U.S. Department of
Homeland Security
United States
Coast Guard

Commanding Officer
United States Coast Guard
Civil Engineering Unit Oakland

1301 Clay Street, Suite 700N
Oakland, CA 94612-5203
Staff Symbol: EM
Phone: (510) 637-5567
FAX: (510) 535-7288

5090
14 April 2020

Ms. Sandra Caldwell
Land Unit Supervisor
Washington State Department of Ecology
Toxic Cleanup Program HQ
300 Desmond Dr. SE
Lacey, WA 98504

Dear Ms. Caldwell:

The U.S. Coast Guard is pleased to present this Draft Final Remedial Investigation and Focused Feasibility Study for the Burrows Island for your review. Our project team is available to address any comments or concerns you have with the attached study. Once you have had a chance to review the public comments we will finalize the document. Please reach out to James Hall at 510-637-5593 or at James.C.Hall2@USCG.mil with any questions or concerns.

Sincerely,

David W. Stalters
Chief, Environmental Management Branch
U.S. Coast Guard
By direction of the Commanding Officer

Enclosure: (1) Draft Remedial Investigation and Focused Feasibility Study

United States Coast Guard

DRAFT FINAL REMEDIAL INVESTIGATION AND FOCUSED FEASIBILITY STUDY REPORT

Burrows Island Light Station
Skagit County, Washington

Contract No. HSCG50-14-D-PSL007
Task Order No. 70Z08818FPXA01700

DRAFT FINAL REMEDIAL INVESTIGATION AND FOCUSED FEASIBILITY STUDY REPORT

Burrows Island Light Station
Skagit County, Washington

Paul McCullough, P.E.
Principal Environmental Engineer

Josh Gravenmier
Certified Project Manager

Prepared for:

United States Coast Guard

Prepared by:

Arcadis U.S., Inc.
2300 Clayton Road
Suite 400
Concord
California 94520
Tel 925 274 1100
Fax 925 726 0121

Our Ref.:

Contract HSCG50-14-D-PSL007
Task Order No. 70Z08818FPXA01700

Arcadis Project Number B0003010.0006

Date:

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ACRONYMS AND ABBREVIATIONS

ARAR	applicable or relevant and appropriate requirement
Arcadis	Arcadis U.S., Inc.
AST	aboveground storage tank
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylene
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	contaminant of concern
cy	cubic yards
DRO	diesel-range organics
DU	decision unit
Ecology	Washington State Department of Ecology
FFS	focused feasibility study
GRA	general response action
HO	heavy oil
ISM	incremental sampling methodology
ITRC	Interstate Technology & Regulatory Counsel
mg/kg	milligrams per kilogram
mg/L	milligram per liter
MS	matrix spike
MSD	matrix spike duplicate
MTCA	Model Toxics Control Act
NWSS	Northwest Schooner Society
O&M	operations and maintenance
OIC	Officer in Charge
Onsite	Onsite Environmental Inc., located in Redmond, Washington
PCB	polychlorinated biphenyl
PID	photo ionization detector
PPE	personal protective equipment
QAPP and SAP	Quality Assurance Project Plan and Sampling and Analysis Plan

RA	remedial action
RAO	remedial action objective
RI	remedial investigation
RI/FFS Report	Remedial Investigation Report and Focused Feasibility Study Report
site	Burrows Island Light Station, located on Burrows Island, Skagit County, near Anacortes, Washington
SU	sampling unit
TCLP	toxicity characteristic leaching procedure
TEE	terrestrial ecology evaluation
TSCA	Toxic Substances Control Act
USCG	United States Coast Guard
USEPA	United States Environmental Protection Agency
UST	underground storage tank
WAC	Washington Administrative Code
XRF	x-ray fluorescence

1 INTRODUCTION AND BACKGROUND

The United States Coast Guard (USCG), Civil Engineering Unit Oakland, contracted Arcadis U.S., Inc. (Arcadis) to conduct a remedial investigation (RI), focused feasibility study (FFS), and remedial design at the Burrows Island Light Station, located on Burrows Island, Skagit County, near Anacortes, Washington (site; Figure 1), under Contract No. HSCG50-14-D-PSL007, Task Order No. 70Z08818FPXA01700. The site is an active USCG light station. Historical operations at the site resulted in near-surface soil contamination within the upper few feet of ground surface. Contaminants of concern (COCs) include lead from lead-based paint, polychlorinated biphenyls (PCBs), and petroleum from heating oil and/or diesel fuel.

This Remedial Investigation Report and Focused Feasibility Study Report (RI/FFS Report) documents sampling and delineation of site COCs, identifies and evaluates four remedial actions (RAs), as well as a No Action Alternative, and compares the RAs to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121 criteria (42 United States Code [USC] § 9621). The implementation and results of the RI field activities are presented in Section 2. An updated conceptual site model based on the new and historical site data is presented in Section 3. Applicable or relevant and appropriate requirements (ARARs) are presented in Section 4, along with remedial objectives, points of compliance, and preliminary quantities. Remedial technologies are identified and evaluated as part of the initial screening and further developed as remedial alternatives in Sections 5 and 6.

The USCG plans to transfer the light station to the Northwest Schooner Society (NWSS) pursuant to the National Historic Lighthouse Preservation Act of 2000 and CERCLA Section120(h) (42 USC § 9620) once the RA is completed and the light station is cleaned up to a level that is protective of human health and the environment. The NWSS will restore the site to reflect various periods of time and will rehabilitate the duplex structure to a condition that will allow guests to stay onsite for short periods of time.

The USCG is the lead agency for the investigation and cleanup of the site and will follow the CERCLA process because the site is located on USCG-owned property and the USCG is a federal agency. As such, the activities described in this RI/FFS Report are consistent with United States Environmental Protection Agency (USEPA) guidance for conducting RIs and feasibility studies under CERCLA. The USCG conducted the RI/FFS in collaboration with the Washington State Department of Ecology (Ecology) and in accordance with the substantive requirements of the Model Toxics Control Act (MTCA), Chapter 70.105D Revised Code of Washington, and associated implementing regulations under Chapter 173-340 Washington Administrative Code (WAC). Ecology was consulted in developing a Quality Assurance Project Plan and Sampling and Analysis Plan (QAPP and SAP; Arcadis 2018) for the RI sampling, and in developing the proposed cleanup standards and other ARARs that will inform the implementation of the selected RA.

Upon review and concurrence of this RI/FFS Report by Ecology, the USCG will initiate a public review process in accordance with CERCLA requirements and the substantive requirements of the State Environmental Policy Act.

1.1 General Site Information

The site is located on the western tip of Burrows Island, approximately ¼ mile southeast of Anacortes, Washington on Rosario Strait within the western portion of Section 32, Township 35 North, Range 1 East, Willamette Meridian. The latitude and longitude for the site are 48º 28’ 40” North and -122º 42’ 48” West (North American Datum of 1983). Primary access to the site is by boat via the fixed concrete dock located on the north side of the site. A helicopter pad is also located onsite. A map showing the location of the Burrows Island Light Station is presented on Figure 1.

The site is located on USCG-owned property identified as Parcel Number P32494 in Skagit County records (Skagit County 2018). The USCG property is approximately 8.2 acres; 2 acres is cleared land and the remainder is heavily forested. The Skagit County designated land use for Parcel P32494 is (740) Recreational Activities. Parcels adjacent to the USCG property are owned by Washington State Parks and Recreation and have similar land use designations as the USCG property. The adjacent parcels are undeveloped and heavily forested. Several parcels of land on Burrows Island are owned by private individuals: Parcels P32502, P32500, P32503, P32452, P99308, and P99309. The privately-owned parcels are located on the opposite (eastern) side of Burrows Island from the USCG property.

Operation of the light signal is automated and there are no full-time residents or dedicated workers at the site. Historical site features included residential and operational structures used by USCG personnel before the light signal was automated in 1972. Structures remaining onsite are listed below and are identified numerically based on historical USCG drawings:

- Light and Fog Signal Building (101)
- Helicopter pad (located between former structures 102 and 104)
- Duplex (103)
- Boathouse (105)
- Pumphouse and Spring Cistern, nonoperational (106)
- Saltwater Flushing Pumphouse, nonoperational (108).

