Comments:

While ADEC requires all soil results be reported on a dry-weight basis the purpose of this analysis was for waste characterization and disposal. The TSDF (Columbia Ridge Landfill in Arlington, Oregon) was contacted and they stated they would accept the results and waste on a wet-weight basis so the results are usable for project purposes.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes ☐ No ☐NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?
Comments:

Not applicable

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
☐Yes ☐ No X NA (Please explain.) Comments:

No analytes were detected in the method blank

v. Data quality or usability affected? (Please explain.)
Comments:

Sample results are usable for project purposes without qualification in respect to the method blank.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)
Yes X☐ No☐NA (Please explain.) Comments:

Only a LCS was performed for this SDG of 8260 only samples; therefore, batch precision will need to rely on MS/MSD RPDs.

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
☐Yes ☐ No X NA (Please explain.) Comments:

Samples were analyzed for VOCs by EPA method 8260 only.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)
☐Yes X No ☐NA (Please explain.) Comments:

1,2-dichloropropane had a recovery that exceeded the upper control limit in the LCS. 1,2-dichloropropane was not detected in any samples. The MS and/or MSD had recoveries that exceeded the upper control limit for 1,2-dichloropropane, 1,1,2,2-tetrachloroethane, 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene, sec-butylbenzene, n-butylbenzene and naphthalene. Recoveries for the LCS were in control for these compounds exceeding MS/MSD limits. Naphthalene, 1,3,5-trimethylbenzene and1,2,4-trimethylbenzene had reportable detections in the spiked sample, 12NC10BW01, and were flagged MH.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

X Yes □ No □NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

X Yes □ No □NA (Please explain.) Comments:

Noted above

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Sample results are usable for project purposes with above noted qualifications for high recoveries in the MS/MSD. The purpose of this analysis was for waste characterization and disposal.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

X Yes □ No □NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

□Yes X No □NA (Please explain.) Comments:

Trifluorotoluene, a field surrogate for AK101 (GRO) analyses had a recovery exceed the upper control limit in sample 12NC10BW01 8260 analysis results. All other surrogates added at the lab met acceptance criteria.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

□Yes X No □NA (Please explain.) Comments:

No flags were assigned due to the high TFT surrogate recovery as the surrogate is meant for AK 101 GRO analyses.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

Sample results are usable for project purposes without qualification in respect to surrogate recoveries.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

X Yes □ No □NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

X Yes □ No □NA (Please explain.) Comments:

iii. All results less than PQL?

X Yes □ No □NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

Not applicable

v. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable without qualification in respect to surrogate recoveries.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X Yes □ No □NA (Please explain.) Comments:

ii. Submitted blind to lab?

X Yes ☐ No ☐NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of:
$$\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

☐Yes X No ☐NA (Please explain.) Comments:

MEK was detected in sample 12NC10BW02 below the LOQ and not in –BW03 (field duplicate), MTBE was detected in –BW02 above the LOQ and not in –BW03 (flagged QN), naphthalene was detected in –BW03 below the LOQ. All other results were non-detect. The samples were pretty clean.

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Sample results are usable for project purposes, which is waste characterization and disposal, with above noted qualifications.

f. Decontamination or Equipment Blank (If not used explain why).

☐Yes X No ☐NA (Please explain.) Comments:

Samples were collected with disposable sampling equipment.

i. All results less than PQL?

☐Yes ☐ No ☐NA (Please explain.) Comments:

Not applicable.

ii. If above PQL, what samples are affected?

Comments:

Not applicable

iii. Data quality or usability affected? (Please explain.)

Comments:

Not applicable.

7. <u>Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)</u>
   a. Defined and appropriate?
      X Yes ☐ No ☐NA (Please explain.) Comments:

Flags are defined in this checklist, in the table notes and in the CDQR.

Laboratory Data Review Checklist

Completed by: Marty Hannah

Title: Project Chemist

Date: 12-3-12

CS Report Name: NE Cape Site 28 Phase I Sediment Removal Report

Report Date: 10-15-12

Consultant Firm: Bristol Environmental Remediation Services

Laboratory Name: TestAmerica-Tacoma

Laboratory Report Number: 580-35168

ADEC File Number: 475.38.013

ADEC RecKey Number: Haz ID. 212

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      ☐Yes ☐ No X NA (Please explain.) Comments:

      All analyses were performed by TestAmerica-Tacoma

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      ☐Yes X No ☐NA (Please explain.) Comments:

      Samples were shipped from NE Cape and picked up by Bristol personnel who hand delivered to TA-Anchorage where the cooler temperature was 2.5 degrees C and forwarded by TA-Anchorage personnel to TA-Tacoma. The cooler temperature upon receipt in Tacoma was 0.1 degrees C and the temperature blank was 2.4 degrees C. Samples were not affected by the cooler temperature.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
X Yes No NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X Yes No NA (Please explain.) Comments:

All samples were received in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?
X Yes No NA (Please explain.) Comments:

The sample container for 12NC28BW01 listed a collection date of 9/21/12 and the CoC listed a date of 9/1212012, likely a typing error, the sample was logged in per the sample container. Sample Trip blank 092312-1 listed a collection date of 9/2132012, likely another entry error, the sample was logged in as a collection date of 09/23/12 per the sample container.

e. Data quality or usability affected? (Please explain.)
Comments:

The mis-labeling or mis-entry of collection dates did not affect samples results or holding times.

4. Case Narrative
a. Present and understandable?
X Yes No NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes No NA (Please explain.) Comments:

The GRO surrogate had a low recovery for sample 12NC28BW01 (high % moisture), GRO was detected in the MB, the RRO surrogate failed high for samples 12NCMOCBW222 and –BW229. The metals MS/MSD was performed on a non-project sample and had chromium, lead and nickel fail high in the MSD and zinc high in both the MS and MSD. The MS /MSD also failed RPD for chromium and nickel.

c. Were all corrective actions documented?
Yes X No NA (Please explain.) Comments:

No corrective actions were required as matrix and high percent moisture likely contributed to the low accuracy of the samples and surrogates.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Sample results are usable for project purposes with some qualifications. The results will be used for waste sample characterization and disposal.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

X Yes □ No □NA (Please explain.) Comments:

b. All applicable holding times met?

X Yes □ No □NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?

X Yes □ No □NA (Please explain.) Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

X Yes □ No □NA (Please explain.) Comments:

e. Data quality or usability affected?

Comments:

Sample results are usable for project purposes without qualification in respect to sample reporting limits and holding times.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?

X Yes □ No □NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?

Comments:

GRO was detected in the method blank, trip blank and sample 12NC28BW01. The concentration in sample –BW01 was greater than 10 times the concentration reported in the method blank and trip blank so no qualification is necessary.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

☐Yes X No ☐NA (Please explain.) Comments:

The concentration was greater than 10 times the concentration of the method blank.

v. Data quality or usability affected? (Please explain.)

Comments:

Sample results are usable for project purposes without qualification in respect to method blank analysis and reporting.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

X Yes ☐ No ☐NA (Please explain.) Comments:

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

☐Yes ☐ No ☐NA (Please explain.) Comments:

The metals MS/MSD was performed on a non-project sample and had chromium, lead and nickel fail high in the MSD and zinc high in both the MS and MSD.

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

☐Yes ☐ No ☐NA (Please explain.) Comments:

The MS/MSD on the non-project sample also failed RPD for chromium, and nickel

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

MS/MSD results on non-project samples are not applicable for data evaluation. Only sample 12NC28BW01 was analyzed for metals and results were used for waste disposal decisions. The lack of MS/MSD information will not affect data usability .

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
No data qualifiers were assigned. X Yes No NA (Please explain.)
Comments:

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Sample results are usable for project purposes, which was waste characterization and disposal as well as monitoring the effectiveness of the removal technique for capturing contaminants of concern at Site 28.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?
X Yes No NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)
Yes X No NA (Please explain.) Comments:

Trifluorotoluene, the field surrogate for GRO analyses, had surrogate recovery in sample 12NC28BW01 below acceptance criteria for both GRO and 8260 analyses. The sample had high % moisture, which may bias the surrogate recovery. Surrogate recoveries for two waste samples were high for the RRO surrogate.

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?
X Yes No NA (Please explain.) Comments:

The GRO sample result for 12NC28BW01 is flagged ML for a surrogate outlier with low bias likely due to high moisture content of 45 percent. The RRO results for samples 12NCMOCBW222 and 12NCMOCBW229 were flagged QH for a surrogate outlier with high bias.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

Sample results are usable for project purposes, which is waste characterization and disposal. The bulk waste contained high concentrations of DRO, 1-methylnaphthalene and 2-methylnaphthalene, which necessitate proper disposal in a TSDF facility. The waste is not considered hazardous.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): <u>Water and Soil</u>

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

X Yes ☐ No ☐NA (Please explain.) Comments:

Only 1 cooler was shipped.

iii. All results less than PQL?

☐Yes X No ☐NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

Only sample 12NC28BW01 was analyzed for GRO and its GRO concentration was greater than 10 times the concentration reported in the both the trip blank and method blank so no qualification is necessary.

v. Data quality or usability affected? (Please explain.)

Comments:

While the GRO blanks (trip blank and method blank) both had reportable GRO, neither result affected the usability of the GRO result in sample 12NC28BW01. The results are usable for project purposes, which is waste characterization and disposal.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

X Yes ☐ No ☐NA (Please explain.) Comments:

No field duplicate samples were collected with this SDG. The overall 10% field duplicate frequency was met for the project.

ii. Submitted blind to lab?

Not applicable

☐Yes ☐ No ☐NA (Please explain.) Comments:

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $$\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

☐Yes ☐ No ☐NA (Please explain.) Comments:

Not applicable

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

The overall field duplicate goal of 10% frequency was met for the project.

f. Decontamination or Equipment Blank (If not used explain why).

☐Yes X No ☐NA (Please explain.) Comments:

All samples were collected with disposable sampling equipment.

i. All results less than PQL?

☐Yes ☐ No ☐NA (Please explain.) Comments:

Not applicable.

ii. If above PQL, what samples are affected?

Comments:

Not applicable

iii. Data quality or usability affected? (Please explain.)

Comments:

No equipment blank was necessary as all samples were collected with disposable sampling equipment.

7. <u>Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)</u>
   a. Defined and appropriate?

X Yes ☐ No ☐NA (Please explain.) Comments:

Data flags are defined in the ADEC checklist, CDQR and in the appropriate results tables.

Sample Summary Report

Sample Summary Sheet

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-33899 MI-MOC wells, MOC SW													
580-33899-16	12NCBGSS01	Soil	7/6/2012 15:20	0-4"	8082	TestAmerica Seattle	MS/MSD	CB-1	EB	cool <4 C	2	15_Days	Plastic Bag
580-33899-16	12NCBGSS01	Soil	7/6/2012 15:20	0-4"	AK102	TestAmerica Seattle	MS/MSD	CB-1	EB	cool <4 C	2	15_Days	Plastic Bag
580-33899-17	12NCBGSS02	Soil	7/7/2012 11:40	0-4"	8082	TestAmerica Seattle		CB-2	EB	cool <4 C	2	15_Days	Plastic Bag
580-33899-17	12NCBGSS02	Soil	7/7/2012 11:40	0-4"	AK102	TestAmerica Seattle		CB-2	EB	cool <4 C	2	15_Days	Plastic Bag
580-33899-18	12NCBGSS03	Soil	7/7/2012 14:00	0-4"	8082	TestAmerica Seattle	Field Rep of NCBGSS02	CB-2	EB	cool <4 C	1	15_Days	Plastic Bag
580-33899-18	12NCBGSS03	Soil	7/7/2012 14:00	0-4"	AK102	TestAmerica Seattle	Field Rep of NCBGSS02	CB-2	EB	cool <4 C	1	15_Days	Plastic Bag
580-33899-19	12NCBGSS04	Soil	7/7/2012 14:25	0-4"	8082	TestAmerica Seattle	Field Rep of NCBGSS02	CB-2	EB	cool <4 C	2	15_Days	Plastic Bag
580-33899-19	12NCBGSS04	Soil	7/7/2012 14:25	0-4"	AK102	TestAmerica Seattle	Field Rep of NCBGSS02	CB-2	EB	cool <4 C	2	15_Days	Plastic Bag
580-33899-20	12NCBGSS05	Soil	7/7/2012 17:00	0-4"	8082	TestAmerica Seattle		CB-3	EB	cool <4 C	2	15_Days	Plastic Bag
580-33899-20	12NCBGSS05	Soil	7/7/2012 17:00	0-4"	AK102	TestAmerica Seattle		CB-3	EB	cool <4 C	2	15_Days	Plastic Bag
580-33899-21	12NCBGSS06	Soil	7/8/2012 14:30	0-4"	8082	TestAmerica Seattle		CB-4	EB	cool <4 C	1	15_Days	Plastic Bag
580-33899-21	12NCBGSS06	Soil	7/8/2012 14:30	0-4"	AK102	TestAmerica Seattle		CB-4	EB	cool <4 C	1	15_Days	Plastic Bag
580-33899-22	12NCBGSS07	Soil	7/9/2012 9:40	0-4"	8082	TestAmerica Seattle		CB-5	EB	cool <4 C	2	15_Days	Plastic Bag
580-33899-22	12NCBGSS07	Soil	7/9/2012 9:40	0-4"	AK102	TestAmerica Seattle		CB-5	EB	cool <4 C	2	15_Days	Plastic Bag
580-33899-23	12NCBGSS08	Soil	7/9/2012 11:15	0-4"	8082	TestAmerica Seattle		CB-6	EB	cool <4 C	1	15_Days	Plastic Bag
580-33899-23	12NCBGSS08	Soil	7/9/2012 11:15	0-4"	AK102	TestAmerica Seattle		CB-6	EB	cool <4 C	1	15_Days	Plastic Bag
580-33899-24	12NCBGSS09	Soil	7/9/2012 16:45	0-4"	8082	TestAmerica Seattle		MOC-BS-1	EB	cool <4 C	2	15_Days	Plastic Bag
580-33899-24	12NCBGSS09	Soil	7/9/2012 16:45	0-4"	AK102	TestAmerica Seattle		MOC-BS-1	EB	cool <4 C	2	15_Days	Plastic Bag
580-33899-13	12NCMOCSWA001	Water	7/6/2012 10:45	0"	AK102	TestAmerica Seattle		MOCSW01	LK	Hydrochloric Acid	9	15_Days	Amber Glass 1 liter - Hydrochloric
580-33899-14	12NCMOCSWA002	Water	7/6/2012 11:05	0"	AK102	TestAmerica Seattle		MOCSW02	LK	Hydrochloric Acid	9	15_Days	Amber Glass 1 liter - Hydrochloric
580-33899-15	12NCMOCSWA003	Water	7/6/2012 11:45	0"	AK102	TestAmerica Seattle	MS/MSD	MOCSW03	LK	Hydrochloric Acid	9	15_Days	Amber Glass 1 liter - Hydrochloric
580-33899-1	12NCMOCWA001	Water	7/8/2012 15:00	69.14' amsl	6020 Total	TestAmerica Seattle	MS/MSD	22MW2	LK	Nitric Acid	4	15_Days	Plastic 250ml - with Nitric Acid
580-33899-1	12NCMOCWA001	Water	7/8/2012 15:00	69.14' amsl	6020 Dissolved	TestAmerica Seattle	MS/MSD	22MW2	LK	Nitric Acid	9	15_Days	Plastic 250ml â€“ w/nitric - dis
580-33899-1	12NCMOCWA001	Water	7/8/2012 15:00	69.14' amsl	7470A Dissolved	TestAmerica Seattle	MS/MSD	22MW2	LK	Nitric Acid	9	15_Days	Plastic 250ml â€“ w/nitric - dis
580-33899-1	12NCMOCWA001	Water	7/8/2012 15:00	69.14' amsl	7470A Total	TestAmerica Seattle	MS/MSD	22MW2	LK	Nitric Acid	4	15_Days	Plastic 250ml - with Nitric Acid
580-33899-1	12NCMOCWA001	Water	7/8/2012 15:00	69.14' amsl	8082	TestAmerica Seattle	MS/MSD	22MW2	LK	cool <4 C	4	15_Days	Amber Glass 1 liter - unpreserved
580-33899-1	12NCMOCWA001	Water	7/8/2012 15:00	69.14' amsl	8260B/DoD	TestAmerica Seattle	MS/MSD	22MW2	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-1	12NCMOCWA001	Water	7/8/2012 15:00	69.14' amsl	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	22MW2	LK	cool <4 C	4	15_Days	Amber Glass 1 liter - unpreserved
580-33899-1	12NCMOCWA001	Water	7/8/2012 15:00	69.14' amsl	AK101	TestAmerica Seattle	MS/MSD	22MW2	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-1	12NCMOCWA001	Water	7/8/2012 15:00	69.14' amsl	AK102 & 103	TestAmerica Seattle	MS/MSD	22MW2	LK	Hydrochloric Acid	3	15_Days	Amber Glass 1 liter - Hydrochloric
580-33899-1	12NCMOCWA001	Water	7/8/2012 15:00	69.14' amsl	RSK-175	TestAmerica Savannah	MS/MSD	22MW2	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-2	12NCMOCWA002	Water	7/8/2012 17:00	74.38' amsl	6020 Total	TestAmerica Seattle		26MW1	LK	Nitric Acid	5	15_Days	Plastic 250ml - with Nitric Acid
580-33899-2	12NCMOCWA002	Water	7/8/2012 17:00	74.38' amsl	6020 Dissolved	TestAmerica Seattle		26MW1	LK	Nitric Acid	9	15_Days	Plastic 250ml â€“ w/nitric - dis
580-33899-2	12NCMOCWA002	Water	7/8/2012 17:00	74.38' amsl	7470A Dissolved	TestAmerica Seattle		26MW1	LK	Nitric Acid	9	15_Days	Plastic 250ml â€“ w/nitric - dis
580-33899-2	12NCMOCWA002	Water	7/8/2012 17:00	74.38' amsl	7470A Total	TestAmerica Seattle		26MW1	LK	Nitric Acid	5	15_Days	Plastic 250ml - with Nitric Acid
580-33899-2	12NCMOCWA002	Water	7/8/2012 17:00	74.38' amsl	8082	TestAmerica Seattle		26MW1	LK	cool <4 C	5	15_Days	Amber Glass 1 liter - unpreserved
580-33899-2	12NCMOCWA002	Water	7/8/2012 17:00	74.38' amsl	8260B/DoD	TestAmerica Seattle		26MW1	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-2	12NCMOCWA002	Water	7/8/2012 17:00	74.38' amsl	8270C SIM/DoD	TestAmerica Seattle		26MW1	LK	cool <4 C	5	15_Days	Amber Glass 1 liter - unpreserved
580-33899-2	12NCMOCWA002	Water	7/8/2012 17:00	74.38' amsl	AK101	TestAmerica Seattle		26MW1	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-2	12NCMOCWA002	Water	7/8/2012 17:00	74.38' amsl	AK102 & 103	TestAmerica Seattle		26MW1	LK	Hydrochloric Acid	5	15_Days	Amber Glass 1 liter - Hydrochloric
580-33899-2	12NCMOCWA002	Water	7/8/2012 17:00	74.38' amsl	RSK-175	TestAmerica Savannah		26MW1	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-3	12NCMOCWA003	Water	7/9/2012 10:40	69.27' amsl	6020 Total	TestAmerica Seattle		20MW1	LK	Nitric Acid	6	15_Days	Plastic 250ml - with Nitric Acid
580-33899-3	12NCMOCWA003	Water	7/9/2012 10:40	69.27' amsl	6020 Dissolved	TestAmerica Seattle		20MW1	LK	Nitric Acid	9	15_Days	Plastic 250ml â€“ w/nitric - dis
580-33899-3	12NCMOCWA003	Water	7/9/2012 10:40	69.27' amsl	7470A Dissolved	TestAmerica Seattle		20MW1	LK	Nitric Acid	9	15_Days	Plastic 250ml â€“ w/nitric - dis
580-33899-3	12NCMOCWA003	Water	7/9/2012 10:40	69.27' amsl	7470A Total	TestAmerica Seattle		20MW1	LK	Nitric Acid	6	15_Days	Plastic 250ml - with Nitric Acid
580-33899-3	12NCMOCWA003	Water	7/9/2012 10:40	69.27' amsl	8082	TestAmerica Seattle		20MW1	LK	cool <4 C	6	15_Days	Amber Glass 1 liter - unpreserved
580-33899-3	12NCMOCWA003	Water	7/9/2012 10:40	69.27' amsl	8260B/DoD	TestAmerica Seattle		20MW1	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-3	12NCMOCWA003	Water	7/9/2012 10:40	69.27' amsl	8270C SIM/DoD	TestAmerica Seattle		20MW1	LK	cool <4 C	6	15_Days	Amber Glass 1 liter - unpreserved
580-33899-3	12NCMOCWA003	Water	7/9/2012 10:40	69.27' amsl	AK101	TestAmerica Seattle		20MW1	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-3	12NCMOCWA003	Water	7/9/2012 10:40	69.27' amsl	AK102 & 103	TestAmerica Seattle		20MW1	LK	Hydrochloric Acid	6	15_Days	Amber Glass 1 liter - Hydrochloric
580-33899-3	12NCMOCWA003	Water	7/9/2012 10:40	69.27' amsl	RSK-175	TestAmerica Savannah		20MW1	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-4	12NCMOCWA004	Water	7/9/2012 13:20	62.22' amsl	6020 Total	TestAmerica Seattle		17MW1	LK	Nitric Acid	7	15_Days	Plastic 250ml - with Nitric Acid
580-33899-4	12NCMOCWA004	Water	7/9/2012 13:20	62.22' amsl	6020 Dissolved	TestAmerica Seattle		17MW1	LK	Nitric Acid	9	15_Days	Plastic 250ml â€“ w/nitric - dis
580-33899-4	12NCMOCWA004	Water	7/9/2012 13:20	62.22' amsl	7470A Dissolved	TestAmerica Seattle		17MW1	LK	Nitric Acid	9	15_Days	Plastic 250ml â€“ w/nitric - dis
580-33899-4	12NCMOCWA004	Water	7/9/2012 13:20	62.22' amsl	7470A Total	TestAmerica Seattle		17MW1	LK	Nitric Acid	7	15_Days	Plastic 250ml - with Nitric Acid
580-33899-4	12NCMOCWA004	Water	7/9/2012 13:20	62.22' amsl	8082	TestAmerica Seattle		17MW1	LK	cool <4 C	7	15_Days	Amber Glass 1 liter - unpreserved
580-33899-4	12NCMOCWA004	Water	7/9/2012 13:20	62.22' amsl	8260B/DoD	TestAmerica Seattle		17MW1	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-4	12NCMOCWA004	Water	7/9/2012 13:20	62.22' amsl	8270C SIM/DoD	TestAmerica Seattle		17MW1	LK	cool <4 C	7	15_Days	Amber Glass 1 liter - unpreserved
580-33899-4	12NCMOCWA004	Water	7/9/2012 13:20	62.22' amsl	AK101	TestAmerica Seattle		17MW1	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-4	12NCMOCWA004	Water	7/9/2012 13:20	62.22' amsl	AK102 & 103	TestAmerica Seattle		17MW1	LK	Hydrochloric Acid	7	15_Days	Amber Glass 1 liter - Hydrochloric
580-33899-4	12NCMOCWA004	Water	7/9/2012 13:20	62.22' amsl	RSK-175	TestAmerica Savannah		17MW1	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-5	12NCMOCWA005	Water	7/9/2012 14:20	67.96' amsl	6020 Total	TestAmerica Seattle		MW88-10	LK	Nitric Acid	7	15_Days	Plastic 250ml - with Nitric Acid
580-33899-5	12NCMOCWA005	Water	7/9/2012 14:20	67.96' amsl	6020 Dissolved	TestAmerica Seattle		MW88-10	LK	Nitric Acid	9	15_Days	Plastic 250ml â€“ w/nitric - dis
580-33899-5	12NCMOCWA005	Water	7/9/2012 14:20	67.96' amsl	7470A Dissolved	TestAmerica Seattle		MW88-10	LK	Nitric Acid	9	15_Days	Plastic 250ml â€“ w/nitric - dis
580-33899-5	12NCMOCWA005	Water	7/9/2012 14:20	67.96' amsl	7470A Total	TestAmerica Seattle		MW88-10	LK	Nitric Acid	7	15_Days	Plastic 250ml - with Nitric Acid
580-33899-5	12NCMOCWA005	Water	7/9/2012 14:20	67.96' amsl	8082	TestAmerica Seattle		MW88-10	LK	cool <4 C	7	15_Days	Amber Glass 1 liter - unpreserved

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-33899-5	12NCMOCWA005	Water	7/9/2012 14:20	67.96' amsl	8260B/DoD	TestAmerica Seattle		MW88-10	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-5	12NCMOCWA005	Water	7/9/2012 14:20	67.96' amsl	8270C SIM/DoD	TestAmerica Seattle		MW88-10	LK	cool <4 C	7	15_Days	Amber Glass 1 liter - unpreserved
580-33899-5	12NCMOCWA005	Water	7/9/2012 14:20	67.96' amsl	AK101	TestAmerica Seattle		MW88-10	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-5	12NCMOCWA005	Water	7/9/2012 14:20	67.96' amsl	AK102 & 103	TestAmerica Seattle		MW88-10	LK	Hydrochloric Acid	4	15_Days	Amber Glass 1 liter - Hydrochloric
580-33899-5	12NCMOCWA005	Water	7/9/2012 14:20	67.96' amsl	RSK-175	TestAmerica Savannah		MW88-10	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-6	12NCMOCWA006	Water	7/9/2012 15:30	67.38' amsl	6020 Total	TestAmerica Seattle		MW88-1	LK	Nitric Acid	8	15_Days	Plastic 250ml - with Nitric Acid
580-33899-6	12NCMOCWA006	Water	7/9/2012 15:30	67.38' amsl	6020 Dissolved	TestAmerica Seattle		MW88-1	LK	Nitric Acid	9	15_Days	Plastic 250ml â€“ w/nitric - dis
580-33899-6	12NCMOCWA006	Water	7/9/2012 15:30	67.38' amsl	7470A Dissolved	TestAmerica Seattle		MW88-1	LK	Nitric Acid	9	15_Days	Plastic 250ml â€“ w/nitric - dis
580-33899-6	12NCMOCWA006	Water	7/9/2012 15:30	67.38' amsl	7470A Total	TestAmerica Seattle		MW88-1	LK	Nitric Acid	8	15_Days	Plastic 250ml - with Nitric Acid
580-33899-6	12NCMOCWA006	Water	7/9/2012 15:30	67.38' amsl	8082	TestAmerica Seattle		MW88-1	LK	cool <4 C	8	15_Days	Amber Glass 1 liter - unpreserved
580-33899-6	12NCMOCWA006	Water	7/9/2012 15:30	67.38' amsl	8260B/DoD	TestAmerica Seattle		MW88-1	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-6	12NCMOCWA006	Water	7/9/2012 15:30	67.38' amsl	8270C SIM/DoD	TestAmerica Seattle		MW88-1	LK	cool <4 C	8	15_Days	Amber Glass 1 liter - unpreserved
580-33899-6	12NCMOCWA006	Water	7/9/2012 15:30	67.38' amsl	AK101	TestAmerica Seattle		MW88-1	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-6	12NCMOCWA006	Water	7/9/2012 15:30	67.38' amsl	AK102 & 103	TestAmerica Seattle		MW88-1	LK	Hydrochloric Acid	8	15_Days	Amber Glass 1 liter - Hydrochloric
580-33899-6	12NCMOCWA006	Water	7/9/2012 15:30	67.38' amsl	RSK-175	TestAmerica Savannah		MW88-1	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-7	12NCMOCWA007	Water	7/10/2012 14:00	69.25' amsl	6020 Total	TestAmerica Seattle		MW10-1	LK	Nitric Acid	1	15_Days	Plastic 250ml - with Nitric Acid
580-33899-7	12NCMOCWA007	Water	7/10/2012 14:00	69.25' amsl	6020 Dissolved	TestAmerica Seattle		MW10-1	LK	Nitric Acid	9	15_Days	Plastic 250ml â€“ w/nitric - dis
580-33899-7	12NCMOCWA007	Water	7/10/2012 14:00	69.25' amsl	7470A Dissolved	TestAmerica Seattle		MW10-1	LK	Nitric Acid	9	15_Days	Plastic 250ml â€“ w/nitric - dis
580-33899-7	12NCMOCWA007	Water	7/10/2012 14:00	69.25' amsl	7470A Total	TestAmerica Seattle		MW10-1	LK	Nitric Acid	1	15_Days	Plastic 250ml - with Nitric Acid
580-33899-7	12NCMOCWA007	Water	7/10/2012 14:00	69.25' amsl	8082	TestAmerica Seattle		MW10-1	LK	cool <4 C	1	15_Days	Amber Glass 1 liter - unpreserved
580-33899-7	12NCMOCWA007	Water	7/10/2012 14:00	69.25' amsl	8260B/DoD	TestAmerica Seattle		MW10-1	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-7	12NCMOCWA007	Water	7/10/2012 14:00	69.25' amsl	8270C SIM/DoD	TestAmerica Seattle		MW10-1	LK	cool <4 C	1	15_Days	Amber Glass 1 liter - unpreserved
580-33899-7	12NCMOCWA007	Water	7/10/2012 14:00	69.25' amsl	AK101	TestAmerica Seattle		MW10-1	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-7	12NCMOCWA007	Water	7/10/2012 14:00	69.25' amsl	AK102 & 103	TestAmerica Seattle		MW10-1	LK	Hydrochloric Acid	1	15_Days	Amber Glass 1 liter - Hydrochloric
580-33899-7	12NCMOCWA007	Water	7/10/2012 14:00	69.25' amsl	RSK-175	TestAmerica Savannah		MW10-1	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-8	12NCMOCWA008	Water	7/10/2012 17:00	62.41' amsl	6020 Total	TestAmerica Seattle		MW88-4	LK	Nitric Acid	10	15_Days	Plastic 250ml - with Nitric Acid
580-33899-8	12NCMOCWA008	Water	7/10/2012 17:00	62.41' amsl	6020 Dissolved	TestAmerica Seattle		MW88-4	LK	Nitric Acid	9	15_Days	Plastic 250ml â€“ w/nitric - dis
580-33899-8	12NCMOCWA008	Water	7/10/2012 17:00	62.41' amsl	7470A Dissolved	TestAmerica Seattle		MW88-4	LK	Nitric Acid	9	15_Days	Plastic 250ml â€“ w/nitric - dis
580-33899-8	12NCMOCWA008	Water	7/10/2012 17:00	62.41' amsl	7470A Total	TestAmerica Seattle		MW88-4	LK	Nitric Acid	10	15_Days	Plastic 250ml - with Nitric Acid
580-33899-8	12NCMOCWA008	Water	7/10/2012 17:00	62.41' amsl	8082	TestAmerica Seattle		MW88-4	LK	cool <4 C	10	15_Days	Amber Glass 1 liter - unpreserved
580-33899-8	12NCMOCWA008	Water	7/10/2012 17:00	62.41' amsl	8260B/DoD	TestAmerica Seattle		MW88-4	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-8	12NCMOCWA008	Water	7/10/2012 17:00	62.41' amsl	8270C SIM/DoD	TestAmerica Seattle		MW88-4	LK	cool <4 C	10	15_Days	Amber Glass 1 liter - unpreserved
580-33899-8	12NCMOCWA008	Water	7/10/2012 17:00	62.41' amsl	AK101	TestAmerica Seattle		MW88-4	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-8	12NCMOCWA008	Water	7/10/2012 17:00	62.41' amsl	AK102 & 103	TestAmerica Seattle		MW88-4	LK	Hydrochloric Acid	10	15_Days	Amber Glass 1 liter - Hydrochloric
580-33899-8	12NCMOCWA008	Water	7/10/2012 17:00	62.41' amsl	RSK-175	TestAmerica Savannah		MW88-4	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-9	12NCMOCWA009	Water	7/10/2012 17:30	62.41' amsl	6020 Total	TestAmerica Seattle	Field Dup of MOCWA008	MW88-4	LK	Nitric Acid	12	15_Days	Plastic 250ml - with Nitric Acid
580-33899-9	12NCMOCWA009	Water	7/10/2012 17:30	62.41' amsl	6020 Dissolved	TestAmerica Seattle	Field Dup of MOCWA008	MW88-4	LK	Nitric Acid	2	15_Days	Plastic 250ml â€“ w/nitric - dis
580-33899-9	12NCMOCWA009	Water	7/10/2012 17:30	62.41' amsl	7470A	TestAmerica Seattle	Field Dup of MOCWA008	MW88-4	LK	Nitric Acid	12	15_Days	Plastic 250ml - with Nitric Acid
580-33899-9	12NCMOCWA009	Water	7/10/2012 17:30	62.41' amsl	7470A	TestAmerica Seattle	Field Dup of MOCWA008	MW88-4	LK	Nitric Acid	2	15_Days	Plastic 250ml â€“ w/nitric - dis
580-33899-9	12NCMOCWA009	Water	7/10/2012 17:30	62.41' amsl	8082	TestAmerica Seattle	Field Dup of MOCWA008	MW88-4	LK	cool <4 C	12	15_Days	Amber Glass 1 liter - unpreserved
580-33899-9	12NCMOCWA009	Water	7/10/2012 17:30	62.41' amsl	8260B/DoD	TestAmerica Seattle	Field Dup of MOCWA008	MW88-4	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-9	12NCMOCWA009	Water	7/10/2012 17:30	62.41' amsl	8270C SIM/DoD	TestAmerica Seattle	Field Dup of MOCWA008	MW88-4	LK	cool <4 C	12	15_Days	Amber Glass 1 liter - unpreserved
580-33899-9	12NCMOCWA009	Water	7/10/2012 17:30	62.41' amsl	AK101	TestAmerica Seattle	Field Dup of MOCWA008	MW88-4	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-9	12NCMOCWA009	Water	7/10/2012 17:30	62.41' amsl	AK102 & 103	TestAmerica Seattle	Field Dup of MOCWA008	MW88-4	LK	Hydrochloric Acid	11	15_Days	Amber Glass 1 liter - Hydrochloric
580-33899-9	12NCMOCWA009	Water	7/10/2012 17:30	62.41' amsl	RSK-175	TestAmerica Savannah	Field Dup of MOCWA008	MW88-4	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-10	12NCMOCWA010	Water	7/10/2012 18:30	60.19' amsl	6020 Total	TestAmerica Seattle		MW88-5	LK	Nitric Acid	11	15_Days	Plastic 250ml - with Nitric Acid
580-33899-10	12NCMOCWA010	Water	7/10/2012 18:30	60.19' amsl	6020 Dissolved	TestAmerica Seattle		MW88-5	LK	Nitric Acid	9	15_Days	Plastic 250ml â€“ w/nitric - dis
580-33899-10	12NCMOCWA010	Water	7/10/2012 18:30	60.19' amsl	7470A Dissolved	TestAmerica Seattle		MW88-5	LK	Nitric Acid	9	15_Days	Plastic 250ml â€“ w/nitric - dis
580-33899-10	12NCMOCWA010	Water	7/10/2012 18:30	60.19' amsl	7470A Total	TestAmerica Seattle		MW88-5	LK	Nitric Acid	11	15_Days	Plastic 250ml - with Nitric Acid
580-33899-10	12NCMOCWA010	Water	7/10/2012 18:30	60.19' amsl	8082	TestAmerica Seattle		MW88-5	LK	cool <4 C	11	15_Days	Amber Glass 1 liter - unpreserved
580-33899-10	12NCMOCWA010	Water	7/10/2012 18:30	60.19' amsl	8260B/DoD	TestAmerica Seattle		MW88-5	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-10	12NCMOCWA010	Water	7/10/2012 18:30	60.19' amsl	8270C SIM/DoD	TestAmerica Seattle		MW88-5	LK	cool <4 C	11	15_Days	Amber Glass 1 liter - unpreserved
580-33899-10	12NCMOCWA010	Water	7/10/2012 18:30	60.19' amsl	AK101	TestAmerica Seattle		MW88-5	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-10	12NCMOCWA010	Water	7/10/2012 18:30	60.19' amsl	AK102 & 103	TestAmerica Seattle		MW88-5	LK	Hydrochloric Acid	11	15_Days	Amber Glass 1 liter - Hydrochloric
580-33899-10	12NCMOCWA010	Water	7/10/2012 18:30	60.19' amsl	RSK-175	TestAmerica Savannah		MW88-5	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-11	12NCMOCWA011	Water	7/11/2012 0:00	NA	AK101	TestAmerica Seattle	Trip Blank	Trip Blank	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-11	12NCMOCWA011	Water	7/11/2012 0:00	NA	8260B/DoD	TestAmerica Seattle	Trip Blank	Trip Blank	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
580-33899-12	12NCMOCWA012	Water	7/11/2012 0:00	NA	RSK-175	TestAmerica Seattle	Trip Blank	Trip Blank	LK	Hydrochloric Acid	12	15_Days	Voa Vial 40ml - Hydrochloric Acid
							580-34086 Site 6 MI						
580-34086-1	12NCBGSS10	Soil	7/15/2012 15:45	0-4"	AK102	TestAmerica Seattle	MS/MSD	S6-1	EB	cool <4 C	72012-1	15_Days	Plastic Bag
580-34086-1	12NCBGSS10	Soil	7/15/2012 15:45	0-4"	8082	TestAmerica Seattle	MS/MSD	S6-1	EB	cool <4 C	72012-1	15_Days	Plastic Bag
580-34086-2	12NCBGSS11	Soil	7/15/2012 17:10	0-4"	AK102	TestAmerica Seattle		S6-2	EB	cool <4 C	72012-1	15_Days	Plastic Bag
580-34086-2	12NCBGSS11	Soil	7/15/2012 17:10	0-4"	8082	TestAmerica Seattle		S6-2	EB	cool <4 C	72012-1	15_Days	Plastic Bag
580-34086-3	12NCBGSS12	Soil	7/16/2012 11:20	0-4"	AK102	TestAmerica Seattle		S6-3	EB	cool <4 C	72012-1	15_Days	Plastic Bag
580-34086-3	12NCBGSS12	Soil	7/16/2012 11:20	0-4"	8082	TestAmerica Seattle		S6-3	EB	cool <4 C	72012-1	15_Days	Plastic Bag
580-34086-4	12NCBGSS13	Soil	7/16/2012 14:10	0-4"	AK102	TestAmerica Seattle		S6-4	EB	cool <4 C	72012-1	15_Days	Plastic Bag
580-34086-4	12NCBGSS13	Soil	7/16/2012 14:10	0-4"	8082	TestAmerica Seattle		S6-4	EB	cool <4 C	72012-1	15_Days	Plastic Bag