The following historical structures have been removed or demolished:

- Oil and Paint Storage Building (102)
- Officer in Charge (OIC) Quarters and associated fuel oil tank(s) (104)
- Firehouse Pump Building (107)
- Water tanks (109, 110, 111)
- 10,000-gallon fuel oil aboveground storage tank (AST [112]).

Remnants of historical structures include concrete footings and support structures. The locations of current and historical site features are shown on Figure 2.

1.2 Site History

The site is currently an active USCG light station and was first developed for that purpose in 1906. The light signal was automated in 1972 and no dedicated USCG personnel have occupied the site since that time. Based on historical site maps, multiple petroleum tanks were present to supply fuel for heating and site operations (USCG 1958, 1960a), which included:

- One 10,000-gallon fuel oil AST located southeast of the Duplex.
- Two 675-gallon fuel oil ASTs located east of the Duplex and connected to the furnaces and gas ranges in the building via underground piping.
- One 675-gallon fuel oil AST located on the southeast corner of the Light and Fog Signal Building.
- One 200-gallon fuel oil underground storage tank (UST) located on the east side of the OIC Quarters.
- One gasoline storage tank located west of the Oil and Paint Storage Building.

The fuel oil tanks were connected via underground piping to a ship to shore connection located east of the Boathouse. Additional underground piping connected the tanks to the buildings and the main fuel oil line. No connections between the gasoline storage tank and any underground piping or other fueling infrastructure are apparent based on historical information. Historical drawings reference repair work completed on the 10,000-gallon fuel oil AST in 1960 (USCG 1960b). The 10,000-gallon fuel oil AST was removed from the site, but the concrete support structure remains. The smaller fuel oil tanks and gasoline storage tank were also removed. The fuel oil tank associated with the OIC Quarters was a 200 or 300-gallon UST that was removed as part of an RA in 1999 (AGI Technologies 1999).

A power transformer that supported onsite electrical generation via generators and power from an undersea cable installed around 1970 was located southeast of the lighthouse and fog signal building (USCG 1980a, 1980b). Oil in the transformer is known to have contained PCBs. A spill of approximately 5 to 50 gallons of transformer oil occurred on February 22, 1980 (USCG 1980b). Approximately 140 cubic yards (cy) of soil were removed from around the transformer and transformer pad (USCG 1980b). The submerged power line is no longer active, and the transformer and electrical equipment have been removed. Two additional tanks (690 gallons and 540 gallons) are shown southeast of the Light and Fog Signal Building on drawings from 1980 (USCG 1980b) and appear to be connected to fuel oil lines. No other information is available on these tanks and they do not appear on earlier site drawings.

The site is not continuously inhabited, although it is known to be visited by kayakers and other boaters. The area to the east of the site is part of Burrows Island Marine State Park. In 2010, the NWSS assumed custodianship of the Burrows Island Light Station, which is listed on the National Register of Historic Places.

1.3 Site Use

The site is currently an unmanned light station that is owned and operated by the USCG. An automated and unmanned fog signal is in the Light and Fog Signal Building and is currently operating. The USCG conducts periodic maintenance activities at the site (e.g., semiannual visits to inspect and maintain the facility). The NWSS conducts periodic restoration and maintenance work as future custodians of the light station and associated buildings. The NWSS intends to restore and maintain historical structures associated with the site following transfer of the property from the USCG. Long-term uses after USCG divestiture will include expanded visitation and overnight accommodations for guests.

1.4 Previous Environmental Investigations

Multiple investigations and RAs have been conducted at the site. A timeline of these activities and associated documents is presented below:

- *1980*. Removal of 140 cy of PCB-impacted soil from a transformer oil release (USCG 1980a, 1980b).
- *1999*. Removal of the UST located near the OIC Quarters. Corrosion was observed on the bottom of the steel UST and 2 cy of petroleum-contaminated soil were removed from the excavation. One sidewall and one excavation bottom sample were collected and analyzed for diesel-range organics (DRO) and heavy oil (HO). DRO was not detected and HO concentrations were 190 and 240 milligrams per kilogram (mg/kg) from the sidewall and bottom samples, respectively (AGI Technologies 1999).
- *2005*. The Duplex, Light and Fog Signal Building, and Boathouse structures were encapsulated to prevent the continued deterioration of lead-based paint remaining on the structures. Lead-contaminated soil (75 tons) was removed from the immediate area surrounding the Duplex, placed into drums, and transported offsite for disposal. Additional lead impacts greater than 1,000 mg/kg were noted in areas surrounding the Duplex, Light and Fog Signal Building, and the Boathouse (Kellco Services, Inc. 2005).
- *2009.* A Phase II environmental investigation was performed by ERRG, Inc. to assess lead in soil near the Duplex, Light and Fog Signal Building, and Boathouse. Elevated levels of lead were identified at all these locations (ERRG, Inc. 2009).
- *2015*. A soil stabilization study was conducted by Arcadis to assess reducing the leachability of lead impacts in soil using phosphate-based reagents. Soil samples were collected based on x-ray fluorescence (XRF) screening and mixed with reagents to determine the relative impacts on lead leachability. The study concluded that soil amendments were not an effective method to reduce lead leachability for site soil (Arcadis 2015b).

1.5 Site Geology and Hydrogeology

Burrows Island is part of the archipelago that includes the San Juan Islands located in the northern Puget Sound between the Strait of Juan de Fuca and the Strait of Georgia. The San Juan Islands include late Cretaceous thrust faults known as the San Juan thrust system. The San Juan thrust system is divided into five terranes, with Burrows Island located on the Decatur terrane (Brandon 1988). The Decatur terrane is composed of two stratigraphically related sections: the Fidalgo Igneous Complex and the Lummi Formation. Formations at Burrows Island primarily belong to the Fidalgo Igneous Complex, which is a middle-late volcanic Jurassic formation mostly associated with minor conglomerates of sandstone and mudstone, Jurassic pillow lava, and brecciated gabro and diabase (Brandon 1988).

The site has many bedrock outcroppings that consist of oceanic crusts (terranes) and igneous rock (ERRG, Inc. 2009). Soil is present at greater thickness moving east from the shoreline. Shallow soil samples collected in November 2018 primarily consisted of sandy soil near the buildings. Soil characteristics observed tended to be well-graded, with some organic content from surface vegetation based on visual observations.

The elevation at the tree line is approximately 78 feet above mean sea level with a decrease to 45 feet at the cliff edge prior to dropping down to the water surrounding the island. The topography of the site generally slopes to the Rosario Strait. No major surface channels or overland runoff features were identified during sampling conducted in November 2018 (which included light precipitation during the sampling). Most of the shoreline consists of rocky bluffs.

Groundwater is likely not present in a consistent aquifer due to the presence of shallow bedrock. Historically, groundwater collected from a seep located northeast of the main area of the site at the Pumphouse and Spring Cistern was used as a water source for residents of the station. The drainage area that flows into the seep is topographically separated from the main area of the site. No surface water bodies have been documented or observed near the site, other than Puget Sound. There is likely no tidal influence on groundwater at the site because the outcropped bedrock is approximately 40 feet above mean higher high water (as measured at monitoring station 9444900, Port Townsend, Washington [National Oceanic and Atmospheric Administration 2019]).

2 REMEDIAL INVESTIGATION FIELD ACTIVITIES

2.1 Preliminary X-Ray Fluorescence Screening

Arcadis conducted preliminary XRF screening in November 2018 to assess shallow soil for lead using a field XRF instrument and to obtain site information to inform the QAPP and SAP (Arcadis 2018). The XRF screening included the following activities:

- Collected and field screened 419 soil samples using the XRF.
- Collected and analyzed 32 co-located samples for lead using USEPA Method 6010 to determine the correlation between XRF data and laboratory results for lead.
- Collected and analyzed three shallow soil samples for PCBs by USEPA Method 8082.
- Analysis of three samples for toxicity characteristic leaching procedure (TCLP) metals for waste characterization purposes.
- Visual evaluation of site conditions and documentation of accessibility for planning future site work.

Activities and results of the November 2018 preliminary XRF sampling event are summarized in a Field Sampling Memorandum dated November 26, 2018, which is included as Appendix A.

2.2 Comprehensive Site-Wide Soil Sampling and Analysis

A comprehensive RI was performed by Arcadis in March and April 2019 using incremental sampling methodology (ISM) and discrete sampling methods. The RI sampling program was informed by the results of the preliminary XRF screening performed in November 2018 and the results of previous environmental investigations, and was conducted in accordance with the QAPP and SAP (Arcadis 2018) to characterize the lateral and vertical extents of COCs in soil associated with historical activities at the site. Based on previous RIs and RAs, the following constituents are known or suspected to be present in soil:

- *Lead.* Associated with lead-based paint applied to site buildings and other painted structures. Sampling conducted in 2005, 2009 and 2018 indicated lead concentrations in soil greater than 1,000 mg/kg near the Boathouse, Duplex, and Light and Fog Signal Building (Kellco Services, Inc. 2005; ERRG 2009; Arcadis 2019).
- *PCBs*. A release of transformer oil containing PCBs was documented in 1980 with limited removal. Soil concentrations remaining following removal activities were greater than 1 mg/kg (USCG 1980a; USCG 1980b).
- *Diesel and heavy oil petroleum constituents*. Various tanks and piping infrastructure throughout the site. Soil containing petroleum was excavated during the removal of a UST near the OIC Quarters (AGI Technologies 1999).
- *Gasoline petroleum constituents*. Associated with the gasoline storage tank adjacent to the Oil and Paint Storage Building (USCG 1958). There are no documented releases of gasoline from this tank

that are known or recorded in available reports. Based on the results of the RI, gasoline petroleum constituents were not present at the site.

Sample analytical methods that were included in the RI are shown in Table 1. Sample locations are presented on Figures 3 and 4. Field documentation is provided in Appendix B. A photo log depicting RI activities is included in Appendix C.

2.2.1.1 Incremental Composite Sampling for Decision Units

Sampling and chemical analysis for lead were conducted using ISM in general accordance with guidance from the Interstate Technology & Regulatory Counsel (ITRC [2012]) and in accordance with the QAPP and SAP (Arcadis 2018). Discrete samples were collected in areas where limited access prevented ISM sampling for lead and across the site to identify other COCs, as described in Section 2.2.1.3.

As described in the QAPP and SAP (Arcadis 2018), the site was divided into 18 decision units (DUs) based on the results of the XRF screening event conducted in November 2018 (Appendix A). Each DU was selected to represent a location where soil conditions were consistent based on proximity to structures and were subdivided into 30 equally sized areas with a sample location placed at the center of each area. Where possible, soil samples were collected using a hand auger from each of the 30 locations within the DU. An equal volume of soil was taken from each increment and combined to form an incremental composite sample.

Primary incremental composite samples were collected from all 18 DUs from 0 to 0.5 and 0.5 to 1 foot below ground surface (bgs). Additional ISM composite samples were collected at depth intervals greater than 1 foot bgs where XRF screening results suggested elevated levels of lead remained at depths below 1 foot bgs. Select increments from the 0.5 to 1 foot bgs interval (minimum of 20 percent) were analyzed in the field using XRF. Increments for XRF analysis were selected to be spatially representative of the DU. When screening results indicated that average lead concentrations were greater than 200 mg/kg, soil samples were collected from additional depth intervals until XRF results indicated average lead concentrations less than 200 mg/kg or until refusal was encountered. Replicate ISM composite samples (duplicate and triplicate) were collected from discrete points separate from the primary locations from the 0 to 0.5 foot bgs depth interval in four DUs (DU-02, DU-06, DU-08, DU-13). The replicate samples were collected and processed in the same manner as the primary ISM samples.

ISM composite samples were homogenized, placed on ice following collection, and submitted to Onsite Environmental Inc., located in Redmond, Washington (Onsite) for processing and analysis. The samples were processed in accordance with the procedures outlined in the QAPP and SAP (Arcadis 2018). Primary ISM composite samples were analyzed for leachable lead by TCLP when the composite total lead result was greater than 250 mg/kg.

2.2.1.2 Incremental Composite Sampling for Sampling Units

Each area was further divided into two to four sampling units (SUs), for a total of 61 SUs. SU samples were collected by compositing an equal volume of soil from each of the increments within the SU using the same procedures as the ISM composite samples. SU composite samples were collected from the same soil increments as the primary ISM samples and were submitted to the laboratory for analysis pending results of the ISM composite samples. Not all SU composite samples were analyzed in the laboratory. As described in the QAPP and SAP (Arcadis 2018), the SU composite samples were analyzed only when the primary ISM sample results indicated lead concentrations between 200 and 400 mg/kg. Select SU samples were also analyzed for lead leaching by TCLP if the results of at least one of the SUs in a DU was greater than 250 mg/kg. The SU with the highest lead concentration within a DU was analyzed for leachable lead by TCLP, except ISM-06-4-1.5-2.0 and ISM-15-3-0.5-1.0, which could not be analyzed due to insufficient sample volume. Locations and limits of DUs and SUs are shown on Figure 3.

2.2.1.3 Discrete Soil Sampling

Discrete soil samples were collected for laboratory analysis for PCBs and petroleum hydrocarbons based on the location of historical structures and the known or suspected presence of contaminants based on historical documentation. Discrete samples were collected for lead from locations where ISM sampling was infeasible based on access limitations or safety considerations. Sample locations and constituents were established based on historical documentation as outlined in the QAPP and SAP and revised based on the locations of historical utilities identified in the field prior to sampling.

Samples were collected from three locations around each of the known former ASTs and UST from the surface (0 to 0.5 foot bgs) and the deepest interval that could be collected before encountering refusal. Based on historical documentation, the UST associated with the OIC Quarters was removed and over-excavated to a depth of 5 feet bgs. One of the sample locations was collected within the backfill material, based on field observations of soil conditions. Due to the larger footprint of the 10,000-gallon AST, samples were collected from 12 locations. Samples were collected from 14 locations along the former petroleum piping in accordance with Ecology guidance (Ecology 1991). Where the pipeline was visible, samples were collected from soil immediately below the pipeline. If the pipeline was not identified, samples were collected at the maximum depth that could be obtained prior to refusal. Based on historical documentation, the primary fuels handled and stored at the site were diesel and fuel oil. Samples were analyzed for DRO and HO. Samples collected near the former gasoline storage tank associated with the Oil and Paint Storage Building were also analyzed for gasoline range organics. Samples were field screened using a photo ionization detector (PID) and submitted for analysis as outlined in the QAPP and SAP (Arcadis 2018).

Samples were collected to evaluate PCBs in soil surrounding the former transformer. Due to concrete fill encountered in the field, the quantity and location of samples were modified. Samples were collected from 13 locations at two depth intervals (0 to 0.5 foot bgs and the deepest interval that could be obtained prior to refusal). Locations were selected to encompass the perimeter of the concrete area. Samples were field screened using a PID and submitted to the laboratory for analysis as outlined in the QAPP and SAP (Arcadis 2018). Discrete soil sample locations are shown on Figure 4.

2.2.2 Sediment Sampling

Two discrete sediment samples were collected from the sandy beach located to the northeast of the Boathouse to evaluate the potential contribution of leachable lead from the site to sediment. The samples were collected from the south side of the beach adjacent to the bluff leading to the site. Sample SED-01 was collected near the tide line and SED-02 was collected as far away from the tide line as possible in this location. Sediment samples were collected and placed into sealable plastic bags and held under refrigeration prior to submittal to Onsite for analysis of total lead. The locations of the samples are shown on Figure 4.

2.2.3 Lead Encapsulation Assessment

A visual survey of the current condition of encapsulation treatments on the Duplex, Boathouse, and Light and Fog Signal Building was completed during the field event. Areas of weathering or failure, including chipping, flaking, and exposure of the underlying wood and paint were noted and documented. Additional details are provided in Section 2.3.3.5.

2.2.4 Waste Management

Soil remaining from discrete and ISM composite samples was containerized in 5-gallon pails and stored in the basement of the Duplex. Decontamination water was also collected and containerized in 5-gallon pails and stored in the basement of the Duplex. Fourteen 5-gallon pails of soil and two 5-gallon pails of decontamination water were generated. Six 5-gallon pails of soil were already stored onsite in the basement of the Duplex and were generated during the initial mobilization completed in November 2018. Waste characterization samples were collected from the decontamination water and submitted to Onsite for analysis in accordance with the QAPP and SAP. Waste generated during sampling activities will be transferred to an approved offsite disposal facility licensed and permitted to manage the waste in accordance with state and federal regulations.