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34101 site 13 grabs													
580-34101-1	12NC13SS001	Soil	7/23/2012 16:15	2'-3'	8082	TestAmerica Seattle	MS/MSD	013-1	EB	cool <4 C	072312-1	2_Day_RUSH	Soil jar 4oz
580-34101-2	12NC13SS002	Soil	7/23/2012 16:20	2'-3'	8082	TestAmerica Seattle	Field Dup of SS001	013-2	EB	cool <4 C	072312-1	2_Day_RUSH	Soil jar 4oz
580-34205 MOC POL													
580-34205-1	12NCMOCSS001	Soil	7/25/2012 13:00	14'	AK102 & 103	TestAmerica Seattle		MOCSS001	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34205-2	12NCMOCSS002	Soil	7/25/2012 13:10	14'	AK102 & 103	TestAmerica Seattle	MS/MSD	MOCSS002	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34205-3	12NCMOCSS003	Soil	7/25/2012 13:15	14'	AK102 & 103	TestAmerica Seattle		MOCSS003	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34205-4	12NCMOCSS004	Soil	7/25/2012 13:05	14'	AK102 & 103	TestAmerica Seattle	Field Dup of SS001	MOCSS001A	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34205-5	12NCMOCSS005	Soil	7/26/2012 14:30	12'-14'	AK102 & 103	TestAmerica Seattle		MOCSS005	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34205-6	12NCMOCSS006	Soil	7/26/2012 14:35	12'-14'	AK102 & 103	TestAmerica Seattle	Field Dup of SS005	MOCSS006	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34205-7	12NCMOCSS007	Soil	7/26/2012 14:40	12'-14'	AK102 & 103	TestAmerica Seattle		MOCSS007	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34205-8	12NCMOCSS008	Soil	7/26/2012 14:45	12'-14'	AK102 & 103	TestAmerica Seattle		MOCSS008	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34205-9	12NCMOCSS009	Soil	7/26/2012 14:50	12'-14'	AK102 & 103	TestAmerica Seattle		MOCSS009	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34205-10	12NCMOCSS010	Soil	7/26/2012 14:55	7'-9'	AK102 & 103	TestAmerica Seattle		MOCSS010	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34205-11	12NCMOCSS011	Soil	7/26/2012 15:00	12'-14'	AK102 & 103	TestAmerica Seattle		MOCSS011	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34205-12	12NCMOCSS012	Soil	7/26/2012 15:05	12'-14'	AK102 & 103	TestAmerica Seattle		MOCSS012	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34205-13	12NCMOCSS013	Soil	7/26/2012 15:10	12'-14'	AK102 & 103	TestAmerica Seattle		MOCSS013	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34205-14	12NCMOCSS014	Soil	7/26/2012 15:15	7'-9'	AK102 & 103	TestAmerica Seattle		MOCSS014	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34205-15	12NCMOCSS015	Soil	7/26/2012 15:20	7'-9'	AK102 & 103	TestAmerica Seattle		MOCSS015	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34205-16	12NCMOCSS016	Soil	7/26/2012 15:25	7'-9'	AK102 & 103	TestAmerica Seattle		MOCSS016	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34205-17	12NCMOCSS017	Soil	7/26/2012 15:30	7'-9'	AK102 & 103	TestAmerica Seattle		MOCSS017	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34205-18	12NCMOCSS018	Soil	7/28/2012 9:20	7'-9'	AK102 & 103	TestAmerica Seattle	MS/MSD	MOCSS018	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34205-19	12NCMOCSS019	Soil	7/28/2012 9:25	7'-9'	AK102 & 103	TestAmerica Seattle	MS/MSD	MOCSS019	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34205-20	12NCMOCSS020	Soil	7/26/2012 15:45	7'-9'	AK102 & 103	TestAmerica Seattle		MOCSS020	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34205-21	12NCMOCSS021	Soil	7/26/2012 15:50	7'-9'	AK102 & 103	TestAmerica Seattle		MOCSS021	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34205-22	12NCMOCSS022	Soil	7/26/2012 15:55	12'-14'	AK102 & 103	TestAmerica Seattle		MOCSS022	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34205-23	12NCMOCSS023	Soil	7/26/2012 16:00	12'-14'	AK102 & 103	TestAmerica Seattle		MOCSS023	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34205-24	12NCMOCSS024	Soil	7/26/2012 16:05	12'-14'	AK102 & 103	TestAmerica Seattle		MOCSS024	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34205-25	12NCMOCSS025	Soil	7/26/2012 16:10	12'-14'	AK102 & 103	TestAmerica Seattle	Field Dup of SS024	MOCSS024A	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34205-26	12NCMOCSS026	Soil	7/28/2012 8:40	7'-9'	AK102 & 103	TestAmerica Seattle	Field Dup of SS019	MOCSS026	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34205-27	12NCMOCSS027	Soil	7/28/2012 8:30	15'	AK102 & 103	TestAmerica Seattle		MOCSS027	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34205-28	12NCMOCSS028	Soil	7/28/2012 8:35	15'	AK102 & 103	TestAmerica Seattle		MOCSS028	LK	cool <4 C	0729-12-01	2_Day_RUSH	Soil jar 4oz
580-34330 site 13 PCBs													
580-34330-1	12NC13SS003	Soil	8/4/2012 16:45	5-10'	8082/DOD	TestAmerica Seattle		013-2	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-2	12NC13SS004	Soil	8/4/2012 16:46	5-10'	8082/DOD	TestAmerica Seattle		013-3	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-3	12NC13SS005	Soil	8/4/2012 16:47	5-10'	8082/DOD	TestAmerica Seattle		013-4	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-4	12NC13SS006	Soil	8/4/2012 16:48	5-10'	8082/DOD	TestAmerica Seattle		013-5	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-5	12NC13SS007	Soil	8/4/2012 16:55	5-10'	8082/DOD	TestAmerica Seattle		013-6	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-6	12NC13SS008	Soil	8/4/2012 16:56	5-10'	8082/DOD	TestAmerica Seattle		013-7	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-7	12NC13SS009	Soil	8/4/2012 16:58	5-10'	8082/DOD	TestAmerica Seattle	Field Dup of 13SS008	013-7	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-8	12NC13SS010	Soil	8/4/2012 17:07	5-10'	8082/DOD	TestAmerica Seattle		013-8	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-9	12NC13SS011	Soil	8/4/2012 17:11	5-10'	8082/DOD	TestAmerica Seattle		013-9	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-10	12NC13SS012	Soil	8/4/2012 17:20	5-10'	8082/DOD	TestAmerica Seattle		013-10	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-11	12NC13SS013	Soil	8/4/2012 17:21	5-10'	8082/DOD	TestAmerica Seattle		013-11	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-12	12NC13SS014	Soil	8/4/2012 17:22	5-10'	8082/DOD	TestAmerica Seattle		013-12	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-13	12NC13SS015	Soil	8/4/2012 17:23	5-10'	8082/DOD	TestAmerica Seattle		013-13	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-14	12NC13SS016	Soil	8/4/2012 17:24	5-10'	8082/DOD	TestAmerica Seattle		013-14	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-15	12NC13SS017	Soil	8/4/2012 17:25	5-10'	8082/DOD	TestAmerica Seattle		013-15	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-16	12NC13SS018	Soil	8/4/2012 17:26	5-10'	8082/DOD	TestAmerica Seattle	MS/MSD	013-16	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-17	12NC13SS019	Soil	8/5/2012 8:52	5-10'	8082/DOD	TestAmerica Seattle		013-17	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-18	12NC13SS020	Soil	8/5/2012 8:55	5-10'	8082/DOD	TestAmerica Seattle		013-18	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-19	12NC13SS021	Soil	8/5/2012 8:57	5-10'	8082/DOD	TestAmerica Seattle		013-19	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-20	12NC13SS022	Soil	8/5/2012 8:58	5-10'	8082/DOD	TestAmerica Seattle		013-20	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-21	12NC13SS023	Soil	8/5/2012 8:58	5-10'	8082/DOD	TestAmerica Seattle		013-21	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-22	12NC13SS024	Soil	8/5/2012 8:59	5-10'	8082/DOD	TestAmerica Seattle		013-22	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-23	12NC13SS025	Soil	8/5/2012 9:00	5-10'	8082/DOD	TestAmerica Seattle		013-23	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-24	12NC13SS026	Soil	8/5/2012 9:00	5-10'	8082/DOD	TestAmerica Seattle	Field dup of 13SS019	013-17	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-25	12NC13SS027	Soil	8/5/2012 9:10	5-10'	8082/DOD	TestAmerica Seattle		013-24	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-26	12NC13SS028	Soil	8/5/2012 9:27	5-10'	8082/DOD	TestAmerica Seattle	MS/MSD	013-25	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-27	12NC13SS029	Soil	8/5/2012 10:38	5-10'	8082/DOD	TestAmerica Seattle		013-26	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-28	12NC13SS030	Soil	8/5/2012 10:28	5-10'	8082/DOD	TestAmerica Seattle		013-27	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-29	12NC13SS031	Soil	8/5/2012 10:15	5-10'	8082/DOD	TestAmerica Seattle		013-28	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-30	12NC13SS032	Soil	8/5/2012 10:00	5-10'	8082/DOD	TestAmerica Seattle		013-29	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-31	12NC13SS033	Soil	8/5/2012 10:47	5-10'	8082/DOD	TestAmerica Seattle		013-30	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-32	12NC13SS034	Soil	8/5/2012 10:53	5-10'	8082/DOD	TestAmerica Seattle		013-31	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-33	12NC13SS035	Soil	8/5/2012 11:02	5-10'	8082/DOD	TestAmerica Seattle		013-32	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-34	12NC13SS036	Soil	8/5/2012 11:08	5-10'	8082/DOD	TestAmerica Seattle		013-33	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34330-35	12NC13SS037	Soil	8/5/2012 11:12	5-10'	8082/DOD	TestAmerica Seattle		013-34	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-36	12NC13SS038	Soil	8/5/2012 11:17	5-10'	8082/DOD	TestAmerica Seattle		013-35	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-37	12NC13SS039	Soil	8/5/2012 11:20	5-10'	8082/DOD	TestAmerica Seattle		013-36	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-38	12NC13SS040	Soil	8/5/2012 11:30	5-10'	8082/DOD	TestAmerica Seattle		013-37	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-39	12NC13SS041	Soil	8/5/2012 11:32	5-10'	8082/DOD	TestAmerica Seattle		013-38	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-40	12NC13SS042	Soil	8/5/2012 12:00	5-10'	8082/DOD	TestAmerica Seattle	field dup of 13SS032	013-29	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-41	12NC13SS043	Soil	8/5/2012 12:05	5-10'	8082/DOD	TestAmerica Seattle	field dup of 13SS031	013-28	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-42	12NC13SS044	Soil	8/5/2012 12:10	5-10'	8082/DOD	TestAmerica Seattle	field dup of 13SS030	013-27	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-43	12NC13SS045	Soil	8/5/2012 12:15	5-10'	8082/DOD	TestAmerica Seattle	Field dup of 13SS036	013-33	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-44	12NC13SS046	Soil	8/5/2012 14:21	5-10'	8082/DOD	TestAmerica Seattle		013-39	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-45	12NC13SS047	Soil	8/5/2012 14:25	5-10'	8082/DOD	TestAmerica Seattle		013-40	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-46	12NC13SS048	Soil	8/5/2012 14:30	5-10'	8082/DOD	TestAmerica Seattle		013-41	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-47	12NC13SS049	Soil	8/5/2012 14:41	5-10'	8082/DOD	TestAmerica Seattle		013-42	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-48	12NC13SS050	Soil	8/5/2012 14:43	5-10'	8082/DOD	TestAmerica Seattle		013-43	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-49	12NC13SS051	Soil	8/5/2012 14:50	5-10'	8082/DOD	TestAmerica Seattle		013-44	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-50	12NC13SS052	Soil	8/5/2012 14:52	5-10'	8082/DOD	TestAmerica Seattle		013-45	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-51	12NC13SS053	Soil	8/5/2012 14:55	5-10'	8082/DOD	TestAmerica Seattle		013-46	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-52	12NC13SS054	Soil	8/5/2012 14:57	5-10'	8082/DOD	TestAmerica Seattle		013-47	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-53	12NC13SS055	Soil	8/5/2012 15:01	5-10'	8082/DOD	TestAmerica Seattle		013-48	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-54	12NC13SS056	Soil	8/5/2012 15:02	5-10'	8082/DOD	TestAmerica Seattle		013-49	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-55	12NC13SS057	Soil	8/5/2012 15:04	5-10'	8082/DOD	TestAmerica Seattle		013-50	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-56	12NC13SS058	Soil	8/5/2012 15:09	5-10'	8082/DOD	TestAmerica Seattle		013-51	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-57	12NC13SS059	Soil	8/5/2012 15:11	5-10'	8082/DOD	TestAmerica Seattle		013-52	EB	cool <4 C	80612-2	6_Day_Rush	Soil Jar 4oz Amber
580-34330-58	12NC13SS060	Soil	8/5/2012 15:16	5-10'	8082/DOD	TestAmerica Seattle		013-53	EB	cool <4 C	80612-1	6_Day_Rush	Soil Jar 4oz Amber
580-34330-59	12NC13SS061	Soil	8/5/2012 15:17	5-10'	8082/DOD	TestAmerica Seattle	MS/MSD	013-54	EB	cool <4 C	80612-1	6_Day_Rush	Soil Jar 4oz Amber
580-34330-60	12NC13SS062	Soil	8/5/2012 15:18	5-10'	8082/DOD	TestAmerica Seattle	MS/MSD	013-55	EB	cool <4 C	80612-1	6_Day_Rush	Soil Jar 4oz Amber
580-34330-61	12NC13SS063	Soil	8/5/2012 15:20	5-10'	8082/DOD	TestAmerica Seattle	MS/MSD	013-56	EB	cool <4 C	80612-1	6_Day_Rush	Soil Jar 4oz Amber
580-34335-1 MI Samples													
580-34335-1	12NCBGSS14	Soil	7/26/2012 11:40	0-4"	8082	TestAmerica Seattle	MS/MSD	MOC-BS-2	EB	cool <4 C	80612-1	15_Days	Plastic Bag
580-34335-1	12NCBGSS14	Soil	7/26/2012 11:40	0-4"	AK102	TestAmerica Seattle	MS/MSD	MOC-BS-2	EB	cool <4 C	80612-1	15_Days	Plastic Bag
580-34335-2	12NCBGSS15	Soil	7/26/2012 13:45	0-4"	8082	TestAmerica Seattle	Field Rep of BGSS14	MOC-BS-2	EB	cool <4 C	80612-1	15_Days	Plastic Bag
580-34335-2	12NCBGSS15	Soil	7/26/2012 13:45	0-4"	AK102	TestAmerica Seattle	Field Rep of BGSS14	MOC-BS-2	EB	cool <4 C	80612-1	15_Days	Plastic Bag
580-34335-3	12NCBGSS16	Soil	7/26/2012 14:20	0-4"	8082	TestAmerica Seattle	Field Rep of BGSS14	MOC-BS-2	EB	cool <4 C	80612-1	15_Days	Plastic Bag
580-34335-3	12NCBGSS16	Soil	7/26/2012 14:20	0-4"	AK102	TestAmerica Seattle	Field Rep of BGSS14	MOC-BS-2	EB	cool <4 C	80612-1	15_Days	Plastic Bag
580-34373-Site 31 PCBs													
580-34373-1	12NC31SS001	Soil	8/7/2012 16:24	5'-16'	8082/DOD	TestAmerica Tacoma		031-001	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-2	12NC31SS002	Soil	8/7/2012 16:25	5'-16'	8082/DOD	TestAmerica Tacoma		031-002	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-3	12NC31SS003	Soil	8/7/2012 16:26	5'-16'	8082/DOD	TestAmerica Tacoma		031-003	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-4	12NC31SS004	Soil	8/7/2012 16:27	5'-16'	8082/DOD	TestAmerica Tacoma		031-004	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-5	12NC31SS005	Soil	8/7/2012 16:28	5'-16'	8082/DOD	TestAmerica Tacoma		031-005	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-6	12NC31SS006	Soil	8/7/2012 16:29	5'-16'	8082/DOD	TestAmerica Tacoma		031-006	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-7	12NC31SS007	Soil	8/7/2012 16:31	5'-16'	8082/DOD	TestAmerica Tacoma		031-007	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-8	12NC31SS008	Soil	8/7/2012 16:33	5'-16'	8082/DOD	TestAmerica Tacoma		031-008	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-9	12NC31SS009	Soil	8/7/2012 16:38	5'-16'	8082/DOD	TestAmerica Tacoma		031-009	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-10	12NC31SS010	Soil	8/7/2012 16:40	5'-16'	8082/DOD	TestAmerica Tacoma		031-010	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-11	12NC31SS011	Soil	8/7/2012 16:40	5'-16'	8082/DOD	TestAmerica Tacoma		031-011	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-12	12NC31SS012	Soil	8/7/2012 16:42	5'-16'	8082/DOD	TestAmerica Tacoma		031-012	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-13	12NC31SS013	Soil	8/7/2012 16:44	5'-16'	8082/DOD	TestAmerica Tacoma	MS/MSD	031-013	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-14	12NC31SS014	Soil	8/7/2012 16:48	5'-16'	8082/DOD	TestAmerica Tacoma	MS/MSD	031-014	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-15	12NC31SS015	Soil	8/7/2012 16:50	5'-16'	8082/DOD	TestAmerica Tacoma		031-015	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-16	12NC31SS016	Soil	8/7/2012 16:53	5'-16'	8082/DOD	TestAmerica Tacoma		031-016	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-17	12NC31SS017	Soil	8/7/2012 16:54	5'-16'	8082/DOD	TestAmerica Tacoma		031-017	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-18	12NC31SS018	Soil	8/7/2012 16:56	5'-16'	8082/DOD	TestAmerica Tacoma		031-018	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-19	12NC31SS019	Soil	8/7/2012 16:58	5'-16'	8082/DOD	TestAmerica Tacoma		031-019	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-20	12NC31SS020	Soil	8/7/2012 16:59	5'-16'	8082/DOD	TestAmerica Tacoma		031-020	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-21	12NC31SS021	Soil	8/7/2012 17:00	5'-16'	8082/DOD	TestAmerica Tacoma		031-021	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-22	12NC31SS022	Soil	8/7/2012 17:02	5'-16'	8082/DOD	TestAmerica Tacoma		031-022	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-23	12NC31SS023	Soil	8/7/2012 17:03	5'-16'	8082/DOD	TestAmerica Tacoma		031-023	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-24	12NC31SS024	Soil	8/7/2012 17:05	5'-16'	8082/DOD	TestAmerica Tacoma		031-024	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-25	12NC31SS025	Soil	8/7/2012 17:09	5'-16'	8082/DOD	TestAmerica Tacoma		031-025	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-26	12NC31SS026	Soil	8/7/2012 17:11	5'-16'	8082/DOD	TestAmerica Tacoma		031-026	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-27	12NC31SS027	Soil	8/7/2012 17:15	5'-16'	8082/DOD	TestAmerica Tacoma	Field dup of 31SS024	031-024	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-28	12NC31SS028	Soil	8/7/2012 17:16	5'-16'	8082/DOD	TestAmerica Tacoma	Field dup of 31SS025	031-025	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34373-29	12NC31SS029	Soil	8/7/2012 17:17	5'-16'	8082/DOD	TestAmerica Tacoma	Field dup of 31SS026	031-026	EB	cool <4 C	080812-2	5_Day_RUSH	Soil Jar 4oz Amber
580-34374-1 Site 13 PCBs													
580-34374-1	12NC13SS0064	Soil	8/7/2012 9:03	5'-16'	8082/DOD	TestAmerica Seattle		013-057	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-2	12NC13SS0065	Soil	8/7/2012 9:05	5'-16'	8082/DOD	TestAmerica Seattle		013-058	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34374-3	12NC13SS0066	Soil	8/7/2012 9:06	5'-16'	8082/DOD	TestAmerica Seattle		013-059	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-4	12NC13SS0067	Soil	8/7/2012 9:07	5'-16'	8082/DOD	TestAmerica Seattle		013-060	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-5	12NC13SS0068	Soil	8/7/2012 9:07	5'-16'	8082/DOD	TestAmerica Seattle		013-061	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-6	12NC13SS0069	Soil	8/7/2012 9:09	5'-16'	8082/DOD	TestAmerica Seattle		013-062	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-7	12NC13SS0070	Soil	8/7/2012 9:10	5'-16'	8082/DOD	TestAmerica Seattle		013-063	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-8	12NC13SS0071	Soil	8/7/2012 9:11	5'-16'	8082/DOD	TestAmerica Seattle		013-064	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-9	12NC13SS0072	Soil	8/7/2012 9:12	5'-16'	8082/DOD	TestAmerica Seattle		013-065	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-10	12NC13SS0073	Soil	8/7/2012 9:13	5'-16'	8082/DOD	TestAmerica Seattle		013-066	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-11	12NC13SS0074	Soil	8/7/2012 9:14	5'-16'	8082/DOD	TestAmerica Seattle		013-067	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-12	12NC13SS0075	Soil	8/7/2012 9:20	5'-16'	8082/DOD	TestAmerica Seattle		013-068	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-13	12NC13SS076	Soil	8/7/2012 9:21	5'-16'	8082/DOD	TestAmerica Seattle		013-069	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-14	12NC13SS077	Soil	8/7/2012 9:22	5'-16'	8082/DOD	TestAmerica Seattle		013-070	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-15	12NC13SS078	Soil	8/7/2012 9:24	5'-16'	8082/DOD	TestAmerica Seattle		013-071	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-16	12NC13SS079	Soil	8/7/2012 9:26	5'-16'	8082/DOD	TestAmerica Seattle		013-072	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-17	12NC13SS080	Soil	8/7/2012 9:31	5'-16'	8082/DOD	TestAmerica Seattle		013-073	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-18	12NC13SS081	Soil	8/7/2012 9:33	5'-16'	8082/DOD	TestAmerica Seattle	Field Dup 13SS080	013-073	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-19	12NC13SS082	Soil	8/7/2012 9:41	5'-16'	8082/DOD	TestAmerica Seattle		013-074	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-20	12NC13SS083	Soil	8/7/2012 9:48	5'-16'	8082/DOD	TestAmerica Seattle	Field Dup 13SS082	013-074	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-21	12NC13SS084	Soil	8/7/2012 10:55	5'-16'	8082/DOD	TestAmerica Seattle		013-075	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-22	12NC13SS085	Soil	8/7/2012 10:57	5'-16'	8082/DOD	TestAmerica Seattle		013-076	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-23	12NC13SS086	Soil	8/7/2012 10:59	5'-16'	8082/DOD	TestAmerica Seattle		013-077	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-24	12NC13SS087	Soil	8/7/2012 11:00	5'-16'	8082/DOD	TestAmerica Seattle		013-078	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-25	12NC13SS088	Soil	8/5/2012 11:01	5'-16'	8082/DOD	TestAmerica Seattle		013-079	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-26	12NC13SS089	Soil	8/5/2012 11:03	5'-16'	8082/DOD	TestAmerica Seattle		013-080	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-27	12NC13SS090	Soil	8/5/2012 11:05	5'-16'	8082/DOD	TestAmerica Seattle		013-081	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-28	12NC13SS091	Soil	8/5/2012 11:06	5'-16'	8082/DOD	TestAmerica Seattle		013-082	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-29	12NC13SS092	Soil	8/5/2012 11:07	5'-16'	8082/DOD	TestAmerica Seattle		013-083	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-30	12NC13SS093	Soil	8/5/2012 11:08	5'-16'	8082/DOD	TestAmerica Seattle	MS/MSD	013-084	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-31	12NC13SS094	Soil	8/5/2012 11:09	5'-16'	8082/DOD	TestAmerica Seattle	MS/MSD	013-085	EB	cool <4 C	080812-1	7_Day_Rush	No Container
580-34374-32	12NC13SS095	Soil	8/5/2012 11:16	5'-16'	8082/DOD	TestAmerica Seattle		013-086	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-33	12NC13SS096	Soil	8/5/2012 11:18	5'-16'	8082/DOD	TestAmerica Seattle		013-087	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-34	12NC13SS097	Soil	8/5/2012 11:19	5'-16'	8082/DOD	TestAmerica Seattle		013-088	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-35	12NC13SS098	Soil	8/5/2012 11:20	5'-16'	8082/DOD	TestAmerica Seattle		013-089	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-36	12NC13SS099	Soil	8/5/2012 11:23	5'-16'	8082/DOD	TestAmerica Seattle		013-090	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-37	12NC13SS100	Soil	8/7/2012 11:24	5'-16'	8082/DOD	TestAmerica Seattle		013-091	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-38	12NC13SS101	Soil	8/7/2012 11:25	5'-16'	8082/DOD	TestAmerica Seattle		013-092	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-39	12NC13SS102	Soil	8/7/2012 11:26	5'-16'	8082/DOD	TestAmerica Seattle		013-093	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-40	12NC13SS103	Soil	8/7/2012 11:28	5'-16'	8082/DOD	TestAmerica Seattle	MS/MSD	013-094	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-41	12NC13SS104	Soil	8/7/2012 11:30	5'-16'	8082/DOD	TestAmerica Seattle		013-095	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-42	12NC13SS105	Soil	8/7/2012 11:33	5'-16'	8082/DOD	TestAmerica Seattle		013-096	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-43	12NC13SS106	Soil	8/7/2012 11:34	5'-16'	8082/DOD	TestAmerica Seattle		013-097	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-44	12NC13SS107	Soil	8/7/2012 11:38	5'-16'	8082/DOD	TestAmerica Seattle	Field Dup of 13SS106	013-097	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-45	12NC13SS108	Soil	8/7/2012 11:42	5'-16'	8082/DOD	TestAmerica Seattle	MS/MSD	013-098	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-46	12NC13SS109	Soil	8/7/2012 13:51	5'-16'	8082/DOD	TestAmerica Seattle		013-099	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-47	12NC13SS110	Soil	8/7/2012 13:53	5'-16'	8082/DOD	TestAmerica Seattle		013-100	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-48	12NC13SS111	Soil	8/7/2012 13:54	5'-16'	8082/DOD	TestAmerica Seattle		013-101	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-49	12NC13SS112	Soil	8/7/2012 13:55	5'-16'	8082/DOD	TestAmerica Seattle		013-103	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-50	12NC13SS113	Soil	8/7/2012 13:58	5'-16'	8082/DOD	TestAmerica Seattle		013-104	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-51	12NC13SS114	Soil	8/7/2012 13:58	5'-16'	8082/DOD	TestAmerica Seattle		013-105	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-52	12NC13SS115	Soil	8/7/2012 14:00	5'-16'	8082/DOD	TestAmerica Seattle		013-106	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-53	12NC13SS116	Soil	8/7/2012 14:01	5'-16'	8082/DOD	TestAmerica Seattle		013-107	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-54	12NC13SS117	Soil	8/7/2012 14:04	5'-16'	8082/DOD	TestAmerica Seattle		013-108	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-55	12NC13SS118	Soil	8/7/2012 14:06	5'-16'	8082/DOD	TestAmerica Seattle		013-109	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-56	12NC13SS119	Soil	8/7/2012 14:10	5'-16'	8082/DOD	TestAmerica Seattle		013-110	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-57	12NC13SS120	Soil	8/7/2012 14:12	5'-16'	8082/DOD	TestAmerica Seattle		013-111	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-58	12NC13SS121	Soil	8/7/2012 14:13	5'-16'	8082/DOD	TestAmerica Seattle		013-112	EB	cool <4 C	080812-1	7_Day_Rush	Soil Jar 4oz Amber
580-34374-59	12NC13SS122	Soil	8/7/2012 14:14	5'-16'	8082/DOD	TestAmerica Seattle		013-113	EB	cool <4 C	080812-2	7_Day_Rush	Soil Jar 4oz Amber
580-34374-60	12NC13SS123	Soil	8/7/2012 14:15	5'-16'	8082/DOD	TestAmerica Seattle		013-114	EB	cool <4 C	080812-2	7_Day_Rush	Soil Jar 4oz Amber
580-34374-61	12NC13SS124	Soil	8/7/2012 14:16	5'-16'	8082/DOD	TestAmerica Seattle		013-115	EB	cool <4 C	080812-2	7_Day_Rush	Soil Jar 4oz Amber
580-34374-62	12NC13SS125	Soil	8/7/2012 14:17	5'-16'	8082/DOD	TestAmerica Seattle		013-116	EB	cool <4 C	080812-2	7_Day_Rush	Soil Jar 4oz Amber
580-34374-63	12NC13SS126	Soil	8/7/2012 14:18	5'-16'	8082/DOD	TestAmerica Seattle		013-117	EB	cool <4 C	080812-2	7_Day_Rush	Soil Jar 4oz Amber
580-34374-64	12NC13SS127	Soil	8/7/2012 14:20	5'-16'	8082/DOD	TestAmerica Seattle		013-118	EB	cool <4 C	080812-2	7_Day_Rush	Soil Jar 4oz Amber
580-34374-65	12NC13SS128	Soil	8/7/2012 14:37	5'-16'	8082/DOD	TestAmerica Seattle		013-119	EB	cool <4 C	080812-2	7_Day_Rush	Soil Jar 4oz Amber
580-34374-66	12NC13SS129	Soil	8/7/2012 14:38	5'-16'	8082/DOD	TestAmerica Seattle	Field Dup of 13SS128	013-119	EB	cool <4 C	080812-2	7_Day_Rush	Soil Jar 4oz Amber
580-34374-67	12NC13SS130	Soil	8/7/2012 14:39	5'-16'	8082/DOD	TestAmerica Seattle		013-120	EB	cool <4 C	080812-2	7_Day_Rush	Soil Jar 4oz Amber
580-34374-68	12NC13SS131	Soil	8/7/2012 14:40	5'-16'	8082/DOD	TestAmerica Seattle	Field Dup of 13SS130	013-120	EB	cool <4 C	080812-2	7_Day_Rush	Soil Jar 4oz Amber
580-34374-69	12NC13SS132	Soil	8/7/2012 14:43	5'-16'	8082/DOD	TestAmerica Seattle		013-121	EB	cool <4 C	080812-2	7_Day_Rush	Soil Jar 4oz Amber

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34374-70	12NC13SS133	Soil	8/7/2012 14:45	5'-16'	8082/DOD	TestAmerica Seattle	Field Dup of 13SS132	013-121	EB	cool <4 C	080812-2	7_Day_Rush	Soil Jar 4oz Amber
580-34374-71	12NC13SS134	Soil	8/7/2012 14:52	5'-16'	8082/DOD	TestAmerica Seattle	MS/MSD	013-122	EB	cool <4 C	080812-2	7_Day_Rush	Soil Jar 4oz Amber
580-34374-72	12NC13SS135	Soil	8/7/2012 14:54	5'-16'	8082/DOD	TestAmerica Seattle		013-123	EB	cool <4 C	080812-2	7_Day_Rush	Soil Jar 4oz Amber
580-34374-73	12NC13SS136	Soil	8/7/2012 14:55	5'-16'	8082/DOD	TestAmerica Seattle	Field Dup of 13SS135	013-123	EB	cool <4 C	080812-2	7_Day_Rush	Soil Jar 4oz Amber
580-34374-74	12NC13SS137	Soil	8/7/2012 14:16	5'-16'	8082/DOD	TestAmerica Seattle	MS/MSD	013-124	EB	cool <4 C	080812-2	7_Day_Rush	Soil Jar 4oz Amber
580-34374-75	12NC13SS138	Soil	8/7/2012 14:17	5'-16'	8082/DOD	TestAmerica Seattle		013-125	EB	cool <4 C	080812-2	7_Day_Rush	Soil Jar 4oz Amber
580-34374-76	12NC13SS139	Soil	8/7/2012 14:18	5'-16'	8082/DOD	TestAmerica Seattle		013-126	EB	cool <4 C	080812-2	7_Day_Rush	Soil Jar 4oz Amber
580-34374-77	12NC13SS140	Soil	8/7/2012 14:20	5'-16'	8082/DOD	TestAmerica Seattle		013-127	EB	cool <4 C	080812-2	7_Day_Rush	Soil Jar 4oz Amber
580-34374-78	12NC13SS141	Soil	8/7/2012 14:37	5'-16'	8082/DOD	TestAmerica Seattle		013-128	EB	cool <4 C	080812-2	7_Day_Rush	Soil Jar 4oz Amber
580-34374-79	12NC13SS142	Soil	8/7/2012 14:38	5'-16'	8082/DOD	TestAmerica Seattle		013-129	EB	cool <4 C	080812-2	7_Day_Rush	Soil Jar 4oz Amber
580-34380-1 Oil Drums													
580-34380-1	12NCDRUM01	Waste	8/7/2012 14:00	0	1020A	TestAmerica Seattle		12NCDRUM01	RJ	cool <4 C	080812-2	13_Days	Soil jar 4oz
580-34380-1	12NCDRUM01	Waste	8/7/2012 14:00	0	6010B	TestAmerica Seattle	MS/MSD	12NCDRUM01	RJ	cool <4 C	080812-2	13_Days	Soil jar 4oz
580-34380-1	12NCDRUM01	Waste	8/7/2012 14:00	0	8082	TestAmerica Seattle		12NCDRUM01	RJ	cool <4 C	080812-2	13_Days	Soil jar 4oz
580-34380-1	12NCDRUM01	Waste	8/7/2012 14:00	0	9056	TestAmerica Savannah		12NCDRUM01	RJ	cool <4 C	080812-2	13_Days	Soil jar 2oz
580-34446-1 Impoundment Water													
580-34446-1	12NCMOCSWA009	Water	8/12/2012 14:15	0	8260B/DoD	TestAmerica Seattle	MS/MSD	MOCSW-04	EB	Hydrochloric Acid	081312-1	2_Day_RUSH	Voa Vial 40ml - Hydrochloric Acid
580-34446-1	12NCMOCSWA009	Water	8/12/2012 14:15	0	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	MOCSW-04	EB	cool <4 C	081312-1	2_Day_RUSH	Amber Glass 1 liter - unpreserved
580-34446-2	12NCMOCSWA010	Water	8/12/2012 14:30	0	8260B/DoD	TestAmerica Seattle	Field Dup of SWA009	MOCSW-04	EB	Hydrochloric Acid	081312-1	2_Day_RUSH	Voa Vial 40ml - Hydrochloric Acid
580-34446-2	12NCMOCSWA010	Water	8/12/2012 14:30	0	8270C SIM/DoD	TestAmerica Seattle	Field Dup of SWA009	MOCSW-04	EB	cool <4 C	081312-1	2_Day_RUSH	Amber Glass 1 liter - unpreserved
580-34446-3	Trip blank 081212	Water	9/12/2012 0:00	0	8260B/DOD	TestAmerica Seattle	Trip Blank	NA	EB	Hydrochloric Acid	081312-1	2_Day_RUSH	Voa Vial 40ml - Hydrochloric Acid
580-34447-1 MOC soils													
580-34447-1	12NCMOCSS030	Soil	8/6/2012 16:20	13'-15'	AK102 & 103	TestAmerica Seattle		MOCSS030	LK	cool <4 C	081312-02	5_Day_RUSH	Soil jar 4oz
580-34447-2	12NCMOCSS031	Soil	8/6/2012 16:25	13'-15'	AK102 & 103	TestAmerica Seattle	MS/MSD	MOCSS031	LK	cool <4 C	081312-02	5_Day_RUSH	Soil jar 4oz
580-34447-3	12NCMOCSS032	Soil	8/6/2012 16:30	13'-15'	AK102 & 103	TestAmerica Seattle		MOCSS032	LK	cool <4 C	081312-02	5_Day_RUSH	Soil jar 4oz
580-34447-4	12NCMOCSS033	Soil	8/6/2012 16:35	13'-15'	AK102 & 103	TestAmerica Seattle		MOCSS033	LK	cool <4 C	081312-02	5_Day_RUSH	Soil jar 4oz
580-34447-5	12NCMOCSS034	Soil	8/6/2012 16:40	13'-15'	AK102 & 103	TestAmerica Seattle		MOCSS034	LK	cool <4 C	081312-02	5_Day_RUSH	Soil jar 4oz
580-34447-6	12NCMOCSS035	Soil	8/6/2012 16:45	13'-15'	AK102 & 103	TestAmerica Seattle		MOCSS035	LK	cool <4 C	081312-02	5_Day_RUSH	Soil jar 4oz
580-34447-7	12NCMOCSS036	Soil	8/6/2012 16:47	13'-15'	AK102 & 103	TestAmerica Seattle		MOCSS036	LK	cool <4 C	081312-02	5_Day_RUSH	Soil jar 4oz
580-34447-8	12NCMOCSS037	Soil	8/6/2012 16:48	13'-15'	AK102 & 103	TestAmerica Seattle		MOCSS037	LK	cool <4 C	081312-02	5_Day_RUSH	Soil jar 4oz
580-34447-9	12NCMOCSS038	Soil	8/6/2012 16:50	13'-15'	AK102 & 103	TestAmerica Seattle		MOCSS038	LK	cool <4 C	081312-02	5_Day_RUSH	Soil jar 4oz
580-34447-10	12NCMOCSS039	Soil	8/6/2012 17:00	13'-15'	AK102 & 103	TestAmerica Seattle		MOCSS039	LK	cool <4 C	081312-02	5_Day_RUSH	Soil jar 4oz
580-34447-11	12NCMOCSS040	Soil	8/6/2012 17:05	13'-15'	AK102 & 103	TestAmerica Seattle		MOCSS040	LK	cool <4 C	081312-02	5_Day_RUSH	Soil jar 4oz
580-34447-12	12NCMOCSS041	Soil	8/6/2012 17:10	13'-15'	AK102 & 103	TestAmerica Seattle	Field Dup of MOCSS040	MOCSS041	LK	cool <4 C	081312-02	5_Day_RUSH	Soil jar 4oz
580-34447-13	12NCMOCSS042	Soil	8/6/2012 17:15	13'-15'	AK102 & 103	TestAmerica Seattle		MOCSS042	LK	cool <4 C	081312-02	5_Day_RUSH	Soil jar 4oz
580-34447-14	12NCMOCSS043	Soil	8/6/2012 17:20	13'-15'	AK102 & 103	TestAmerica Seattle		MOCSS043	LK	cool <4 C	081312-02	5_Day_RUSH	Soil jar 4oz
580-34447-15	12NCMOCSS044	Soil	8/8/2012 8:30	9'-11'	AK102 & 103	TestAmerica Seattle		MOCSS044	LK	cool <4 C	081312-02	5_Day_RUSH	Soil jar 4oz
580-34447-16	12NCMOCSS045	Soil	8/8/2012 8:35	7'-9'	AK102 & 103	TestAmerica Seattle		MOCSS045	LK	cool <4 C	081312-02	5_Day_RUSH	Soil jar 4oz
580-34447-17	12NCMOCSS046	Soil	8/8/2012 8:40	7'-9'	AK102 & 103	TestAmerica Seattle		MOCSS046	LK	cool <4 C	081312-02	5_Day_RUSH	Soil jar 4oz
580-34447-18	12NCMOCSS047	Soil	8/8/2012 9:00	9'-11'	AK102 & 103	TestAmerica Seattle		MOCSS047	LK	cool <4 C	081312-02	5_Day_RUSH	Soil jar 4oz
580-34447-19	12NCMOCSS048	Soil	8/8/2012 9:05	9'-11'	AK102 & 103	TestAmerica Seattle		MOCSS048	LK	cool <4 C	081312-02	5_Day_RUSH	Soil jar 4oz
580-34447-20	12NCMOCSS049	Soil	8/8/2012 9:10	9'-11'	AK102 & 103	TestAmerica Seattle		MOCSS049	LK	cool <4 C	081312-02	5_Day_RUSH	Soil jar 4oz
580-34447-21	12NCMOCSS050	Soil	8/8/2012 9:15	9'-11'	AK102 & 103	TestAmerica Seattle		MOCSS050	LK	cool <4 C	081312-02	5_Day_RUSH	Soil jar 4oz
580-34447-22	12NCMOCSS051	Soil	8/8/2012 9:20	9'-11'	AK102 & 103	TestAmerica Seattle		MOCSS051	LK	cool <4 C	081312-02	5_Day_RUSH	Soil jar 4oz
580-34447-23	12NCMOCSS052	Soil	8/8/2012 9:25	9'-11'	AK102 & 103	TestAmerica Seattle		MOCSS052	LK	cool <4 C	081312-02	5_Day_RUSH	Soil jar 4oz
580-34447-24	12NCMOCSS053	Soil	8/8/2012 9:30	9'-11'	AK102 & 103	TestAmerica Seattle		MOCSS053	LK	cool <4 C	081312-02	5_Day_RUSH	Soil jar 4oz
580-34447-25	12NCMOCSS054	Soil	8/8/2012 9:35	9'-11'	AK102 & 103	TestAmerica Seattle		MOCSS054	LK	cool <4 C	081312-04	5_Day_RUSH	Soil jar 4oz
580-34447-26	12NCMOCSS055	Soil	8/8/2012 9:40	9'-11'	AK102 & 103	TestAmerica Seattle		MOCSS055	LK	cool <4 C	081312-04	5_Day_RUSH	Soil jar 4oz
580-34447-27	12NCMOCSS056	Soil	8/8/2012 9:45	9'-11'	AK102 & 103	TestAmerica Seattle		MOCSS056	LK	cool <4 C	081312-04	5_Day_RUSH	Soil jar 4oz
580-34447-28	12NCMOCSS057	Soil	8/8/2012 9:50	9'-11'	AK102 & 103	TestAmerica Seattle	MS/MSD	MOCSS057	LK	cool <4 C	081312-04	5_Day_RUSH	Soil jar 4oz
580-34447-29	12NCMOCSS058	Soil	8/8/2012 9:55	9'-11'	AK102 & 103	TestAmerica Seattle		MOCSS058	LK	cool <4 C	081312-04	5_Day_RUSH	Soil jar 4oz
580-34447-30	12NCMOCSS059	Soil	8/8/2012 10:00	9'-11'	AK102 & 103	TestAmerica Seattle		MOCSS059	LK	cool <4 C	081312-04	5_Day_RUSH	Soil jar 4oz
580-34447-31	12NCMOCSS060	Soil	8/8/2012 10:05	9'-11'	AK102 & 103	TestAmerica Seattle		MOCSS060	LK	cool <4 C	081312-04	5_Day_RUSH	Soil jar 4oz
580-34447-32	12NCMOCSS061	Soil	8/8/2012 10:10	9'-11'	AK102 & 103	TestAmerica Seattle		MOCSS061	LK	cool <4 C	081312-04	5_Day_RUSH	Soil jar 4oz
580-34447-33	12NCMOCSS062	Soil	8/8/2012 10:15	7'-9'	AK102 & 103	TestAmerica Seattle	Field Dup of MOCSS045	MOCSS062	LK	cool <4 C	081312-04	5_Day_RUSH	Soil jar 4oz
580-34447-34	12NCMOCSS063	Soil	8/8/2012 10:20	9'-11'	AK102 & 103	TestAmerica Seattle		MOCSS063	LK	cool <4 C	081312-04	5_Day_RUSH	Soil jar 4oz
580-34447-35	12NCMOCSS064	Soil	8/8/2012 10:25	9'-11'	AK102 & 103	TestAmerica Seattle		MOCSS064	LK	cool <4 C	081312-04	5_Day_RUSH	Soil jar 4oz
580-34447-36	12NCMOCSS065	Soil	8/8/2012 10:30	9'-11'	AK102 & 103	TestAmerica Seattle		MOCSS065	LK	cool <4 C	081312-04	5_Day_RUSH	Soil jar 4oz
580-34447-37	12NCMOCSS066	Soil	8/8/2012 10:35	9'-11'	AK102 & 103	TestAmerica Seattle		MOCSS066	LK	cool <4 C	081312-04	5_Day_RUSH	Soil jar 4oz
580-34447-38	12NCMOCSS067	Soil	8/8/2012 10:40	9'-11'	AK102 & 103	TestAmerica Seattle		MOCSS067	LK	cool <4 C	081312-04	5_Day_RUSH	Soil jar 4oz
580-34447-39	12NCMOCSS068	Soil	8/8/2012 10:33	9'-11'	AK102 & 103	TestAmerica Seattle	Field Dup of MOCSS065	MOCSS068	LK	cool <4 C	081312-04	5_Day_RUSH	Soil jar 4oz
580-34447-40	12NCMOCSS069	Soil	8/12/2012 16:30	9'-11'	AK102 & 103	TestAmerica Seattle		MOCSS069	LK	cool <4 C	081312-04	5_Day_RUSH	Soil jar 4oz
580-34447-41	12NCMOCSS070	Soil	8/12/2012 16:35	9'-11'	AK102 & 103	TestAmerica Seattle		MOCSS070	LK	cool <4 C	081312-04	5_Day_RUSH	Soil jar 4oz
580-34447-42	12NCMOCSS071	Soil	8/12/2012 16:40	9'-11'	AK102 & 103	TestAmerica Seattle		MOCSS071	LK	cool <4 C	081312-04	5_Day_RUSH	Soil jar 4oz
580-34447-43	12NCMOCSS072	Soil	8/8/2012 10:03	9'-11'	AK102 & 103	TestAmerica Seattle	Field Dup of MOCSS059	MOCSS072	LK	cool <4 C	081312-04	5_Day_RUSH	Soil jar 4oz
580-34447-44	12NCMOCSS074	Soil	8/12/2012 14:50	12'-14'	AK102 & 103	TestAmerica Seattle	MS/MSD	MOCSS074	LK	cool <4 C	081312-04	5_Day_RUSH	Soil jar 4oz
580-34481-1 MOC Surface Water													

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34481-1	12NCMOCSWA005	Water	8/8/2012 15:40	0"	AK102 & 103	TestAmerica Seattle		MOCSW01	LK	Hydrochloric Acid	081312-03	10_Days	Amber Glass 1 liter - Hydrochloric
580-34481-2	12NCMOCSWA006	Water	8/8/2012 16:00	0"	AK102 & 103	TestAmerica Seattle		MOCSW02	LK	Hydrochloric Acid	081312-03	10_Days	Amber Glass 1 liter - Hydrochloric
580-34481-3	12NCMOCSWA007	Water	8/8/2012 16:20	0"	AK102 & 103	TestAmerica Seattle	MS/MSD	MOCSW03	LK	Hydrochloric Acid	081312-03	10_Days	Amber Glass 1 liter - Hydrochloric
580-34481-4	12NCMOCSWA008	Water	8/8/2012 15:50	0"	AK102 & 103	TestAmerica Seattle	Field Dup of SWA005	MOCSW01	LK	Hydrochloric Acid	081312-03	10_Days	Amber Glass 1 liter - Hydrochloric
580-34550-1 Arsenic													
580-34550-1	12NC21SS001	Soil	8/15/2012 11:00	2"-9"	6020	TestAmerica Seattle		NC21SS001	LK	cool <4 C	081612-01	2_Day_RUSH	Soil jar 4oz
580-34550-2	12NC21SS002	Soil	8/15/2012 11:05	2"-9"	6020	TestAmerica Seattle		NC21SS002	LK	cool <4 C	081612-01	2_Day_RUSH	Soil jar 4oz
580-34550-3	12NC21SS003	Soil	8/15/2012 11:10	2"-9"	6020	TestAmerica Seattle		NC21SS003	LK	cool <4 C	081612-01	2_Day_RUSH	Soil jar 4oz
580-34550-4	12NC21SS004	Soil	8/15/2012 11:15	2"-9"	6020	TestAmerica Seattle		NC21SS004	LK	cool <4 C	081612-01	2_Day_RUSH	Soil jar 4oz
580-34550-5	12NC21SS005	Soil	8/15/2012 11:20	2"-9"	6020	TestAmerica Seattle		NC21SS005	LK	cool <4 C	081612-01	2_Day_RUSH	Soil jar 4oz
580-34550-6	12NC21SS006	Soil	8/15/2012 11:25	2"-9"	6020	TestAmerica Seattle		NC21SS006	LK	cool <4 C	081612-01	2_Day_RUSH	Soil jar 4oz
580-34550-7	12NC21SS007	Soil	8/15/2012 11:30	2"-9"	6020	TestAmerica Seattle		NC21SS007	LK	cool <4 C	081612-01	2_Day_RUSH	Soil jar 4oz
580-34550-8	12NC21SS008	Soil	8/15/2012 11:35	2"-9"	6020	TestAmerica Seattle		NC21SS008	LK	cool <4 C	081612-01	2_Day_RUSH	Soil jar 4oz
580-34550-9	12NC21SS009	Soil	8/15/2012 11:40	2"-9"	6020	TestAmerica Seattle		NC21SS009	LK	cool <4 C	081612-01	2_Day_RUSH	Soil jar 4oz
580-34550-10	12NC21SS010	Soil	8/15/2012 11:45	2"-9"	6020	TestAmerica Seattle		NC21SS010	LK	cool <4 C	081612-01	2_Day_RUSH	Soil jar 4oz
580-34550-11	12NC21SS011	Soil	8/15/2012 11:50	2"-9"	6020	TestAmerica Seattle	Field dup of 21SS008	NC21SS011	LK	cool <4 C	081612-01	2_Day_RUSH	Soil jar 4oz
580-34550-12	12NC21SS012	Soil	8/15/2012 11:55	2'-3'	6020	TestAmerica Seattle	MS/MSD	NC21SS012	LK	cool <4 C	081612-01	2_Day_RUSH	Soil jar 4oz
580-34550-13	12NC21SS013	Soil	8/15/2012 10:50	0	6020	TestAmerica Seattle		NC21SS013	LK	cool <4 C	081612-01	2_Day_RUSH	Soil jar 4oz
580-34550-14	12NC21SS014	Soil	8/15/2012 10:55	0	6020	TestAmerica Seattle	Field Dup of 21SS013	NC21SS014	LK	cool <4 C	081612-01	2_Day_RUSH	Soil jar 4oz
580-34594-1													
580-34594-1	12NCMOCSS083	Soil	8/21/2012 9:40	12'-14'	AK102 & 103	TestAmerica Seattle		12MOCS083	LK	cool <4 C	082212-01	5_Day_RUSH	Soil Jar 4oz Amber
580-34594-8	12NCMOCSS090	Soil	8/21/2012 10:15	12'-14'	AK102 & 103	TestAmerica Seattle		12MOCS090	LK	cool <4 C	082212-01	5_Day_RUSH	Soil Jar 4oz Amber
580-34594-12	12NCMOCSS094	Soil	8/21/2012 10:35	12'-14'	AK102 & 103	TestAmerica Seattle		12MOCS094	LK	cool <4 C	082212-01	5_Day_RUSH	Soil Jar 4oz Amber
580-34594-16	12NCMOCSS098	Soil	8/21/2012 10:55	12'-14'	AK102 & 103	TestAmerica Seattle		12MOCS098	LK	cool <4 C	082212-01	5_Day_RUSH	Soil Jar 4oz Amber
580-34594-17	12NCMOCSS099	Soil	8/21/2012 11:00	12'-14'	AK102 & 103	TestAmerica Seattle	Field Dup of MOCSS098	12MOCS099	LK	cool <4 C	082212-01	5_Day_RUSH	Soil Jar 4oz Amber
580-34594-22	12NCMOCSS104	Soil	8/21/2012 11:25	12'-14'	AK102 & 103	TestAmerica Seattle	MS/MSD	12MOCS104	LK	cool <4 C	082212-02	5_Day_RUSH	Soil Jar 4oz Amber
580-34594-26	12NCMOCSS108	Soil	8/21/2012 11:45	12'-14'	AK102 & 103	TestAmerica Seattle		12MOCS108	LK	cool <4 C	082212-02	5_Day_RUSH	Soil Jar 4oz Amber
580-34594-35	12NCMOCSS117	Soil	8/21/2012 14:00	12'-14'	AK102 & 103	TestAmerica Seattle		12MOCS117	LK	cool <4 C	082212-02	5_Day_RUSH	Soil Jar 4oz Amber
580-34607-1 MOC Soils													
580-34607-1	12NCMOCSS073	Soil	8/12/2012 17:00	12'-14'	AK102 & 103	TestAmerica Seattle		MOCSS073	LK	cool <4 C	082012-04	2_Day_RUSH	Soil Jar 4oz Amber
580-34607-2	12NCMOCSS075	Soil	8/12/2012 17:10	12'-14'	AK102 & 103	TestAmerica Seattle		MOCSS075	LK	cool <4 C	082012-04	2_Day_RUSH	Soil Jar 4oz Amber
580-34607-3	12NCMOCSS076	Soil	8/12/2012 17:15	12'-14'	AK102 & 103	TestAmerica Seattle		MOCSS076	LK	cool <4 C	082012-04	2_Day_RUSH	Soil Jar 4oz Amber
580-34607-4	12NCMOCSS077	Soil	8/12/2012 17:20	12'-14'	AK102 & 103	TestAmerica Seattle		MOCSS077	LK	cool <4 C	082012-04	2_Day_RUSH	Soil Jar 4oz Amber
580-34607-5	12NCMOCSS078	Soil	8/12/2012 17:25	12'-14'	AK102 & 103	TestAmerica Seattle		MOCSS078	LK	cool <4 C	082012-04	2_Day_RUSH	Soil Jar 4oz Amber
580-34607-6	12NCMOCSS079	Soil	8/12/2012 17:30	12'-14'	AK102 & 103	TestAmerica Seattle	Field Dup of MOCSS073	MOCSS079	LK	cool <4 C	082012-04	2_Day_RUSH	Soil Jar 4oz Amber
580-34607-7	12NCMOCSS080	Soil	8/20/2012 9:05	12'-14'	AK102 & 103	TestAmerica Seattle		MOCSS080	LK	cool <4 C	082012-04	2_Day_RUSH	Soil Jar 4oz Amber
580-34607-8	12NCMOCSS081	Soil	8/20/2012 9:07	12'-14'	AK102 & 103	TestAmerica Seattle	Field Dup of MOCSS080	MOCSS081	LK	cool <4 C	082012-04	2_Day_RUSH	Soil Jar 4oz Amber
580-34607-9	12NCMOCSS082	Soil	8/20/2012 9:15	12'-14'	AK102 & 103	TestAmerica Seattle	MS/MSD	MOCSS082	LK	cool <4 C	082012-04	2_Day_RUSH	Soil Jar 4oz Amber
580-34609-1 Drum Soil													
580-34609-1	12NC10SS001	Soil	8/18/2012 15:00	1'-3'	6020	TestAmerica Seattle		10SS001	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-1	12NC10SS001	Soil	8/18/2012 15:00	1'-3'	7471A	TestAmerica Seattle		10SS001	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil Jar 4oz Amber
580-34609-1	12NC10SS001	Soil	8/18/2012 15:00	1'-3'	8015C	TestAmerica Savannah		10SS001	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil Jar 4oz Amber
580-34609-1	12NC10SS001	Soil	8/18/2012 15:00	1'-3'	8082/DOD	TestAmerica Seattle		10SS001	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-1	12NC10SS001	Soil	8/18/2012 15:00	1'-3'	8260B	TestAmerica Seattle		10SS001	LK & RJ	Methanol	082012-01	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-1	12NC10SS001	Soil	8/18/2012 15:00	1'-3'	8270C SIM/DoD	TestAmerica Seattle		10SS001	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-1	12NC10SS001	Soil	8/18/2012 15:00	1'-3'	AK101	TestAmerica Seattle		10SS001	LK & RJ	Methanol	082012-01	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-1	12NC10SS001	Soil	8/18/2012 15:00	1'-3'	AK102 & 103	TestAmerica Seattle		10SS001	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-2	12NC10SS002	Soil	8/18/2012 15:30	1'-3'	6020	TestAmerica Seattle		10SS002	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-2	12NC10SS002	Soil	8/18/2012 15:30	1'-3'	7471A	TestAmerica Seattle		10SS002	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil Jar 4oz Amber
580-34609-2	12NC10SS002	Soil	8/18/2012 15:30	1'-3'	8015C	TestAmerica Savannah		10SS002	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil Jar 4oz Amber
580-34609-2	12NC10SS002	Soil	8/18/2012 15:30	1'-3'	8082/DOD	TestAmerica Seattle		10SS002	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-2	12NC10SS002	Soil	8/18/2012 15:30	1'-3'	8260B	TestAmerica Seattle		10SS002	LK & RJ	Methanol	082012-01	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-2	12NC10SS002	Soil	8/18/2012 15:30	1'-3'	8270C SIM/DoD	TestAmerica Seattle		10SS002	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-2	12NC10SS002	Soil	8/18/2012 15:30	1'-3'	AK101	TestAmerica Seattle		10SS002	LK & RJ	Methanol	082012-01	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-2	12NC10SS002	Soil	8/18/2012 15:30	1'-3'	AK102 & 103	TestAmerica Seattle		10SS002	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-3	12NC10SS003	Soil	8/18/2012 15:40	1'-3'	6020	TestAmerica Seattle		10SS003	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-3	12NC10SS003	Soil	8/18/2012 15:40	1'-3'	7471A	TestAmerica Seattle		10SS003	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil Jar 4oz Amber
580-34609-3	12NC10SS003	Soil	8/18/2012 15:40	1'-3'	8015C	TestAmerica Savannah		10SS003	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil Jar 4oz Amber
580-34609-3	12NC10SS003	Soil	8/18/2012 15:40	1'-3'	8082/DOD	TestAmerica Seattle		10SS003	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-3	12NC10SS003	Soil	8/18/2012 15:40	1'-3'	8260B	TestAmerica Seattle		10SS003	LK & RJ	Methanol	082012-01	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-3	12NC10SS003	Soil	8/18/2012 15:40	1'-3'	8270C SIM/DoD	TestAmerica Seattle		10SS003	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-3	12NC10SS003	Soil	8/18/2012 15:40	1'-3'	AK101	TestAmerica Seattle		10SS003	LK & RJ	Methanol	082012-01	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-3	12NC10SS003	Soil	8/18/2012 15:40	1'-3'	AK102 & 103	TestAmerica Seattle		10SS003	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-4	12NC10SS004	Soil	8/18/2012 15:50	1'-3'	6020	TestAmerica Seattle		10SS004	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-4	12NC10SS004	Soil	8/18/2012 15:50	1'-3'	7471A	TestAmerica Seattle		10SS004	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil Jar 4oz Amber
580-34609-4	12NC10SS004	Soil	8/18/2012 15:50	1'-3'	8015C	TestAmerica Savannah		10SS004	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil Jar 4oz Amber
580-34609-4	12NC10SS004	Soil	8/18/2012 15:50	1'-3'	8082/DOD	TestAmerica Seattle		10SS004	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34609-4	12NC10SS004	Soil	8/18/2012 15:50	1'-3'	8260B	TestAmerica Seattle		10SS004	LK & RJ	Methanol	082012-01	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-4	12NC10SS004	Soil	8/18/2012 15:50	1'-3'	8270C SIM/DoD	TestAmerica Seattle		10SS004	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-4	12NC10SS004	Soil	8/18/2012 15:50	1'-3'	AK101	TestAmerica Seattle		10SS004	LK & RJ	Methanol	082012-01	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-4	12NC10SS004	Soil	8/18/2012 15:50	1'-3'	AK102 & 103	TestAmerica Seattle		10SS004	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-5	12NC10SS005	Soil	8/18/2012 15:55	1'-3'	6020	TestAmerica Seattle		10SS005	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-5	12NC10SS005	Soil	8/18/2012 15:55	1'-3'	7471A	TestAmerica Seattle		10SS005	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil Jar 4oz Amber
580-34609-5	12NC10SS005	Soil	8/18/2012 15:55	1'-3'	8015C	TestAmerica Savannah		10SS005	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil Jar 4oz Amber
580-34609-5	12NC10SS005	Soil	8/18/2012 15:55	1'-3'	8082/DOD	TestAmerica Seattle		10SS005	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-5	12NC10SS005	Soil	8/18/2012 15:55	1'-3'	8260B	TestAmerica Seattle		10SS005	LK & RJ	Methanol	082012-01	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-5	12NC10SS005	Soil	8/18/2012 15:55	1'-3'	8270C SIM/DoD	TestAmerica Seattle		10SS005	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-5	12NC10SS005	Soil	8/18/2012 15:55	1'-3'	AK101	TestAmerica Seattle		10SS005	LK & RJ	Methanol	082012-01	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-5	12NC10SS005	Soil	8/18/2012 15:55	1'-3'	AK102 & 103	TestAmerica Seattle		10SS005	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-6	12NC10SS006	Soil	8/18/2012 16:00	1'-3'	6020	TestAmerica Seattle		10SS006	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-6	12NC10SS006	Soil	8/18/2012 16:00	1'-3'	7471A	TestAmerica Seattle		10SS006	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil Jar 4oz Amber
580-34609-6	12NC10SS006	Soil	8/18/2012 16:00	1'-3'	8015C	TestAmerica Savannah		10SS006	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil Jar 4oz Amber
580-34609-6	12NC10SS006	Soil	8/18/2012 16:00	1'-3'	8082/DOD	TestAmerica Seattle		10SS006	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-6	12NC10SS006	Soil	8/18/2012 16:00	1'-3'	8260B	TestAmerica Seattle		10SS006	LK & RJ	Methanol	082012-01	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-6	12NC10SS006	Soil	8/18/2012 16:00	1'-3'	8270C SIM/DoD	TestAmerica Seattle		10SS006	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-6	12NC10SS006	Soil	8/18/2012 16:00	1'-3'	AK101	TestAmerica Seattle		10SS006	LK & RJ	Methanol	082012-01	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-6	12NC10SS006	Soil	8/18/2012 16:00	1'-3'	AK102 & 103	TestAmerica Seattle		10SS006	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-7	12NC10SS007	Soil	8/18/2012 16:10	1'-3'	6020	TestAmerica Seattle	MS/MSD	10SS007	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-7	12NC10SS007	Soil	8/18/2012 16:10	1'-3'	7471A	TestAmerica Seattle	MS/MSD	10SS007	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil Jar 4oz Amber
580-34609-7	12NC10SS007	Soil	8/18/2012 16:10	1'-3'	8015C	TestAmerica Savannah	MS/MSD	10SS007	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil Jar 4oz Amber
580-34609-7	12NC10SS007	Soil	8/18/2012 16:10	1'-3'	8082/DOD	TestAmerica Seattle	MS/MSD	10SS007	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-7	12NC10SS007	Soil	8/18/2012 16:10	1'-3'	8260B	TestAmerica Seattle	MS/MSD	10SS007	LK & RJ	Methanol	082012-01	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-7	12NC10SS007	Soil	8/18/2012 16:10	1'-3'	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	10SS007	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-7	12NC10SS007	Soil	8/18/2012 16:10	1'-3'	AK101	TestAmerica Seattle	MS/MSD	10SS007	LK & RJ	Methanol	082012-01	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-7	12NC10SS007	Soil	8/18/2012 16:10	1'-3'	AK102 & 103	TestAmerica Seattle	MS/MSD	10SS007	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-8	12NC10SS008	Soil	8/18/2012 16:15	1'-3'	6020	TestAmerica Seattle		10SS008	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-8	12NC10SS008	Soil	8/18/2012 16:15	1'-3'	7471A	TestAmerica Seattle		10SS008	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil Jar 4oz Amber
580-34609-8	12NC10SS008	Soil	8/18/2012 16:15	1'-3'	8015C	TestAmerica Savannah		10SS008	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil Jar 4oz Amber
580-34609-8	12NC10SS008	Soil	8/18/2012 16:15	1'-3'	8082/DOD	TestAmerica Seattle		10SS008	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-8	12NC10SS008	Soil	8/18/2012 16:15	1'-3'	8260B	TestAmerica Seattle		10SS008	LK & RJ	Methanol	082012-01	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-8	12NC10SS008	Soil	8/18/2012 16:15	1'-3'	8270C SIM/DoD	TestAmerica Seattle		10SS008	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-8	12NC10SS008	Soil	8/18/2012 16:15	1'-3'	AK101	TestAmerica Seattle		10SS008	LK & RJ	Methanol	082012-01	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-8	12NC10SS008	Soil	8/18/2012 16:15	1'-3'	AK102 & 103	TestAmerica Seattle		10SS008	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-9	12NC10SS009	Soil	8/18/2012 16:20	1'-3'	6020	TestAmerica Seattle		10SS009	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-9	12NC10SS009	Soil	8/18/2012 16:20	1'-3'	7471A	TestAmerica Seattle		10SS009	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil Jar 4oz Amber
580-34609-9	12NC10SS009	Soil	8/18/2012 16:20	1'-3'	8015C	TestAmerica Savannah		10SS009	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil Jar 4oz Amber
580-34609-9	12NC10SS009	Soil	8/18/2012 16:20	1'-3'	8082/DOD	TestAmerica Seattle		10SS009	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-9	12NC10SS009	Soil	8/18/2012 16:20	1'-3'	8260B	TestAmerica Seattle		10SS009	LK & RJ	Methanol	082012-01	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-9	12NC10SS009	Soil	8/18/2012 16:20	1'-3'	8270C SIM/DoD	TestAmerica Seattle		10SS009	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-9	12NC10SS009	Soil	8/18/2012 16:20	1'-3'	AK101	TestAmerica Seattle		10SS009	LK & RJ	Methanol	082012-01	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-9	12NC10SS009	Soil	8/18/2012 16:20	1'-3'	AK102 & 103	TestAmerica Seattle		10SS009	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-10	12NC10SS010	Soil	8/18/2012 16:30	1'-3'	6020	TestAmerica Seattle		10SS010	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-10	12NC10SS010	Soil	8/18/2012 16:30	1'-3'	7471A	TestAmerica Seattle		10SS010	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil Jar 4oz Amber
580-34609-10	12NC10SS010	Soil	8/18/2012 16:30	1'-3'	8015C	TestAmerica Savannah		10SS010	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil Jar 4oz Amber
580-34609-10	12NC10SS010	Soil	8/18/2012 16:30	1'-3'	8082/DOD	TestAmerica Seattle		10SS010	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-10	12NC10SS010	Soil	8/18/2012 16:30	1'-3'	8260B	TestAmerica Seattle		10SS010	LK & RJ	Methanol	082012-01	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-10	12NC10SS010	Soil	8/18/2012 16:30	1'-3'	8270C SIM/DoD	TestAmerica Seattle		10SS010	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-10	12NC10SS010	Soil	8/18/2012 16:30	1'-3'	AK101	TestAmerica Seattle		10SS010	LK & RJ	Methanol	082012-01	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-10	12NC10SS010	Soil	8/18/2012 16:30	1'-3'	AK102 & 103	TestAmerica Seattle		10SS010	LK & RJ	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-11	12NC10SS011	Soil	8/19/2012 9:35	1'-4'	6020	TestAmerica Seattle		10SS011	LK	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-11	12NC10SS011	Soil	8/19/2012 9:35	1'-4'	7471A	TestAmerica Seattle		10SS011	LK	cool <4 C	082012-01	6_Day_Rush	Soil Jar 4oz Amber
580-34609-11	12NC10SS011	Soil	8/19/2012 9:35	1'-4'	8015C	TestAmerica Savannah		10SS011	LK	cool <4 C	082012-01	6_Day_Rush	Soil Jar 4oz Amber
580-34609-11	12NC10SS011	Soil	8/19/2012 9:35	1'-4'	8082/DOD	TestAmerica Seattle		10SS011	LK	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-11	12NC10SS011	Soil	8/19/2012 9:35	1'-4'	8260B	TestAmerica Seattle		10SS011	LK	Methanol	082012-01	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-11	12NC10SS011	Soil	8/19/2012 9:35	1'-4'	8270C SIM/DoD	TestAmerica Seattle		10SS011	LK	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-11	12NC10SS011	Soil	8/19/2012 9:35	1'-4'	AK101	TestAmerica Seattle		10SS011	LK	Methanol	082012-01	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-11	12NC10SS011	Soil	8/19/2012 9:35	1'-4'	AK102 & 103	TestAmerica Seattle		10SS011	LK	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-12	12NC10SS012	Soil	8/19/2012 9:40	1'-4'	6020	TestAmerica Seattle		10SS012	LK	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-12	12NC10SS012	Soil	8/19/2012 9:40	1'-4'	7471A	TestAmerica Seattle		10SS012	LK	cool <4 C	082012-01	6_Day_Rush	Soil Jar 4oz Amber
580-34609-12	12NC10SS012	Soil	8/19/2012 9:40	1'-4'	8015C	TestAmerica Savannah		10SS012	LK	cool <4 C	082012-01	6_Day_Rush	Soil Jar 4oz Amber
580-34609-12	12NC10SS012	Soil	8/19/2012 9:40	1'-4'	8082/DOD	TestAmerica Seattle		10SS012	LK	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-12	12NC10SS012	Soil	8/19/2012 9:40	1'-4'	8260B	TestAmerica Seattle		10SS012	LK	Methanol	082012-01	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-12	12NC10SS012	Soil	8/19/2012 9:40	1'-4'	8270C SIM/DoD	TestAmerica Seattle		10SS012	LK	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-12	12NC10SS012	Soil	8/19/2012 9:40	1'-4'	AK101	TestAmerica Seattle		10SS012	LK	Methanol	082012-01	6_Day_Rush	Soil jar 4oz - with Methanol

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34609-12	12NC10SS012	Soil	8/19/2012 9:40	1'-4'	AK102 & 103	TestAmerica Seattle		10SS012	LK	cool <4 C	082012-01	6_Day_Rush	Soil jar 16oz
580-34609-13	12NC10SS013	Soil	8/19/2012 10:00	1'-4'	6020	TestAmerica Seattle		10SS013	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-13	12NC10SS013	Soil	8/19/2012 10:00	1'-4'	7471A	TestAmerica Seattle		10SS013	LK	cool <4 C	082012-02	6_Day_Rush	Soil Jar 4oz Amber
580-34609-13	12NC10SS013	Soil	8/19/2012 10:00	1'-4'	8015C	TestAmerica Savannah		10SS013	LK	cool <4 C	082012-02	6_Day_Rush	Soil Jar 4oz Amber
580-34609-13	12NC10SS013	Soil	8/19/2012 10:00	1'-4'	8082/DOD	TestAmerica Seattle		10SS013	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-13	12NC10SS013	Soil	8/19/2012 10:00	1'-4'	8260B	TestAmerica Seattle		10SS013	LK	Methanol	082012-02	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-13	12NC10SS013	Soil	8/19/2012 10:00	1'-4'	8270C SIM/DoD	TestAmerica Seattle		10SS013	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-13	12NC10SS013	Soil	8/19/2012 10:00	1'-4'	AK101	TestAmerica Seattle		10SS013	LK	Methanol	082012-02	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-13	12NC10SS013	Soil	8/19/2012 10:00	1'-4'	AK102 & 103	TestAmerica Seattle		10SS013	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-14	12NC10SS014	Soil	8/19/2012 10:30	1'-4'	6020	TestAmerica Seattle	MS/MSD	10SS014	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-14	12NC10SS014	Soil	8/19/2012 10:30	1'-4'	7471A	TestAmerica Seattle	MS/MSD	10SS014	LK	cool <4 C	082012-02	6_Day_Rush	Soil Jar 4oz Amber
580-34609-14	12NC10SS014	Soil	8/19/2012 10:30	1'-4'	8015C	TestAmerica Savannah	MS/MSD	10SS014	LK	cool <4 C	082012-02	6_Day_Rush	Soil Jar 4oz Amber
580-34609-14	12NC10SS014	Soil	8/19/2012 10:30	1'-4'	8082/DOD	TestAmerica Seattle	MS/MSD	10SS014	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-14	12NC10SS014	Soil	8/19/2012 10:30	1'-4'	8260B	TestAmerica Seattle	MS/MSD	10SS014	LK	Methanol	082012-02	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-14	12NC10SS014	Soil	8/19/2012 10:30	1'-4'	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	10SS014	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-14	12NC10SS014	Soil	8/19/2012 10:30	1'-4'	AK101	TestAmerica Seattle	MS/MSD	10SS014	LK	Methanol	082012-02	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-14	12NC10SS014	Soil	8/19/2012 10:30	1'-4'	AK102 & 103	TestAmerica Seattle	MS/MSD	10SS014	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-15	12NC10SS015	Soil	8/19/2012 10:35	1'-4'	6020	TestAmerica Seattle		10SS015	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-15	12NC10SS015	Soil	8/19/2012 10:35	1'-4'	7471A	TestAmerica Seattle		10SS015	LK	cool <4 C	082012-02	6_Day_Rush	Soil Jar 4oz Amber
580-34609-15	12NC10SS015	Soil	8/19/2012 10:35	1'-4'	8015C	TestAmerica Savannah		10SS015	LK	cool <4 C	082012-02	6_Day_Rush	Soil Jar 4oz Amber
580-34609-15	12NC10SS015	Soil	8/19/2012 10:35	1'-4'	8082/DOD	TestAmerica Seattle		10SS015	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-15	12NC10SS015	Soil	8/19/2012 10:35	1'-4'	8260B	TestAmerica Seattle		10SS015	LK	Methanol	082012-02	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-15	12NC10SS015	Soil	8/19/2012 10:35	1'-4'	8270C SIM/DoD	TestAmerica Seattle		10SS015	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-15	12NC10SS015	Soil	8/19/2012 10:35	1'-4'	AK101	TestAmerica Seattle		10SS015	LK	Methanol	082012-02	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-15	12NC10SS015	Soil	8/19/2012 10:35	1'-4'	AK102 & 103	TestAmerica Seattle		10SS015	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-16	12NC10SS016	Soil	8/19/2012 10:40	1'-4'	6020	TestAmerica Seattle		10SS016	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-16	12NC10SS016	Soil	8/19/2012 10:40	1'-4'	7471A	TestAmerica Seattle		10SS016	LK	cool <4 C	082012-02	6_Day_Rush	Soil Jar 4oz Amber
580-34609-16	12NC10SS016	Soil	8/19/2012 10:40	1'-4'	8015C	TestAmerica Savannah		10SS016	LK	cool <4 C	082012-02	6_Day_Rush	Soil Jar 4oz Amber
580-34609-16	12NC10SS016	Soil	8/19/2012 10:40	1'-4'	8082/DOD	TestAmerica Seattle		10SS016	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-16	12NC10SS016	Soil	8/19/2012 10:40	1'-4'	8260B	TestAmerica Seattle		10SS016	LK	Methanol	082012-02	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-16	12NC10SS016	Soil	8/19/2012 10:40	1'-4'	8270C SIM/DoD	TestAmerica Seattle		10SS016	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-16	12NC10SS016	Soil	8/19/2012 10:40	1'-4'	AK101	TestAmerica Seattle		10SS016	LK	Methanol	082012-02	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-16	12NC10SS016	Soil	8/19/2012 10:40	1'-4'	AK102 & 103	TestAmerica Seattle		10SS016	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-17	12NC10SS017	Soil	8/19/2012 10:50	1'-4'	6020	TestAmerica Seattle		10SS017	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-17	12NC10SS017	Soil	8/19/2012 10:50	1'-4'	7471A	TestAmerica Seattle		10SS017	LK	cool <4 C	082012-02	6_Day_Rush	Soil Jar 4oz Amber
580-34609-17	12NC10SS017	Soil	8/19/2012 10:50	1'-4'	8015C	TestAmerica Savannah		10SS017	LK	cool <4 C	082012-02	6_Day_Rush	Soil Jar 4oz Amber
580-34609-17	12NC10SS017	Soil	8/19/2012 10:50	1'-4'	8082/DOD	TestAmerica Seattle		10SS017	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-17	12NC10SS017	Soil	8/19/2012 10:50	1'-4'	8260B	TestAmerica Seattle		10SS017	LK	Methanol	082012-02	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-17	12NC10SS017	Soil	8/19/2012 10:50	1'-4'	8270C SIM/DoD	TestAmerica Seattle		10SS017	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-17	12NC10SS017	Soil	8/19/2012 10:50	1'-4'	AK101	TestAmerica Seattle		10SS017	LK	Methanol	082012-02	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-17	12NC10SS017	Soil	8/19/2012 10:50	1'-4'	AK102 & 103	TestAmerica Seattle		10SS017	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-18	12NC10SS018	Soil	8/18/2012 17:05	1'-3'	6020	TestAmerica Seattle	Field Dup of 10SS005	10SS005	LK & RJ	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-18	12NC10SS018	Soil	8/18/2012 17:05	1'-3'	7471A	TestAmerica Seattle	Field Dup of 10SS005	10SS005	LK & RJ	cool <4 C	082012-02	6_Day_Rush	Soil Jar 4oz Amber
580-34609-18	12NC10SS018	Soil	8/18/2012 17:05	1'-3'	8015C	TestAmerica Savannah	Field Dup of 10SS005	10SS005	LK & RJ	cool <4 C	082012-02	6_Day_Rush	Soil Jar 4oz Amber
580-34609-18	12NC10SS018	Soil	8/18/2012 17:05	1'-3'	8082/DOD	TestAmerica Seattle	Field Dup of 10SS005	10SS005	LK & RJ	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-18	12NC10SS018	Soil	8/18/2012 17:05	1'-3'	8260B	TestAmerica Seattle	Field Dup of 10SS005	10SS005	LK & RJ	Methanol	082012-02	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-18	12NC10SS018	Soil	8/18/2012 17:05	1'-3'	8270C SIM/DoD	TestAmerica Seattle	Field Dup of 10SS005	10SS005	LK & RJ	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-18	12NC10SS018	Soil	8/18/2012 17:05	1'-3'	AK101	TestAmerica Seattle	Field Dup of 10SS005	10SS005	LK & RJ	Methanol	082012-02	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-18	12NC10SS018	Soil	8/18/2012 17:05	1'-3'	AK102 & 103	TestAmerica Seattle	Field Dup of 10SS005	10SS005	LK & RJ	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-19	12NC10SS019	Soil	8/19/2012 10:45	1'-4'	6020	TestAmerica Seattle	Field Dup of 10SS016	10SS016	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-19	12NC10SS019	Soil	8/19/2012 10:45	1'-4'	7471A	TestAmerica Seattle	Field Dup of 10SS016	10SS016	LK	cool <4 C	082012-02	6_Day_Rush	Soil Jar 4oz Amber
580-34609-19	12NC10SS019	Soil	8/19/2012 10:45	1'-4'	8015C	TestAmerica Savannah	Field Dup of 10SS016	10SS016	LK	cool <4 C	082012-02	6_Day_Rush	Soil Jar 4oz Amber
580-34609-19	12NC10SS019	Soil	8/19/2012 10:45	1'-4'	8082/DOD	TestAmerica Seattle	Field Dup of 10SS016	10SS016	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-19	12NC10SS019	Soil	8/19/2012 10:45	1'-4'	8260B	TestAmerica Seattle	Field Dup of 10SS016	10SS016	LK	Methanol	082012-02	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-19	12NC10SS019	Soil	8/19/2012 10:45	1'-4'	8270C SIM/DoD	TestAmerica Seattle	Field Dup of 10SS016	10SS016	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-19	12NC10SS019	Soil	8/19/2012 10:45	1'-4'	AK101	TestAmerica Seattle	Field Dup of 10SS016	10SS016	LK	Methanol	082012-02	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-19	12NC10SS019	Soil	8/19/2012 10:45	1'-4'	AK102 & 103	TestAmerica Seattle	Field Dup of 10SS016	10SS016	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-20	12NC10SS020	Soil	8/19/2012 15:00	0'-3'	6020	TestAmerica Seattle		10SS020	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-20	12NC10SS020	Soil	8/19/2012 15:00	0'-3'	7471A	TestAmerica Seattle		10SS020	LK	cool <4 C	082012-02	6_Day_Rush	Soil Jar 4oz Amber
580-34609-20	12NC10SS020	Soil	8/19/2012 15:00	0'-3'	8015C	TestAmerica Savannah		10SS020	LK	cool <4 C	082012-02	6_Day_Rush	Soil Jar 4oz Amber
580-34609-20	12NC10SS020	Soil	8/19/2012 15:00	0'-3'	8082/DOD	TestAmerica Seattle		10SS020	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-20	12NC10SS020	Soil	8/19/2012 15:00	0'-3'	8260B	TestAmerica Seattle		10SS020	LK	Methanol	082012-02	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-20	12NC10SS020	Soil	8/19/2012 15:00	0'-3'	8270C SIM/DoD	TestAmerica Seattle		10SS020	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-20	12NC10SS020	Soil	8/19/2012 15:00	0'-3'	AK101	TestAmerica Seattle		10SS020	LK	Methanol	082012-02	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-20	12NC10SS020	Soil	8/19/2012 15:00	0'-3'	AK102 & 103	TestAmerica Seattle		10SS020	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-21	12NC10SS021	Soil	8/19/2012 15:05	0'-3'	6020	TestAmerica Seattle		10SS021	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-21	12NC10SS021	Soil	8/19/2012 15:05	0'-3'	7471A	TestAmerica Seattle		10SS021	LK	cool <4 C	082012-02	6_Day_Rush	Soil Jar 4oz Amber