2.3 Sampling and Analytical Results

2.3.1 Quality Analyses

Sampling and analysis of soil was conducted using standard USEPA or state-approved methods. All quality control measures were carried out as described in the QAPP and SAP (Arcadis 2018) and validated as follows:

- *Field triplicate samples*. Triplicate ISM samples were collected from 0 to 0.5 foot bgs in four DUs (DU-02, DU-06, DU-08, DU-13). Sample locations for duplicate and triplicate ISM samples were collected from the same 30 equal-spaced grids, but at alternate locations from the primary ISM samples.
- *Field duplicate samples*. Field duplicates were collected from 11 discrete sample locations in accordance with the QAPP and SAP (Arcadis 2018) to assess variability attributable to collection, handling, shipment, storage, and laboratory handling and analysis.
- *Matrix spike (MS) and matrix spike duplicate (MSD) samples*. MS and MSD samples were analyzed to measure interference from the sample matrix on the recovery of the target analytes. MSs and MSDs were performed in the laboratory at a frequency of one sample per batch or one sample per 20 samples, whichever was more frequent, and held to percent recovery standards.
- *Field rinsate blanks*. Equipment rinsate samples were collected daily from decontaminated reusable equipment (e.g., hand trowel, hand auger) to identify possible contamination from the sample environment or equipment. No analytes were detected at concentrations greater than the reporting limit or practical quantitation limit; therefore, no contamination was associated with the blank samples.

Laboratory data reports were reviewed and validated in accordance with the Superfund Contract Laboratory Program National Functional Guidelines for Data Review (USEPA 2017a, 2017b) and the quality assurance and quality control criteria specified in the QAPP and SAP (Arcadis 2018). Data quality flags were revised or added based on the validation review. The overall data quality was within acceptable ranges. The higher (most conservative) of the two values for duplicate results was used for screening and evaluation against cleanup standards. Laboratory analytical reports and data validation reports are provided in Appendix D and E, respectively.

2.3.2 Deviations from Sampling and Analysis Plan

Investigation activities were substantially completed in accordance with the QAPP and SAP (Arcadis 2018). Select samples could not be collected or the sample locations were revised based on field conditions encountered during the field event. As noted below, the deviations from the SAP were primarily associated with sampling refusal, which limited sample collection or required sampling locations to be revised in the field. Deviations that were documented in the field are recorded in the field documentation provided in Appendix B and discussed below.

Shallow refusal was encountered throughout the site as a result of bedrock outcroppings generally located adjacent to the shoreline, cobbles in soil present in the eastern portion of the site away from the shoreline, and concrete materials encountered from historical structures or other site activities. As a result, refusal was encountered in at least one increment in all DUs except DU-16. When refusal was encountered, additional step-out borings were attempted within 2 feet of the original increment location and repeated up to two times. When the full depth of a sample interval could not be obtained due to refusal, the partial increment was collected and processed. When refusal prevented the collection of soil (when refusal was encountered at the beginning of a depth interval or shallower), the ISM composite sample was prepared with less than 30 increments. In total, 17 of the 49 total ISM composite samples contained fewer than 30 increments due to refusal. The number of ISM increments that were collected from each DU and depth interval are summarized in Table 2. Increment locations where refusal was encountered are shown on the Figures F-1 through F-7 and Table F-1 in Appendix F.

Only two increment locations in DU-06 could be advanced deeper than 2 feet bgs. Refusal was encountered at all other locations prior to reaching 2 feet bgs. Select XRF results indicated the average concentration of lead in soil from 1.5 to 2 feet bgs was greater than 200 mg/kg. Soil borings were attempted at 2 to 2.5 feet bgs but samples could only be obtained in two of the 30 increment locations. Because additional ISM samples could not be obtained, discrete samples were collected from the two increment sample locations at the deepest interval that could be obtained before refusal. Samples SB-06-10 and SB-06-22 were collected from 2 to 2.5 and 3 to 3.5 feet bgs, respectively, and submitted for analysis of total lead in accordance with the procedures for discrete samples outlined in the QAPP and SAP (Arcadis 2018).

Concrete was encountered near the former transformer area to the south of the Light and Fog Signal Building. Three ISM sample locations in DU-09 (DU-09-24, DU-09-25, and DU-09-26) were initially located on concrete and were relocated to the south outside of the concrete area. Discrete samples identified for evaluating the PCB area were relocated around the perimeter of the concrete area. In total, 16 discrete samples were collected from the perimeter of the concrete area as a substitute for the sample locations outlined in the QAPP and SAP (Arcadis 2018). Updated locations for the discrete samples are shown on Figure 4.

ISM increment locations obstructed by water tank platforms present in DU-16 and DU-17 were relocated to allow for safe access and sampling. Increment locations were placed in the closest possible location outside the immediate footprint of the platforms.

The locations of three discrete samples associated with the petroleum pipelines were revised in the field to be located on or adjacent to the associated pipelines based on visual observations and results of the utility locate performed prior to sampling. The pipeline connecting the tank near the Light and Fog Signal Building to the 10,000-gallon tank was partially intact and SB-PL-09 and SB-PL-10 were relocated to the actual layout of the pipe, which was further south than indicated on historical figures based on the utility locate markings. The pipeline terminated near SB-PL-09 and no indications of the connection to the tank near the Light and Fog Signal Building were present. SB-PL-08 was relocated along the projected line between the end of the pipeline and the location of the tank. The samples were either collected underneath the pipeline if it was visible, or at the maximum depth that could be sampled in accordance with the QAPP and SAP (Arcadis 2018).

ISM sampling in DU-18 was determined based on field conditions due to sampling obstructions rather than at pre-determined locations. Increment locations were marked out over the area that could be safely accessed and were recorded using a global positioning system. The footprint of the former building was generally accessible and was sampled. The area between the west side of the former structure and the helicopter pad was sloped, heavily vegetated and could not be safely accessed for sampling. The limits of the area that was sampled in DU-18 are shown on Figure 3.

2.3.3 Results

2.3.3.1 Incremental Composite Sample Results

The area surrounding the Boathouse contained two DUs (DU-01 and DU-02), with replicate sampling performed at DU-02. Three ISM samples were collected from DU-01 and four were collected from DU-02 (two primary samples and two replicates), with a maximum depth of 1 to 1.5 feet bgs in DU-01. Analytical results indicated that there were no exceedances in either of the DUs in the area surrounding the Boathouse. Concentrations in DU-01, which was closest to the Boathouse, ranged from 43 to 190 mg/kg with the highest concentration present in the shallow sample (0 to 0.5 foot bgs) and decreasing with depth.

DU-02 had both primary and replicate ISM samples collected from 0 to 0.5 foot bgs, with concentrations of 61, 50, and 85 mg/kg. The lead concentration from 0.5 to 1 foot bgs in DU-02 was 35 mg/kg. Refusal was encountered in one ISM increment location at less than 0.5 foot bgs and in five locations at less than 1 foot bgs.

DU-03 covers the large grassy area to the west of the Boathouse and north of the former Oil and Paint Storage Building. No current or historical structures are present in this area. Two ISM samples were collected with lead concentrations of 68 mg/kg (0 to 0.5 foot bgs) and 30 mg/kg (0.5 to 1 foot bgs).

The area surrounding the OIC Quarters contained DU-04, DU-05, and DU-18. The ISM samples from DU-04 contained lead concentrations of 280 and 74 mg/kg at 0 to 0.5 and 0.5 to 1 foot bgs, respectively.

Analysis of the four SU composite samples from 0 to 0.5 foot bgs in DU-04 contained lead concentrations less than 250 mg/kg for all subunits except SU-4 (280 mg/kg). Lead concentrations in the two ISM composite samples collected from DU-05 were 64 and 56 mg/kg. The 0 to 0.5 foot bgs sample from DU-18 contained lead at a concentration of 220 mg/kg. Based on the results of the primary ISM sample, the SU composite samples were analyzed. Only SU-1 contained lead at a concentration greater than 250 mg/kg. The ISM sample collected from 0.5 to 1 foot bgs in SU-18 contained lead at a concentration of 180 mg/kg.