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34609-21	12NC10SS021	Soil	8/19/2012 15:05	0'-3'	8015C	TestAmerica Savannah		10SS021	LK	cool <4 C	082012-02	6_Day_Rush	Soil Jar 4oz Amber
580-34609-21	12NC10SS021	Soil	8/19/2012 15:05	0'-3'	8082/DOD	TestAmerica Seattle		10SS021	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-21	12NC10SS021	Soil	8/19/2012 15:05	0'-3'	8260B	TestAmerica Seattle		10SS021	LK	Methanol	082012-02	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-21	12NC10SS021	Soil	8/19/2012 15:05	0'-3'	8270C SIM/DoD	TestAmerica Seattle		10SS021	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-21	12NC10SS021	Soil	8/19/2012 15:05	0'-3'	AK101	TestAmerica Seattle		10SS021	LK	Methanol	082012-02	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-21	12NC10SS021	Soil	8/19/2012 15:05	0'-3'	AK102 & 103	TestAmerica Seattle		10SS021	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-22	12NC10SS022	Soil	8/19/2012 15:10	0'-3'	6020	TestAmerica Seattle		10SS022	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-22	12NC10SS022	Soil	8/19/2012 15:10	0'-3'	7471A	TestAmerica Seattle		10SS022	LK	cool <4 C	082012-02	6_Day_Rush	Soil Jar 4oz Amber
580-34609-22	12NC10SS022	Soil	8/19/2012 15:10	0'-3'	8015C	TestAmerica Savannah		10SS022	LK	cool <4 C	082012-02	6_Day_Rush	Soil Jar 4oz Amber
580-34609-22	12NC10SS022	Soil	8/19/2012 15:10	0'-3'	8082/DOD	TestAmerica Seattle		10SS022	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-22	12NC10SS022	Soil	8/19/2012 15:10	0'-3'	8260B	TestAmerica Seattle		10SS022	LK	Methanol	082012-02	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-22	12NC10SS022	Soil	8/19/2012 15:10	0'-3'	8270C SIM/DoD	TestAmerica Seattle		10SS022	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-22	12NC10SS022	Soil	8/19/2012 15:10	0'-3'	AK101	TestAmerica Seattle		10SS022	LK	Methanol	082012-02	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-22	12NC10SS022	Soil	8/19/2012 15:10	0'-3'	AK102 & 103	TestAmerica Seattle		10SS022	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-23	12NC10SS023	Soil	8/19/2012 15:15	0'-3'	6020	TestAmerica Seattle		10SS023	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-23	12NC10SS023	Soil	8/19/2012 15:15	0'-3'	7471A	TestAmerica Seattle		10SS023	LK	cool <4 C	082012-02	6_Day_Rush	Soil Jar 4oz Amber
580-34609-23	12NC10SS023	Soil	8/19/2012 15:15	0'-3'	8015C	TestAmerica Savannah		10SS023	LK	cool <4 C	082012-02	6_Day_Rush	Soil Jar 4oz Amber
580-34609-23	12NC10SS023	Soil	8/19/2012 15:15	0'-3'	8082/DOD	TestAmerica Seattle		10SS023	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-23	12NC10SS023	Soil	8/19/2012 15:15	0'-3'	8260B	TestAmerica Seattle		10SS023	LK	Methanol	082012-02	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-23	12NC10SS023	Soil	8/19/2012 15:15	0'-3'	8270C SIM/DoD	TestAmerica Seattle		10SS023	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-23	12NC10SS023	Soil	8/19/2012 15:15	0'-3'	AK101	TestAmerica Seattle		10SS023	LK	Methanol	082012-02	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-23	12NC10SS023	Soil	8/19/2012 15:15	0'-3'	AK102 & 103	TestAmerica Seattle		10SS023	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-24	12NC10SS024	Soil	8/19/2012 15:20	0'-3'	6020	TestAmerica Seattle		10SS024	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-24	12NC10SS024	Soil	8/19/2012 15:20	0'-3'	7471A	TestAmerica Seattle		10SS024	LK	cool <4 C	082012-02	6_Day_Rush	Soil Jar 4oz Amber
580-34609-24	12NC10SS024	Soil	8/19/2012 15:20	0'-3'	8015C	TestAmerica Savannah		10SS024	LK	cool <4 C	082012-02	6_Day_Rush	Soil Jar 4oz Amber
580-34609-24	12NC10SS024	Soil	8/19/2012 15:20	0'-3'	8082/DOD	TestAmerica Seattle		10SS024	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-24	12NC10SS024	Soil	8/19/2012 15:20	0'-3'	8260B	TestAmerica Seattle		10SS024	LK	Methanol	082012-02	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-24	12NC10SS024	Soil	8/19/2012 15:20	0'-3'	8270C SIM/DoD	TestAmerica Seattle		10SS024	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-24	12NC10SS024	Soil	8/19/2012 15:20	0'-3'	AK101	TestAmerica Seattle		10SS024	LK	Methanol	082012-02	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-24	12NC10SS024	Soil	8/19/2012 15:20	0'-3'	AK102 & 103	TestAmerica Seattle		10SS024	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-25	12NC10SS025	Soil	8/19/2012 15:25	0'-3'	6020	TestAmerica Seattle		10SS025	LK	cool <4 C	082012-02	6_Day_Rush	Soil jar 16oz
580-34609-25	12NC10SS025	Soil	8/19/2012 15:25	0'-3'	7471A	TestAmerica Seattle		10SS025	LK	cool <4 C	082012-03	6_Day_Rush	Soil Jar 4oz Amber
580-34609-25	12NC10SS025	Soil	8/19/2012 15:25	0'-3'	8015C	TestAmerica Savannah		10SS025	LK	cool <4 C	082012-03	6_Day_Rush	Soil Jar 4oz Amber
580-34609-25	12NC10SS025	Soil	8/19/2012 15:25	0'-3'	8082/DOD	TestAmerica Seattle		10SS025	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-25	12NC10SS025	Soil	8/19/2012 15:25	0'-3'	8260B	TestAmerica Seattle		10SS025	LK	Methanol	082012-03	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-25	12NC10SS025	Soil	8/19/2012 15:25	0'-3'	8270C SIM/DoD	TestAmerica Seattle		10SS025	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-25	12NC10SS025	Soil	8/19/2012 15:25	0'-3'	AK101	TestAmerica Seattle		10SS025	LK	Methanol	082012-03	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-25	12NC10SS025	Soil	8/19/2012 15:25	0'-3'	AK102 & 103	TestAmerica Seattle		10SS025	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-26	12NC10SS026	Soil	8/19/2012 15:30	0'-3'	6020	TestAmerica Seattle		10SS026	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-26	12NC10SS026	Soil	8/19/2012 15:30	0'-3'	7471A	TestAmerica Seattle		10SS026	LK	cool <4 C	082012-03	6_Day_Rush	Soil Jar 4oz Amber
580-34609-26	12NC10SS026	Soil	8/19/2012 15:30	0'-3'	8015C	TestAmerica Savannah		10SS026	LK	cool <4 C	082012-03	6_Day_Rush	Soil Jar 4oz Amber
580-34609-26	12NC10SS026	Soil	8/19/2012 15:30	0'-3'	8082/DOD	TestAmerica Seattle		10SS026	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-26	12NC10SS026	Soil	8/19/2012 15:30	0'-3'	8260B	TestAmerica Seattle		10SS026	LK	Methanol	082012-03	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-26	12NC10SS026	Soil	8/19/2012 15:30	0'-3'	8270C SIM/DoD	TestAmerica Seattle		10SS026	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-26	12NC10SS026	Soil	8/19/2012 15:30	0'-3'	AK101	TestAmerica Seattle		10SS026	LK	Methanol	082012-03	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-26	12NC10SS026	Soil	8/19/2012 15:30	0'-3'	AK102 & 103	TestAmerica Seattle		10SS026	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-27	12NC10SS027	Soil	8/19/2012 15:35	2'-5'	6020	TestAmerica Seattle		10SS027	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-27	12NC10SS027	Soil	8/19/2012 15:35	2'-5'	7471A	TestAmerica Seattle		10SS027	LK	cool <4 C	082012-03	6_Day_Rush	Soil Jar 4oz Amber
580-34609-27	12NC10SS027	Soil	8/19/2012 15:35	2'-5'	8015C	TestAmerica Savannah		10SS027	LK	cool <4 C	082012-03	6_Day_Rush	Soil Jar 4oz Amber
580-34609-27	12NC10SS027	Soil	8/19/2012 15:35	2'-5'	8082/DOD	TestAmerica Seattle		10SS027	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-27	12NC10SS027	Soil	8/19/2012 15:35	2'-5'	8260B	TestAmerica Seattle		10SS027	LK	Methanol	082012-03	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-27	12NC10SS027	Soil	8/19/2012 15:35	2'-5'	8270C SIM/DoD	TestAmerica Seattle		10SS027	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-27	12NC10SS027	Soil	8/19/2012 15:35	2'-5'	AK101	TestAmerica Seattle		10SS027	LK	Methanol	082012-03	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-27	12NC10SS027	Soil	8/19/2012 15:35	2'-5'	AK102 & 103	TestAmerica Seattle		10SS027	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-28	12NC10SS028	Soil	8/19/2012 15:40	2'-5'	6020	TestAmerica Seattle		10SS028	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-28	12NC10SS028	Soil	8/19/2012 15:40	2'-5'	7471A	TestAmerica Seattle		10SS028	LK	cool <4 C	082012-03	6_Day_Rush	Soil Jar 4oz Amber
580-34609-28	12NC10SS028	Soil	8/19/2012 15:40	2'-5'	8015C	TestAmerica Savannah		10SS028	LK	cool <4 C	082012-03	6_Day_Rush	Soil Jar 4oz Amber
580-34609-28	12NC10SS028	Soil	8/19/2012 15:40	2'-5'	8082/DOD	TestAmerica Seattle		10SS028	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-28	12NC10SS028	Soil	8/19/2012 15:40	2'-5'	8260B	TestAmerica Seattle		10SS028	LK	Methanol	082012-03	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-28	12NC10SS028	Soil	8/19/2012 15:40	2'-5'	8270C SIM/DoD	TestAmerica Seattle		10SS028	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-28	12NC10SS028	Soil	8/19/2012 15:40	2'-5'	AK101	TestAmerica Seattle		10SS028	LK	Methanol	082012-03	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-28	12NC10SS028	Soil	8/19/2012 15:40	2'-5'	AK102 & 103	TestAmerica Seattle		10SS028	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-29	12NC10SS029	Soil	8/19/2012 15:45	2'-5'	6020	TestAmerica Seattle		10SS029	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-29	12NC10SS029	Soil	8/19/2012 15:45	2'-5'	7471A	TestAmerica Seattle		10SS029	LK	cool <4 C	082012-03	6_Day_Rush	Soil Jar 4oz Amber
580-34609-29	12NC10SS029	Soil	8/19/2012 15:45	2'-5'	8015C	TestAmerica Savannah		10SS029	LK	cool <4 C	082012-03	6_Day_Rush	Soil Jar 4oz Amber
580-34609-29	12NC10SS029	Soil	8/19/2012 15:45	2'-5'	8082/DOD	TestAmerica Seattle		10SS029	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-29	12NC10SS029	Soil	8/19/2012 15:45	2'-5'	8260B	TestAmerica Seattle		10SS029	LK	Methanol	082012-03	6_Day_Rush	Soil jar 4oz - with Methanol

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34609-29	12NC10SS029	Soil	8/19/2012 15:45	2'-5'	8270C SIM/DoD	TestAmerica Seattle		10SS029	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-29	12NC10SS029	Soil	8/19/2012 15:45	2'-5'	AK101	TestAmerica Seattle		10SS029	LK	Methanol	082012-03	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-29	12NC10SS029	Soil	8/19/2012 15:45	2'-5'	AK102 & 103	TestAmerica Seattle		10SS029	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-30	12NC10SS030	Soil	8/19/2012 11:35	2'-5'	6020	TestAmerica Seattle		10SS030	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-30	12NC10SS030	Soil	8/19/2012 11:35	2'-5'	7471A	TestAmerica Seattle		10SS030	LK	cool <4 C	082012-03	6_Day_Rush	Soil Jar 4oz Amber
580-34609-30	12NC10SS030	Soil	8/19/2012 11:35	2'-5'	8015C	TestAmerica Savannah		10SS030	LK	cool <4 C	082012-03	6_Day_Rush	Soil Jar 4oz Amber
580-34609-30	12NC10SS030	Soil	8/19/2012 11:35	2'-5'	8082/DOD	TestAmerica Seattle		10SS030	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-30	12NC10SS030	Soil	8/19/2012 11:35	2'-5'	8260B	TestAmerica Seattle		10SS030	LK	Methanol	082012-03	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-30	12NC10SS030	Soil	8/19/2012 11:35	2'-5'	8270C SIM/DoD	TestAmerica Seattle		10SS030	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-30	12NC10SS030	Soil	8/19/2012 11:35	2'-5'	AK101	TestAmerica Seattle		10SS030	LK	Methanol	082012-03	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-30	12NC10SS030	Soil	8/19/2012 11:35	2'-5'	AK102 & 103	TestAmerica Seattle		10SS030	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-31	12NC10SS031	Soil	8/19/2012 15:50	2'-5'	6020	TestAmerica Seattle		10SS031	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-31	12NC10SS031	Soil	8/19/2012 15:50	2'-5'	7471A	TestAmerica Seattle		10SS031	LK	cool <4 C	082012-03	6_Day_Rush	Soil Jar 4oz Amber
580-34609-31	12NC10SS031	Soil	8/19/2012 15:50	2'-5'	8015C	TestAmerica Savannah		10SS031	LK	cool <4 C	082012-03	6_Day_Rush	Soil Jar 4oz Amber
580-34609-31	12NC10SS031	Soil	8/19/2012 15:50	2'-5'	8082/DOD	TestAmerica Seattle		10SS031	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-31	12NC10SS031	Soil	8/19/2012 15:50	2'-5'	8260B	TestAmerica Seattle		10SS031	LK	Methanol	082012-03	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-31	12NC10SS031	Soil	8/19/2012 15:50	2'-5'	8270C SIM/DoD	TestAmerica Seattle		10SS031	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-31	12NC10SS031	Soil	8/19/2012 15:50	2'-5'	AK101	TestAmerica Seattle		10SS031	LK	Methanol	082012-03	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-31	12NC10SS031	Soil	8/19/2012 15:50	2'-5'	AK102 & 103	TestAmerica Seattle		10SS031	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-32	12NC10SS032	Soil	8/19/2012 11:40	2'-5'	6020	TestAmerica Seattle	Field Dup of 10SS030	10SS030	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-32	12NC10SS032	Soil	8/19/2012 11:40	2'-5'	7471A	TestAmerica Seattle	Field Dup of 10SS030	10SS030	LK	cool <4 C	082012-03	6_Day_Rush	Soil Jar 4oz Amber
580-34609-32	12NC10SS032	Soil	8/19/2012 11:40	2'-5'	8015C	TestAmerica Savannah	Field Dup of 10SS030	10SS030	LK	cool <4 C	082012-03	6_Day_Rush	Soil Jar 4oz Amber
580-34609-32	12NC10SS032	Soil	8/19/2012 11:40	2'-5'	8082/DOD	TestAmerica Seattle	Field Dup of 10SS030	10SS030	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-32	12NC10SS032	Soil	8/19/2012 11:40	2'-5'	8260B	TestAmerica Seattle	Field Dup of 10SS030	10SS030	LK	Methanol	082012-03	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-32	12NC10SS032	Soil	8/19/2012 11:40	2'-5'	8270C SIM/DoD	TestAmerica Seattle	Field Dup of 10SS030	10SS030	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-32	12NC10SS032	Soil	8/19/2012 11:40	2'-5'	AK101	TestAmerica Seattle	Field Dup of 10SS030	10SS030	LK	Methanol	082012-03	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-32	12NC10SS032	Soil	8/19/2012 11:40	2'-5'	AK102 & 103	TestAmerica Seattle	Field Dup of 10SS030	10SS030	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-33	12NC10SS033	Soil	8/19/2012 14:15	6"-18"	6020	TestAmerica Seattle		10SS033	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-33	12NC10SS033	Soil	8/19/2012 14:15	6"-18"	7471A	TestAmerica Seattle		10SS033	LK	cool <4 C	082012-03	6_Day_Rush	Soil Jar 4oz Amber
580-34609-33	12NC10SS033	Soil	8/19/2012 14:15	6"-18"	8015C	TestAmerica Savannah		10SS033	LK	cool <4 C	082012-03	6_Day_Rush	Soil Jar 4oz Amber
580-34609-33	12NC10SS033	Soil	8/19/2012 14:15	6"-18"	8082/DOD	TestAmerica Seattle		10SS033	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-33	12NC10SS033	Soil	8/19/2012 14:15	6"-18"	8260B	TestAmerica Seattle		10SS033	LK	Methanol	082012-03	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-33	12NC10SS033	Soil	8/19/2012 14:15	6"-18"	8270C SIM/DoD	TestAmerica Seattle		10SS033	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-33	12NC10SS033	Soil	8/19/2012 14:15	6"-18"	AK101	TestAmerica Seattle		10SS033	LK	Methanol	082012-03	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-33	12NC10SS033	Soil	8/19/2012 14:15	6"-18"	AK102 & 103	TestAmerica Seattle		10SS033	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-34	12NC10SS034	Soil	8/19/2012 14:20	6"-18"	6020	TestAmerica Seattle		10SS034	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-34	12NC10SS034	Soil	8/19/2012 14:20	6"-18"	7471A	TestAmerica Seattle		10SS034	LK	cool <4 C	082012-03	6_Day_Rush	Soil Jar 4oz Amber
580-34609-34	12NC10SS034	Soil	8/19/2012 14:20	6"-18"	8015C	TestAmerica Savannah		10SS034	LK	cool <4 C	082012-03	6_Day_Rush	Soil Jar 4oz Amber
580-34609-34	12NC10SS034	Soil	8/19/2012 14:20	6"-18"	8082/DOD	TestAmerica Seattle	MS/MSD	10SS034	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-34	12NC10SS034	Soil	8/19/2012 14:20	6"-18"	8260B	TestAmerica Seattle		10SS034	LK	Methanol	082012-03	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-34	12NC10SS034	Soil	8/19/2012 14:20	6"-18"	8270C SIM/DoD	TestAmerica Seattle		10SS034	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-34	12NC10SS034	Soil	8/19/2012 14:20	6"-18"	AK101	TestAmerica Seattle		10SS034	LK	Methanol	082012-03	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-34	12NC10SS034	Soil	8/19/2012 14:20	6"-18"	AK102 & 103	TestAmerica Seattle		10SS034	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-35	12NC10SS035	Soil	8/19/2012 14:25	6"-18"	6020	TestAmerica Seattle		10SS035	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-35	12NC10SS035	Soil	8/19/2012 14:25	6"-18"	7471A	TestAmerica Seattle		10SS035	LK	cool <4 C	082012-03	6_Day_Rush	Soil Jar 4oz Amber
580-34609-35	12NC10SS035	Soil	8/19/2012 14:25	6"-18"	8015C	TestAmerica Savannah		10SS035	LK	cool <4 C	082012-03	6_Day_Rush	Soil Jar 4oz Amber
580-34609-35	12NC10SS035	Soil	8/19/2012 14:25	6"-18"	8082/DOD	TestAmerica Seattle		10SS035	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-35	12NC10SS035	Soil	8/19/2012 14:25	6"-18"	8260B	TestAmerica Seattle		10SS035	LK	Methanol	082012-03	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-35	12NC10SS035	Soil	8/19/2012 14:25	6"-18"	8270C SIM/DoD	TestAmerica Seattle		10SS035	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-35	12NC10SS035	Soil	8/19/2012 14:25	6"-18"	AK101	TestAmerica Seattle		10SS035	LK	Methanol	082012-03	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-35	12NC10SS035	Soil	8/19/2012 14:25	6"-18"	AK102 & 103	TestAmerica Seattle		10SS035	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-36	12NC10SS036	Soil	8/19/2012 14:30	6"-18"	6020	TestAmerica Seattle		10SS036	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-36	12NC10SS036	Soil	8/19/2012 14:30	6"-18"	7471A	TestAmerica Seattle		10SS036	LK	cool <4 C	082012-03	6_Day_Rush	Soil Jar 4oz Amber
580-34609-36	12NC10SS036	Soil	8/19/2012 14:30	6"-18"	8015C	TestAmerica Savannah		10SS036	LK	cool <4 C	082012-03	6_Day_Rush	Soil Jar 4oz Amber
580-34609-36	12NC10SS036	Soil	8/19/2012 14:30	6"-18"	8082/DOD	TestAmerica Seattle		10SS036	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-36	12NC10SS036	Soil	8/19/2012 14:30	6"-18"	8260B	TestAmerica Seattle		10SS036	LK	Methanol	082012-03	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-36	12NC10SS036	Soil	8/19/2012 14:30	6"-18"	8270C SIM/DoD	TestAmerica Seattle		10SS036	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-36	12NC10SS036	Soil	8/19/2012 14:30	6"-18"	AK101	TestAmerica Seattle		10SS036	LK	Methanol	082012-03	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-36	12NC10SS036	Soil	8/19/2012 14:30	6"-18"	AK102 & 103	TestAmerica Seattle		10SS036	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-37	12NC10SS037	Soil	8/19/2012 14:35	6"-18"	6020	TestAmerica Seattle	Field Dup of 10SS036	10SS037	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-37	12NC10SS037	Soil	8/19/2012 14:35	6"-18"	7471A	TestAmerica Seattle	Field Dup of 10SS036	10SS037	LK	cool <4 C	082012-03	6_Day_Rush	Soil Jar 4oz Amber
580-34609-37	12NC10SS037	Soil	8/19/2012 14:35	6"-18"	8015C	TestAmerica Savannah	Field Dup of 10SS036	10SS037	LK	cool <4 C	082012-03	6_Day_Rush	Soil Jar 4oz Amber
580-34609-37	12NC10SS037	Soil	8/19/2012 14:35	6"-18"	8082/DOD	TestAmerica Seattle	Field Dup of 10SS036	10SS037	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-37	12NC10SS037	Soil	8/19/2012 14:35	6"-18"	8260B	TestAmerica Seattle	Field Dup of 10SS036	10SS037	LK	Methanol	082012-03	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-37	12NC10SS037	Soil	8/19/2012 14:35	6"-18"	8270C SIM/DoD	TestAmerica Seattle	Field Dup of 10SS036	10SS037	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz
580-34609-37	12NC10SS037	Soil	8/19/2012 14:35	6"-18"	AK101	TestAmerica Seattle	Field Dup of 10SS036	10SS037	LK	Methanol	082012-03	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-37	12NC10SS037	Soil	8/19/2012 14:35	6"-18"	AK102 & 103	TestAmerica Seattle	Field Dup of 10SS036	10SS037	LK	cool <4 C	082012-03	6_Day_Rush	Soil jar 16oz

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34609-38	TripBlank082012-01	Soil	8/20/12 1300	NA	AK101	TestAmerica Seattle	Trip Blank	TripBlank082012-0	LK	Methanol	081212-01	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-38	TripBlank082012-01	Soil	8/20/12 1300	NA	8260B	TestAmerica Seattle	Trip Blank	TripBlank082012-0	LK	Methanol	081212-01	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-39	TripBlank082012-02	Soil	8/20/12 1300	NA	AK101	TestAmerica Seattle	Trip Blank	TripBlank082012-0	LK	Methanol	081212-02	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-39	TripBlank082012-02	Soil	8/20/12 1300	NA	8260B	TestAmerica Seattle	Trip Blank	TripBlank082012-0	LK	Methanol	081212-02	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-40	TripBlank082012-03	Soil	8/20/12 1300	NA	AK101	TestAmerica Seattle	Trip Blank	TripBlank082012-0	LK	Methanol	081212-03	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-40	TripBlank082012-03	Soil	8/20/12 1300	NA	8260B	TestAmerica Seattle	Trip Blank	TripBlank082012-0	LK	Methanol	081212-03	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-41	TripBlank082012-04	Soil	8/20/12 1300	NA	AK101	TestAmerica Seattle	Trip Blank	TripBlank082012-0	LK	Methanol	081212-04	6_Day_Rush	Soil jar 4oz - with Methanol
580-34609-41	TripBlank082012-04	Soil	8/20/12 1300	NA	8260B	TestAmerica Seattle	Trip Blank	TripBlank082012-0	LK	Methanol	081212-04	6_Day_Rush	Soil jar 4oz - with Methanol
580-34648-1 Site 8 outfall water													
580-34648-1	12NC08SWA01	Water	8/23/2012 11:30	0"	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	12NC08-01	LK & EC	Hydrochloric Acid	082412-02	10_Days	Amber Glass 1 liter - Hydrochloric
580-34648-1	12NC08SWA01	Water	8/23/2012 11:30	0"	AK102 & 103	TestAmerica Seattle	MS/MSD	12NC08-01	LK & EC	Hydrochloric Acid	082412-01	10_Days	Amber Glass 1 liter - Hydrochloric
580-34648-2	12NC08SWA02	Water	8/23/2012 15:00	0"	8270C SIM/DoD	TestAmerica Seattle		12NC08-02	LK & EC	Hydrochloric Acid	082412-02	10_Days	Amber Glass 1 liter - Hydrochloric
580-34648-2	12NC08SWA02	Water	8/23/2012 15:00	0"	AK102 & 103	TestAmerica Seattle		12NC08-02	LK & EC	Hydrochloric Acid	082412-02	10_Days	Amber Glass 1 liter - Hydrochloric
580-34648-3	12NC08SWA03	Water	8/23/2012 15:15	0"	8270C SIM/DoD	TestAmerica Seattle	Field Dup of 08SWA02	12NC08-03	LK & EC	Hydrochloric Acid	082412-02	10_Days	Amber Glass 1 liter - Hydrochloric
580-34648-3	12NC08SWA03	Water	8/23/2012 15:15	0"	AK102 & 103	TestAmerica Seattle	Field Dup of 08SWA02	12NC08-03	LK & EC	Hydrochloric Acid	082412-02	10_Days	Amber Glass 1 liter - Hydrochloric
580-34675-1 Site 31 PCBs													
580-34675-1	12NC31SS114	Soil	8/23/2012 16:04	5-16'	8082A	TestAmerica Denver		31-114	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-2	12NC31SS115	Soil	8/23/2012 16:06	5-16'	8082A	TestAmerica Denver		31-115	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-3	12NC31SS116	Soil	8/23/2012 16:06	5-16'	8082A	TestAmerica Denver	`	31-116	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-4	12NC31SS117	Soil	8/23/2012 16:08	5-16'	8082A	TestAmerica Denver		31-117	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-5	12NC31SS118	Soil	8/23/2012 16:11	5-16'	8082A	TestAmerica Denver		31-118	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-6	12NC31SS119	Soil	8/23/2012 16:12	5-16'	8082A	TestAmerica Denver		31-119	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-7	12NC31SS120	Soil	8/23/2012 16:16	5-16'	8082A	TestAmerica Denver		31-120	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-8	12NC31SS121	Soil	8/23/2012 16:16	5-16'	8082A	TestAmerica Denver		31-121	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-9	12NC31SS122	Soil	8/23/2012 16:17	5-16'	8082A	TestAmerica Denver		31-122	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-10	12NC31SS123	Soil	8/23/2012 16:19	5-16'	8082A	TestAmerica Denver		31-123	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-11	12NC31SS124	Soil	8/23/2012 16:20	5-16'	8082A	TestAmerica Denver		31-124	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-12	12NC31SS125	Soil	8/23/2012 16:21	5-16'	8082A	TestAmerica Denver		31-125	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-13	12NC31SS126	Soil	8/23/2012 16:22	5-16'	8082A	TestAmerica Denver	Field dup of 31SS123	31-126	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-14	12NC31SS127	Soil	8/23/2012 16:23	5-16'	8082A	TestAmerica Denver	Field dup of 31SS124	31-127	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-15	12NC31SS128	Soil	8/23/2012 16:24	5-16'	8082A	TestAmerica Denver	Field dup of 31SS125	31-128	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-16	12NC31SS129	Soil	8/23/2012 17:08	5-16'	8082A	TestAmerica Denver		31-129	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-17	12NC31SS130	Soil	8/23/2012 17:10	5-16'	8082A	TestAmerica Denver		31-130	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-18	12NC31SS131	Soil	8/23/2012 17:13	5-16'	8082A	TestAmerica Denver		31-131	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-19	12NC31SS132	Soil	8/24/2012 9:12	5-16'	8082A	TestAmerica Denver		31-132	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-20	12NC31SS133	Soil	8/24/2012 9:13	5-16'	8082A	TestAmerica Denver		31-133	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-21	12NC31SS134	Soil	8/24/2012 9:15	5-16'	8082A	TestAmerica Denver		31-134	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-22	12NC31SS135	Soil	8/24/2012 9:17	5-16'	8082A	TestAmerica Denver		31-135	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-23	12NC31SS136	Soil	8/24/2012 9:19	5-16'	8082A	TestAmerica Denver		31-136	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-24	12NC31SS137	Soil	8/24/2012 9:21	5-16'	8082A	TestAmerica Denver		31-137	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-25	12NC31SS138	Soil	8/24/2012 9:23	5-16'	8082A	TestAmerica Denver		31-138	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-26	12NC31SS139	Soil	8/24/2012 9:26	5-16'	8082A	TestAmerica Denver	MS/MSD	31-139	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-27	12NC31SS140	Soil	8/24/2012 9:31	5-16'	8082A	TestAmerica Denver	MS/MSD	31-140	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-28	12NC31SS141	Soil	8/24/2012 9:32	5-16'	8082A	TestAmerica Denver	MS/MSD	31-141	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-29	12NC31SS142	Soil	8/24/2012 9:33	5-16'	8082A	TestAmerica Denver	MS/MSD	31-142	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-30	12NC31SS143	Soil	8/24/2012 9:38	5-16'	8082A	TestAmerica Denver		31-142	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-31	12NC31SS144	Soil	8/24/2012 9:39	5-16'	8082A	TestAmerica Denver		31-144	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-32	12NC31SS145	Soil	8/24/2012 9:40	5-16'	8082A	TestAmerica Denver		31-145	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-33	12NC31SS146	Soil	8/24/2012 9:45	5-16'	8082A	TestAmerica Denver		31-146	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-34	12NC31SS147	Soil	8/24/2012 10:15	5-16'	8082A	TestAmerica Denver		31-147	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-35	12NC31SS148	Soil	8/24/2012 10:18	5-16'	8082A	TestAmerica Denver	Field dup of 31SS147	31-148	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-36	12NC31SS149	Soil	8/24/2012 10:23	5-16'	8082A	TestAmerica Denver	MS/MSD	31-149	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-37	12NC31SS150	Soil	8/24/2012 10:24	5-16'	8082A	TestAmerica Denver	MS/MSD	31-150	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-38	12NC31SS151	Soil	8/24/2012 10:26	5-16'	8082A	TestAmerica Denver		31-151	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-39	12NC31SS152	Soil	8/24/2012 10:28	5-16'	8082A	TestAmerica Denver	Field dup of 31SS151	31-152	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-40	12NC31SS153	Soil	8/24/2012 10:31	5-16'	8082A	TestAmerica Denver		31-153	EB	cool <4 C	082712-4	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-41	12NC31SS154	Soil	8/24/2012 10:35	5-16'	8082A	TestAmerica Denver		31-154	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-42	12NC31SS155	Soil	8/24/2012 10:36	5-16'	8082A	TestAmerica Denver	Field dup of 31SS154	31-155	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-43	12NC31SS156	Soil	8/24/2012 10:41	5-16'	8082A	TestAmerica Denver		31-156	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-44	12NC31SS157	Soil	8/24/2012 10:43	5-16'	8082A	TestAmerica Denver	Field dup of 31SS156	31-157	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-45	12NC31SS158	Soil	8/24/2012 10:44	5-16'	8082A	TestAmerica Denver		31-158	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-46	12NC31SS159	Soil	8/24/2012 10:45	5-16'	8082A	TestAmerica Denver		31-159	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-47	12NC31SS160	Soil	8/24/2012 10:51	5-16'	8082A	TestAmerica Denver		31-160	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-48	12NC31SS161	Soil	8/24/2012 10:52	5-16'	8082A	TestAmerica Denver	Field dup of 31SS160	31-161	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-49	12NC31SS162	Soil	8/24/2012 10:55	5-16'	8082A	TestAmerica Denver		31-162	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-50	12NC31SS163	Soil	8/24/2012 10:54	5-16'	8082A	TestAmerica Denver	Field dup of 31SS162	31-163	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-51	12NC31SS164	Soil	8/24/2012 11:05	5-16'	8082A	TestAmerica Denver		31-164	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34675-52	12NC31SS165	Soil	8/24/2012 11:06	5-16'	8082A	TestAmerica Denver		31-165	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-53	12NC31SS166	Soil	8/24/2012 11:07	5-16'	8082A	TestAmerica Denver		31-166	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-54	12NC31SS167	Soil	8/24/2012 11:08	5-16'	8082A	TestAmerica Denver		31-167	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-55	12NC31SS168	Soil	8/24/2012 11:09	5-16'	8082A	TestAmerica Denver		31-168	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-56	12NC31SS169	Soil	8/24/2012 11:10	5-16'	8082A	TestAmerica Denver		31-169	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-57	12NC31SS170	Soil	8/24/2012 11:11	5-16'	8082A	TestAmerica Denver		31-170	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-58	12NC31SS171	Soil	8/24/2012 11:12	5-16'	8082A	TestAmerica Denver		31-171	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-59	12NC31SS172	Soil	8/24/2012 11:13	5-16'	8082A	TestAmerica Denver		31-172	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-60	12NC31SS173	Soil	8/24/2012 11:37	5-16'	8082A	TestAmerica Denver		31-173	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-61	12NC31SS174	Soil	8/24/2012 11:39	5-16'	8082A	TestAmerica Denver		31-174	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-62	12NC31SS175	Soil	8/24/2012 11:40	5-16'	8082A	TestAmerica Denver		31-175	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-63	12NC31SS176	Soil	8/24/2012 13:51	5-16'	8082A	TestAmerica Denver		31-176	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-64	12NC31SS177	Soil	8/24/2012 14:00	5-16'	8082A	TestAmerica Denver		31-177	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-65	12NC31SS178	Soil	8/24/2012 14:01	5-16'	8082A	TestAmerica Denver	MS/MSD	31-178	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-66	12NC31SS179	Soil	8/24/2012 14:03	5-16'	8082A	TestAmerica Denver		31-179	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-67	12NC31SS180	Soil	8/24/2012 14:04	5-16'	8082A	TestAmerica Denver		31-180	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-68	12NC31SS181	Soil	8/24/2012 14:07	5-16'	8082A	TestAmerica Denver		31-181	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-69	12NC31SS182	Soil	8/24/2012 14:08	5-16'	8082A	TestAmerica Denver		31-182	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-70	12NC31SS183	Soil	8/24/2012 14:10	5-16'	8082A	TestAmerica Denver		31-183	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-71	12NC31SS184	Soil	8/24/2012 14:11	5-16'	8082A	TestAmerica Denver	Field Dup of 31SS177	31-184	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-72	12NC31SS185	Soil	8/24/2012 14:12	5-16'	8082A	TestAmerica Denver	Field Dup of 31SS179	31-185	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-73	12NC31SS186	Soil	8/24/2012 14:16	5-16'	8082A	TestAmerica Denver	Field dup of 31SS180	31-186	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-74	12NC31SS187	Soil	8/24/2012 14:18	5-16'	8082A	TestAmerica Denver	Field dup of 31SS181	31-187	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-75	12NC31SS188	Soil	8/24/2012 14:20	5-16'	8082A	TestAmerica Denver	Field dup of 31SS182	31-188	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-76	12NC31SS189	Soil	8/24/2012 14:24	5-16'	8082A	TestAmerica Denver	Field dup of 31SS183	31-189	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-77	12NC31SS190	Soil	8/24/2012 14:50	5-16'	8082A	TestAmerica Denver		31-190	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-78	12NC31SS191	Soil	8/24/2012 14:53	5-16'	8082A	TestAmerica Denver	Field dup of 31SS190	31-191	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-79	12NC31SS192	Soil	8/24/2012 15:05	5-16'	8082A	TestAmerica Denver		31-192	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34675-80	12NC31SS193	Soil	8/24/2012 15:08	5-16'	8082A	TestAmerica Denver	Field dup of 31SS192	31-193	EB	cool <4 C	082712-5	5_Day_RUSH	Soil Jar 4oz Amber
580-34677-1 MOC E-plume													
580-34677-7	12NCMOCSS128	Soil	8/25/2012 7:53	12'-14'	AK102 & 103	TestAmerica Seattle		MOC-128	EC	cool <4 C	082712-1	5_Day_RUSH	Soil jar 4oz
580-34677-8	12NCMOCSS129	Soil	8/25/2012 7:57	12'-14'	AK102 & 103	TestAmerica Seattle	Field Dup of MOCSS128	MOC-129	EC	cool <4 C	082712-1	5_Day_RUSH	Soil jar 4oz
580-34677-12	12NCMOCSS133	Soil	8/25/2012 8:15	12'-14'	AK102 & 103	TestAmerica Seattle	MS/MSD	MOC-133	EC	cool <4 C	082712-1	5_Day_RUSH	Soil jar 4oz
580-34677-15	12NCMOCSS136	Soil	8/25/2012 10:35	12'-14'	AK102 & 103	TestAmerica Seattle	MS/MSD	MOC-136	EC	cool <4 C	082712-1	5_Day_RUSH	Soil jar 4oz
580-34677-19	12NCMOCSS140	Soil	8/25/2012 10:55	12'-14'	AK102 & 103	TestAmerica Seattle		MOC-140	EC	cool <4 C	082712-1	5_Day_RUSH	Soil jar 4oz
580-34677-25	12NCMOCSS146	Soil	8/26/2012 8:20	12'-14'	AK102 & 103	TestAmerica Seattle		MOC-146	EC	cool <4 C	082712-1	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-1 Site 13 PCBs													
580-34680-1	12NC13SS143	Soil	8/25/2012 16:23	5-16'	8082A	TestAmerica Denver		013-143	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-2	12NC13SS144	Soil	8/25/2012 16:25	5-16'	8082A	TestAmerica Denver	Field Dup of 13SS143	013-144	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-3	12NC13SS145	Soil	8/25/2012 16:28	5-16'	8082A	TestAmerica Denver		013-145	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-4	12NC13SS146	Soil	8/25/2012 16:30	5-16'	8082A	TestAmerica Denver		013-146	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-5	12NC13SS147	Soil	8/25/2012 16:31	5-16'	8082A	TestAmerica Denver		013-147	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-6	12NC13SS148	Soil	8/25/2012 16:33	5-16'	8082A	TestAmerica Denver		013-148	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-7	12NC13SS149	Soil	8/25/2012 16:35	5-16'	8082A	TestAmerica Denver		013-149	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-8	12NC13SS150	Soil	8/25/2012 16:37	5-16'	8082A	TestAmerica Denver		013-150	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-9	12NC13SS151	Soil	8/25/2012 16:38	5-16'	8082A	TestAmerica Denver		013-151	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-10	12NC13SS152	Soil	8/25/2012 16:39	5-16'	8082A	TestAmerica Denver		013-152	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-11	12NC13SS153	Soil	8/25/2012 16:41	5-16'	8082A	TestAmerica Denver		013-153	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-12	12NC13SS154	Soil	8/25/2012 16:42	5-16'	8082A	TestAmerica Denver		013-154	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-13	12NC13SS155	Soil	8/25/2012 16:44	5-16'	8082A	TestAmerica Denver		013-155	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-14	12NC13SS156	Soil	8/25/2012 16:45	5-16'	8082A	TestAmerica Denver		013-156	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-15	12NC13SS157	Soil	8/25/2012 16:47	5-16'	8082A	TestAmerica Denver		013-157	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-16	12NC13SS158	Soil	8/25/2012 16:48	5-16'	8082A	TestAmerica Denver		013-158	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-17	12NC13SS159	Soil	8/25/2012 16:50	5-16'	8082A	TestAmerica Denver		013-159	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-18	12NC13SS160	Soil	8/25/2012 16:51	5-16'	8082A	TestAmerica Denver		013-160	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-19	12NC13SS161	Soil	8/25/2012 16:52	5-16'	8082A	TestAmerica Denver	Field Dup of 13SS160	013-161	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-20	12NC13SS162	Soil	8/25/2012 16:56	5-16'	8082A	TestAmerica Denver		013-162	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-21	12NC13SS163	Soil	8/25/2012 16:58	5-16'	8082A	TestAmerica Denver	Field Dup of 13SS162	013-163	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-22	12NC13SS164	Soil	8/25/2012 17:02	5-16'	8082A	TestAmerica Denver		013-164	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-23	12NC13SS165	Soil	8/25/2012 17:03	5-16'	8082A	TestAmerica Denver		013-165	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-24	12NC13SS166	Soil	8/25/2012 17:05	5-16'	8082A	TestAmerica Denver		013-166	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-25	12NC13SS167	Soil	8/25/2012 17:07	5-16'	8082A	TestAmerica Denver		013-167	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-26	12NC13SS168	Soil	8/25/2012 17:08	5-16'	8082A	TestAmerica Denver		013-168	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-27	12NC13SS169	Soil	8/25/2012 17:10	5-16'	8082A	TestAmerica Denver		013-169	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-28	12NC13SS170	Soil	8/26/2012 9:10	5-16'	8082A	TestAmerica Denver		013-170	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-29	12NC13SS171	Soil	8/26/2012 9:13	5-16'	8082A	TestAmerica Denver		013-171	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-30	12NC13SS172	Soil	8/26/2012 9:14	5-16'	8082A	TestAmerica Denver		013-172	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34680-31	12NC13SS173	Soil	8/26/2012 9:20	5-16'	8082A	TestAmerica Denver		013-173	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-32	12NC13SS174	Soil	8/26/2012 9:22	5-16'	8082A	TestAmerica Denver		013-174	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-33	12NC13SS175	Soil	8/26/2012 9:24	5-16'	8082A	TestAmerica Denver		013-175	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-34	12NC13SS176	Soil	8/26/2012 9:26	5-16'	8082A	TestAmerica Denver		013-176	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-35	12NC13SS177	Soil	8/26/2012 9:28	5-16'	8082A	TestAmerica Denver	Field Dup of 13SS176	013-177	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-36	12NC13SS178	Soil	8/26/2012 9:31	5-16'	8082A	TestAmerica Denver		013-178	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-37	12NC13SS179	Soil	8/26/2012 9:33	5-16'	8082A	TestAmerica Denver		013-179	EB	cool <4 C	082712-7	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-38	12NC13SS180	Soil	8/26/2012 9:35	5-16'	8082A	TestAmerica Denver		013-180	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-38	12NC13SS180	Soil	8/26/2012 9:35	5-16'	8082A	TestAmerica Denver	MS/MSD	013-180	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-39	12NC13SS181	Soil	8/26/2012 9:37	5-16'	8082A	TestAmerica Denver		013-181	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-40	12NC13SS182	Soil	8/26/2012 9:39	5-16'	8082A	TestAmerica Denver		013-182	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-41	12NC13SS183	Soil	8/26/2012 9:54	5-16'	8082A	TestAmerica Denver		013-183	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-42	12NC13SS184	Soil	8/26/2012 9:56	5-16'	8082A	TestAmerica Denver		013-184	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-43	12NC13SS185	Soil	8/26/2012 9:58	5-16'	8082A	TestAmerica Denver	Field Dup of 13SS184	013-185	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-44	12NC13SS186	Soil	8/26/2012 9:59	5-16'	8082A	TestAmerica Denver		013-186	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-45	12NC13SS187	Soil	8/26/2012 10:00	5-16'	8082A	TestAmerica Denver		013-187	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-46	12NC13SS188	Soil	8/26/2012 10:11	5-16'	8082A	TestAmerica Denver	MS/MSD	013-188	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-47	12NC13SS189	Soil	8/26/2012 10:16	5-16'	8082A	TestAmerica Denver	MS/MSD	013-189	EB	cool <4 C	082712-6	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-48	12NC13SS190	Soil	8/26/2012 10:20	5-16'	8082A	TestAmerica Denver	MS/MSD	013-190	EB	cool <4 C	082712-7	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-49	12NC13SS191	Soil	8/26/2012 10:26	5-16'	8082A	TestAmerica Denver		013-191	EB	cool <4 C	082712-7	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-50	12NC13SS192	Soil	8/26/2012 10:27	5-16'	8082A	TestAmerica Denver		013-192	EB	cool <4 C	082712-7	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-51	12NC13SS193	Soil	8/26/2012 10:32	5-16'	8082A	TestAmerica Denver		013-193	EB	cool <4 C	082712-7	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-52	12NC13SS194	Soil	8/26/2012 10:34	5-16'	8082A	TestAmerica Denver		013-194	EB	cool <4 C	082712-7	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-53	12NC13SS195	Soil	8/26/2012 10:36	5-16'	8082A	TestAmerica Denver		013-195	EB	cool <4 C	082712-7	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-54	12NC13SS196	Soil	8/26/2012 10:39	5-16'	8082A	TestAmerica Denver		013-196	EB	cool <4 C	082712-7	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-55	12NC13SS197	Soil	8/26/2012 10:41	5-16'	8082A	TestAmerica Denver		013-197	EB	cool <4 C	082712-7	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-56	12NC13SS198	Soil	8/26/2012 10:45	5-16'	8082A	TestAmerica Denver		013-198	EB	cool <4 C	082712-7	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-57	12NC13SS199	Soil	8/26/2012 10:50	5-16'	8082A	TestAmerica Denver		013-199	EB	cool <4 C	082712-7	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-58	12NC13SS200	Soil	8/26/2012 10:55	5-16'	8082A	TestAmerica Denver		013-200	EB	cool <4 C	082712-7	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-59	12NC13SS201	Soil	8/26/2012 12:38	5-16'	8082A	TestAmerica Denver		013-201	EB	cool <4 C	082712-7	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-60	12NC13SS202	Soil	8/26/2012 12:40	5-16'	8082A	TestAmerica Denver		013-202	EB	cool <4 C	082712-7	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-61	12NC13SS203	Soil	8/26/2012 12:41	5-16'	8082A	TestAmerica Denver		013-203	EB	cool <4 C	082712-7	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-62	12NC13SS204	Soil	8/26/2012 12:43	5-16'	8082A	TestAmerica Denver		013-204	EB	cool <4 C	082712-7	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-64	12NC13SS206	Soil	8/26/2012 12:47	5-16'	8082A	TestAmerica Denver		013-206	EB	cool <4 C	082712-7	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-65	12NC13SS207	Soil	8/26/2012 12:48	5-16'	8082A	TestAmerica Denver		013-207	EB	cool <4 C	082712-7	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-66	12NC13SS208	Soil	8/26/2012 12:49	5-16'	8082A	TestAmerica Denver		013-208	EB	cool <4 C	082712-7	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-67	12NC13SS209	Soil	8/26/2012 12:50	5-16'	8082A	TestAmerica Denver		013-209	EB	cool <4 C	082712-7	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-68	12NC13SS210	Soil	8/26/2012 12:52	5-16'	8082A	TestAmerica Denver		013-210	EB	cool <4 C	082712-7	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-69	12NC13SS211	Soil	8/26/2012 12:53	5-16'	8082A	TestAmerica Denver		013-211	EB	cool <4 C	082712-7	5_Day_RUSH	Soil Jar 4oz Amber
580-34680-71	12NC13SS213	Soil	8/26/2012 12:56	5-16'	8082A	TestAmerica Denver		013-213	EB	cool <4 C	082712-7	5_Day_RUSH	Soil Jar 4oz Amber
580-34683-1 Site 31 PCBs													
580-34683-1	12NC31SS030	Soil	8/23/2012 9:14	5-16'	8082/DOD	TestAmerica Seattle		31-030	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-2	12NC31SS031	Soil	8/23/2012 9:16	5-16'	8082/DOD	TestAmerica Seattle		31-031	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-3	12NC31SS032	Soil	8/23/2012 9:18	5-16'	8082/DOD	TestAmerica Seattle		31-032	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-4	12NC31SS033	Soil	8/23/2012 9:19	5-16'	8082/DOD	TestAmerica Seattle		31-033	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-5	12NC31SS034	Soil	8/23/2012 9:22	5-16'	8082/DOD	TestAmerica Seattle		31-034	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-6	12NC31SS035	Soil	8/23/2012 9:24	5-16'	8082/DOD	TestAmerica Seattle		31-035	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-7	12NC31SS036	Soil	8/23/2012 9:27	5-16'	8082/DOD	TestAmerica Seattle		31-036	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-8	12NC31SS037	Soil	8/23/2012 9:31	5-16'	8082/DOD	TestAmerica Seattle		31-037	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-9	12NC31SS038	Soil	8/23/2012 9:34	5-16'	8082/DOD	TestAmerica Seattle		31-038	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-10	12NC31SS039	Soil	8/23/2012 9:36	5-16'	8082/DOD	TestAmerica Seattle		31-039	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-11	12NC31SS040	Soil	8/23/2012 9:37	5-16'	8082/DOD	TestAmerica Seattle		31-040	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-12	12NC31SS041	Soil	8/23/2012 9:39	5-16'	8082/DOD	TestAmerica Seattle		31-041	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-13	12NC31SS042	Soil	8/23/2012 9:41	5-16'	8082/DOD	TestAmerica Seattle		31-042	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-14	12NC31SS043	Soil	8/23/2012 9:44	5-16'	8082/DOD	TestAmerica Seattle	MS/MSD	31-043	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-15	12NC31SS044	Soil	8/23/2012 9:45	5-16'	8082/DOD	TestAmerica Seattle		31-044	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-16	12NC31SS045	Soil	8/23/2012 9:48	5-16'	8082/DOD	TestAmerica Seattle		31-045	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-17	12NC31SS046	Soil	8/23/2012 10:16	5-16'	8082/DOD	TestAmerica Seattle		31-046	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-18	12NC31SS047	Soil	8/23/2012 10:18	5-16'	8082/DOD	TestAmerica Seattle		31-047	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-19	12NC31SS048	Soil	8/23/2012 10:21	5-16'	8082/DOD	TestAmerica Seattle		31-048	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-20	12NC31SS049	Soil	8/23/2012 10:23	5-16'	8082/DOD	TestAmerica Seattle		31-049	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-21	12NC31SS050	Soil	8/23/2012 10:24	5-16'	8082/DOD	TestAmerica Seattle		31-050	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-22	12NC31SS051	Soil	8/23/2012 10:25	5-16'	8082/DOD	TestAmerica Seattle		31-051	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-23	12NC31SS052	Soil	8/23/2012 10:27	5-16'	8082/DOD	TestAmerica Seattle	Field Dup of 31SS051	31-052	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-24	12NC31SS053	Soil	8/23/2012 10:34	5-16'	8082/DOD	TestAmerica Seattle		31-053	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-25	12NC31SS054	Soil	8/23/2012 10:34	5-16'	8082/DOD	TestAmerica Seattle		31-054	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-26	12NC31SS055	Soil	8/23/2012 10:36	5-16'	8082/DOD	TestAmerica Seattle		31-055	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34683-27	12NC31SS056	Soil	8/23/2012 10:41	5-16'	8082/DOD	TestAmerica Seattle		31-056	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-28	12NC31SS057	Soil	8/23/2012 10:50	5-16'	8082/DOD	TestAmerica Seattle		31-057	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-29	12NC31SS058	Soil	8/23/2012 10:44	5-16'	8082/DOD	TestAmerica Seattle		31-058	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-30	12NC31SS059	Soil	8/23/2012 10:57	5-16'	8082/DOD	TestAmerica Seattle		31-059	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-31	12NC31SS060	Soil	8/23/2012 10:52	5-16'	8082/DOD	TestAmerica Seattle		31-060	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-32	12NC31SS061	Soil	8/23/2012 11:02	5-16'	8082/DOD	TestAmerica Seattle		31-061	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-33	12NC31SS062	Soil	8/23/2012 11:04	5-16'	8082/DOD	TestAmerica Seattle		31-062	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-34	12NC31SS063	Soil	8/23/2012 11:08	5-16'	8082/DOD	TestAmerica Seattle		31-063	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-34	12NC31SS063	Soil	8/23/2012 11:08	5-16'	8082/DOD	TestAmerica Seattle	MS/MSD	31-063	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-35	12NC31SS064	Soil	8/23/2012 11:11	5-16'	8082/DOD	TestAmerica Seattle		31-064	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-36	12NC31SS065	Soil	8/23/2012 11:17	5-16'	8082/DOD	TestAmerica Seattle		31-065	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-37	12NC31SS066	Soil	8/23/2012 11:19	5-16'	8082/DOD	TestAmerica Seattle	Field Dup of 31SS065	31-066	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-38	12NC31SS067	Soil	8/23/2012 11:23	5-16'	8082/DOD	TestAmerica Seattle		31-067	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-39	12NC31SS068	Soil	8/23/2012 11:25	5-16'	8082/DOD	TestAmerica Seattle	Field Dup of 31SS067	31-068	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-40	12NC31SS069	Soil	8/23/2012 11:37	5-16'	8082/DOD	TestAmerica Seattle		31-069	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-41	12NC31SS070	Soil	8/23/2012 11:49	5-16'	8082/DOD	TestAmerica Seattle		31-070	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-42	12NC31SS071	Soil	8/23/2012 11:42	5-16'	8082/DOD	TestAmerica Seattle		31-071	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-43	12NC31SS072	Soil	8/23/2012 11:45	5-16'	8082/DOD	TestAmerica Seattle		31-072	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-44	12NC31SS073	Soil	8/23/2012 12:57	5-16'	8082/DOD	TestAmerica Seattle		31-073	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-45	12NC31SS074	Soil	8/23/2012 12:59	5-16'	8082/DOD	TestAmerica Seattle		31-074	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-46	12NC31SS075	Soil	8/23/2012 13:01	5-16'	8082/DOD	TestAmerica Seattle		31-075	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-47	12NC31SS076	Soil	8/23/2012 13:03	5-16'	8082/DOD	TestAmerica Seattle		31-076	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-48	12NC31SS077	Soil	8/23/2012 13:07	5-16'	8082/DOD	TestAmerica Seattle		31-077	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-49	12NC31SS078	Soil	8/23/2012 13:09	5-16'	8082/DOD	TestAmerica Seattle	MS/MSD	31-078	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-50	12NC31SS079	Soil	8/23/2012 13:14	5-16'	8082/DOD	TestAmerica Seattle		31-079	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-51	12NC31SS080	Soil	8/23/2012 13:16	5-16'	8082/DOD	TestAmerica Seattle		31-080	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-52	12NC31SS081	Soil	8/23/2012 13:19	5-16'	8082/DOD	TestAmerica Seattle		31-081	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-53	12NC31SS082	Soil	8/23/2012 13:22	5-16'	8082/DOD	TestAmerica Seattle		31-082	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-54	12NC31SS083	Soil	8/23/2012 13:24	5-16'	8082/DOD	TestAmerica Seattle	MS/MSD	31-083	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-55	12NC31SS084	Soil	8/23/2012 13:25	5-16'	8082/DOD	TestAmerica Seattle		31-084	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-56	12NC31SS085	Soil	8/23/2012 13:31	5-16'	8082/DOD	TestAmerica Seattle		31-085	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-57	12NC31SS086	Soil	8/23/2012 13:34	5-16'	8082/DOD	TestAmerica Seattle		31-086	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-58	12NC31SS087	Soil	8/23/2012 13:49	5-16'	8082/DOD	TestAmerica Seattle		31-087	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-59	12NC31SS088	Soil	8/23/2012 13:51	5-16'	8082/DOD	TestAmerica Seattle		31-088	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-60	12NC31SS089	Soil	8/23/2012 13:55	5-16'	8082/DOD	TestAmerica Seattle		31-089	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-61	12NC31SS090	Soil	8/23/2012 13:58	5-16'	8082/DOD	TestAmerica Seattle	Field Dup of 31SS089	31-090	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-62	12NC31SS091	Soil	8/23/2012 14:00	5-16'	8082/DOD	TestAmerica Seattle		31-091	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-63	12NC31SS092	Soil	8/23/2012 14:04	5-16'	8082/DOD	TestAmerica Seattle		31-092	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-64	12NC31SS093	Soil	8/23/2012 14:05	5-16'	8082/DOD	TestAmerica Seattle		31-093	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-65	12NC31SS094	Soil	8/23/2012 14:06	5-16'	8082/DOD	TestAmerica Seattle		31-094	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-66	12NC31SS095	Soil	8/23/2012 14:07	5-16'	8082/DOD	TestAmerica Seattle		31-095	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-67	12NC31SS096	Soil	8/23/2012 14:11	5-16'	8082/DOD	TestAmerica Seattle		31-096	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-68	12NC31SS097	Soil	8/23/2012 14:15	5-16'	8082/DOD	TestAmerica Seattle		31-097	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-69	12NC31SS098	Soil	8/23/2012 14:16	5-16'	8082/DOD	TestAmerica Seattle		31-098	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-70	12NC31SS099	Soil	8/23/2012 14:21	5-16'	8082/DOD	TestAmerica Seattle		31-099	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-71	12NC31SS100	Soil	8/23/2012 14:23	5-16'	8082/DOD	TestAmerica Seattle		31-100	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-72	12NC31SS101	Soil	8/23/2012 17:22	5-16'	8082/DOD	TestAmerica Seattle		31-101	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-73	12NC31SS102	Soil	8/23/2012 14:27	5-16'	8082/DOD	TestAmerica Seattle		31-102	EB	cool <4 C	082712-4	5_Days	Soil Jar 4oz Amber
580-34683-74	12NC31SS103	Soil	8/23/2012 14:30	5-16'	8082/DOD	TestAmerica Seattle		31-103	EB	cool <4 C	082712-4	5_Days	Soil Jar 4oz Amber
580-34683-75	12NC31SS104	Soil	8/23/2012 14:32	5-16'	8082/DOD	TestAmerica Seattle		31-104	EB	cool <4 C	082712-4	5_Days	Soil Jar 4oz Amber
580-34683-76	12NC31SS105	Soil	8/23/2012 14:34	5-16'	8082/DOD	TestAmerica Seattle		31-105	EB	cool <4 C	082712-4	5_Days	Soil Jar 4oz Amber
580-34683-77	12NC31SS106	Soil	8/23/2012 14:36	5-16'	8082/DOD	TestAmerica Seattle		31-106	EB	cool <4 C	082712-4	5_Days	Soil Jar 4oz Amber
580-34683-78	12NC31SS107	Soil	8/23/2012 14:40	5-16'	8082/DOD	TestAmerica Seattle		31-107	EB	cool <4 C	082712-4	5_Days	Soil Jar 4oz Amber
580-34683-79	12NC31SS108	Soil	8/23/2012 14:42	5-16'	8082/DOD	TestAmerica Seattle		31-108	EB	cool <4 C	082712-4	5_Days	Soil Jar 4oz Amber
580-34683-80	12NC31SS109	Soil	8/23/2012 14:45	5-16'	8082/DOD	TestAmerica Seattle		31-109	EB	cool <4 C	082712-4	5_Days	Soil Jar 4oz Amber
580-34683-81	12NC31SS110	Soil	8/23/2012 14:48	5-16'	8082/DOD	TestAmerica Seattle		31-110	EB	cool <4 C	082712-4	5_Days	Soil Jar 4oz Amber
580-34683-82	12NC31SS111	Soil	8/23/2012 15:59	5-16'	8082/DOD	TestAmerica Seattle		31-111	EB	cool <4 C	082712-4	5_Days	Soil Jar 4oz Amber
580-34683-83	12NC31SS112	Soil	8/23/2012 16:00	5-16'	8082/DOD	TestAmerica Seattle		31-112	EB	cool <4 C	082712-4	5_Days	Soil Jar 4oz Amber
580-34683-84	12NC31SS113	Soil	8/23/2012 16:02	5-16'	8082/DOD	TestAmerica Seattle	MS/MSD	31-113	EB	cool <4 C	082712-4	5_Days	Soil Jar 4oz Amber
580-34701-1 Radar Dome													
580-34701-1	12NCRDSS01	Soil	8/25/2012 14:45	4-6"	6020	TestAmerica Seattle		RD-01	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-1	12NCRDSS01	Soil	8/25/2012 14:45	4-6"	7471A	TestAmerica Seattle		RD-01	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-1	12NCRDSS01	Soil	8/25/2012 14:45	4-6"	8082/DOD	TestAmerica Seattle		RD-01	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-1	12NCRDSS01	Soil	8/25/2012 14:45	4-6"	8260B/DoD	TestAmerica Seattle		RD-01	RJ	Methanol	082712-02	10_Days	Soil jar 4oz - with Methanol
580-34701-1	12NCRDSS01	Soil	8/25/2012 14:45	4-6"	8270C SIM/DoD	TestAmerica Seattle		RD-01	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-1	12NCRDSS01	Soil	8/25/2012 14:45	4-6"	AK101	TestAmerica Seattle		RD-01	RJ	Methanol	082712-02	10_Days	Soil jar 4oz - with Methanol
580-34701-1	12NCRDSS01	Soil	8/25/2012 14:45	4-6"	AK102 & 103	TestAmerica Seattle		RD-01	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34701-2	12NCRDSS02	Soil	8/25/2012 14:50	4-6"	6020	TestAmerica Seattle		RD-02	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-2	12NCRDSS02	Soil	8/25/2012 14:50	4-6"	7471A	TestAmerica Seattle		RD-02	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-2	12NCRDSS02	Soil	8/25/2012 14:50	4-6"	8082/DOD	TestAmerica Seattle		RD-02	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-2	12NCRDSS02	Soil	8/25/2012 14:50	4-6"	8260B/DoD	TestAmerica Seattle		RD-02	RJ	Methanol	082712-02	10_Days	Soil jar 4oz - with Methanol
580-34701-2	12NCRDSS02	Soil	8/25/2012 14:50	4-6"	8270C SIM/DoD	TestAmerica Seattle		RD-02	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-2	12NCRDSS02	Soil	8/25/2012 14:50	4-6"	AK101	TestAmerica Seattle		RD-02	RJ	Methanol	082712-02	10_Days	Soil jar 4oz - with Methanol
580-34701-2	12NCRDSS02	Soil	8/25/2012 14:50	4-6"	AK102 & 103	TestAmerica Seattle		RD-02	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-3	12NCRDSS03	Soil	8/25/2012 15:10	4-6"	6020	TestAmerica Seattle	MS/MSD	RD-03	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-3	12NCRDSS03	Soil	8/25/2012 15:10	4-6"	7471A	TestAmerica Seattle	MS/MSD	RD-03	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-3	12NCRDSS03	Soil	8/25/2012 15:10	4-6"	8082/DOD	TestAmerica Seattle	MS/MSD	RD-03	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-3	12NCRDSS03	Soil	8/25/2012 15:10	4-6"	8260B/DoD	TestAmerica Seattle	MS/MSD	RD-03	RJ	Methanol	082712-02	10_Days	Soil jar 4oz - with Methanol
580-34701-3	12NCRDSS03	Soil	8/25/2012 15:10	4-6"	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	RD-03	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-3	12NCRDSS03	Soil	8/25/2012 15:10	4-6"	AK101	TestAmerica Seattle	MS/MSD	RD-03	RJ	Methanol	082712-02	10_Days	Soil jar 4oz - with Methanol
580-34701-3	12NCRDSS03	Soil	8/25/2012 15:10	4-6"	AK102 & 103	TestAmerica Seattle	MS/MSD	RD-03	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-4	12NCRDSS04	Soil	8/25/2012 15:25	4-6"	6020	TestAmerica Seattle		RD-04	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-4	12NCRDSS04	Soil	8/25/2012 15:25	4-6"	7471A	TestAmerica Seattle		RD-04	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-4	12NCRDSS04	Soil	8/25/2012 15:25	4-6"	8082/DOD	TestAmerica Seattle		RD-04	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-4	12NCRDSS04	Soil	8/25/2012 15:25	4-6"	8260B/DoD	TestAmerica Seattle		RD-04	RJ	Methanol	082712-02	10_Days	Soil jar 4oz - with Methanol
580-34701-4	12NCRDSS04	Soil	8/25/2012 15:25	4-6"	8270C SIM/DoD	TestAmerica Seattle		RD-04	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-4	12NCRDSS04	Soil	8/25/2012 15:25	4-6"	AK101	TestAmerica Seattle		RD-04	RJ	Methanol	082712-02	10_Days	Soil jar 4oz - with Methanol
580-34701-4	12NCRDSS04	Soil	8/25/2012 15:25	4-6"	AK102 & 103	TestAmerica Seattle		RD-04	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-5	12NCRDSS05	Soil	8/25/2012 15:30	4-6"	6020	TestAmerica Seattle		RD-05	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-5	12NCRDSS05	Soil	8/25/2012 15:30	4-6"	7471A	TestAmerica Seattle		RD-05	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-5	12NCRDSS05	Soil	8/25/2012 15:30	4-6"	8082/DOD	TestAmerica Seattle		RD-05	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-5	12NCRDSS05	Soil	8/25/2012 15:30	4-6"	8260B/DoD	TestAmerica Seattle		RD-05	RJ	Methanol	082712-02	10_Days	Soil jar 4oz - with Methanol
580-34701-5	12NCRDSS05	Soil	8/25/2012 15:30	4-6"	8270C SIM/DoD	TestAmerica Seattle		RD-05	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-5	12NCRDSS05	Soil	8/25/2012 15:30	4-6"	AK101	TestAmerica Seattle		RD-05	RJ	Methanol	082712-02	10_Days	Soil jar 4oz - with Methanol
580-34701-5	12NCRDSS05	Soil	8/25/2012 15:30	4-6"	AK102 & 103	TestAmerica Seattle		RD-05	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-6	12NCRDSS06	Soil	8/25/2012 15:35	4-6"	6020	TestAmerica Seattle		RD-06	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-6	12NCRDSS06	Soil	8/25/2012 15:35	4-6"	7471A	TestAmerica Seattle		RD-06	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-6	12NCRDSS06	Soil	8/25/2012 15:35	4-6"	8260B/DoD	TestAmerica Seattle		RD-06	RJ	Methanol	082712-02	10_Days	Soil jar 4oz - with Methanol
580-34701-6	12NCRDSS06	Soil	8/25/2012 15:35	4-6"	8270C SIM/DoD	TestAmerica Seattle		RD-06	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-6	12NCRDSS06	Soil	8/25/2012 15:35	4-6"	AK101	TestAmerica Seattle		RD-06	RJ	Methanol	082712-02	10_Days	Soil jar 4oz - with Methanol
580-34701-6	12NCRDSS06	Soil	8/25/2012 15:35	4-6"	AK102 & 103	TestAmerica Seattle		RD-06	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-7	12NCRDSS07	Soil	8/25/2012 15:40	4-6"	6020	TestAmerica Seattle		RD-07	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-7	12NCRDSS07	Soil	8/25/2012 15:40	4-6"	7471A	TestAmerica Seattle		RD-07	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-7	12NCRDSS07	Soil	8/25/2012 15:40	4-6"	8082/DOD	TestAmerica Seattle		RD-07	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-7	12NCRDSS07	Soil	8/25/2012 15:40	4-6"	8260B/DoD	TestAmerica Seattle		RD-07	RJ	Methanol	082712-02	10_Days	Soil jar 4oz - with Methanol
580-34701-7	12NCRDSS07	Soil	8/25/2012 15:40	4-6"	8270C SIM/DoD	TestAmerica Seattle		RD-07	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-7	12NCRDSS07	Soil	8/25/2012 15:40	4-6"	AK101	TestAmerica Seattle		RD-07	RJ	Methanol	082712-02	10_Days	Soil jar 4oz - with Methanol
580-34701-7	12NCRDSS07	Soil	8/25/2012 15:40	4-6"	AK102 & 103	TestAmerica Seattle		RD-07	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-8	12NCRDSS08	Soil	8/25/2012 18:30	4-6"	6020	TestAmerica Seattle	Field Dup of NCRDSS02	RD-08	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-8	12NCRDSS08	Soil	8/25/2012 18:30	4-6"	7471A	TestAmerica Seattle	Field Dup of NCRDSS02	RD-08	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-8	12NCRDSS08	Soil	8/25/2012 18:30	4-6"	8082/DOD	TestAmerica Seattle	Field Dup of NCRDSS02	RD-08	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-8	12NCRDSS08	Soil	8/25/2012 18:30	4-6"	8260B/DoD	TestAmerica Seattle	Field Dup of NCRDSS02	RD-08	RJ	Methanol	082712-02	10_Days	Soil jar 4oz - with Methanol
580-34701-8	12NCRDSS08	Soil	8/25/2012 18:30	4-6"	8270C SIM/DoD	TestAmerica Seattle	Field Dup of NCRDSS02	RD-08	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-8	12NCRDSS08	Soil	8/25/2012 18:30	4-6"	AK101	TestAmerica Seattle	Field Dup of NCRDSS02	RD-08	RJ	Methanol	082712-02	10_Days	Soil jar 4oz - with Methanol
580-34701-8	12NCRDSS08	Soil	8/25/2012 18:30	4-6"	AK102 & 103	TestAmerica Seattle	Field Dup of NCRDSS02	RD-08	RJ	cool <4 C	082712-02	10_Days	Soil jar 8oz
580-34701-9	AV00225	Solid	8/27/2012 0:00		8260B/DoD	TestAmerica Seattle	Trip Blank	AV00225	RJ	Methanol	082712-02	10_Days	Soil jar 4oz - with Methanol
580-34701-9	AV00225	Solid	8/27/2012 0:00		AK101	TestAmerica Seattle	Trip Blank	AV00225	RJ	Methanol	082712-02	10_Days	Soil jar 4oz - with Methanol
580-34746-1 site 13													
580-34746-1	12NC13SS205	Soil	8/26/2012 12:45	5-16'	8082/DOD	TestAmerica Seattle		013-205	EB	cool <4 C	082912-1	5_Day_RUSH	Soil Jar 4oz Amber
580-34746-2	12NC13SS212	Soil	8/26/2012 12:54	5-16'	8082/DOD	TestAmerica Seattle		013-212	EB	cool <4 C	082912-1	5_Day_RUSH	Soil Jar 4oz Amber
580-34746-3	12NC13SS214	Soil	8/29/2012 12:30	5-16'	8082/DOD	TestAmerica Seattle	MS/MSD	013-214	EB	cool <4 C	082912-1	5_Day_RUSH	Soil Jar 4oz Amber
580-34746-4	12NC13SS215	Soil	8/29/2012 12:35	5-16'	8082/DOD	TestAmerica Seattle		013-215	EB	cool <4 C	082912-1	5_Day_RUSH	Soil Jar 4oz Amber
580-34746-5	12NC13SS216	Soil	8/29/2012 12:40	5-16'	8082/DOD	TestAmerica Seattle		013-216	EB	cool <4 C	082912-1	5_Day_RUSH	Soil Jar 4oz Amber
580-34746-6	12NC13SS217	Soil	8/29/2012 12:45	5-16'	8082/DOD	TestAmerica Seattle		013-217	EB	cool <4 C	082912-1	5_Day_RUSH	Soil Jar 4oz Amber
580-34746-7	12NC13SS218	Soil	8/29/2012 12:50	5-16'	8082/DOD	TestAmerica Seattle		013-218	EB	cool <4 C	082912-1	5_Day_RUSH	Soil Jar 4oz Amber
580-34746-8	12NC13SS219	Soil	8/29/2012 12:55	5-16'	8082/DOD	TestAmerica Seattle		013-219	EB	cool <4 C	082912-1	5_Day_RUSH	Soil Jar 4oz Amber
580-34746-9	12NC13SS220	Soil	8/29/2012 13:00	5-16'	8082/DOD	TestAmerica Seattle		013-220	EB	cool <4 C	082912-1	5_Day_RUSH	Soil Jar 4oz Amber
580-34746-10	12NC13SS221	Soil	8/29/2012 13:05	5-16'	8082/DOD	TestAmerica Seattle	Field Dup of 13SS215	013-221	EB	cool <4 C	082912-1	5_Day_RUSH	Soil Jar 4oz Amber
580-34747-1 Site 8 Methane Waters													
580-34747-1	12NC08WA001	Water	8/28/2012 10:30	0"	RSK-175	TestAmerica Savannah		WA08-001	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-34747-2	12NC08WA002	Water	8/28/2012 10:40	0"	RSK-175	TestAmerica Savannah		WA08-002	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-34747-3	12NC08WA003	Water	8/28/2012 10:50	0"	RSK-175	TestAmerica Savannah		WA08-003	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-34747-4	12NC08WA004	Water	8/28/2012 11:00	0"	RSK-175	TestAmerica Savannah		WA08-004	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-34747-5	12NC08WA005	Water	8/28/2012 11:10	0"	RSK-175	TestAmerica Savannah		WA08-005	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34747-6	12NC08WA006	Water	8/28/2012 11:20	0"	RSK-175	TestAmerica Savannah		WA08-006	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-34747-7	12NC08WA007	Water	8/28/2012 11:30	0"	RSK-175	TestAmerica Savannah		WA08-007	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-34747-8	12NC08WA008	Water	8/28/2012 11:40	0"	RSK-175	TestAmerica Savannah		WA08-008	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-34747-9	12NC08WA009	Water	8/28/2012 11:50	0"	RSK-175	TestAmerica Savannah	Field Dup of 08WA008	WA08-009	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-34747-10	12NC08WA010	Water	8/28/2012 13:00	0"	RSK-175	TestAmerica Savannah		WA08-010	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-34747-11	12NC08WA011	Water	8/28/2012 13:10	0"	RSK-175	TestAmerica Savannah		WA08-011	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-34747-12	12NC08WA012	Water	8/28/2012 13:20	0"	RSK-175	TestAmerica Savannah		WA08-012	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-34747-13	12NC08WA013	Water	8/28/2012 13:30	0"	RSK-175	TestAmerica Savannah		WA08-013	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-34747-14	12NC08WA014	Water	8/28/2012 13:40	0"	RSK-175	TestAmerica Savannah		WA08-014	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-34747-15	12NC08WA015	Water	8/28/2012 13:50	0"	RSK-175	TestAmerica Savannah		WA08-015	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-34747-16	12NC08WA016	Water	8/28/2012 14:00	0"	RSK-175	TestAmerica Savannah		WA08-016	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-34747-17	12NC08WA017	Water	8/28/2012 14:10	0"	RSK-175	TestAmerica Savannah		WA08-017	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-34747-18	12NC08WA018	Water	8/28/2012 14:20	0"	RSK-175	TestAmerica Savannah	Field Dup of 08WA017	WA08-018	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-34747-19	12NC08WA019	Water	8/28/2012 14:30	0"	RSK-175	TestAmerica Savannah		WA08-019	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-34747-20	12NC08WA020	Water	8/28/2012 16:10	0"	RSK-175	TestAmerica Savannah		WA08-020	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-34747-21	12NC08WA021	Water	8/28/2012 16:27	0"	RSK-175	TestAmerica Savannah		WA08-021	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-34747-22	12NC08WA022	Water	8/28/2012 16:34	0"	RSK-175	TestAmerica Savannah		WA08-022	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-34747-23	12NC08WA023	Water	8/28/2012 16:47	0"	RSK-175	TestAmerica Savannah		WA08-023	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-34747-24	12NC08WA024	Water	8/28/2012 16:50	0"	RSK-175	TestAmerica Savannah	Field Dup of 08WA023	WA08-024	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-34747-25	12NC08WA025	Water	8/28/2012 16:56	0"	RSK-175	TestAmerica Savannah		WA08-025	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-34747-26	12NC08WA026	Water	8/28/2012 17:00	0"	RSK-175	TestAmerica Savannah		WA08-026	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-34747-27	12NC08WA027	Water	8/28/2012 17:13	0"	RSK-175	TestAmerica Savannah		WA08-027	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-34747-28	Trip Blank 082912	Water	8/23/2012 0:00	1/0/1900 0:00	RSK-175	TestAmerica Savannah	Trip Blank	Trip Blank 082912	EB	Hydrochloric Acid	082912-1	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-34828-1 Site 21 arsenic													
580-34828-1	12NC21SS015	Soil	9/4/2012 14:00	0"	6020	TestAmerica Seattle		12N21BW1	LK	cool <4 C	090512-02	10_Days	Soil Jar 4oz Amber
580-34828-2	12NC21SS016	Soil	9/4/2012 14:05	0"	6020	TestAmerica Seattle	Field Dup of 21SS015	12N21BW2	LK	cool <4 C	090512-02	10_Days	Soil Jar 4oz Amber
580-34828-3	12NC21SS017	Soil	9/4/2012 14:50	2"-9"	6020	TestAmerica Seattle		12N21S017	LK	cool <4 C	090512-02	10_Days	Soil Jar 4oz Amber
580-34828-4	12NC21SS018	Soil	9/5/2012 9:10	2"-9"	6020	TestAmerica Seattle		12N21S018	LK	cool <4 C	090512-02	10_Days	Soil Jar 4oz Amber
580-34828-5	12NC21SS019	Soil	9/4/2012 15:00	2"-9"	6020	TestAmerica Seattle	MS/MSD	12N21S019	LK	cool <4 C	090512-02	10_Days	Soil Jar 4oz Amber
580-34828-6	12NC21SS020	Soil	9/4/2012 15:05	2"-9"	6020	TestAmerica Seattle		12N21S020	LK	cool <4 C	090512-02	10_Days	Soil Jar 4oz Amber
580-34828-7	12NC21SS021	Soil	9/4/2012 15:10	2'-3'	6020	TestAmerica Seattle		12N21S021	LK	cool <4 C	090512-02	10_Days	Soil Jar 4oz Amber
580-34828-8	12NC21WA001	Water	9/5/2012 14:00	0"	6020	TestAmerica Seattle	MS/MSD	12N21W001	LK	Nitric Acid	090512-02	10_Days	Plastic 250ml - with Nitric Acid
580-34828-9	12NC21WA002	Water	9/5/2012 14:10	0"	6020	TestAmerica Seattle	Field Dup of 21WA001	12N21W002	LK	Nitric Acid	090512-02	10_Days	Plastic 250ml - with Nitric Acid
580-34748-1 Site 8 soil													
580-34748-1	12NC08SS001	Soil	8/26/2012 16:00	0-4"	8270C SIM/DoD	TestAmerica Seattle		SS08-01	LK	cool <4 C	082912-1	10_Days	Soil jar 16oz
580-34748-1	12NC08SS001	Soil	8/26/2012 16:00	0-4"	9060	TestAmerica Seattle	MS/MSD	SS08-01	LK	cool <4 C	082912-1	10_Days	Soil jar 16oz
580-34748-1	12NC08SS001	Soil	8/26/2012 16:00	0-4"	AK102 & 103	TestAmerica Seattle		SS08-01	LK	cool <4 C	082912-1	10_Days	Soil jar 16oz
580-34748-1	12NC08SS001	Soil	8/26/2012 16:00	0-4"	AK102/103	TestAmerica Seattle		SS08-01	LK	cool <4 C	082912-1	10_Days	Soil jar 16oz
580-34748-2	12NC08SS002	Soil	8/26/2012 16:10	0-4"	8270C SIM/DoD	TestAmerica Seattle	Field Dup of 08SS001	SS08-02	LK	cool <4 C	082912-1	10_Days	Soil jar 16oz
580-34748-2	12NC08SS002	Soil	8/26/2012 16:10	0-4"	9060	TestAmerica Seattle	Field Dup of 08SS001	SS08-02	LK	cool <4 C	082912-1	10_Days	Soil jar 16oz
580-34748-2	12NC08SS002	Soil	8/26/2012 16:10	0-4"	AK102/103	TestAmerica Seattle	Field Dup of 08SS001	SS08-02	LK	cool <4 C	082912-1	10_Days	Soil jar 16oz
580-34748-3	12NC08SS003	Soil	8/29/2012 10:00	0-4"	8270C SIM/DoD	TestAmerica Seattle		SS08-03	EB	cool <4 C	082912-1	10_Days	Soil jar 16oz
580-34748-3	12NC08SS003	Soil	8/29/2012 10:00	0-4"	9060	TestAmerica Seattle		SS08-03	EB	cool <4 C	082912-1	10_Days	Soil jar 16oz
580-34748-3	12NC08SS003	Soil	8/29/2012 10:00	0-4"	AK102 & 103	TestAmerica Seattle	MS/MSD	SS08-03	EB	cool <4 C	082912-1	10_Days	Soil jar 16oz
580-34748-3	12NC08SS003	Soil	8/29/2012 10:00	0-4"	AK102/103	TestAmerica Seattle	MS/MSD	SS08-03	EB	cool <4 C	082912-1	10_Days	Soil jar 16oz
580-34748-4	12NC08SS004	Soil	8/29/2012 11:00	0-4"	8270C SIM/DoD	TestAmerica Seattle		SS08-04	EB	cool <4 C	082912-1	10_Days	Soil jar 16oz
580-34748-4	12NC08SS004	Soil	8/29/2012 11:00	0-4"	9060	TestAmerica Seattle		SS08-04	EB	cool <4 C	082912-1	10_Days	Soil jar 16oz
580-34748-4	12NC08SS004	Soil	8/29/2012 11:00	0-4"	AK102 & 103	TestAmerica Seattle		SS08-04	EB	cool <4 C	082912-1	10_Days	Soil jar 16oz
580-34748-4	12NC08SS004	Soil	8/29/2012 11:00	0-4"	AK102/103	TestAmerica Seattle		SS08-04	EB	cool <4 C	082912-1	10_Days	Soil jar 16oz
580-34677-1 MOC E-plume													
580-34677-7	12NCMOCSS128	Soil	8/25/2012 7:53	12'-14'	AK102 & 103	TestAmerica Seattle		MOC-128	LK	cool <4 C	082712-1	5_Day_RUSH	Soil jar 4oz
580-34677-8	12NCMOCSS129	Soil	8/25/2012 7:57	12'-14'	AK102 & 103	TestAmerica Seattle		MOC-129	LK	cool <4 C	082712-1	5_Day_RUSH	Soil jar 4oz
580-34677-12	12NCMOCSS133	Soil	8/25/2012 8:15	12'-14'	AK102 & 103	TestAmerica Seattle	MS/MSD	MOC-133	LK	cool <4 C	082712-1	5_Day_RUSH	Soil jar 4oz
580-34677-15	12NCMOCSS136	Soil	8/25/2012 10:35	12'-14'	AK102 & 103	TestAmerica Seattle	MS/MSD	MOC-136	LK	cool <4 C	082712-1	5_Day_RUSH	Soil jar 4oz
580-34677-19	12NCMOCSS140	Soil	8/25/2012 10:55	12'-14'	AK102 & 103	TestAmerica Seattle		MOC-140	LK	cool <4 C	082712-1	5_Day_RUSH	Soil jar 4oz
580-34677-25	12NCMOCSS146	Soil	8/26/2012 8:20	12'-14'	AK102 & 103	TestAmerica Seattle		MOC-146	EC	cool <4 C	082712-1	5_Day_RUSH	Soil Jar 4oz Amber
580-34683-1 Site 31 PCBs													
580-34683-1	12NC31SS030	Soil	8/23/2012 9:14	5-16'	8082/DOD	TestAmerica Seattle		31-030	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-2	12NC31SS031	Soil	8/23/2012 9:16	5-16'	8082/DOD	TestAmerica Seattle		31-031	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-3	12NC31SS032	Soil	8/23/2012 9:18	5-16'	8082/DOD	TestAmerica Seattle		31-032	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-4	12NC31SS033	Soil	8/23/2012 9:19	5-16'	8082/DOD	TestAmerica Seattle		31-033	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-5	12NC31SS034	Soil	8/23/2012 9:22	5-16'	8082/DOD	TestAmerica Seattle		31-034	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-6	12NC31SS035	Soil	8/23/2012 9:24	5-16'	8082/DOD	TestAmerica Seattle		31-035	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-7	12NC31SS036	Soil	8/23/2012 9:27	5-16'	8082/DOD	TestAmerica Seattle		31-036	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-8	12NC31SS037	Soil	8/23/2012 9:31	5-16'	8082/DOD	TestAmerica Seattle		31-037	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-9	12NC31SS038	Soil	8/23/2012 9:34	5-16'	8082/DOD	TestAmerica Seattle		31-038	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-10	12NC31SS039	Soil	8/23/2012 9:36	5-16'	8082/DOD	TestAmerica Seattle		31-039	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34683-11	12NC31SS040	Soil	8/23/2012 9:37	5-16'	8082/DOD	TestAmerica Seattle		31-040	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-12	12NC31SS041	Soil	8/23/2012 9:39	5-16'	8082/DOD	TestAmerica Seattle		31-041	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-13	12NC31SS042	Soil	8/23/2012 9:41	5-16'	8082/DOD	TestAmerica Seattle		31-042	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-14	12NC31SS043	Soil	8/23/2012 9:44	5-16'	8082/DOD	TestAmerica Seattle	MS/MSD	31-043	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-15	12NC31SS044	Soil	8/23/2012 9:45	5-16'	8082/DOD	TestAmerica Seattle		31-044	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-16	12NC31SS045	Soil	8/23/2012 9:48	5-16'	8082/DOD	TestAmerica Seattle		31-045	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-17	12NC31SS046	Soil	8/23/2012 10:16	5-16'	8082/DOD	TestAmerica Seattle		31-046	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-18	12NC31SS047	Soil	8/23/2012 10:18	5-16'	8082/DOD	TestAmerica Seattle		31-047	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-19	12NC31SS048	Soil	8/23/2012 10:21	5-16'	8082/DOD	TestAmerica Seattle		31-048	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-20	12NC31SS049	Soil	8/23/2012 10:23	5-16'	8082/DOD	TestAmerica Seattle		31-049	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-21	12NC31SS050	Soil	8/23/2012 10:24	5-16'	8082/DOD	TestAmerica Seattle		31-050	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-22	12NC31SS051	Soil	8/23/2012 10:25	5-16'	8082/DOD	TestAmerica Seattle		31-051	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-23	12NC31SS052	Soil	8/23/2012 10:27	5-16'	8082/DOD	TestAmerica Seattle	Field Dup of 31SS051	31-052	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-24	12NC31SS053	Soil	8/23/2012 10:34	5-16'	8082/DOD	TestAmerica Seattle		31-053	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-25	12NC31SS054	Soil	8/23/2012 10:34	5-16'	8082/DOD	TestAmerica Seattle		31-054	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-26	12NC31SS055	Soil	8/23/2012 10:36	5-16'	8082/DOD	TestAmerica Seattle		31-055	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-27	12NC31SS056	Soil	8/23/2012 10:41	5-16'	8082/DOD	TestAmerica Seattle		31-056	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-28	12NC31SS057	Soil	8/23/2012 10:50	5-16'	8082/DOD	TestAmerica Seattle		31-057	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-29	12NC31SS058	Soil	8/23/2012 10:44	5-16'	8082/DOD	TestAmerica Seattle		31-058	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-30	12NC31SS059	Soil	8/23/2012 10:57	5-16'	8082/DOD	TestAmerica Seattle		31-059	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-31	12NC31SS060	Soil	8/23/2012 10:52	5-16'	8082/DOD	TestAmerica Seattle		31-060	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-32	12NC31SS061	Soil	8/23/2012 11:02	5-16'	8082/DOD	TestAmerica Seattle		31-061	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-33	12NC31SS062	Soil	8/23/2012 11:04	5-16'	8082/DOD	TestAmerica Seattle		31-062	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-34	12NC31SS063	Soil	8/23/2012 11:08	5-16'	8082/DOD	TestAmerica Seattle	MS/MSD	31-063	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-35	12NC31SS064	Soil	8/23/2012 11:11	5-16'	8082/DOD	TestAmerica Seattle		31-064	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-36	12NC31SS065	Soil	8/23/2012 11:17	5-16'	8082/DOD	TestAmerica Seattle		31-065	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-37	12NC31SS066	Soil	8/23/2012 11:19	5-16'	8082/DOD	TestAmerica Seattle	Field Dup of 31SS065	31-066	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-38	12NC31SS067	Soil	8/23/2012 11:23	5-16'	8082/DOD	TestAmerica Seattle		31-067	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-39	12NC31SS068	Soil	8/23/2012 11:25	5-16'	8082/DOD	TestAmerica Seattle	Field Dup of 31SS067	31-068	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-40	12NC31SS069	Soil	8/23/2012 11:37	5-16'	8082/DOD	TestAmerica Seattle		31-069	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-41	12NC31SS070	Soil	8/23/2012 11:49	5-16'	8082/DOD	TestAmerica Seattle		31-070	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-42	12NC31SS071	Soil	8/23/2012 11:42	5-16'	8082/DOD	TestAmerica Seattle		31-071	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-43	12NC31SS072	Soil	8/23/2012 11:45	5-16'	8082/DOD	TestAmerica Seattle		31-072	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-44	12NC31SS073	Soil	8/23/2012 12:57	5-16'	8082/DOD	TestAmerica Seattle		31-073	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-45	12NC31SS074	Soil	8/23/2012 12:59	5-16'	8082/DOD	TestAmerica Seattle		31-074	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-46	12NC31SS075	Soil	8/23/2012 13:01	5-16'	8082/DOD	TestAmerica Seattle		31-075	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-47	12NC31SS076	Soil	8/23/2012 13:03	5-16'	8082/DOD	TestAmerica Seattle		31-076	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-48	12NC31SS077	Soil	8/23/2012 13:07	5-16'	8082/DOD	TestAmerica Seattle		31-077	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-49	12NC31SS078	Soil	8/23/2012 13:09	5-16'	8082/DOD	TestAmerica Seattle	MS/MSD	31-078	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-50	12NC31SS079	Soil	8/23/2012 13:14	5-16'	8082/DOD	TestAmerica Seattle		31-079	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-51	12NC31SS080	Soil	8/23/2012 13:16	5-16'	8082/DOD	TestAmerica Seattle		31-080	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-52	12NC31SS081	Soil	8/23/2012 13:19	5-16'	8082/DOD	TestAmerica Seattle		31-081	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-53	12NC31SS082	Soil	8/23/2012 13:22	5-16'	8082/DOD	TestAmerica Seattle		31-082	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-54	12NC31SS083	Soil	8/23/2012 13:24	5-16'	8082/DOD	TestAmerica Seattle	MS/MSD	31-083	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-55	12NC31SS084	Soil	8/23/2012 13:25	5-16'	8082/DOD	TestAmerica Seattle		31-084	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-56	12NC31SS085	Soil	8/23/2012 13:31	5-16'	8082/DOD	TestAmerica Seattle		31-085	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-57	12NC31SS086	Soil	8/23/2012 13:34	5-16'	8082/DOD	TestAmerica Seattle		31-086	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-58	12NC31SS087	Soil	8/23/2012 13:49	5-16'	8082/DOD	TestAmerica Seattle		31-087	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-59	12NC31SS088	Soil	8/23/2012 13:51	5-16'	8082/DOD	TestAmerica Seattle		31-088	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-60	12NC31SS089	Soil	8/23/2012 13:55	5-16'	8082/DOD	TestAmerica Seattle		31-089	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-61	12NC31SS090	Soil	8/23/2012 13:58	5-16'	8082/DOD	TestAmerica Seattle	Field Dup of 31SS089	31-090	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-62	12NC31SS091	Soil	8/23/2012 14:00	5-16'	8082/DOD	TestAmerica Seattle		31-091	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-63	12NC31SS092	Soil	8/23/2012 14:04	5-16'	8082/DOD	TestAmerica Seattle		31-092	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-64	12NC31SS093	Soil	8/23/2012 14:05	5-16'	8082/DOD	TestAmerica Seattle		31-093	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-65	12NC31SS094	Soil	8/23/2012 14:06	5-16'	8082/DOD	TestAmerica Seattle		31-094	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-66	12NC31SS095	Soil	8/23/2012 14:07	5-16'	8082/DOD	TestAmerica Seattle		31-095	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-67	12NC31SS096	Soil	8/23/2012 14:11	5-16'	8082/DOD	TestAmerica Seattle		31-096	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-68	12NC31SS097	Soil	8/23/2012 14:15	5-16'	8082/DOD	TestAmerica Seattle		31-097	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-69	12NC31SS098	Soil	8/23/2012 14:16	5-16'	8082/DOD	TestAmerica Seattle		31-098	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-70	12NC31SS099	Soil	8/23/2012 14:21	5-16'	8082/DOD	TestAmerica Seattle		31-099	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-71	12NC31SS100	Soil	8/23/2012 14:23	5-16'	8082/DOD	TestAmerica Seattle		31-100	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-72	12NC31SS101	Soil	8/23/2012 17:22	5-16'	8082/DOD	TestAmerica Seattle		31-101	EB	cool <4 C	082712-3	5_Days	Soil Jar 4oz Amber
580-34683-73	12NC31SS102	Soil	8/23/2012 14:27	5-16'	8082/DOD	TestAmerica Seattle		31-102	EB	cool <4 C	082712-4	5_Days	Soil Jar 4oz Amber
580-34683-74	12NC31SS103	Soil	8/23/2012 14:30	5-16'	8082/DOD	TestAmerica Seattle		31-103	EB	cool <4 C	082712-4	5_Days	Soil Jar 4oz Amber
580-34683-75	12NC31SS104	Soil	8/23/2012 14:32	5-16'	8082/DOD	TestAmerica Seattle		31-104	EB	cool <4 C	082712-4	5_Days	Soil Jar 4oz Amber
580-34683-76	12NC31SS105	Soil	8/23/2012 14:34	5-16'	8082/DOD	TestAmerica Seattle		31-105	EB	cool <4 C	082712-4	5_Days	Soil Jar 4oz Amber
580-34683-77	12NC31SS106	Soil	8/23/2012 14:36	5-16'	8082/DOD	TestAmerica Seattle		31-106	EB	cool <4 C	082712-4	5_Days	Soil Jar 4oz Amber