DU-06 and DU-07 surround the former Oil and Paint Storage Building. Six ISM composite samples were collected in DU-06, including replicate samples from 0 to 0.5 foot bgs. Lead concentrations in the primary, replicate B, and replicate C ISM samples were 1,300, 1,500, and 2,000 mg/kg, respectively. ISM samples from deeper sample intervals contained lead at concentrations of 630 mg/kg (0.5 to 1 foot bgs), 390 mg/kg (1 to 1.5 feet bgs), and 400 mg/kg (1.5 to 2 feet bgs). Refusal was encountered in nine locations at less than 0.5 foot bgs, eight locations at less than 1 foot bgs, and seven locations at less than 1.5 feet bgs. Only two locations could be advanced deeper than 2 feet bgs. Since an ISM composite sample could not be generated, discrete samples SB-06-10 and SB-06-22 were collected from increment locations DU-06-10 and DU-06-22 at depths of 2 to 2.5 and 3 to 3.5 feet bgs, respectively. Lead concentrations were 1,800 mg/kg in SB-06-10 and 9.7 mg/kg in SB-06-22.

SU composite samples were collected from DU-06 at 1 to 1.5 and 1.5 to 2 feet bgs and analyzed. Lead concentrations were greater than 600 mg/kg in the samples from 1 to 1.5 feet bgs in SU-3 and SU-4, and the 1.5 to 2 feet bgs sample from SU-4. Lead concentrations in the other SU samples were less than 200 mg/kg. Analytical results of the two ISM samples collected from DU-07 indicate lead concentrations of 470 mg/kg from 0 to 0.5 foot bgs and 62 mg/kg from 0.5 to 1 foot bgs. Refusal was encountered in five increment locations in DU-07 at depths less than 0.5 foot.

The area surrounding the Light and Fog Signal Building contained two DUs (DU-08 and DU-09). Primary, replicate B, and replicate C ISM samples collected from 0 to 0.5 foot bgs in DU-08 contained lead concentrations of 1,100, 1,300, and 1,300 mg/kg, respectively. Deeper samples collected in DU-08 contained lead concentrations of 160 mg/kg (0.5 to 1 foot bgs), and 540 mg/kg (1 to 1.5 foot bgs). Refusal was encountered at depths less than 0.5 foot bgs in three locations and less than 1 foot in eight locations, which reduced the total number of increments in the ISM samples from those intervals.

Lead concentrations in the two ISM samples from DU-09 were 150 mg/kg (0 to 0.5 foot bgs) and 75 mg/kg (0.5 to 1 foot bgs). As described in Section 2.3.2, concrete that was present to the south of the Light and Fog Signal Building inhibited sampling in some increment locations. Five increment locations could not be sampled and there were no viable alternative locations without substantially expanding the DU boundary. Refusal was encountered at depths less than 0.5 foot in an additional eight increment locations.

DU-10 was located between the Light and Fog Signal Building and the Duplex. No current or former structures are located within the DU. Lead concentrations in the two ISM samples collected from DU-10 were 57 mg/kg (0 to 0.5 foot bgs) and 19 mg/kg (0.5 to 1 foot bgs). Refusal was encountered in four increment locations at depths of 0.5 foot or less.

The area surrounding the Duplex contained three DUs (DU-11, DU-12, and DU-13). Eight ISM samples were collected, including two replicates from DU-13. The ISM composite samples from 0 to 0.5 foot bgs adjacent to the Duplex in DU-11 contained a lead concentration of 450 mg/kg. The ISM sample from the 0 to 0.5 foot bgs interval in DU-12 had a lead concentration of 280 mg/kg. The remaining samples from DU-11, DU-12, and DU-13 contained lead at concentrations of 200 mg/kg or less. Analysis of the SU composite samples from the 0 to 0.5 foot bgs interval in DU-12 indicated that lead concentrations were greater than 250 mg/kg in SU-1, SU-2, and SU-3. The sample from SU-4, located west of the Duplex, contained a lead concentration of 170 mg/kg and was the only SU sample less than 250 mg/kg.

Lead concentrations in DU-14, which contained the 10,000-gallon fuel oil AST, were 350 mg/kg (0 to 0.5 foot bgs) and 130 mg/kg (0.5 to 1 foot bgs). Analytical results for the two SUs showed lead concentrations of 300 and 420 mg/kg from 0 to 0.5 foot bgs. One increment could not be sampled from the 0.5 to 1 foot bgs interval due to refusal.

Three ISM samples were collected from DU-15, which included the Firehouse Pump Building. Lead concentrations from 0 to 0.5 foot and 0.5 to 1 foot bgs were 160 and 260 mg/kg, respectively. An additional ISM sample was collected from 1 to 1.5 feet bgs based on field screening and contained 72 mg/kg of lead. The SU samples from 0.5 to 1 foot bgs were analyzed and lead concentrations in SU-1, SU-2, and SU-4 were less than 50 mg/kg. The lead concentration in SU-3 was 6,600 mg/kg. One increment location could not be sampled because of the presence of concrete. Refusal was encountered in another 14 locations at depths less than 1 foot bgs.

The former water tanks located east of the Duplex were included in DU-16 and DU-17. Lead concentrations in the ISM samples from 0 to 0.5 foot and 0.5 to 1 foot bgs were less than 100 mg/kg in both DUs. Increment locations were relocated as noted in Section 2.3.2. Analytical results for ISM and SU samples are summarized in Tables 3 and 4 and shown on Figures 5 through 8.

2.3.3.2 Waste Characterization Sampling

Primary ISM and SU composite samples analyzed for waste characterization by TCLP contained leachable lead concentrations ranging from the detection limit to 0.97 milligram per liter (mg/L). Lead concentrations in all samples were less than the dangerous waste characteristic of 5 mg/L (Washington Administrative Code 173-303-090). Analytical results are summarized in Tables 3 and 4.

2.3.3.3 Discrete Sample Results

Discrete samples collected for lead near the Pumphouse and Spring Cistern were collected from three locations and two depth intervals on the north and south sides of the structure in soil adjacent to the concrete building pad. The maximum detected lead concentration was 110 mg/kg in the 0 to 0.5 foot bgs sample from SB-106-2. The remaining five samples analyzed for lead near the Pumphouse and Spring Cistern had concentrations less than 50 mg/kg. Analytical results for lead samples are presented in Table 5a and sampling locations and results are shown on Figure 9.

Discrete sampling for petroleum constituents was performed at locations of existing and former tanks and pipeline. Concentrations of DRO and HO varied, but were generally less than the MTCA Method A cleanup level of 2,000 mg/kg, with the exception of SB-112-6 located near the former 10,000-gallon fuel oil AST and SB-107-3 located adjacent to the tanks located south of the Firehouse Pump Building. Near the 10,000-gallon fuel oil AST, DRO and HO concentrations ranged from the detection limit up to 2,000 and 2,700 mg/kg. The maximum concentrations for both compounds were detected in the sample from 0 to 0.5 foot bgs in SB-112-6. Concentrations were lower in the sample collected from 1 to 1.5 feet in SB-112-6, with DRO and HO concentrations of 240 and 150 mg/kg. All other sample results were at or less than 1,000 mg/kg for both DRO and HO.

DRO and HO were detected in all 13 samples from the tanks located south of the Firehouse Pump Building. Concentrations of DRO ranged from 130 to 2,700 mg/kg and HO ranged from 300 to 2,900 mg/kg. The sample collected from 0 to 0.5 foot bgs in SB-107-3 contained DRO and HO at concentrations of 2,700 and 2,900 mg/kg. The deeper sample collected in SB-107-3 from 0.5 to 1.0 foot bgs contained HO at a concentration of 2,300 mg/kg. Concentrations of DRO and HO were equal to or less than 1,300 mg/kg in all other samples from this area.

Samples with concentrations of DRO and HO exceeding the relevant MTCA Method A cleanup levels were analyzed for total petroleum hydrocarbon fractions; benzene, toluene, ethylbenzene, and xylene (BTEX); and semivolatile organic compounds. No constituents exceeded relevant MTCA Method A cleanup levels for the additional analytes. Analytical results for these constituents are presented in Table 5b and shown on Figure 10.