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34683-78	12NC31SS107	Soil	8/23/2012 14:40	5-16'	8082/DOD	TestAmerica Seattle		31-107	EB	cool <4 C	082712-4	5_Days	Soil Jar 4oz Amber
580-34683-79	12NC31SS108	Soil	8/23/2012 14:42	5-16'	8082/DOD	TestAmerica Seattle		31-108	EB	cool <4 C	082712-4	5_Days	Soil Jar 4oz Amber
580-34683-80	12NC31SS109	Soil	8/23/2012 14:45	5-16'	8082/DOD	TestAmerica Seattle		31-109	EB	cool <4 C	082712-4	5_Days	Soil Jar 4oz Amber
580-34683-81	12NC31SS110	Soil	8/23/2012 14:48	5-16'	8082/DOD	TestAmerica Seattle		31-110	EB	cool <4 C	082712-4	5_Days	Soil Jar 4oz Amber
580-34683-82	12NC31SS111	Soil	8/23/2012 15:59	5-16'	8082/DOD	TestAmerica Seattle		31-111	EB	cool <4 C	082712-4	5_Days	Soil Jar 4oz Amber
580-34683-83	12NC31SS112	Soil	8/23/2012 16:00	5-16'	8082/DOD	TestAmerica Seattle		31-112	EB	cool <4 C	082712-4	5_Days	Soil Jar 4oz Amber
580-34683-84	12NC31SS113	Soil	8/23/2012 16:02	5-16'	8082/DOD	TestAmerica Seattle	MS/MSD	31-113	EB	cool <4 C	082712-4	5_Days	Soil Jar 4oz Amber
580-34825-1 Drum Liquids													
580-34825-9	12NCDRUMO10	Waste	9/2/2012 17:15	0	1020A	TestAmerica Seattle		DRUM10	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-9	12NCDRUMO10	Waste	9/2/2012 17:15	0	6010B	TestAmerica Seattle		DRUM10	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-9	12NCDRUMO10	Waste	9/2/2012 17:15	0	7470A	TestAmerica Seattle		DRUM10	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-9	12NCDRUMO10	Waste	9/2/2012 17:15	0	8082	TestAmerica Seattle		DRUM10	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-9	12NCDRUMO10	Waste	9/2/2012 17:15	0	8260B	TestAmerica Seattle		DRUM10	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-9	12NCDRUMO10	Waste	9/2/2012 17:15	0	8270C	TestAmerica Seattle		DRUM10	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-9	12NCDRUMO10	Waste	9/2/2012 17:15	0	9045C	TestAmerica Seattle		DRUM10	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-9	12NCDRUMO10	Waste	9/2/2012 17:15	0	9056A	TestAmerica Savannah		DRUM10	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-9	12NCDRUMO10	Waste	9/2/2012 17:15	0	AK102 & 103	TestAmerica Seattle		DRUM10	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-10	12NCDRUMO11	Waste	9/2/2012 17:10	0	1020A	TestAmerica Seattle		DRUM11	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-10	12NCDRUMO11	Waste	9/2/2012 17:10	0	6010B	TestAmerica Seattle		DRUM11	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-10	12NCDRUMO11	Waste	9/2/2012 17:10	0	7470A	TestAmerica Seattle		DRUM11	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-10	12NCDRUMO11	Waste	9/2/2012 17:10	0	8015B	TestAmerica Savannah		DRUM11	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-10	12NCDRUMO11	Waste	9/2/2012 17:10	0	8082	TestAmerica Seattle		DRUM11	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-10	12NCDRUMO11	Waste	9/2/2012 17:10	0	8260B	TestAmerica Seattle		DRUM11	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-10	12NCDRUMO11	Waste	9/2/2012 17:10	0	8270C	TestAmerica Seattle		DRUM11	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-10	12NCDRUMO11	Waste	9/2/2012 17:10	0	9045C	TestAmerica Seattle		DRUM11	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-10	12NCDRUMO11	Waste	9/2/2012 17:10	0	9056A	TestAmerica Savannah		DRUM11	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-10	12NCDRUMO11	Waste	9/2/2012 17:10	0	AK102 & 103	TestAmerica Seattle		DRUM11	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-11	12NCDRUMO12	Waste	9/2/2012 15:45	0	1020A	TestAmerica Seattle		DRUM12	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-11	12NCDRUMO12	Waste	9/2/2012 15:45	0	6010B	TestAmerica Seattle		DRUM12	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-11	12NCDRUMO12	Waste	9/2/2012 15:45	0	7470A	TestAmerica Seattle		DRUM12	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-11	12NCDRUMO12	Waste	9/2/2012 15:45	0	8082	TestAmerica Seattle		DRUM12	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-11	12NCDRUMO12	Waste	9/2/2012 15:45	0	8260B	TestAmerica Seattle		DRUM12	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-11	12NCDRUMO12	Waste	9/2/2012 15:45	0	8270C	TestAmerica Seattle		DRUM12	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-11	12NCDRUMO12	Waste	9/2/2012 15:45	0	9045C	TestAmerica Seattle		DRUM12	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-11	12NCDRUMO12	Waste	9/2/2012 15:45	0	9056A	TestAmerica Savannah		DRUM12	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-11	12NCDRUMO12	Waste	9/2/2012 15:45	0	AK102 & 103	TestAmerica Seattle		DRUM12	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-12	12NCDRUMO13	Waste	9/2/2012 16:30	0	1020A	TestAmerica Seattle		DRUM13	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-12	12NCDRUMO13	Waste	9/2/2012 16:30	0	6010B	TestAmerica Seattle		DRUM13	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-12	12NCDRUMO13	Waste	9/2/2012 16:30	0	7470A	TestAmerica Seattle		DRUM13	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-12	12NCDRUMO13	Waste	9/2/2012 16:30	0	8082	TestAmerica Seattle		DRUM13	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-12	12NCDRUMO13	Waste	9/2/2012 16:30	0	8260B	TestAmerica Seattle		DRUM13	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-12	12NCDRUMO13	Waste	9/2/2012 16:30	0	8270C	TestAmerica Seattle		DRUM13	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-12	12NCDRUMO13	Waste	9/2/2012 16:30	0	9045C	TestAmerica Seattle		DRUM13	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-12	12NCDRUMO13	Waste	9/2/2012 16:30	0	9056A	TestAmerica Savannah		DRUM13	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-12	12NCDRUMO13	Waste	9/2/2012 16:30	0	AK102 & 103	TestAmerica Seattle		DRUM13	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-13	12NCDRUMO14	Waste	8/21/2012 14:05	0	1020A	TestAmerica Seattle		DRUM14	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-13	12NCDRUMO14	Waste	8/21/2012 14:05	0	6010B	TestAmerica Seattle		DRUM14	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-13	12NCDRUMO14	Waste	8/21/2012 14:05	0	7470A	TestAmerica Seattle		DRUM14	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-13	12NCDRUMO14	Waste	8/21/2012 14:05	0	8082	TestAmerica Seattle		DRUM14	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-13	12NCDRUMO14	Waste	8/21/2012 14:05	0	8260B	TestAmerica Seattle		DRUM14	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-13	12NCDRUMO14	Waste	8/21/2012 14:05	0	8270C	TestAmerica Seattle		DRUM14	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-13	12NCDRUMO14	Waste	8/21/2012 14:05	0	9045C	TestAmerica Seattle		DRUM14	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-13	12NCDRUMO14	Waste	8/21/2012 14:05	0	9056A	TestAmerica Savannah		DRUM14	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-13	12NCDRUMO14	Waste	8/21/2012 14:05	0	AK102 & 103	TestAmerica Seattle		DRUM14	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-1	12NCDRUMO2	Waste	8/21/2012 13:45	0	1020A	TestAmerica Seattle		DRUM02	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-1	12NCDRUMO2	Waste	8/21/2012 13:45	0	6010B	TestAmerica Seattle		DRUM02	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-1	12NCDRUMO2	Waste	8/21/2012 13:45	0	7470A	TestAmerica Seattle		DRUM02	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-1	12NCDRUMO2	Waste	8/21/2012 13:45	0	8015B	TestAmerica Savannah		DRUM02	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-1	12NCDRUMO2	Waste	8/21/2012 13:45	0	8082	TestAmerica Seattle		DRUM02	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-1	12NCDRUMO2	Waste	8/21/2012 13:45	0	8260B	TestAmerica Seattle		DRUM02	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-1	12NCDRUMO2	Waste	8/21/2012 13:45	0	8270C	TestAmerica Seattle		DRUM02	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-1	12NCDRUMO2	Waste	8/21/2012 13:45	0	9045C	TestAmerica Seattle		DRUM02	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-1	12NCDRUMO2	Waste	8/21/2012 13:45	0	9056A	TestAmerica Savannah		DRUM02	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-1	12NCDRUMO2	Waste	8/21/2012 13:45	0	AK102 & 103	TestAmerica Seattle		DRUM02	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-2	12NCDRUMO3	Waste	8/21/2012 14:16	0	1020A	TestAmerica Seattle		DRUM03	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-2	12NCDRUMO3	Waste	8/21/2012 14:16	0	6010B	TestAmerica Seattle		DRUM03	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-2	12NCDRUMO3	Waste	8/21/2012 14:16	0	7470A	TestAmerica Seattle		DRUM03	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-34825-2	12NCDRUMO3	Waste	8/21/2012 14:16	0	8015B	TestAmerica Savannah		DRUM03	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-2	12NCDRUMO3	Waste	8/21/2012 14:16	0	8082	TestAmerica Seattle		DRUM03	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-2	12NCDRUMO3	Waste	8/21/2012 14:16	0	8260B	TestAmerica Seattle		DRUM03	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-2	12NCDRUMO3	Waste	8/21/2012 14:16	0	8270C	TestAmerica Seattle		DRUM03	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-2	12NCDRUMO3	Waste	8/21/2012 14:16	0	9045C	TestAmerica Seattle		DRUM03	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-2	12NCDRUMO3	Waste	8/21/2012 14:16	0	9056A	TestAmerica Savannah		DRUM03	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-2	12NCDRUMO3	Waste	8/21/2012 14:16	0	AK102 & 103	TestAmerica Seattle		DRUM03	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-3	12NCDRUMO4	Waste	8/21/2012 14:20	0	1020A	TestAmerica Seattle		DRUM04	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-3	12NCDRUMO4	Waste	8/21/2012 14:20	0	6010B	TestAmerica Seattle		DRUM04	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-3	12NCDRUMO4	Waste	8/21/2012 14:20	0	7470A	TestAmerica Seattle		DRUM04	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-3	12NCDRUMO4	Waste	8/21/2012 14:20	0	8015B	TestAmerica Savannah		DRUM04	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-3	12NCDRUMO4	Waste	8/21/2012 14:20	0	8082	TestAmerica Seattle		DRUM04	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-3	12NCDRUMO4	Waste	8/21/2012 14:20	0	8260B	TestAmerica Seattle		DRUM04	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-3	12NCDRUMO4	Waste	8/21/2012 14:20	0	8270C	TestAmerica Seattle		DRUM04	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-3	12NCDRUMO4	Waste	8/21/2012 14:20	0	9045C	TestAmerica Seattle		DRUM04	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-3	12NCDRUMO4	Waste	8/21/2012 14:20	0	9056A	TestAmerica Savannah		DRUM04	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-3	12NCDRUMO4	Waste	8/21/2012 14:20	0	AK102 & 103	TestAmerica Seattle		DRUM04	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-4	12NCDRUMO5	Waste	8/21/2012 14:35	0	1020A	TestAmerica Seattle		DRUM05	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-4	12NCDRUMO5	Waste	8/21/2012 14:35	0	6010B	TestAmerica Seattle		DRUM05	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-4	12NCDRUMO5	Waste	8/21/2012 14:35	0	7470A	TestAmerica Seattle		DRUM05	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-4	12NCDRUMO5	Waste	8/21/2012 14:35	0	8082	TestAmerica Seattle		DRUM05	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-4	12NCDRUMO5	Waste	8/21/2012 14:35	0	8260B	TestAmerica Seattle		DRUM05	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-4	12NCDRUMO5	Waste	8/21/2012 14:35	0	8270C	TestAmerica Seattle		DRUM05	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-4	12NCDRUMO5	Waste	8/21/2012 14:35	0	9045C	TestAmerica Seattle		DRUM05	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-4	12NCDRUMO5	Waste	8/21/2012 14:35	0	9056A	TestAmerica Savannah		DRUM05	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-4	12NCDRUMO5	Waste	8/21/2012 14:35	0	AK102 & 103	TestAmerica Seattle		DRUM05	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-5	12NCDRUMO6	Waste	8/21/2012 14:52	0	1020A	TestAmerica Seattle		DRUM06	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-5	12NCDRUMO6	Waste	8/21/2012 14:52	0	6010B	TestAmerica Seattle		DRUM06	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-5	12NCDRUMO6	Waste	8/21/2012 14:52	0	7470A	TestAmerica Seattle	MS/MSD	DRUM06	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-5	12NCDRUMO6	Waste	8/21/2012 14:52	0	8015B	TestAmerica Savannah		DRUM06	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-5	12NCDRUMO6	Waste	8/21/2012 14:52	0	8082	TestAmerica Seattle		DRUM06	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-5	12NCDRUMO6	Waste	8/21/2012 14:52	0	8260B	TestAmerica Seattle		DRUM06	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-5	12NCDRUMO6	Waste	8/21/2012 14:52	0	8270C	TestAmerica Seattle		DRUM06	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-5	12NCDRUMO6	Waste	8/21/2012 14:52	0	9045C	TestAmerica Seattle		DRUM06	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-5	12NCDRUMO6	Waste	8/21/2012 14:52	0	9056A	TestAmerica Savannah		DRUM06	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-5	12NCDRUMO6	Waste	8/21/2012 14:52	0	AK102 & 103	TestAmerica Seattle		DRUM06	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-6	12NCDRUMO7	Waste	8/21/2012 16:03	0	1020A	TestAmerica Seattle		DRUM07	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-6	12NCDRUMO7	Waste	8/21/2012 16:03	0	6010B	TestAmerica Seattle		DRUM07	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-6	12NCDRUMO7	Waste	8/21/2012 16:03	0	7470A	TestAmerica Seattle		DRUM07	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-6	12NCDRUMO7	Waste	8/21/2012 16:03	0	8082	TestAmerica Seattle		DRUM07	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-6	12NCDRUMO7	Waste	8/21/2012 16:03	0	8260B	TestAmerica Seattle		DRUM07	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-6	12NCDRUMO7	Waste	8/21/2012 16:03	0	8270C	TestAmerica Seattle		DRUM07	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-6	12NCDRUMO7	Waste	8/21/2012 16:03	0	9045C	TestAmerica Seattle		DRUM07	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-6	12NCDRUMO7	Waste	8/21/2012 16:03	0	9056A	TestAmerica Savannah		DRUM07	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-6	12NCDRUMO7	Waste	8/21/2012 16:03	0	AK102 & 103	TestAmerica Seattle		DRUM07	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-7	12NCDRUMO8	Waste	9/2/2012 16:25	0	1020A	TestAmerica Seattle		DRUM08	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-7	12NCDRUMO8	Waste	9/2/2012 16:25	0	6010B	TestAmerica Seattle		DRUM08	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-7	12NCDRUMO8	Waste	9/2/2012 16:25	0	7470A	TestAmerica Seattle		DRUM08	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-7	12NCDRUMO8	Waste	9/2/2012 16:25	0	8082	TestAmerica Seattle		DRUM08	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-7	12NCDRUMO8	Waste	9/2/2012 16:25	0	8260B	TestAmerica Seattle		DRUM08	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-7	12NCDRUMO8	Waste	9/2/2012 16:25	0	8270C	TestAmerica Seattle		DRUM08	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-7	12NCDRUMO8	Waste	9/2/2012 16:25	0	9045C	TestAmerica Seattle		DRUM08	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-7	12NCDRUMO8	Waste	9/2/2012 16:25	0	9056A	TestAmerica Savannah		DRUM08	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-7	12NCDRUMO8	Waste	9/2/2012 16:25	0	AK102 & 103	TestAmerica Seattle		DRUM08	EB	cool <4 C	090512-1	5_Day_RUSH	Soil jar 4oz
580-34825-8	12NCDRUMO9	Waste	8/21/2012 16:15	0	1020A	TestAmerica Seattle		DRUM09	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-8	12NCDRUMO9	Waste	8/21/2012 16:15	0	6010B	TestAmerica Seattle		DRUM09	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-8	12NCDRUMO9	Waste	8/21/2012 16:15	0	7470A	TestAmerica Seattle		DRUM09	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-8	12NCDRUMO9	Waste	8/21/2012 16:15	0	8082	TestAmerica Seattle		DRUM09	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-8	12NCDRUMO9	Waste	8/21/2012 16:15	0	8260B	TestAmerica Seattle		DRUM09	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-8	12NCDRUMO9	Waste	8/21/2012 16:15	0	8270C	TestAmerica Seattle		DRUM09	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-8	12NCDRUMO9	Waste	8/21/2012 16:15	0	9045C	TestAmerica Seattle		DRUM09	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-8	12NCDRUMO9	Waste	8/21/2012 16:15	0	9056A	TestAmerica Savannah		DRUM09	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
580-34825-8	12NCDRUMO9	Waste	8/21/2012 16:15	0	AK102 & 103	TestAmerica Seattle		DRUM09	RJ	cool <4 C	090512-1	5_Day_RUSH	Soil jar 8oz
280-33320-1 Site 13 Soil and Wipes													
280-33320-1	12NC13WS001	Wipe	9/6/2012 17:22	5-16'	8082A	TestAmerica Denver		013-WS001	EB	cool <4 C	091412-1	5_Day_RUSH	Other Client Container - unpreserved
280-33320-2	12NC13WS002	Wipe	9/6/2012 17:24	5-16'	8082A	TestAmerica Denver		013-WS002	EB	cool <4 C	091412-1	5_Day_RUSH	Other Client Container - unpreserved
280-33320-3	12NC13SS222	Soil	9/14/2012 9:00	5-16'	8082A	TestAmerica Denver		013-222	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
280-33320-4	12NC13SS223	Soil	9/14/2012 9:01	5-16'	8082A	TestAmerica Denver		013-223	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-5	12NC13SS224	Soil	9/14/2012 9:02	5-16'	8082A	TestAmerica Denver		013-224	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-6	12NC13SS225	Soil	9/14/2012 9:03	5-16'	8082A	TestAmerica Denver		013-225	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-7	12NC13SS226	Soil	9/14/2012 9:04	5-16'	8082A	TestAmerica Denver		013-226	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-8	12NC13SS227	Soil	9/14/2012 9:05	5-16'	8082A	TestAmerica Denver		013-227	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-9	12NC13SS228	Soil	9/14/2012 9:06	5-16'	8082A	TestAmerica Denver		013-228	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-10	12NC13SS229	Soil	9/14/2012 9:07	5-16'	8082A	TestAmerica Denver		013-229	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-11	12NC13SS230	Soil	9/14/2012 9:08	5-16'	8082A	TestAmerica Denver		013-230	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-12	12NC13SS231	Soil	9/14/2012 9:09	5-16'	8082A	TestAmerica Denver		013-231	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-13	12NC13SS232	Soil	9/14/2012 9:10	5-16'	8082A	TestAmerica Denver	MS/MSD	013-232	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-14	12NC13SS233	Soil	9/14/2012 9:11	5-16'	8082A	TestAmerica Denver		013-233	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-15	12NC13SS234	Soil	9/14/2012 9:12	5-16'	8082A	TestAmerica Denver	Field Dup of 13SS227	013-234	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-16	12NC13SS235	Soil	9/14/2012 9:13	5-16'	8082A	TestAmerica Denver	Field Dup of 13SS229	013-235	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-17	12NC31SS194	Soil	9/13/2012 12:30	5-16'	8082A	TestAmerica Denver		031-194	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-18	12NC31SS195	Soil	9/13/2012 12:31	5-16'	8082A	TestAmerica Denver		031-195	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-19	12NC31SS196	Soil	9/13/2012 12:32	5-16'	8082A	TestAmerica Denver		031-196	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-20	12NC31SS197	Soil	9/13/2012 12:33	5-16'	8082A	TestAmerica Denver		031-197	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-21	12NC31SS198	Soil	9/13/2012 12:34	5-16'	8082A	TestAmerica Denver		031-198	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-22	12NC31SS199	Soil	9/13/2012 12:35	5-16'	8082A	TestAmerica Denver		031-199	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-23	12NC31SS200	Soil	9/13/2012 12:36	5-16'	8082A	TestAmerica Denver		031-200	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-24	12NC31SS201	Soil	9/13/2012 12:37	5-16'	8082A	TestAmerica Denver		031-201	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-25	12NC31SS202	Soil	9/13/2012 12:38	5-16'	8082A	TestAmerica Denver		031-202	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-26	12NC31SS203	Soil	9/13/2012 12:39	5-16'	8082A	TestAmerica Denver		031-203	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-27	12NC31SS204	Soil	9/13/2012 12:40	5-16'	8082A	TestAmerica Denver	MS/MSD	031-204	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-28	12NC31SS205	Soil	9/13/2012 12:41	5-16'	8082A	TestAmerica Denver		031-205	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-29	12NC31SS206	Soil	9/14/2012 12:42	5-16'	8082A	TestAmerica Denver		031-206	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-30	12NC31SS207	Soil	9/14/2012 12:43	5-16'	8082A	TestAmerica Denver		031-207	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-31	12NC31SS208	Soil	9/14/2012 12:44	5-16'	8082A	TestAmerica Denver		031-208	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-32	12NC31SS209	Soil	9/14/2012 12:45	5-16'	8082A	TestAmerica Denver		031-209	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-33	12NC31SS210	Soil	9/14/2012 12:46	5-16'	8082A	TestAmerica Denver		031-210	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-34	12NC31SS211	Soil	9/14/2012 12:48	5-16'	8082A	TestAmerica Denver		031-211	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-35	12NC31SS212	Soil	9/14/2012 12:49	5-16'	8082A	TestAmerica Denver		031-212	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-36	12NC31SS213	Soil	9/14/2012 12:50	5-16'	8082A	TestAmerica Denver		031-213	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-37	12NC31SS214	Soil	9/14/2012 12:51	5-16'	8082A	TestAmerica Denver		031-214	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-38	12NC31SS215	Soil	9/14/2012 12:52	5-16'	8082A	TestAmerica Denver		031-215	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-39	12NC31SS216	Soil	9/14/2012 12:53	5-16'	8082A	TestAmerica Denver		031-216	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-40	12NC31SS217	Soil	9/14/2012 12:54	5-16'	8082A	TestAmerica Denver		031-217	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-41	12NC31SS218	Soil	9/14/2012 12:55	5-16'	8082A	TestAmerica Denver		031-218	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-42	12NC31SS219	Soil	9/14/2012 12:56	5-16'	8082A	TestAmerica Denver		031-219	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-43	12NC31SS220	Soil	9/14/2012 12:57	5-16'	8082A	TestAmerica Denver		031-220	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-44	12NC31SS221	Soil	9/14/2012 12:58	5-16'	8082A	TestAmerica Denver		031-221	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-45	12NC31SS222	Soil	9/14/2012 12:59	5-16'	8082A	TestAmerica Denver	MS/MSD	031-222	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-46	12NC31SS223	Soil	9/14/2012 13:00	5-16'	8082A	TestAmerica Denver	Field Dup of 31SS197	031-223	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-47	12NC31SS224	Soil	9/14/2012 13:01	5-16'	8082A	TestAmerica Denver	Field dup of 31SS202	031-224	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
280-33320-48	12NC31SS225	Soil	9/14/2012 13:02	5-16'	8082A	TestAmerica Denver	Field Dup of 31SS204	031-225	EB	cool <4 C	091412-1	5_Day_RUSH	Soil jar 4oz
580-34820-1 MOC Soil G & E Plumes													
580-34820-1	12NCMOCSS159	Soil	9/1/2012 15:00	7'-10'	AK102 & 103	TestAmerica Seattle		MOCSS159	EB	cool <4 C	090512-1	2_Day_RUSH	Soil Jar 4oz Amber
580-34820-2	12NCMOCSS160	Soil	9/2/2012 15:04	7'-10'	AK102 & 103	TestAmerica Seattle		MOCSS160	EB	cool <4 C	090512-1	2_Day_RUSH	Soil Jar 4oz Amber
580-34820-3	12NCMOCSS161	Soil	9/2/2012 15:10	7'-10'	AK102 & 103	TestAmerica Seattle		MOCSS161	EB	cool <4 C	090512-1	2_Day_RUSH	Soil Jar 4oz Amber
580-34820-4	12NCMOCSS162	Soil	9/2/2012 15:14	7'-10'	AK102 & 103	TestAmerica Seattle		MOCSS162	EB	cool <4 C	090512-1	2_Day_RUSH	Soil Jar 4oz Amber
580-34820-5	12NCMOCSS163	Soil	9/2/2012 15:16	7'-10'	AK102 & 103	TestAmerica Seattle		MOCSS163	EB	cool <4 C	090512-1	2_Day_RUSH	Soil Jar 4oz Amber
580-34820-6	12NCMOCSS164	Soil	9/2/2012 15:18	7'-10'	AK102 & 103	TestAmerica Seattle	Field Dup of MOCSS163	MOCSS164	EB	cool <4 C	090512-1	2_Day_RUSH	Soil Jar 4oz Amber
580-34820-7	12NCMOCSS165	Soil	9/2/2012 15:24	7'-10'	AK102 & 103	TestAmerica Seattle		MOCSS165	EB	cool <4 C	090512-1	2_Day_RUSH	Soil Jar 4oz Amber
580-34820-8	12NCMOCSS166	Soil	9/2/2012 15:29	7'-10'	AK102 & 103	TestAmerica Seattle		MOCSS166	EB	cool <4 C	090512-1	2_Day_RUSH	Soil Jar 4oz Amber
580-34820-9	12NCMOCSS167	Soil	9/2/2012 15:31	7'-10'	AK102 & 103	TestAmerica Seattle		MOCSS167	EB	cool <4 C	090512-1	2_Day_RUSH	Soil Jar 4oz Amber
580-34820-10	12NCMOCSS150	Soil	9/2/2012 14:15	7'-10'	AK102 & 103	TestAmerica Seattle		MOCSS150	EB	cool <4 C	090512-1	2_Day_RUSH	Soil Jar 4oz Amber
580-34820-11	12NCMOCSS151	Soil	9/2/2012 14:16	7'-10'	AK102 & 103	TestAmerica Seattle		MOCSS151	EB	cool <4 C	090512-1	2_Day_RUSH	Soil Jar 4oz Amber
580-34820-12	12NCMOCSS152	Soil	9/2/2012 14:17	7'-10'	AK102 & 103	TestAmerica Seattle		MOCSS152	EB	cool <4 C	090512-1	2_Day_RUSH	Soil Jar 4oz Amber
580-34820-13	12NCMOCSS153	Soil	9/2/2012 14:20	7'-10'	AK102 & 103	TestAmerica Seattle	Field Dup of MOCSS152	MOCSS153	EB	cool <4 C	090512-1	2_Day_RUSH	Soil Jar 4oz Amber
580-34820-14	12NCMOCSS154	Soil	9/2/2012 14:21	7'-10'	AK102 & 103	TestAmerica Seattle		MOCSS154	EB	cool <4 C	090512-1	2_Day_RUSH	Soil Jar 4oz Amber
580-34820-15	12NCMOCSS155	Soil	9/2/2012 14:22	7'-10'	AK102 & 103	TestAmerica Seattle		MOCSS155	EB	cool <4 C	090512-1	2_Day_RUSH	Soil Jar 4oz Amber
580-34820-16	12NCMOCSS156	Soil	9/2/2012 14:24	7'-10'	AK102 & 103	TestAmerica Seattle		MOCSS156	EB	cool <4 C	090512-1	2_Day_RUSH	Soil Jar 4oz Amber
580-34820-17	12NCMOCSS157	Soil	9/2/2012 14:26	7'-10'	AK102 & 103	TestAmerica Seattle		MOCSS157	EB	cool <4 C	090512-1	2_Day_RUSH	Soil Jar 4oz Amber
580-34820-18	12NCMOCSS158	Soil	9/2/2012 14:27	7'-10'	AK102 & 103	TestAmerica Seattle	MS/MSD	MOCSS158	EB	cool <4 C	090512-1	2_Day_RUSH	Soil Jar 4oz Amber
280-33360-1 Site 28 water													
280-33360-8	12NC28WA01	Water	9/13/2012 16:00	0"	8260B/DoD	TestAmerica Denver		28-W-01	LK	Hydrochloric Acid	091412-03 & -05	15_Days	Voa Vial 40ml - Hydrochloric Acid
280-33360-8	12NC28WA01	Water	9/13/2012 16:00	0"	8270C SIM/DoD	TestAmerica Denver		28-W-01	LK	cool <4 C	091412-03 & -05	15_Days	Amber Glass 1 liter - unpreserved