Samples collected along the pipelines, including the ship to shore connection to the 10,000-gallon fuel oil AST and the connections to various day tanks and buildings, contained DRO and DO at concentrations of 210 mg/kg or less. No sample locations contained either constituent at concentrations greater than the MTCA Method A cleanup levels.

Detected concentrations of DRO and HO in samples collected near the tanks located near the OIC Quarters and the Oil and Paint Storage Building were also less than the Method A cleanup levels. DRO concentrations ranged from the detection limit to 120 mg/kg in samples from the tank near the OIC Quarters and HO was between 69 and 400 mg/kg. DRO concentrations were 150 mg/kg or less in samples associated with the tank located adjacent to the Oil and Paint Storage Building. HO concentrations were between 100 and 860 mg/kg. Samples from the former tank near the Oil and Paint Storage Building were also analyzed for gasoline range organics based on historical uses, with concentrations ranging from nondetect to 18 mg/kg.

Total PCB concentrations detected in soil samples collected around the perimeter of the concrete area and the former transformer ranged from 0.11 to 45 mg/kg. Concentrations greater than the MTCA Method A cleanup level of 1 mg/kg were detected in at least one sample from nine of 13 sample locations. Concentrations greater than the MTCA Method A cleanup level ranged from 1.2 to 4.9 mg/kg, with the exception of SB-101-5 (0 to 0.5 foot bgs), which contained a total PCB concentration of 45 mg/kg. Soil concentrations greater than 1 mg/kg were present in the 0 to 0.5 foot bgs interval at sample locations SB-101-4, SB-101-5, SB-101-6, SB-101-7, SB-101-8, and SB-101-9. Samples collected from 0 to 0.5 foot bgs and deeper intervals at SB-101-12, SB-101-13, and SB-101-14 exceeded 1 mg/kg. The deeper sample collected at SB-101-16 from 2 to 2.5 feet bgs also exceeded 1 mg/kg total PCBs with a concentration of 3.8 mg/kg, although the concentration of total PCBs in the shallow sample was less than 1 mg/kg. Aroclor 1260 was the only PCB constituent that was detected in any of the soil samples. Soil samples from the former transformer area were also analyzed for mineral oil. Concentrations ranged from the detection limit to 930 mg/kg and were less than the MTCA Method A cleanup level of 4,000 mg/kg. Analytical results are presented in Tables 5a and 5c. Sample locations and results are presented on Figure 11.

2.3.3.4 Sediment Sample Results

Lead was not detected in either of the sediment samples collected northeast of the boathouse. The laboratory report for sediment samples is presented in Appendix D.

2.3.3.5 Lead Encapsulation Assessment

Visual assessment of the lead encapsulation on the Duplex, Light and Fog Signal Building, and Boathouse indicate that most painted surfaces are intact and show minimal signs of weathering or deterioration. The trim around doors and window frames was the primary area where signs of weathering or flaking was observed. In addition to natural weathering, damage to the encapsulation was noted in areas that have sustained physical damage, including the porches on the west side of the Duplex. A photo log showing details of areas where the encapsulation is flaking or deteriorating is included in Appendix G.

3 CONCEPTUAL SITE MODEL

The results of soil sampling completed during the RI confirmed that lead, PCBs, DRO, and HO are present in soil at the site. These constituents are likely the result of historical site use related to the buildings and infrastructure developed in support of lighthouse operations. This section discusses the source areas, extents, fate and transport, and potential receptors and pathways for these constituents.

3.1 Contaminants of Concern and Potential Source Areas

Lead impacts are primarily a result of weathering and flaking of lead-based paint that was historically applied to structures at the site. Previous investigations documented the presence of elevated levels of lead in shallow soil around the former and existing structures. Sample results from the 2019 RI confirmed the presence of lead in shallow soil at concentrations greater than the MTCA Method A cleanup level of 250 mg/kg around the Duplex, Light and Fog Signal Building, Oil and Paint Storage Building, Firehouse Pump Building, and 10,000-gallon fuel oil AST. The spatial distribution of lead concentrations in soil demonstrate that concentrations generally decrease with distance from the buildings and soil depth, suggesting that the physical weathering and flaking of lead-based paint from the buildings is the primary source of lead in the soil.

Gasoline, diesel, and fuel oil were historically used and stored onsite in tanks and transferred from ships to the storage tanks via underground pipelines, as detailed in Section 1.2. There is no historical documentation of gasoline, diesel, or fuel oil releases at the site. However, petroleum-contaminated soil was documented during removal of the UST near the OIC Quarters (AGI Technologies 1999). Soil sampling conducted during the 2019 RI identified two locations with concentrations of DRO and HO underneath the former 10,000-gallon fuel oil AST and adjacent to the tanks located near the Firehouse Pump Building. BTEX and carcinogenic polyaromatic hydrocarbons were not detected in locations with petroleum impacts. None of the tanks remain in place and there was no visual evidence of residual source material in soil. The extent of petroleum-contaminated soil is limited and does not indicate that substantial petroleum releases occurred near the former tanks and piping.

Previous investigations have documented the presence of PCBs in soil near the transformer previously located south of the Light and Fog Signal Building. A spill at this transformer was documented in 1980 (USCG 1980a, 1980b). Sampling conducted as part of the 2019 RI found PCB concentrations exceeding the MTCA Method A cleanup level (1 mg/kg) surrounding the concrete area where the transformer and remedial excavation were located. Because no other documented sources of PCBs are known at the site, the residual impacts are likely present from the transformer oil spill in 1980.

The roof tiles of the Duplex may be comprised of asbestos cement tiles. These potential asbestos tiles are not considered hazardous as long as they are undamaged, as intact roof tiles would not release asbestos into the environment. Damaged tiles could present an exposure risk for people accessing the site. While the material is suspected to contain asbestos, the composition is not currently known.

3.2 Media Affected

The impacted media is limited to shallow soil in the upland portion of the USCG property. There is no surface water at the site except for the Puget Sound, which surrounds the island. Groundwater was not encountered during the 2019 RI and shallow bedrock was present over much of the western portion of the site. Bedrock outcroppings are visible adjacent to the shoreline along the west and north sides of the site, and were encountered at shallow depths (i.e., less than 2 feet) in the areas near the Lighthouse and Fog Signal Building and the Oil and Paint Storage Building. The presence of groundwater in bedrock was not evaluated during the 2019 RI but is unlikely to be present as a competent aquifer that could be beneficially used. The ground surface slopes upward toward the east and bedrock was generally not observed in shallow borings, although refusal on cobbles or other material was encountered.

The coastline of the island comprises steep cliffs and a rocky coastline. Two small sandy beaches were noted during the initial investigation and are located northeast of the site. The observed beaches are not located adjacent to historical structures and are not in areas where surface water runoff from source areas is possible. Given that transport of contaminants by surface runoff is highly unlikely at these locations and that these areas are not expected to be influenced by flaking or chipping paint from historical structures, it is unlikely that elevated lead concentrations are present in sediment at these locations. Based on discussions with USCG and USEPA, two sediment samples were collected from the beach nearest to the site and did not contain detectable concentrations of lead.

3.3 Contaminant Fate and Transport

Lead is relatively immobile and persistent in soil. Analytical results from the 2019 RI demonstrate that lead impacts are generally present in the areas immediately surrounding current or former structures that were treated with lead-based paint and have not migrated to areas of the site where structures are not present. Transport of lead may occur from wind or by erosion of soil particles. Soil that is present in areas that are vegetated or impermeable (sidewalks, helicopter pad) is unlikely to be mobilized by wind or erosion.

Heavy-end petroleum contaminants from fuel oil, diesel, or PCB-containing transformer oil are expected to adhere to soil particles and have relatively low mobility in soil. Petroleum hydrocarbons are readily degraded by naturally occurring microorganisms in the environment and typically diminish over time through biodegradation and volatilization. PCBs are persistent in the environment and do not significantly degrade through time. Primary transport mechanisms for hydrocarbons and PCBs include erosion of shallow impacted soil by wind or water. Analytical data from the 2019 RI indicate that these constituents are present near the anticipated source areas and migration away from these areas has been limited.

Potential asbestos from the roofing material could be transferred to soil or other media if the tiles are damaged. While it is not known if the potential asbestos material is friable, there is a risk of exposure to site users if the roof continues to deteriorate.