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
280-33360-8	12NC28WA01	Water	9/13/2012 16:00	0"	AK101	TestAmerica Denver		28-W-01	LK	Hydrochloric Acid	091412-03 & -05	15_Days	Voa Vial 40ml - Hydrochloric Acid
280-33360-8	12NC28WA01	Water	9/13/2012 16:00	0"	8260B/DoD	TestAmerica Denver		28-W-01	LK	Hydrochloric Acid	091412-03 & -05	15_Days	Voa Vial 40ml - Hydrochloric Acid
280-33360-8	12NC28WA01	Water	9/13/2012 16:00	0"	6020	TestAmerica Denver		28-W-01	LK	Nitric Acid	091412-03 & -06	15_Days	Plastic 250ml - w/nitric - dis
280-33360-8	12NC28WA01	Water	9/13/2012 16:00	0"	7470A	TestAmerica Denver		28-W-01	LK	Nitric Acid	091412-03 & -07	15_Days	Plastic 250ml - w/nitric - dis
280-33360-8	12NC28WA01	Water	9/13/2012 16:00	0"	8082	TestAmerica Denver		28-W-01	LK	cool <4 C	091412-03 & -08	15_Days	Amber Glass 1 liter - unpreserved
280-33360-8	12NC28WA01	Water	9/13/2012 16:00	0"	AK102 & 103	TestAmerica Denver		28-W-01	LK	Hydrochloric Acid	091412-03 & -09	15_Days	Amber Glass 1 liter - Hydrochloric
280-33360-9	12NC28WA02	Water	9/13/2012 16:30	0"	8270C SIM/DoD	TestAmerica Denver		28-W-02	LK	cool <4 C	091412-04 & -05	15_Days	Amber Glass 1 liter - unpreserved
280-33360-9	12NC28WA02	Water	9/13/2012 16:30	0"	6020A	TestAmerica Denver		28-W-02	LK	Nitric Acid	091412-04 & -05	15_Days	Amber Glass 1 liter - Hydrochloric
280-33360-9	12NC28WA02	Water	9/13/2012 16:30	0"	8260B/DoD	TestAmerica Denver		28-W-02	LK	Hydrochloric Acid	091412-04 & -05	15_Days	Voa Vial 40ml - Hydrochloric Acid
280-33360-9	12NC28WA02	Water	9/13/2012 16:30	0"	AK101	TestAmerica Denver		28-W-02	LK	Hydrochloric Acid	091412-03 & -05	15_Days	Voa Vial 40ml - Hydrochloric Acid
280-33360-9	12NC28WA02	Water	9/13/2012 16:30	0"	6020	TestAmerica Denver		28-W-02	LK	Nitric Acid	091412-03 & -06	15_Days	Plastic 250ml - w/nitric - dis
280-33360-9	12NC28WA02	Water	9/13/2012 16:30	0"	7470A	TestAmerica Denver		28-W-02	LK	Nitric Acid	091412-03 & -07	15_Days	Plastic 250ml - w/nitric - dis
280-33360-9	12NC28WA02	Water	9/13/2012 16:30	0"	8082	TestAmerica Denver		28-W-02	LK	cool <4 C	091412-03 & -08	15_Days	Amber Glass 1 liter - unpreserved
280-33360-9	12NC28WA02	Water	9/13/2012 16:30	0"	AK102 & 103	TestAmerica Denver		28-W-02	LK	Hydrochloric Acid	091412-03 & -09	15_Days	Amber Glass 1 liter - Hydrochloric
280-33360-10	12NC28WA03	Water	9/14/2012 9:00	0"	8260B/DoD	TestAmerica Denver	MS/MSD	28-W-03	LK	Hydrochloric Acid	091412-02,-04 &-05	15_Days	Voa Vial 40ml - Hydrochloric Acid
280-33360-10	12NC28WA03	Water	9/14/2012 9:00	0"	8270C SIM/DoD	TestAmerica Denver	MS/MSD	28-W-03	LK	cool <4 C	091412-02,-04 &-05	15_Days	Amber Glass 1 liter - unpreserved
280-33360-10	12NC28WA03	Water	9/14/2012 9:00	0"	6020A	TestAmerica Denver	MS/MSD	28-W-03	LK	Nitric Acid	091412-02,-04 &-05	15_Days	Plastic 250ml - w/nitric - dis
280-33360-10	12NC28WA03	Water	9/14/2012 9:00	0"	7470A	TestAmerica Denver	MS/MSD	28-W-03	LK	Nitric Acid	091412-02,-04 &-06	15_Days	Plastic 250ml - w/nitric - dis
280-33360-10	12NC28WA03	Water	9/14/2012 9:00	0"	8082A	TestAmerica Denver	MS/MSD	28-W-03	LK	cool <4 C	091412-02,-04 &-05	15_Days	
280-33360-10	12NC28WA03	Water	9/14/2012 9:00	0"	AK102 & 103	TestAmerica Denver	MS/MSD	28-W-03	LK	Hydrochloric Acid	091412-02,-04 &-05	15_Days	
280-33360-10	12NC28WA03	Water	9/14/2012 9:00	0"	AK101	TestAmerica Denver	MS/MSD	28-W-03	LK	Hydrochloric Acid	091412-02,-04 &-05	15_Days	Voa Vial 40ml - Hydrochloric Acid
280-33360-12	12NCMOCSWA009	Water	9/13/2012 14:00	0"	AK102 & 103	TestAmerica Denver		28-W-03					
280-33360-13	12NCMOCSWA010	Water	9/13/2012 14:20	0"	AK102 & 103	TestAmerica Denver		MOCSW02	LK	cool <4 C	091412-03	15_Days	Amber Glass 1 liter - unpreserved
280-33360-14	12NCMOCSWA011	Water	9/13/2012 14:25	0"	AK102 & 103	TestAmerica Denver		MOCSW03	LK	Hydrochloric Acid	091412-03	15_Days	Voa Vial 40ml - Hydrochloric Acid
280-33360-15	12NCMOCSWA012	Water	9/13/2012 14:10	0"	AK102 & 103	TestAmerica Denver	Field Dup of MOCSWA009	MOCSW01	LK	Hydrochloric Acid	091412-03	15_Days	Voa Vial 40ml - Hydrochloric Acid
280-33360-2 PCB Rocks													
280-33360-1	12NC13ROCK-1	Soil	9/13/2012 14:35	0	8082A	TestAmerica Denver	MS/MSD	13Rock-1	EB	cool <4 C	Rock-1 9-14-12	7_Day_Rush	Soil jar 4oz
280-33360-2	12NC13ROCK-2	Soil	9/13/2012 14:50	0	8082A	TestAmerica Denver		13Rock-2	EB	cool <4 C	Rock-1 9-14-12	7_Day_Rush	Soil jar 4oz
280-33360-3	12NC13ROCK-3	Soil	9/13/2012 15:00	0	8082A	TestAmerica Denver		13Rock-3	EB	cool <4 C	Rock-1 9-14-12	7_Day_Rush	Soil jar 4oz
280-33360-4	12NC13ROCK-4	Soil	9/13/2012 15:15	0	8082A	TestAmerica Denver	Field dup of 13Rock-1	13Rock-4	EB	cool <4 C	Rock-1 9-14-12	7_Day_Rush	Soil jar 4oz
280-33360-5	12NC31ROCK-1	Soil	9/13/2012 14:00	0	8082A	TestAmerica Denver		31Rock-1	EB	cool <4 C	Rock-1 9-14-12	7_Day_Rush	Soil jar 4oz
280-33360-6	12NC31ROCK-2	Soil	9/13/2012 14:10	0	8082A	TestAmerica Denver		31Rock-2	EB	cool <4 C	Rock-1 9-14-12	7_Day_Rush	Soil jar 4oz
280-33360-7	12NC31ROCK-3	Soil	9/13/2012 14:20	0	8082A	TestAmerica Denver		31Rock-3	EB	cool <4 C	Rock-1 9-14-12	7_Day_Rush	Soil jar 4oz
580-35021 Site 10 Bulk Waste													
580-35021-1	12NC10BW01	Soil	9/16/2012 9:20	0"	8260B	TestAmerica Seattle	MS/MSD	12NC10BW01	LK	Methanol	091712-01	10_Days	Soil jar 4oz - with Methanol
580-35021-2	12NC10BW02	Soil	9/16/2012 9:25	0"	8260B	TestAmerica Seattle		12NC10BW02	LK	Methanol	091712-01	10_Days	Soil jar 4oz - with Methanol
580-35021-3	12NC10BW03	Soil	9/16/2012 9:30	0"	8260B	TestAmerica Seattle	Field Dup of 10BW02	12NC10BW03	LK	Methanol	091712-01	10_Days	Soil jar 4oz - with Methanol
580-35021-4	12NC10BW04	Soil	9/16/2012 9:45	0"	8260B	TestAmerica Seattle		12NC10BW04	LK	Methanol	091712-01	10_Days	Soil jar 4oz - with Methanol
580-35021-5	12NC10BW05	Soil	9/16/2012 10:00	0"	8260B	TestAmerica Seattle		12NC10BW05	LK	Methanol	091712-01	10_Days	Soil jar 4oz - with Methanol
580-35021-6	12NC10BW06	Soil	9/16/2012 10:10	0"	8260B	TestAmerica Seattle		12NC10BW06	LK	Methanol	091712-01	10_Days	Soil jar 4oz - with Methanol
580-35085 Site 28 Waters													
580-35085-1	12NC28WA04	Water	9/17/2012 15:50	0"	6020	TestAmerica Seattle	MS/MSD	28-W-01	EB	Nitric Acid	091912-01	10_Days	Plastic 250ml - w/nitric - dis
580-35085-1	12NC28WA04	Water	9/17/2012 15:50	0"	7470A	TestAmerica Seattle	MS/MSD	28-W-01	EB	Nitric Acid	091912-01	10_Days	Plastic 250ml - w/nitric - dis
580-35085-1	12NC28WA04	Water	9/17/2012 15:50	0"	8082	TestAmerica Seattle	MS/MSD	28-W-01	EB	cool <4 C	091912-01	10_Days	Amber Glass 1 liter - unpreserved
580-35085-1	12NC28WA04	Water	9/17/2012 15:50	0"	8260B/DoD	TestAmerica Seattle	MS/MSD	28-W-01	EB	Hydrochloric Acid	091912-03	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-35085-1	12NC28WA04	Water	9/17/2012 15:50	0"	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	28-W-01	EB	cool <4 C	091912-01	10_Days	Amber Glass 1 liter - unpreserved
580-35085-1	12NC28WA04	Water	9/17/2012 15:50	0"	AK102 & 103	TestAmerica Seattle	MS/MSD	28-W-01	EB	Hydrochloric Acid	091912-02	10_Days	Amber Glass 1 liter - Hydrochloric
580-35085-2	12NC28WA05	Water	9/18/2012 15:00	0"	6020	TestAmerica Seattle		28-W-01	EB	Nitric Acid	091912-01	10_Days	Plastic 250ml - with Nitric Acid
580-35085-2	12NC28WA05	Water	9/18/2012 15:00	0"	7470A	TestAmerica Seattle		28-W-01	EB	Nitric Acid	091912-02	10_Days	Plastic 250ml - w/nitric - dis
580-35085-2	12NC28WA05	Water	9/18/2012 15:00	0"	8082	TestAmerica Seattle		28-W-01	EB	cool <4 C	091912-02	10_Days	Amber Glass 1 liter - unpreserved
580-35085-2	12NC28WA05	Water	9/18/2012 15:00	0"	8260B/DoD	TestAmerica Seattle		28-W-01	EB	Hydrochloric Acid	091912-03	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-35085-2	12NC28WA05	Water	9/18/2012 15:00	0"	8270C SIM/DoD	TestAmerica Seattle		28-W-01	EB	cool <4 C	091912-02	10_Days	Amber Glass 1 liter - unpreserved
580-35085-2	12NC28WA05	Water	9/18/2012 15:00	0"	AK102 & 103	TestAmerica Seattle		28-W-01	EB	Hydrochloric Acid	091912-02	10_Days	Amber Glass 1 liter - Hydrochloric
580-35085-3	12NC28WA06	Water	9/18/2012 15:30	0"	6020	TestAmerica Seattle	Field Dup of 28WA05	28-W-01	EB	Nitric Acid	091912-02	10_Days	Plastic 250ml - w/nitric - dis
580-35085-3	12NC28WA06	Water	9/18/2012 15:30	0"	7470A	TestAmerica Seattle	Field Dup of 28WA05	28-W-01	EB	Nitric Acid	091912-02	10_Days	Plastic 250ml - w/nitric - dis
580-35085-3	12NC28WA06	Water	9/18/2012 15:30	0"	8082	TestAmerica Seattle	Field Dup of 28WA05	28-W-01	EB	cool <4 C	091912-03	10_Days	Amber Glass 1 liter - unpreserved
580-35085-3	12NC28WA06	Water	9/18/2012 15:30	0"	8260B/DoD	TestAmerica Seattle	Field Dup of 28WA05	28-W-01	EB	Hydrochloric Acid	091912-03	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-35085-3	12NC28WA06	Water	9/18/2012 15:30	0"	8270C SIM/DoD	TestAmerica Seattle	Field Dup of 28WA05	28-W-01	EB	cool <4 C	091912-03	10_Days	Amber Glass 1 liter - unpreserved
580-35085-3	12NC28WA06	Water	9/18/2012 15:30	0"	AK102 & 103	TestAmerica Seattle	Field Dup of 28WA05	28-W-01	EB	Hydrochloric Acid	091912-02	10_Days	Amber Glass 1 liter - Hydrochloric
580-35085-4	TripBlank091912	Water	9/14/12 1100	1/0/1900 0:00	8260B/DoD	TestAmerica Seattle	Trip Blank	TripBlank091912	EB	Hydrochloric Acid	091912-03	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-35092 Site 28 water													
580-35092-1	12NC28WA07	Water	9/19/2012 15:50	0"	6020	TestAmerica Seattle	MS/MSD	28-W-01	EB	Nitric Acid	092112-01 & -02	10_Days	Plastic 250ml - with Nitric Acid
580-35092-1	12NC28WA07	Water	9/19/2012 15:50	0"	7470A	TestAmerica Seattle	MS/MSD	28-W-01	EB	Nitric Acid	092112-01 & -02	10_Days	Plastic 250ml - with Nitric Acid
580-35092-1	12NC28WA07	Water	9/19/2012 15:50	0"	8082	TestAmerica Seattle	MS/MSD	28-W-01	EB	cool <4 C	092112-01 & -02	10_Days	Amber Glass 1 liter - unpreserved
580-35092-1	12NC28WA07	Water	9/19/2012 15:50	0"	8260B/DoD	TestAmerica Seattle	MS/MSD	28-W-01	EB	Hydrochloric Acid	092112-01 & -02	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-35092-1	12NC28WA07	Water	9/19/2012 15:50	0"	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	28-W-01	EB	cool <4 C	092112-01 & -02	10_Days	Amber Glass 1 liter - unpreserved
580-35092-1	12NC28WA07	Water	9/19/2012 15:50	0"	AK102 & 103	TestAmerica Seattle	MS/MSD	28-W-01	EB	Hydrochloric Acid	092112-01 & -02	10_Days	Amber Glass 1 liter - Hydrochloric

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-35092-2	12NC28WA08	Water	9/19/2012 15:00	0"	6020	TestAmerica Seattle		28-W-02	EB	Nitric Acid	092112-02	10_Days	Plastic 250ml - with Nitric Acid
580-35092-2	12NC28WA08	Water	9/19/2012 15:00	0"	7470A	TestAmerica Seattle		28-W-02	EB	Nitric Acid	092112-02	10_Days	Plastic 250ml - with Nitric Acid
580-35092-2	12NC28WA08	Water	9/19/2012 15:00	0"	8082	TestAmerica Seattle		28-W-02	EB	cool <4 C	092112-02	10_Days	Amber Glass 1 liter - unpreserved
580-35092-2	12NC28WA08	Water	9/19/2012 15:00	0"	8260B/DoD	TestAmerica Seattle		28-W-02	EB	Hydrochloric Acid	092112-03	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-35092-2	12NC28WA08	Water	9/19/2012 15:00	0"	8270C SIM/DoD	TestAmerica Seattle		28-W-02	EB	cool <4 C	092112-02	10_Days	Amber Glass 1 liter - unpreserved
580-35092-2	12NC28WA08	Water	9/19/2012 15:00	0"	AK102 & 103	TestAmerica Seattle		28-W-02	EB	Hydrochloric Acid	092112-02	10_Days	Amber Glass 1 liter - Hydrochloric
580-35092-3	12NC28WA09	Water	9/19/2012 15:30	0"	6020	TestAmerica Seattle		28-W-03	EB	Nitric Acid	092112-02 & -03	10_Days	Plastic 250ml - with Nitric Acid
580-35092-3	12NC28WA09	Water	9/19/2012 15:30	0"	7470A	TestAmerica Seattle		28-W-03	EB	Nitric Acid	092112-02 & -03	10_Days	Plastic 250ml - with Nitric Acid
580-35092-3	12NC28WA09	Water	9/19/2012 15:30	0"	8082	TestAmerica Seattle		28-W-03	EB	cool <4 C	092112-02 & -03	10_Days	Amber Glass 1 liter - unpreserved
580-35092-3	12NC28WA09	Water	9/19/2012 15:30	0"	8260B/DoD	TestAmerica Seattle		28-W-03	EB	Hydrochloric Acid	092112-02 & -03	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-35092-3	12NC28WA09	Water	9/19/2012 15:30	0"	8270C SIM/DoD	TestAmerica Seattle		28-W-03	EB	cool <4 C	092112-02 & -03	10_Days	Amber Glass 1 liter - unpreserved
580-35092-3	12NC28WA09	Water	9/19/2012 15:30	0"	AK102 & 103	TestAmerica Seattle		28-W-03	EB	Hydrochloric Acid	092112-02 & -03	10_Days	Amber Glass 1 liter - Hydrochloric
580-35092-4	12NC28WA10	Water	9/20/2012 15:05	0"	6020	TestAmerica Seattle		28-W-01	LK	Nitric Acid	092112-02 & -04	10_Days	Plastic 250ml - with Nitric Acid
580-35092-4	12NC28WA10	Water	9/20/2012 15:05	0"	7470A	TestAmerica Seattle		28-W-01	LK	Nitric Acid	092112-02 & -04	10_Days	Plastic 250ml - with Nitric Acid
580-35092-4	12NC28WA10	Water	9/20/2012 15:05	0"	8082	TestAmerica Seattle		28-W-01	LK	cool <4 C	092112-02 & -04	10_Days	Amber Glass 1 liter - unpreserved
580-35092-4	12NC28WA10	Water	9/20/2012 15:05	0"	8260B/DoD	TestAmerica Seattle		28-W-01	LK	Hydrochloric Acid	092112-02 & -04	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-35092-4	12NC28WA10	Water	9/20/2012 15:05	0"	8270C SIM/DoD	TestAmerica Seattle		28-W-01	LK	cool <4 C	092112-02 & -04	10_Days	Amber Glass 1 liter - unpreserved
580-35092-4	12NC28WA10	Water	9/20/2012 15:05	0"	AK102 & 103	TestAmerica Seattle		28-W-01	LK	Hydrochloric Acid	092112-02 & -04	10_Days	Amber Glass 1 liter - Hydrochloric
580-35092-5	12NC28WA11	Water	9/20/2012 14:30	0"	6020	TestAmerica Seattle		28-W-03	LK	Nitric Acid	092112-02 & -05	10_Days	Plastic 250ml - with Nitric Acid
580-35092-5	12NC28WA11	Water	9/20/2012 14:30	0"	7470A	TestAmerica Seattle		28-W-03	LK	Nitric Acid	092112-02 & -05	10_Days	Plastic 250ml - with Nitric Acid
580-35092-5	12NC28WA11	Water	9/20/2012 14:30	0"	8082	TestAmerica Seattle		28-W-03	LK	cool <4 C	092112-02 & -05	10_Days	Amber Glass 1 liter - unpreserved
580-35092-5	12NC28WA11	Water	9/20/2012 14:30	0"	8260B/DoD	TestAmerica Seattle		28-W-03	LK	Hydrochloric Acid	092112-02 & -05	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-35092-5	12NC28WA11	Water	9/20/2012 14:30	0"	8270C SIM/DoD	TestAmerica Seattle		28-W-03	LK	cool <4 C	092112-02 & -05	10_Days	Amber Glass 1 liter - unpreserved
580-35092-5	12NC28WA11	Water	9/20/2012 14:30	0"	AK102 & 103	TestAmerica Seattle		28-W-03	LK	Hydrochloric Acid	092112-02 & -05	10_Days	Amber Glass 1 liter - Hydrochloric
580-35092-6	12NC28WA12	Water	9/20/2012 14:45	0"	6020	TestAmerica Seattle		28-W-02	LK	Nitric Acid	092112-02 & -05	10_Days	Plastic 250ml - with Nitric Acid
580-35092-6	12NC28WA12	Water	9/20/2012 14:45	0"	7470A	TestAmerica Seattle		28-W-02	LK	Nitric Acid	092112-02 & -05	10_Days	Plastic 250ml - with Nitric Acid
580-35092-6	12NC28WA12	Water	9/20/2012 14:45	0"	8082	TestAmerica Seattle		28-W-02	LK	cool <4 C	092112-02 & -05	10_Days	Amber Glass 1 liter - unpreserved
580-35092-6	12NC28WA12	Water	9/20/2012 14:45	0"	8260B/DoD	TestAmerica Seattle		28-W-02	LK	Hydrochloric Acid	092112-02 & -05	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-35092-6	12NC28WA12	Water	9/20/2012 14:45	0"	8270C SIM/DoD	TestAmerica Seattle		28-W-02	LK	cool <4 C	092112-02 & -05	10_Days	Amber Glass 1 liter - unpreserved
580-35092-6	12NC28WA12	Water	9/20/2012 14:45	0"	AK102 & 103	TestAmerica Seattle		28-W-02	LK	Hydrochloric Acid	092112-02 & -05	10_Days	Amber Glass 1 liter - Hydrochloric
580-35092-7	12NC28WA13	Water	9/20/2012 15:15	0"	6020	TestAmerica Seattle	Field Dup of 28WA10	28-W-01	LK	Nitric Acid	092112-02 & -04	10_Days	Plastic 250ml - with Nitric Acid
580-35092-7	12NC28WA13	Water	9/20/2012 15:15	0"	7470A	TestAmerica Seattle	Field Dup of 28WA10	28-W-01	LK	Nitric Acid	092112-02 & -04	10_Days	Plastic 250ml - with Nitric Acid
580-35092-7	12NC28WA13	Water	9/20/2012 15:15	0"	8082	TestAmerica Seattle	Field Dup of 28WA10	28-W-01	LK	cool <4 C	092112-02 & -04	10_Days	Amber Glass 1 liter - unpreserved
580-35092-7	12NC28WA13	Water	9/20/2012 15:15	0"	8260B/DoD	TestAmerica Seattle	Field Dup of 28WA10	28-W-01	LK	Hydrochloric Acid	092112-02 & -04	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-35092-7	12NC28WA13	Water	9/20/2012 15:15	0"	8270C SIM/DoD	TestAmerica Seattle	Field Dup of 28WA10	28-W-01	LK	cool <4 C	092112-02 & -04	10_Days	Amber Glass 1 liter - unpreserved
580-35092-7	12NC28WA13	Water	9/20/2012 15:15	0"	AK102 & 103	TestAmerica Seattle	Field Dup of 28WA10	28-W-01	LK	Hydrochloric Acid	092112-02 & -04	10_Days	Amber Glass 1 liter - Hydrochloric
580-35092-8	Trip Blank 091212-(	Water	9/21/2012 0:00	0"	8260B/DoD	TestAmerica Seattle	Trip Blank	Trip Blank 091212-	LK	Hydrochloric Acid	092112-02	10_Days	Voa Vial 40ml - Hydrochloric Acid
580-35140 Site 28 sediment trap water samples													
580-35140-1	12NC28SS052	Soil	9/18/2012 10:20	2'-3'	6020	TestAmerica Seattle		12NC28S52	LK	cool <4 C	091912-08	15_Days	Soil jar 16oz
580-35140-1	12NC28SS052	Soil	9/18/2012 10:20	2'-3'	7471A	TestAmerica Seattle		12NC28S52	LK	cool <4 C	091912-08	15_Days	Soil jar 16oz
580-35140-1	12NC28SS052	Soil	9/18/2012 10:20	2'-3'	8082/DOD	TestAmerica Seattle		12NC28S52	LK	cool <4 C	091912-08	15_Days	Soil jar 16oz
580-35140-1	12NC28SS052	Soil	9/18/2012 10:20	2'-3'	8270C SIM/DoD	TestAmerica Seattle		12NC28S52	LK	cool <4 C	091912-08	15_Days	Soil jar 16oz
580-35140-1	12NC28SS052	Soil	9/18/2012 10:20	2'-3'	AK101	TestAmerica Seattle		12NC28S52	LK	Methanol	091912-08	15_Days	Soil jar 4oz - with Methanol
580-35140-1	12NC28SS052	Soil	9/18/2012 10:20	2'-3'	8260B/DoD	TestAmerica Seattle		12NC28S52	LK	Methanol	091912-08	15_Days	Soil jar 4oz - with Methanol
580-35140-1	12NC28SS052	Soil	9/18/2012 10:20	2'-3'	AK102 & 103	TestAmerica Seattle		12NC28S52	LK	cool <4 C	091912-08	15_Days	Soil jar 16oz
580-35140-2	12NC28SS053	Soil	9/18/2012 10:30	2'-3'	6020	TestAmerica Seattle		12NC28S53	LK	cool <4 C	091912-08	15_Days	Soil jar 16oz
580-35140-2	12NC28SS053	Soil	9/18/2012 10:30	2'-3'	7471A	TestAmerica Seattle		12NC28S53	LK	cool <4 C	091912-08	15_Days	Soil jar 16oz
580-35140-2	12NC28SS053	Soil	9/18/2012 10:30	2'-3'	8082/DOD	TestAmerica Seattle		12NC28S53	LK	cool <4 C	091912-08	15_Days	Soil jar 16oz
580-35140-2	12NC28SS053	Soil	9/18/2012 10:30	2'-3'	8260B/DoD	TestAmerica Seattle		12NC28S53	LK	Methanol	091912-08	15_Days	Soil jar 4oz - with Methanol
580-35140-2	12NC28SS053	Soil	9/18/2012 10:30	2'-3'	8270C SIM/DoD	TestAmerica Seattle		12NC28S53	LK	cool <4 C	091912-08	15_Days	Soil jar 16oz
580-35140-2	12NC28SS053	Soil	9/18/2012 10:30	2'-3'	AK101	TestAmerica Seattle		12NC28S53	LK	Methanol	091912-08	15_Days	Soil jar 4oz - with Methanol
580-35140-2	12NC28SS053	Soil	9/18/2012 10:30	2'-3'	AK102 & 103	TestAmerica Seattle		12NC28S53	LK	cool <4 C	091912-08	15_Days	Soil jar 16oz
580-35140-3	12NC28SS054	Soil	9/18/2012 10:45	2'-3'	6020	TestAmerica Seattle	MS/MSD	12NC28S54	LK	cool <4 C	091912-08	15_Days	Soil jar 16oz
580-35140-3	12NC28SS054	Soil	9/18/2012 10:45	2'-3'	7471A	TestAmerica Seattle	MS/MSD	12NC28S54	LK	cool <4 C	091912-08	15_Days	Soil jar 16oz
580-35140-3	12NC28SS054	Soil	9/18/2012 10:45	2'-3'	8082/DOD	TestAmerica Seattle	MS/MSD	12NC28S54	LK	cool <4 C	091912-08	15_Days	Soil jar 16oz
580-35140-3	12NC28SS054	Soil	9/18/2012 10:45	2'-3'	8260B/DoD	TestAmerica Seattle	MS/MSD	12NC28S54	LK	Methanol	091912-08	15_Days	Soil jar 4oz - with Methanol
580-35140-3	12NC28SS054	Soil	9/18/2012 10:45	2'-3'	8270C SIM/DoD	TestAmerica Seattle	MS/MSD	12NC28S54	LK	cool <4 C	091912-08	15_Days	Soil jar 16oz
580-35140-3	12NC28SS054	Soil	9/18/2012 10:45	2'-3'	AK101	TestAmerica Seattle	MS/MSD	12NC28S54	LK	Methanol	091912-08	15_Days	Soil jar 4oz - with Methanol
580-35140-3	12NC28SS054	Soil	9/18/2012 10:45	2'-3'	AK102 & 103	TestAmerica Seattle	MS/MSD	12NC28S54	LK	cool <4 C	091912-08	15_Days	Soil jar 16oz
580-35140-4	12NC28SS055	Soil	9/18/2012 10:50	2'-3'	6020	TestAmerica Seattle		12NC28S55	LK	cool <4 C	091912-08	15_Days	Soil jar 16oz
580-35140-4	12NC28SS055	Soil	9/18/2012 10:50	2'-3'	7471A	TestAmerica Seattle		12NC28S55	LK	cool <4 C	091912-08	15_Days	Soil jar 16oz
580-35140-4	12NC28SS055	Soil	9/18/2012 10:50	2'-3'	8082/DOD	TestAmerica Seattle		12NC28S55	LK	cool <4 C	091912-08	15_Days	Soil jar 16oz
580-35140-4	12NC28SS055	Soil	9/18/2012 10:50	2'-3'	8260B/DoD	TestAmerica Seattle		12NC28S55	LK	Methanol	091912-08	15_Days	Soil jar 4oz - with Methanol
580-35140-4	12NC28SS055	Soil	9/18/2012 10:50	2'-3'	8270C SIM/DoD	TestAmerica Seattle		12NC28S55	LK	cool <4 C	091912-08	15_Days	Soil jar 16oz
580-35140-4	12NC28SS055	Soil	9/18/2012 10:50	2'-3'	AK101	TestAmerica Seattle		12NC28S55	LK	Methanol	091912-08	15_Days	Soil jar 4oz - with Methanol
580-35140-4	12NC28SS055	Soil	9/18/2012 10:50	2'-3'	AK102 & 103	TestAmerica Seattle		12NC28S55	LK	cool <4 C	091912-08	15_Days	Soil jar 16oz
580-35140-5	12NC28SS056	Soil	9/18/2012 10:35	2'-3'	6020	TestAmerica Seattle	Field Dup of 28SS053	12NC28S53	LK	cool <4 C	091912-08	15_Days	Soil jar 16oz