3.4 Potential Receptors and Pathways

Potential human receptors to COCs at the site include site workers and visitors, which are currently limited by low occupancy due to the difficultly accessing the site. The NWSS will restore the site to a condition that will allow guests to stay onsite for short periods of time. Potential exposure pathways to humans include direct contact with contaminated soil and inhalation of contaminated dust particles. Groundwater, if any, is likely not present at a quantity that could be beneficially used due to the presence of shallow bedrock. The spring at the Pumphouse and Spring Cistern building that was historically used as a water source is located in a drainage area that is topographically separated from the main portion of the site where contaminant migration is highly unlikely. There are no surface water bodies present at the site, other than Puget Sound, which is saline and not suitable for potable uses. Areas of sediment near the site are limited due to the rocky nature of the coastline. The sandy area located to the northeast of the Boathouse is the only observable area with sediment present along the shoreline adjacent to the site. Samples collected in this area did not contain detectable concentrations of lead. Based on these considerations, there is no significant exposure pathway from groundwater, surface water, and sediment. The terrestrial ecological evaluation conducted by Ecology in 2013 identified the following potential terrestrial ecological receptors in the upland portion of the site (Ecology 2013):

- Soil-associated invertebrates
- Vascular plants
- Ground-feeding birds (robin)
- Ground-feeding small mammal predators (shrew)
- Herbivorous small mammals (vole).

Exposure to site contaminants by these potential ecological receptors is possible given the presence of COCs in shallow soil.

3.5 Conceptual Site Model Conclusions

The results of the 2019 RI support that lead, PCBs, DRO, and HO are present in site soil at concentrations greater than the MTCA Method A cleanup levels. The primary receptors are site visitors and animals that may come into direct contact with contaminated soil. Groundwater is not present in quantities that could be beneficially used at the site and Puget Sound is the only nearby surface water body. Sediment deposits near the site are limited due to the presence of bedrock outcroppings. Constituents were spatially correlated with soil located near source areas, indicating that mobility to other areas and media are limited.

4 FEASIBILITY STUDY AND EVALUATION

4.1 Applicable Local, State, and Federal Laws

The primary state and federal regulations regarding hazardous materials in soil that are applicable to the site are the MTCA and the Toxic Substances Control Act (TSCA). Additional advisories, guidance documents, and training materials may be considered. Cleanup standards under the MTCA may be established using standards developed under Method A for unrestricted site land uses as outlined in WAC 173-340-900. As part of the process to establish cleanup levels, a terrestrial ecological evaluation (TEE) must be completed to evaluate the potential impact of hazardous substances on ecological receptors. A TEE was completed for the site by Ecology in September 2013 and did not identify any additional cleanup levels that are more stringent that those outlined in WAC 173-340-900. The following MTCA Method A cleanup levels for unrestricted land use are proposed for the site COCs as established under MTCA Method A, Table 740-1:

- Lead – 250 mg/kg
- PCB mixtures – 1 mg/kg
- DRO – 2,000 mg/kg
- HO – 2,000 mg/kg.

ARARs that were considered are summarized in Appendix H.

4.2 Remedial Action Objectives

Remedial action objectives (RAOs) are media-specific, operable-unit specific, or site-specific goals for protecting human health and the environment. The RAOs for soil at the site are summarized below:

- Prevent exposure of humans and ecological receptors to COCs in soil at concentrations greater than the MTCA Method A cleanup levels identified in Section 4.1.
- Comply with ARARs at the site.

4.3 Points of Compliance

The points of compliance, or locations where the cleanup levels established in Section 4.1 must be met, will be standard points of compliance for soil under an unrestricted land use scenario in accordance with WAC 173-340-740(6)(d). MTCA points of compliance were selected as the relevant and appropriate criteria because MTCA Method A cleanup levels have been selected as the cleanup levels. The MTCA Method A cleanup levels defined in Section 4.1 will be applicable for soil from ground surface to 15 feet bgs throughout the site. As noted above, bedrock is typically encountered at or several feet bgs throughout the site.

4.4 Estimated Remedial Quantities

Proposed remedial treatment areas and depths were established by comparing the analytical results from the 2019 RI to the MTCA Method A cleanup levels. For DUs where ISM lead concentrations were greater than the MTCA Method A cleanup level, the DU is expected to be remedied to the maximum depth where lead concentrations are greater than 250 mg/kg. In DUs where SU samples were evaluated, the results were incorporated into the proposed remedial extents and only SUs with lead concentrations greater than 250 mg/kg are included. Remedial limits also include locations where XRF or discrete samples collected during the November 2018 field event were above 250 mg/kg and outside of the limits of DUs or SUs identified for remediation. Locations and sample results from the November 2018 XRF screening and discrete sampling are included on Figure 12. Analytical results are provided in Appendix A.

Discrete soil sample locations with concentrations of PCBs, DRO, and HO greater than the MTCA Method A cleanup levels are included at an estimated extent where the lateral and vertical extents are not delineated based on the 2019 RI data. The total estimated volume of soil above MTCA Method A cleanup levels is conservatively estimated to be approximately 1,260 cy. This estimate assumes that removal under the helicopter pad will be required at a depth of 1 foot bgs, although sampling was not completed during the 2019 RI due to access limitations. The estimate also does not account for shallow bedrock, which may be encountered at depths shallower than the proposed removal depths. A summary of the estimated removal areas, depths, and COCs is presented in Table 7.

Approximately 410 cy of the total estimated soil volume greater than MTCA Method A cleanup levels contains PCBs based on the results of the 2019 RI sampling. Concrete present within the PCB impacted area is included in the estimated volume. The lateral extents were conservatively estimated in areas where sample results did not delineate soil impacts greater than MTCA Method A cleanup levels.

Lead-based paint present on the Duplex, Boathouse, and Light and Fog Signal Buildings were previously encapsulated, but have deteriorated and were observed to be flaking or damaged in some areas. Based on the results of the survey completed during the 2019 RI activities, approximately 5 to 10 percent of the building surface may require additional treatment or removal of lead-based paint. For the FFS, the surface area requiring treatment is estimated to be 800 square feet. Conditions of the buildings were evaluated during the 2019 RI and are documented in the photo log in Appendix G.

Potential asbestos roofing materials are assumed to be present on the Duplex. The estimated area of roofing that may require removing and replacement is 4,000 square feet. This estimate assumes that all the roofing material would need to be replaced.

5 IDENTIFICATION AND SCREENING OF TECHNOLOGIES

This section identifies and describes the general response actions (GRAs), or categories of remedial alternatives, that are broadly applicable to the site based on the nature and extent of contamination present. The GRAs presented below may satisfy the RAOs defined in Section 4.2, either individually or when combined. A general definition of the GRAs is presented below and the most applicable and appropriate remedial technologies that fall within each GRA are described in Section 5.3. The identification and screening of GRAs and technologies is in general accordance with USEPA guidance on the development and screening of alternatives (USEPA 1988).

5.1 Description of General Response Actions and Identification of Applicable Remedial Technologies

- *No action*. No active or passive remedial activities will be implemented, and no institutional controls will be enacted. Site conditions will not change from what is currently present.
- *Institutional controls*. An administrative action, such as a land use restriction, will be enacted to reduce or eliminate human exposure pathways to contaminants. An example of this GRA for the site is an environmental covenant that will preclude the disturbance of soil in situ or within a constructed repository. This action will likely be combined with one or more of the physical actions described below.
- *Capping/Containment*. The potential spread of contaminated media will be addressed through the installation of a physical barrier. An example of this GRA for the site is capping soil that contains concentrations of site COCs exceeding MTCA Method A cleanup levels (specifically lead) to mitigate direct exposure to contaminated media.
- *Excavation*. The potential spread of contaminated media will be addressed through physical removal combined with either containment or disposal at an offsite facility designed and licensed to contain the contaminated media. An example of this GRA for the site is the excavation of soil that contains concentrations of site COCs exceeding MTCA Method A cleanup levels and transfer to an onsite repository constructed to manage the contaminated soil or an approved offsite facility for disposal.
- *In-Situ Stabilization/Treatment*. The potential spread of contaminated media will be addressed through physical, chemical, thermal, or biological processes. An example of this GRA for the site is the in-situ chemical stabilization of soil that contains concentrations of site COCs (specifically lead) exceeding MTCA Method A cleanup levels.