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
580-35140-5	12NC28SS056	Soil	9/18/2012 10:35	2'-3'	7471A	TestAmerica Seattle	Field Dup of 28SS053	12NC28S53	LK	cool <4 C	091912-08	15_Days	Soil jar 16oz
580-35140-5	12NC28SS056	Soil	9/18/2012 10:35	2'-3'	8082/DOD	TestAmerica Seattle	Field Dup of 28SS053	12NC28S53	LK	cool <4 C	091912-08	15_Days	Soil jar 16oz
580-35140-5	12NC28SS056	Soil	9/18/2012 10:35	2'-3'	8260B/DoD	TestAmerica Seattle	Field Dup of 28SS053	12NC28S53	LK	Methanol	091912-08	15_Days	Soil jar 4oz - with Methanol
580-35140-5	12NC28SS056	Soil	9/18/2012 10:35	2'-3'	8270C SIM/DoD	TestAmerica Seattle	Field Dup of 28SS053	12NC28S53	LK	cool <4 C	091912-08	15_Days	Soil jar 16oz
580-35140-5	12NC28SS056	Soil	9/18/2012 10:35	2'-3'	AK101	TestAmerica Seattle	Field Dup of 28SS053	12NC28S53	LK	Methanol	091912-08	15_Days	Soil jar 4oz - with Methanol
580-35140-5	12NC28SS056	Soil	9/18/2012 10:35	2'-3'	AK102 & 103	TestAmerica Seattle	Field Dup of 28SS053	12NC28S53	LK	cool <4 C	091912-08	15_Days	Soil jar 16oz
580-35140-6	Trip Blank 091212-(	Soil	9/21/2012 0:00	NA	8260B/DoD	TestAmerica Seattle	Trip Blank	Trip Blank 091212-	LK	Methanol	091912-08	15_Days	Soil jar 4oz - with Methanol
580-35140-6	Trip Blank 091212-(	sSoil	9/22/2012 0:00	NA	AK101	TestAmerica Seattle	Trip Blank	Trip Blank 091212-	LK	Methanol	091912-08	15_Days	Soil jar 4oz - with Methanol
580-35168 Site 28 bulk waste													
580-35168-10	12NC28BW01	Soil	9/21/2012 15:21	0"	6020	TestAmerica Seattle		12NC28BW01	EB	cool <4 C	092312-01	10_Days	Soil jar 16oz
580-35168-10	12NC28BW01	Soil	9/21/2012 15:21	0"	7471A	TestAmerica Seattle		12NC28BW01	EB	cool <4 C	092312-01	10_Days	Soil jar 16oz
580-35168-10	12NC28BW01	Soil	9/21/2012 15:21	0"	8082/DOD	TestAmerica Seattle		12NC28BW01	EB	cool <4 C	092312-01	10_Days	Soil jar 16oz
580-35168-10	12NC28BW01	Soil	9/21/2012 15:21	0"	8260B/DoD	TestAmerica Seattle		12NC28BW01	EB	Methanol	092312-01	10_Days	Soil jar 4oz - with Methanol
580-35168-10	12NC28BW01	Soil	9/21/2012 15:21	0"	8270C SIM/DoD	TestAmerica Seattle		12NC28BW01	EB	cool <4 C	092312-01	10_Days	Soil jar 16oz
580-35168-10	12NC28BW01	Soil	9/21/2012 15:21	0"	9060	TestAmerica Seattle	MS/MSD	12NC28BW01	EB	cool <4 C	092312-01	10_Days	Soil jar 16oz
580-35168-10	12NC28BW01	Soil	9/21/2012 15:21	0"	AK101	TestAmerica Seattle		12NC28BW01	EB	Methanol	092312-01	10_Days	Soil jar 4oz - with Methanol
580-35168-10	12NC28BW01	Soil	9/21/2012 15:21	0"	AK102 & 103	TestAmerica Seattle		12NC28BW01	EB	cool <4 C	092312-01	10_Days	Soil jar 16oz
580-35168-1	12NCMOCBW221	Soil	9/17/2012 13:00	0"	AK102 & 103	TestAmerica Seattle		MOCBW221	LK	cool <4 C	092312-01	10_Days	Soil Jar 4oz Amber
580-35168-2	12NCMOCBW222	Soil	9/17/2012 14:30	0"	AK102 & 103	TestAmerica Seattle		MOCBW222	LK	cool <4 C	092312-01	10_Days	Soil Jar 4oz Amber
580-35168-3	12NCMOCBW223	Soil	9/17/2012 15:30	0"	AK102 & 103	TestAmerica Seattle		MOCBW223	LK	cool <4 C	092312-01	10_Days	Soil Jar 4oz Amber
580-35168-4	12NCMOCBW224	Soil	9/17/2012 17:00	0"	AK102 & 103	TestAmerica Seattle		MOCBW224	LK	cool <4 C	092312-01	10_Days	Soil Jar 4oz Amber
580-35168-5	12NCMOCBW225	Soil	9/18/2012 13:40	0"	AK102 & 103	TestAmerica Seattle		MOCBW225	LK	cool <4 C	092312-01	10_Days	Soil Jar 4oz Amber
580-35168-6	12NCMOCBW226	Soil	9/21/2012 9:45	0"	AK102 & 103	TestAmerica Seattle		MOCBW226	EB	cool <4 C	092312-01	10_Days	Soil Jar 4oz Amber
580-35168-7	12NCMOCBW227	Soil	9/21/2012 10:36	0"	AK102 & 103	TestAmerica Seattle		MOCBW227	EB	cool <4 C	092312-01	10_Days	Soil Jar 4oz Amber
580-35168-8	12NCMOCBW228	Soil	9/21/2012 11:36	0"	AK102 & 103	TestAmerica Seattle		MOCBW228	EB	cool <4 C	092312-01	10_Days	Soil Jar 4oz Amber
580-35168-9	12NCMOCBW229	Soil	9/21/2012 14:00	0"	AK102 & 103	TestAmerica Seattle		MOCBW229	EB	cool <4 C	092312-01	10_Days	Soil Jar 4oz Amber
580-35168-11	Trip Blank 092312-1	Soil	9/23/2012 0:00	NA	AK101	TestAmerica Seattle	Trip Blank	Trip Blank 092312-	EB	Methanol	092312-01	10_Days	Soil jar 4oz - with Methanol
580-35168-11	Trip Blank 092312-1	Soil	9/23/2012 0:00	NA	8260B/DoD	TestAmerica Seattle	Trip Blank	Trip Blank 092312-	EB	Methanol	092312-01	10_Days	Soil jar 4oz - with Methanol
1124556-SGS Site 28 Water													
1124556001	12NC28TWA01	Water	9/19/2012 10:30	0"	8270D SIMS (PAH)	SGS North America Inc.		12NC28TW01	LK	cool <4 C	091912-05, 06, & 07	2 Days	Amber Glass 1 liter - unpreserved
1124556001	12NC28TWA01	Water	9/19/2012 10:30	0"	AK101	SGS North America Inc.		12NC28TW01	LK	Hydrochloric Acid	091912-05, 06, & 07	2 Days	Voa Vial 40ml - Hydrochloric Acid
1124556001	12NC28TWA01	Water	9/19/2012 10:30	0"	AK102 & 103	SGS North America Inc.		12NC28TW01	LK	Hydrochloric Acid	091912-05, 06, & 07	2 Days	Amber Glass 1 liter - Hydrochloric
1124556001	12NC28TWA01	Water	9/19/2012 10:30	0"	SW6020 (total)	SGS North America Inc.		12NC28TW01	LK	Nitric Acid	091912-05, 06, & 07	2 Days	Plastic 250ml - with Nitric Acid
1124556001	12NC28TWA01	Water	9/19/2012 10:30	0"	SW7471 (total)	SGS North America Inc.		12NC28TW01	LK	Nitric Acid	091912-05, 06, & 07	2 Days	Plastic 250ml - with Nitric Acid
1124556001	12NC28TWA01	Water	9/19/2012 10:30	0"	SW8082A	SGS North America Inc.		12NC28TW01	LK	cool <4 C	091912-05, 06, & 07	2 Days	Amber Glass 1 liter - unpreserved
1124556001	12NC28TWA01	Water	9/19/2012 10:30	0"	SW8260B	SGS North America Inc.		12NC28TW01	LK	Hydrochloric Acid	091912-05, 06, & 07	2 Days	Voa Vial 40ml - Hydrochloric Acid
1124556002	12NC28TWA01 MS	Water	9/19/2012 10:30	0"	8270D SIMS (PAH)	SGS North America Inc.		12NC28TW01	LK	cool <4 C	091912-05, 06, & 07	2 Days	Amber Glass 1 liter - unpreserved
1124556002	12NC28TWA01 MS	Water	9/19/2012 10:30	0"	AK101	SGS North America Inc.	MS	12NC28TW01	LK	Hydrochloric Acid	091912-05, 06, & 07	2 Days	Voa Vial 40ml - Hydrochloric Acid
1124556002	12NC28TWA01 MS	Water	9/19/2012 10:30	0"	AK102 & 103	SGS North America Inc.	MS	12NC28TW01	LK	Hydrochloric Acid	091912-05, 06, & 07	2 Days	Amber Glass 1 liter - Hydrochloric
1124556002	12NC28TWA01 MS	Water	9/19/2012 10:30	0"	SW6020 (total)	SGS North America Inc.	MS	12NC28TW01	LK	Nitric Acid	091912-05, 06, & 07	2 Days	Plastic 250ml - with Nitric Acid
1124556002	12NC28TWA01 MS	Water	9/19/2012 10:30	0"	SW7471 (total)	SGS North America Inc.	MS	12NC28TW01	LK	Nitric Acid	091912-05, 06, & 07	2 Days	Plastic 250ml - with Nitric Acid
1124556002	12NC28TWA01 MS	Water	9/19/2012 10:30	0"	SW8082A	SGS North America Inc.	MS	12NC28TW01	LK	cool <4 C	091912-05, 06, & 07	2 Days	Amber Glass 1 liter - unpreserved
1124556002	12NC28TWA01 MS	Water	9/19/2012 10:30	0"	SW8260B	SGS North America Inc.	MS	12NC28TW01	LK	Hydrochloric Acid	091912-05, 06, & 07	2 Days	Voa Vial 40ml - Hydrochloric Acid
1124556003	12NC28TWA01 MSD	Water	9/19/2012 10:30	0"	8270D SIMS (PAH)	SGS North America Inc.	MSD	12NC28TW01	LK	cool <4 C	091912-05, 06, & 07	2 Days	Amber Glass 1 liter - unpreserved
1124556003	12NC28TWA01 MSD	Water	9/19/2012 10:30	0"	AK101	SGS North America Inc.	MSD	12NC28TW01	LK	Hydrochloric Acid	091912-05, 06, & 07	2 Days	Voa Vial 40ml - Hydrochloric Acid
1124556003	12NC28TWA01 MSD	Water	9/19/2012 10:30	0"	AK102 & 103	SGS North America Inc.	MSD	12NC28TW01	LK	Hydrochloric Acid	091912-05, 06, & 07	2 Days	Amber Glass 1 liter - Hydrochloric
1124556003	12NC28TWA01 MSD	Water	9/19/2012 10:30	0"	SW6020 (total)	SGS North America Inc.	MSD	12NC28TW01	LK	Nitric Acid	091912-05, 06, & 07	2 Days	Plastic 250ml - with Nitric Acid
1124556003	12NC28TWA01 MSD	Water	9/19/2012 10:30	0"	SW7471 (total)	SGS North America Inc.	MSD	12NC28TW01	LK	Nitric Acid	091912-05, 06, & 07	2 Days	Plastic 250ml - with Nitric Acid
1124556003	12NC28TWA01 MSD	Water	9/19/2012 10:30	0"	SW8082A	SGS North America Inc.	MSD	12NC28TW01	LK	cool <4 C	091912-05, 06, & 07	2 Days	Amber Glass 1 liter - unpreserved
1124556003	12NC28TWA01 MSD	Water	9/19/2012 10:30	0"	SW8260B	SGS North America Inc.	MSD	12NC28TW01	LK	Hydrochloric Acid	091912-05, 06, & 07	2 Days	Voa Vial 40ml - Hydrochloric Acid
1124556004	12NC28TWA02	Water	9/19/2012 10:45	0"	8270D SIMS (PAH)	SGS North America Inc.	Duplicate of TWA03	12NC28TW02	LK	cool <4 C	091912-05, 06, & 07	2 Days	Amber Glass 1 liter - unpreserved
1124556004	12NC28TWA02	Water	9/19/2012 10:45	0"	AK101	SGS North America Inc.	Duplicate of TWA03	12NC28TW02	LK	Hydrochloric Acid	091912-05, 06, & 07	2 Days	Voa Vial 40ml - Hydrochloric Acid
1124556004	12NC28TWA02	Water	9/19/2012 10:45	0"	AK102 & 103	SGS North America Inc.	Duplicate of TWA03	12NC28TW02	LK	Hydrochloric Acid	091912-05, 06, & 07	2 Days	Amber Glass 1 liter - Hydrochloric
1124556004	12NC28TWA02	Water	9/19/2012 10:45	0"	SW6020 (total)	SGS North America Inc.	Duplicate of TWA03	12NC28TW02	LK	Nitric Acid	091912-05, 06, & 07	2 Days	Plastic 250ml - with Nitric Acid
1124556004	12NC28TWA02	Water	9/19/2012 10:45	0"	SW7471 (total)	SGS North America Inc.	Duplicate of TWA03	12NC28TW02	LK	Nitric Acid	091912-05, 06, & 07	2 Days	Plastic 250ml - with Nitric Acid
1124556004	12NC28TWA02	Water	9/19/2012 10:45	0"	SW8082A	SGS North America Inc.	Duplicate of TWA03	12NC28TW02	LK	cool <4 C	091912-05, 06, & 07	2 Days	Amber Glass 1 liter - unpreserved
1124556004	12NC28TWA02	Water	9/19/2012 10:45	0"	SW8260B	SGS North America Inc.	Duplicate of TWA03	12NC28TW02	LK	Hydrochloric Acid	091912-05, 06, & 07	2 Days	Voa Vial 40ml - Hydrochloric Acid
1124556005	12NC28TWA03	Water	9/19/2012 10:00	0"	8270D SIMS (PAH)	SGS North America Inc.		12NC28TW03	LK	cool <4 C	091912-05, 06, & 07	2 Days	Amber Glass 1 liter - unpreserved
1124556005	12NC28TWA03	Water	9/19/2012 10:00	0"	AK101	SGS North America Inc.		12NC28TW03	LK	Hydrochloric Acid	091912-05, 06, & 07	2 Days	Voa Vial 40ml - Hydrochloric Acid
1124556005	12NC28TWA03	Water	9/19/2012 10:00	0"	AK102 & 103	SGS North America Inc.		12NC28TW03	LK	Hydrochloric Acid	091912-05, 06, & 07	2 Days	Amber Glass 1 liter - Hydrochloric
1124556005	12NC28TWA03	Water	9/19/2012 10:00	0"	SW6020 (total)	SGS North America Inc.		12NC28TW03	LK	Nitric Acid	091912-05, 06, & 07	2 Days	Plastic 250ml - with Nitric Acid
1124556005	12NC28TWA03	Water	9/19/2012 10:00	0"	SW7471 (total)	SGS North America Inc.		12NC28TW03	LK	Nitric Acid	091912-05, 06, & 07	2 Days	Plastic 250ml - with Nitric Acid
1124556005	12NC28TWA03	Water	9/19/2012 10:00	0"	SW8082A	SGS North America Inc.		12NC28TW03	LK	cool <4 C	091912-05, 06, & 07	2 Days	Amber Glass 1 liter - unpreserved
1124556005	12NC28TWA03	Water	9/19/2012 10:00	0"	SW8260B	SGS North America Inc.		12NC28TW03	LK	Hydrochloric Acid	091912-05, 06, & 07	2 Days	Voa Vial 40ml - Hydrochloric Acid
1124556006	12NC28TWA04	Water	9/20/2012 11:00	0"	8270D SIMS (PAH)	SGS North America Inc.		12NC28TW04	LK	cool <4 C	092012-01	2 Days	Amber Glass 1 liter - unpreserved
1124556006	12NC28TWA04	Water	9/20/2012 11:00	0"	AK101	SGS North America Inc.		12NC28TW04	LK	Hydrochloric Acid	092012-01	2 Days	Voa Vial 40ml - Hydrochloric Acid
1124556006	12NC28TWA04	Water	9/20/2012 11:00	0"	AK102 & 103	SGS North America Inc.		12NC28TW04	LK	Hydrochloric Acid	092012-01	2 Days	Amber Glass 1 liter - Hydrochloric

Sample Summary Sheet (continued)

Laboratory ID	Sample ID	Matrix	Date/Time Collected	Sample Depth	Analytical Methods	Analysis Laboratory	QC	Location ID	Sampler Initials	Field Preservation	Cooler Name	Turn around Time	Container Type/Volume
1124556006	12NC28TWA04	Water	9/20/2012 11:00	0"	SW6020 (total)	SGS North America Inc.		12NC28TW04	LK	Nitric Acid	092012-01	2 Days	Plastic 250ml - with Nitric Acid
1124556006	12NC28TWA04	Water	9/20/2012 11:00	0"	SW7471 (total)	SGS North America Inc.		12NC28TW04	LK	Nitric Acid	092012-01	2 Days	Plastic 250ml - with Nitric Acid
1124556006	12NC28TWA04	Water	9/20/2012 11:00	0"	SW8082A	SGS North America Inc.		12NC28TW04	LK	cool <4 C	092012-01	2 Days	Amber Glass 1 liter - unpreserved
1124556006	12NC28TWA04	Water	9/20/2012 11:00	0"	SW8260B	SGS North America Inc.		12NC28TW04	LK	Hydrochloric Acid	092012-01	2 Days	Voa Vial 40ml - Hydrochloric Acid
1124556009	12NC28TWA01	Water	9/19/2012 10:30	0"	SW6020 (dissolved)	SGS North America Inc.		12NC28TW01	LK	Nitric Acid	091912-05, 06, & 07	2 Days	Plastic 250ml - with Nitric Acid
1124556009	12NC28TWA01	Water	9/19/2012 10:30	0"	SW7471(dissolved)	SGS North America Inc.		12NC28TW01	LK	Nitric Acid	091912-05, 06, & 07	2 Days	Plastic 250ml - with Nitric Acid
1124556010	12NC28TWA01	Water	9/19/2012 10:30	0"	SW6020 (dissolved)	SGS North America Inc.	MS	12NC28TW01	LK	Nitric Acid	091912-05, 06, & 07	2 Days	Plastic 250ml - with Nitric Acid
1124556010	12NC28TWA01	Water	9/19/2012 10:30	0"	SW7471(dissolved)	SGS North America Inc.	MS	12NC28TW01	LK	Nitric Acid	091912-05, 06, & 07	2 Days	Plastic 250ml - with Nitric Acid
1124556011	12NC28TWA01	Water	9/19/2012 10:30	0"	SW6020 (dissolved)	SGS North America Inc.	MSD	12NC28TW01	LK	Nitric Acid	091912-05, 06, & 07	2 Days	Plastic 250ml - with Nitric Acid
1124556011	12NC28TWA01	Water	9/19/2012 10:30	0"	SW7471(dissolved)	SGS North America Inc.	MSD	12NC28TW01	LK	Nitric Acid	091912-05, 06, & 07	2 Days	Plastic 250ml - with Nitric Acid
1124556012	12NC28TWA02	Water	9/19/2012 10:45	0"	SW6020 (dissolved)	SGS North America Inc.	Duplicate of TWA03	12NC28TW02	LK	Nitric Acid	091912-05, 06, & 07	2 Days	Plastic 250ml - with Nitric Acid
1124556012	12NC28TWA02	Water	9/19/2012 10:45	0"	SW7471(dissolved)	SGS North America Inc.	Duplicate of TWA03	12NC28TW02	LK	Nitric Acid	091912-05, 06, & 07	2 Days	Plastic 250ml - with Nitric Acid
1124556013	12NC28TWA03	Water	9/19/2012 10:00	0"	SW6020 (dissolved)	SGS North America Inc.		12NC28TW03	LK	Nitric Acid	091912-05, 06, & 07	2 Days	Plastic 250ml - with Nitric Acid
1124556013	12NC28TWA03	Water	9/19/2012 10:00	0"	SW7471(dissolved)	SGS North America Inc.		12NC28TW03	LK	Nitric Acid	091912-05, 06, & 07	2 Days	Plastic 250ml - with Nitric Acid
1124556014	12NC28TWA04	Water	9/20/2012 11:00	0"	SW6020 (dissolved)	SGS North America Inc.		12NC28TW04	LK	Nitric Acid	092012-01	2 Days	Plastic 250ml - with Nitric Acid
1124556014	12NC28TWA04	Water	9/20/2012 11:00	0"	SW7471(dissolved)	SGS North America Inc.		12NC28TW04	LK	Nitric Acid	092012-01	2 Days	Plastic 250ml - with Nitric Acid
1124556007	TripBlank091912-01	Water	9/19/2012 0:00	0"	SW8260B	SGS North America Inc.	Trip Blank	TripBlank091912-0	LK	Hydrochloric Acid	091912-05, 06, & 07	2 Days	Voa Vial 40ml - Hydrochloric Acid
1124556007	TripBlank091912-01	Water	9/19/2012 0:00	0"	AK101	SGS North America Inc.	Trip Blank	TripBlank091912-0	LK	Hydrochloric Acid	091912-05, 06, & 07	2 Days	Voa Vial 40ml - Hydrochloric Acid
1124556008	TripBlank091912-03	Water	9/19/2012 0:00	0"	SW8260B	SGS North America Inc.	Trip Blank	TripBlank091912-0	LK	Hydrochloric Acid	091912-05, 06, & 07	2 Days	Voa Vial 40ml - Hydrochloric Acid
1124556008	TripBlank091912-03	Water	9/19/2012 0:00	0"	AK101	SGS North America Inc.	Trip Blank	TripBlank091912-0	LK	Hydrochloric Acid	091912-05, 06, & 07	2 Days	Voa Vial 40ml - Hydrochloric Acid
580-35084 - Site 28 MI Soil													
580-35084-1	12NC28MI001	Soil	9/10/2012 16:10	0-4"	AK102 & 103	TestAmerica Seattle		28-MI-01	EB	cool <4 C	091912-04	15_Days	1 gallon ziplock bag (for all analyses)
580-35084-1	12NC28MI001	Soil	9/10/2012 16:10	0-4"	AK102 & 103 SG	TestAmerica Seattle		28-MI-01	EB	cool <4 C	091912-04	15_Days	
580-35084-1	12NC28MI001	Soil	9/10/2012 16:10	0-4"	SW8082A	TestAmerica Seattle		28-MI-01	EB	cool <4 C	091912-04	15_Days	
580-35084-1	12NC28MI001	Soil	9/10/2012 16:10	0-4"	8270D SIMS (PAH)	TestAmerica Seattle		28-MI-01	EB	cool <4 C	091912-04	15_Days	
580-35084-1	12NC28MI001	Soil	9/10/2012 16:10	0-4"	SW6020	TestAmerica Seattle		28-MI-01	EB	cool <4 C	091912-04	15_Days	
580-35084-1	12NC28MI001	Soil	9/10/2012 16:10	0-4"	SW9060	TestAmerica Seattle		28-MI-01	EB	cool <4 C	091912-04	15_Days	
580-35084-2	12NC28MI002	Soil	9/11/2012 15:50	0-4"	AK102 & 103	TestAmerica Seattle		28-MI-02	EB	cool <4 C	091912-04	15_Days	1 gallon ziplock bag (for all analyses)
580-35084-2	12NC28MI002	Soil	9/11/2012 15:50	0-4"	AK102 & 103 SG	TestAmerica Seattle		28-MI-02	EB	cool <4 C	091912-04	15_Days	
580-35084-2	12NC28MI002	Soil	9/11/2012 15:50	0-4"	SW8082A	TestAmerica Seattle		28-MI-02	EB	cool <4 C	091912-04	15_Days	
580-35084-2	12NC28MI002	Soil	9/11/2012 15:50	0-4"	8270D SIMS (PAH)	TestAmerica Seattle		28-MI-02	EB	cool <4 C	091912-04	15_Days	
580-35084-2	12NC28MI002	Soil	9/11/2012 15:50	0-4"	SW6020	TestAmerica Seattle		28-MI-02	EB	cool <4 C	091912-04	15_Days	
580-35084-2	12NC28MI002	Soil	9/11/2012 15:50	0-4"	SW9060	TestAmerica Seattle		28-MI-02	EB	cool <4 C	091912-04	15_Days	
580-35084-3	12NC28MI003	Soil	9/11/2012 15:00	0-4"	AK102 & 103	TestAmerica Seattle	Field Repl. of 28MI002	28-MI-03	EB	cool <4 C	091912-04	15_Days	1 gallon ziplock bag (for all analyses)
580-35084-3	12NC28MI003	Soil	9/11/2012 15:00	0-4"	AK102 & 103 SG	TestAmerica Seattle	Field Repl. of 28MI002	28-MI-03	EB	cool <4 C	091912-04	15_Days	
580-35084-3	12NC28MI003	Soil	9/11/2012 15:00	0-4"	SW8082A	TestAmerica Seattle	Field Repl. of 28MI002	28-MI-03	EB	cool <4 C	091912-04	15_Days	
580-35084-3	12NC28MI003	Soil	9/11/2012 15:00	0-4"	8270D SIMS (PAH)	TestAmerica Seattle	Field Repl. of 28MI002	28-MI-03	EB	cool <4 C	091912-04	15_Days	
580-35084-3	12NC28MI003	Soil	9/11/2012 15:00	0-4"	SW6020	TestAmerica Seattle	Field Repl. of 28MI002	28-MI-03	EB	cool <4 C	091912-04	15_Days	
580-35084-3	12NC28MI003	Soil	9/11/2012 15:00	0-4"	SW9060	TestAmerica Seattle	Field Repl. of 28MI002	28-MI-03	EB	cool <4 C	091912-04	15_Days	
580-35084-4	12NC28MI004	Soil	9/11/2012 15:30	0-4"	AK102 & 103	TestAmerica Seattle	Field Repl. of 28MI002	28-MI-04	EB	cool <4 C	091912-04	15_Days	1 gallon ziplock bag (for all analyses)
580-35084-4	12NC28MI004	Soil	9/11/2012 15:30	0-4"	AK102 & 103 SG	TestAmerica Seattle	Field Repl. of 28MI002	28-MI-04	EB	cool <4 C	091912-04	15_Days	
580-35084-4	12NC28MI004	Soil	9/11/2012 15:30	0-4"	SW8082A	TestAmerica Seattle	Field Repl. of 28MI002	28-MI-04	EB	cool <4 C	091912-04	15_Days	
580-35084-4	12NC28MI004	Soil	9/11/2012 15:30	0-4"	8270D SIMS (PAH)	TestAmerica Seattle	Field Repl. of 28MI002	28-MI-04	EB	cool <4 C	091912-04	15_Days	
580-35084-4	12NC28MI004	Soil	9/11/2012 15:30	0-4"	SW6020	TestAmerica Seattle	Field Repl. of 28MI002	28-MI-04	EB	cool <4 C	091912-04	15_Days	
580-35084-4	12NC28MI004	Soil	9/11/2012 15:30	0-4"	SW9060	TestAmerica Seattle	Field Repl. of 28MI002	28-MI-04	EB	cool <4 C	091912-04	15_Days	
580-35084-5	12NC28MI005	Soil	9/16/2012 11:30	0-4"	AK102 & 103	TestAmerica Seattle		28-MI-05	EB	cool <4 C	091912-04	15_Days	1 gallon ziplock bag (for all analyses)
580-35084-5	12NC28MI005	Soil	9/16/2012 11:30	0-4"	AK102 & 103 SG	TestAmerica Seattle		28-MI-05	EB	cool <4 C	091912-04	15_Days	
580-35084-5	12NC28MI005	Soil	9/16/2012 11:30	0-4"	SW8082A	TestAmerica Seattle		28-MI-05	EB	cool <4 C	091912-04	15_Days	
580-35084-5	12NC28MI005	Soil	9/16/2012 11:30	0-4"	8270D SIMS (PAH)	TestAmerica Seattle		28-MI-05	EB	cool <4 C	091912-04	15_Days	
580-35084-5	12NC28MI005	Soil	9/16/2012 11:30	0-4"	SW6020	TestAmerica Seattle		28-MI-05	EB	cool <4 C	091912-04	15_Days	
580-35084-5	12NC28MI005	Soil	9/16/2012 11:30	0-4"	SW9060	TestAmerica Seattle		28-MI-05	EB	cool <4 C	091912-04	15_Days	
580-35084-6	12NC28MI006	Soil	9/16/2012 14:30	0-4"	AK102 & 103	TestAmerica Seattle		28-MI-06	EB	cool <4 C	091912-04	15_Days	1 gallon ziplock bag (for all analyses)
580-35084-6	12NC28MI006	Soil	9/16/2012 14:30	0-4"	AK102 & 103 SG	TestAmerica Seattle		28-MI-06	EB	cool <4 C	091912-04	15_Days	
580-35084-6	12NC28MI006	Soil	9/16/2012 14:30	0-4"	SW8082A	TestAmerica Seattle		28-MI-06	EB	cool <4 C	091912-04	15_Days	
580-35084-6	12NC28MI006	Soil	9/16/2012 14:30	0-4"	8270D SIMS (PAH)	TestAmerica Seattle		28-MI-06	EB	cool <4 C	091912-04	15_Days	
580-35084-6	12NC28MI006	Soil	9/16/2012 14:30	0-4"	SW6020	TestAmerica Seattle		28-MI-06	EB	cool <4 C	091912-04	15_Days	
580-35084-6	12NC28MI006	Soil	9/16/2012 14:30	0-4"	SW9060	TestAmerica Seattle		28-MI-06	EB	cool <4 C	091912-04	15_Days	

Notes:
" = inches
' = feet
< = less than
Dup = Duplicate
MS/MSD = Matrix Spike/Matrix Spike Duplicate
PAH = Polynuclear Aromatic Hydrocarbons
Rep = Replicate

APPENDIX K

Laboratory Reference Tables and Analytical Limits

TABLE K1 REFERENCE LIMITS AND EVALUATION CRITERIA FOR SOIL and SEDIMENT
NE CAPE

Analyte	Analytical Group	Analytical Method	Preparation Method	CASRN	Units	Cleanup Levels and Evaluation Criteria		Achievable Laboratory Limits		
						SEDIMENT	SOIL	DL	LOD	LOQ
POL										
Gasoline Range Organics - C_6 to C_{10}	FUELS	AK101	SW5035A	NS	mg/kg	NS	300[2]	0.46	1	4
Diesel Range Organics - C_{10} to C_{25}	FUELS	AK102	SW3550B	NS	mg/kg	3500[1]	9200[1]	2.3	6.50	20
Residual Range Organics - C_{25} to C_{36}	FUELS	AK103	SW3550B	NS	mg/kg	3500[1]	9200[1]	11	25.0	50
Volatile Organic Compounds										
Benzene	VOC	SW8260B	SW5035A	71-43-2	µg/kg	NS	2000[1]	4	10.0	16.0
Ethylbenzene	VOC	SW8260B	SW5035A	100-41-4	µg/kg	NS	6900[2]	10.00	30.0	40.0
Toluene	VOC	SW8260B	SW5035A	108-88-3	µg/kg	NS	6500[2]	10.00	30.0	40.0
m-Xylene & p-Xylene	VOC	SW8260B	SW5035A	1330-20-7	µg/kg	NS	NS	10.0	30.0	40
o-Xylene	VOC	SW8260B	SW5035A	95-47-6	µg/kg	NS	NS	10.00	30.0	40.0
Xylenes, total	VOC	SW8260B	SW5035A	1330-20-7	µg/kg	NS	63000[2]	10.00	30.0	40.0
Polynuclear Aromatic Hydrocarbons										
Acenaphthene	PAH	SW8270C-SIM	SW3550B	83-32-9	µg/kg	500[1]	180000[2]	1.5	2.5	5.0
Acenaphthylene	PAH	SW8270C-SIM	SW3550B	208-96-8	µg/kg	NS	180000[2]	1.5	2.5	5.0
Anthracene	PAH	SW8270C-SIM	SW3550B	120-12-7	µg/kg	NS	3000000[2]	1.5	2.5	5.0
Benzo(a)anthracene	PAH	SW8270C-SIM	SW3550B	56-55-3	µg/kg	NS	3600[2]	1.5	2.5	5.0
Benzo(b)fluoranthene	PAH	SW8270C-SIM	SW3550B	205-99-2	µg/kg	NS	12000[2]	1.5	2.5	5.0
Benzo(k)fluoranthene	PAH	SW8270C-SIM	SW3550B	207-08-9	µg/kg	NS	120000[2]	1.5	2.5	5.0
Benzo(a)pyrene	PAH	SW8270C-SIM	SW3550B	50-32-8	µg/kg	NS	2100[2]	1.5	2.5	5.0
Benzo(g,h,i)perylene	PAH	SW8270C-SIM	SW3550B	191-24-2	µg/kg	1700[1]	38700000[2]	1.5	2.5	5.0
Chrysene	PAH	SW8270C-SIM	SW3550B	218-01-9	µg/kg	NS	360000[2]	1.5	5.0	5.0
Dibenz(a,h)anthracene	PAH	SW8270C-SIM	SW3550B	53-70-3	µg/kg	NS	4000[2]	1.5	2.5	5.0
Fluoranthene	PAH	SW8270C-SIM	SW3550B	206-44-0	µg/kg	2000[1]	1400000[2]	1.5	2.5	5.0
Fluorene	PAH	SW8270C-SIM	SW3550B	86-73-7	µg/kg	800[1]	220000[2]	1.5	2.5	5.0
Indeno(1,2,3-cd)pyrene	PAH	SW8270C-SIM	SW3550B	193-39-5	µg/kg	3200[1]	41000[2]	1.5	2.5	5.0
2-Methylnaphthalene	PAH	SW8270C-SIM	SW3550B	91-57-6	µg/kg	600[1]	6100[2]	2.0	5.0	5.0
Naphthalene	PAH	SW8270C-SIM	SW3550B	91-20-3	µg/kg	1700[1]	120000[1]	2.0	2.5	5.0
Phenanthrene	PAH	SW8270C-SIM	SW3550B	94-09-7	µg/kg	4800[1]	3000000[2]	1.5	2.5	5.0
Pyrene	PAH	SW8270C-SIM	SW3550B	129-00-0	µg/kg	NS	1000000[2]	1.5	2.5	5.0
LPAH	PAH	SW8270C-SIM	SW3550B	NA	ug/kg	7800[1]	NS	NS	NS	NS
HPAH	PAH	SW8270C-SIM	SW3550B	NA	ug/kg	9600[1]	NS	NS	NS	NS
Polychlorinated Biphenyls										
PCB-1221	PCB	SW8082A	SW3550B	11104-28-2	mg/kg	0.7[1]	1[1]	0.0032	0.005	0.010
PCB-1016	PCB	SW8082A	SW3550B	12674-11-2	mg/kg	0.7[1]	1[1]	0.0080	0.005	0.011
PCB-1232	PCB	SW8082A	SW3550B	11141-16-5	mg/kg	0.7[1]	1[1]	0.0070	0.010	0.011
PCB-1242	PCB	SW8082A	SW3550B	53469-21-9	mg/kg	0.7[1]	1[1]	0.0021	0.005	0.010

TABLE K1 REFERENCE LIMITS AND EVALUATION CRITERIA FOR SOIL and SEDIMENT
NE Cape (continued)

Analyte	Analytical Group	Analytical Method	Preparation Method	CASRN	Units	Cleanup Levels and Evaluation Criteria		Achievable Laboratory Limits		
						SEDIMENT	SOIL	DL	LOD	LOQ
PCB-1248	PCB	SW8082A	SW3550B	12672-29-6	mg/kg	0.7[1]	1[1]	0.0030	0.005	0.010
PCB-1254	PCB	SW8082A	SW3550B	11097-69-1	mg/kg	0.7[1]	1[1]	0.0021	0.005	0.010
PCB-1260	PCB	SW8082A	SW3550B	11096-82-5	mg/kg	0.7[1]	1[1]	0.0030	0.005	0.010
PCBs (sum)	PCB	SW8082A	SW3550B	1336363	mg/kg	0.7[1]	1[1]	NS	NS	NS
Total Metals										
Arsenic	Metals	SW6020A	SW3050B	7440-38-2	mg/kg	93 [1]	11[1]	0.18	0.4	0.50
Barium	Metals	SW6020A	SW3050B	7440-39-3	mg/kg	NS	1100[2]	0.03	0.04	0.20
Cadmium	Metals	SW6020A	SW3050B	7440-43-9	mg/kg	NS	5.0[2]	0.008	0.02	0.20
Chromium	Metals	SW6020A	SW3050B	7440-47-3	mg/kg	270[1]	25[2]	0.113	0.15	0.20
Lead	Metals	SW6020A	SW3050B	7439-92-1	mg/kg	530[1]	400[2]	0.013	0.020	0.20
Mercury	Metals	SW7471B	SW7471B	7439-97-6	mg/kg	NS	1.4[2]	0.0063	0.01	0.02
Nickel	Metals	SW6020A	SW3050B	7440-02-0	mg/kg	NS	86[2]	0.071	0.25	0.50
Selenium	Metals	SW6020A	SW3050B	7782-49-2	mg/kg	NS	3.4[2]	0.202	0.4	0.70
Silver	Metals	SW6020A	SW3050B	7440-22-4	mg/kg	NS	11.2[2]	0.012	0.02	0.20
Vanadium	Metals	SW6020A	SW3050B	7440-62-2	mg/kg	NS	3400[2]	0.473	0.5	0.70
Zinc	Metals	SW6020A	SW3050B	7440-66-6	mg/kg	960[1]	4100[2]	1.12	1.50	2.00

Notes:

[1] Site-specific cleanup values established in 2009 Decision Document

[2] Cleanup levels from 18AAC75 Section 341, Table B1, migration to groundwater

µg/kg = micrograms per kilogram
AAC = Alaska Administrative Code
AK = Alaska Test Method
CASRN = Chemical Abstracts Service Registry Number
DL= detection limit
HPAH=High Molecular Weight PAHs
LOD = limit of detection
LOQ = limit of quantitation
LPAH=Low Molecular Weight PAHs
mg/kg = milligrams per kilogram
NS = not specified
PAH = polynuclear aromatic hydrocarbon
PCB = polychlorinated biphenyls
POL = petroleum, oil, and lubricants
SIM = selective ion monitoring
SW = EPA Solid Waste Test Method
VOC = volatile organic compounds

TABLE K2 REFERENCE LIMITS AND EVALUATION CRITERIA FOR WATER
NE CAPE

Analyte	Analytical Group	Analytical Method	CASRN	Preparation Method	Units	Cleanup Levels and Evaluation Criteria[1]	Achievable Laboratory Limits		
							DL	LOD	LOQ
POL									
Gasoline Range Organics - C_6 to C_{10}	TPH	AK101	NS	SW5030B	mg/L	1.3 [2]	0.015	0.044	0.05
Diesel Range Organics - C_{10} to C25	TPH	AK102	NS	SW3510C	mg/L	1.5 [2]	0.022	0.06	0.1
Residual Range Organics - C_{25} to C36	TPH	AK103	NS	SW3510C	mg/L	1.1 [2]	0.027	0.06	0.1
Volatile Organic Compounds									
Benzene	VOC	SW8260B	71-43-2	SW5030B	µg/L	5 [2]	0.15	0.45	1.0
Ethylbenzene	VOC	SW8260B	100-41-4	SW5030B	µg/L	700 [2]	0.15	0.45	1.0
Toluene	VOC	SW8260B	108-88-3	SW5030B	µg/L	1,000	0.15	0.45	1.0
m-Xylene & p-Xylene	VOC	SW8260B	1330-20-7	SW5030B	µg/L	NS	0.30	0.9	2.0
o-Xylene	VOC	SW8260B	95-47-6	SW5030B	µg/L	NS	0.15	0.45	1.0
Xylenes, total	VOC	SW8260B	1330-20-7	SW5030B	µg/L	10,000	0.45	1.35	3.0
Polynuclear Aromatic Hydrocarbons (PAHs)									
Acenaphthene	PAH	SW8270C-SIM	83-32-9	SW3510C	µg/L	2,200	0.03	0.075	0.13
Acenaphthylene	PAH	SW8270C-SIM	208-96-8	SW3510C	µg/L	2,200	0.03	0.075	0.10
Anthracene	PAH	SW8270C-SIM	120-12-7	SW3510C	µg/L	11,000	0.03	0.075	0.10
Benzo(a)anthracene	PAH	SW8270C-SIM	56-55-3	SW3510C	µg/L	1.2	0.03	0.075	0.10
Benzo(b)fluoranthene	PAH	SW8270C-SIM	205-99-2	SW3510C	µg/L	1.2	0.03	0.075	0.10
Benzo(k)fluoranthene	PAH	SW8270C-SIM	207-08-9	SW3510C	µg/L	12	0.03	0.075	0.10
Benzo(a)pyrene	PAH	SW8270C-SIM	50-32-8	SW3510C	µg/L	0.2	0.03	0.075	0.20
Benzo(g,h,i)perylene	PAH	SW8270C-SIM	191-24-2	SW3510C	µg/L	1,100	0.03	0.075	0.10
Chrysene	PAH	SW8270C-SIM	218-01-9	SW3510C	µg/L	120	0.03	0.075	0.10
Dibenz(a,h)anthracene	PAH	SW8270C-SIM	53-70-3	SW3510C	µg/L	0.12	0.03	0.075	0.10
Fluoranthene	PAH	SW8270C-SIM	206-44-0	SW3510C	µg/L	1,500	0.03	0.075	0.10
Fluorene	PAH	SW8270C-SIM	86-73-7	SW3510C	µg/L	1,500	0.03	0.075	0.10
Indeno(1,2,3-cd)pyrene	PAH	SW8270C-SIM	193-39-5	SW3510C	µg/L	1.2	0.03	0.08	0.10
1-Methylnaphthalene	PAH	SW8270C-SIM	90-12-0	SW3510C	µg/L	150	0.03	0.075	0.10
2-Methylnaphthalene	PAH	SW8270C-SIM	91-57-6	SW3510C	µg/L	150	0.03	0.075	0.10
Naphthalene	PAH	SW8270C-SIM	91-20-3	SW3510C	µg/L	730	0.04	0.075	0.10
Phenanthrene	PAH	SW8270C-SIM	94-09-7	SW3510C	µg/L	11,000	0.03	0.075	0.10
Pyrene	PAH	SW8270C-SIM	129-00-0	SW3510C	µg/L	1,100	0.03	0.075	0.10
Polychlorinated Biphenyls									
PCB-1221	PCB	SW8082A	11104-28-2	SW3520C	µg/L	0.5	0.062	0.13	0.5
PCB-1016	PCB	SW8082A	12674-11-2	SW3520C	µg/L	0.5	0.045	0.10	0.5
PCB-1232	PCB	SW8082A	11141-16-5	SW3520C	µg/L	0.5	0.041	0.10	0.5
PCB-1242	PCB	SW8082A	53469-21-9	SW3520C	µg/L	0.5	0.041	0.10	0.5
PCB-1248	PCB	SW8082A	12672-29-6	SW3520C	µg/L	0.5	0.071	0.08	0.5
PCB-1254	PCB	SW8082A	11097-69-1	SW3520C	µg/L	0.5	0.044	0.13	0.5
PCB-1260	PCB	SW8082A	11096-82-5	SW3520C	µg/L	0.5	0.039	0.08	0.5

TABLE K2 REFERENCE LIMITS AND EVALUATION CRITERIA FOR WATER
NE CAPE (continued)

Analyte	Analytical Group	Analytical Method	CASRN	Preparation Method	Units	Cleanup Levels and Evaluation Criteria[1]	Achievable Laboratory Limits		
							DL	LOD	LOQ
Metals									
Arsenic (total)	Metals	SW6020A	7440-38-2	SW3005A	µg/L	NS	3.75	4	5.0
Arsenic (dissolved)	Metals	SW6020A	7440-38-2	SW3005A	µg/L	10 [2]	3.75	4	5.0
Barium (total)	Metals	SW6010C	7440-39-3	SW3005A	µg/L	NS	0.27	1.0	6
Barium (dissolved)	Metals	SW6010C	7440-39-3	SW3005A	µg/L	2,000	0.27	1.0	6
Cadmium (total)	Metals	SW6020A	7440-43-9	SW3005A	µg/L	NS	0.140	0.25	2.0
Cadmium (dissolved)	Metals	SW6020A	7440-43-9	SW3005A	µg/L	5	0.140	0.25	2.0
Chromium (total)	Metals	SW6010C	7440-70-2	SW3005A	µg/L	NS	1.35	1.5	2
Chromium (dissolved) (includes Cr+3 and Cr+6)	Metals	SW6010C	7440-47-3	SW3005A	µg/L	100	1.35	1.5	2
Lead (total)	Metals	SW6010C	7439-89-6	SW3005A	µg/L	NS	0.17	0.25	2
Lead (dissolved)	Metals	SW6020A	7439-92-1	SW3005A	µg/L	15 [2]	0.17	0.25	2
Mercury (total)	Metals	SW6020A	7439-96-5	SW3005A	µg/L	NS	0.041	0.1	0.2
Mercury (dissolved)	Metals	SW7470A	7439-97-6	SW7470A	µg/L	2	0.041	0.1	0.2
Nickel (total)	Metals	SW6010C	7439-98-7	SW3005A	µg/L	NS	2.0	2.50	15
Nickel (dissolved)	Metals	SW6010C	7440-02-0	SW3005A	µg/L	100	2.0	2.50	15
Selenium (total)	Metals	SW6010C	7440-09-7	SW3005A	µg/L	NS	3.55	4	5
Selenium (dissolved)	Metals	SW6020A	7782-49-2	SW3005A	µg/L	50	3.55	4	5
Silver (total)	Metals	SW6020A	7782-49-2	SW3005A	µg/L	NS	0.15	0.25	2.0
Silver (dissolved)	Metals	SW6020A	7440-22-4	SW3005A	µg/L	100	0.15	0.25	2.0
Vanadium (total)	Metals	SW6020A	7440-31-5	SW3005A	µg/L	NS	4.875	5	10
Vanadium (dissolved)	Metals	SW6020A	7440-31-5	SW3005A	µg/L	260	4.875	5	10
Zinc (total)	Metals	SW6010C	7440-62-2	SW3005A	µg/L	NS	4.4	5.0	7
Zinc (dissolved)	Metals	SW6020A	7440-66-6	SW3005A	µg/L	5,000	4.4	5.0	7

Notes:

[1] Unless otherwise noted, values are from 18AAC75 Section 345, Table C, Groundwater Cleanup Levels

[2] Values established in 2009 Decision Document

µg/L = micrograms per liter

ADEC = Alaska Department of Environmental Conservation
AK = Alaska Test Method
CASRN = Chemical Abstracts Service Registry Number
DL= detection limit
LOD = limit of detection
LOQ = limit of quantitation
mg/L= milligrams per liter
NS = not specified
PAH = polynuclear aromatic hydrocarbon
PCB = polychlorinated biphenyls
SIM = selective ion monitoring
SW = EPA Solid Waste Test Method
TPH = total petroleum hydrocarbons
VOC = volatile organic compounds

APPENDIX L

PCB Correlation Study