5.2 Remedial Technologies Evaluation Criteria

Technology types for each of the GRAs identified above were evaluated considering site-specific conditions including the type, distribution, and volume of contaminated soil at the site, and with the RAOs discussed in Section 4.2. The preliminary screening criteria include effectiveness, implementability, and relative cost. The basis for applying each of these criteria in the evaluation of individual technologies is described below:

- *Effectiveness*. This evaluation focused on the potential effectiveness of each alternative in remediating lead, petroleum, and PCB-contaminated soil and in meeting the RAOs. Specific information considered included types and levels of contamination, the volume and areal extent of impacted soil, and the time to achieve remediation goals. Each alternative was classified as low, moderate, or highly effective.
- *Implementability*. This evaluation rated the relative degree of technical implementability and feasibility of implementing the technology or alternative. Aspects considered included any substantive requirements of potential permits for actions; availability of treatment, storage, and disposal services; and availability of necessary equipment and skilled workers to implement the technology. The implementability of each technology was classified as easy, moderate, or difficult to implement.
- *Cost*. The cost evaluation was based on engineering judgement, and each alternative was evaluated in relation to other alternatives of the same technology type. Both capital and operating costs were considered. The cost of each technology was classified as low, medium, or high.

5.3 Preliminary Screening of Technologies

The following remedial technologies were selected for initial screening in the FFS to evaluate potential effectiveness, implementability, and relative costs in meeting the RAOs. Technologies that would not meet the RAOs or would clearly be ineffective or non-implementable were not considered for further evaluation in the FFS.

5.3.1 No Action

No action is the baseline approach to which other technologies are compared. Under this approach, no further RAs will be taken to address site soil and achieve the RAOs. No new engineering or institutional control measures will be implemented, and no additional monitoring will be conducted. This option assumes physical conditions at the site will remain unchanged. If no additional actions are completed at the site, the RAOs will not be met; however, no action provides a baseline for comparison with other options and technologies. No action is retained for more detailed evaluation and for comparison to the other technologies per CERCLA guidance. There are no anticipated costs for this option.

5.3.2 Paint Encapsulation/Treatment

Source control measures are intended to remove or treat contaminants present in building materials that are present at the site, primarily lead-based paint. Measures may include application of coatings designed to encapsulate the surface material and prevent deterioration, removal and replacement of building components, or physical removal of contaminated materials. Previous remedial work at the site included encapsulation of lead-based paint present on the buildings to mitigate further deterioration or flaking of paint into soil. Source control measures should effectively mitigate further contamination of soil due to deterioration and flaking of paint but will not reduce contamination already present in soil. Source control measures are widely used to successfully mitigate lead-based paint and can be implemented at the site. Costs depend on the type of source control measures implemented but are expected to be relatively low for encapsulation. Removal and replacement of building materials will incur higher costs.

5.3.3 Capping

Capping includes engineered treatments intended to contain contamination and prevent migration and exposure pathways, rather than treat or remove it. Exposure to underlying soil will be mitigated by creating a physical barrier between the soil and potential receptors. Caps are implementable, effective, and the technology is widely used and fully developed. Placement of a cap may require additional site grading and/or excavation in some locations. Ongoing operations and maintenance (O&M) will be required to verify that the cap is continuing to function as designed over time. Costs associated with caps are low relative to other RAs (i.e., excavation) due to the low capital costs to install; however, ongoing O&M (inspections and vegetation maintenance) and institutional controls will be required to protect the functionality of the cap.

5.3.4 Excavation

Excavation will require the use of heavy earth-moving equipment (i.e., excavators, backhoes, graders) to remove soil with concentrations of site COCs that exceed MTCA Method A cleanup levels. Exposure pathways to site receptors will be eliminated by removing impacted soil. To meet the RAOs, soil targeted for remediation will be excavated to depths ranging from approximately 1 to 3 feet bgs. Confirmation sampling will be conducted to confirm that soil exceeding MTCA Method A cleanup levels is fully excavated. Clean backfill may be placed as needed to restore excavation areas followed by revegetation or restoring the surface to its pre-excavation condition. Excavation is highly effective and widely used. Surface soil excavation is highly implementable with conventional construction equipment and the time required to meet RAOs is relatively short. Capital costs to excavate the impacted soil are higher than the no action or capping, and if the material is encapsulated on-site rather than disposed of offsite, then there are long-term O&M costs and institutional controls required to confirm the integrity of the soil repository is maintained and RAOs are being met.

Handling of the excavated soil may include construction of an onsite repository to contain and manage contaminated soil or transfer to an offsite licensed disposal facility. Soil handling methods are further described below.

5.3.4.1 Onsite Encapsulation

Excavated soil may be moved from around the site and placed in a single isolated onsite disposal area or repository designed for long-term management and containment of soil and contaminants. Ongoing monitoring will be required for the repository to verify that the soil is effectively contained and that the repository is functioning as designed to isolate contaminants from potential receptors and the environment. In addition, institutional and engineering controls will be established for the area where the repository is located and may include land use controls (e.g., deed restriction) on subsurface excavation and fencing or other physical barriers. Excavation and management of contaminated soil in an onsite repository will effectively reduce potential exposure to receptors. Onsite containment is implementable at the site and the overall effectiveness when paired with institutional and engineering controls in meeting RAOs is high. Capital costs are anticipated to be higher than capping, and long-term O&M costs are less than for capping because the repository has a smaller footprint than the cap area.

5.3.4.2 Offsite Disposal

Excavated soil may be transported offsite for disposal in an approved offsite landfill. Impacted soil will be permanently isolated and confined in the landfill to prevent human and environmental exposure to the soil and potential leaching from soil to groundwater. Excavation and offsite disposal will effectively meet the RAOs. Relative costs are higher than capping or an onsite repository because soil will need to be transported from the site to the approved disposal facility, likely on the road or in railcars. Costs will be incurred by the disposal facility for management of the waste. Long-term monitoring will not be required because the contaminants will be removed from the site.

5.3.5 In-Situ Chemical Stabilization

Chemical stabilization of lead in soil using phosphate-based reagents has been shown to reduce the leachability and bioavailability of lead in contaminated soil (Tardy, Bricka, and Larson 2003). The addition of phosphate to the soil facilitates the formation of lead phosphate compounds, such as pyromorphite, that are many orders of magnitude less soluble the other lead minerals and less bioavailable to plants and animals (Tardy, Bricka, and Larson 2003; Hettiarachchi, Pierzynski, and Ransom 2001; Laperche et al. 1996). Treatability studies of in-situ stabilization of lead with phosphate vary depending on site and soil conditions, with substantial reductions in leachability, but spatial and temporal variations in leaching and bioavailability results, and recurring exposure risks that are greater than residential and industrial use scenarios (Bricka, Marwaha, and Fabian 2008).

A treatability study was conducted in 2015 using soil collected from the site and four phosphate reagents to evaluate the effectiveness of in-situ stabilization on lead in soil (Arcadis 2015a, 2015b). Samples were collected and homogenized to be representative of lead concentrations observed at the site. Following the addition of increasing concentrations of various phosphate source reagents, samples were collected over multiple weeks to evaluate treatment effectiveness. None of the reagents were able to achieve the treatment goals. Leachable lead concentrations generally were the same or even increased as a result of the amendment additions, which likely was a result of increased soil pH due to the amendment addition that inhibited the formation of pyromorphite and the presence of fine and colloidal lead that was largely insoluble but able to pass through the filters used for the leachate testing (Arcadis 2015a).

In-situ chemical stabilization would not be effective in meeting the RAOs because the mobility of lead would likely not be reduced and the total concentration of lead in soil would remain unchanged. The potential for human or terrestrial exposure to lead would remain without additional measures to mitigate direct contact. Costs for implementation are moderate and could be completed with small power equipment. Additional monitoring and institutional controls (i.e. signage, restrictions of development) would be required.

5.3.6 Preliminary Screening of Remedial Technologies

The technologies identified for screening were considered for implementation at the site and evaluated for overall effectiveness in achieving the RAOs, treating source material (i.e. lead paint), implementability, and cost. Since no individual technologies would achieve the RAOs and treat source material on their own, technologies are shown and shown in combinations and evaluated in Table 8. No action is retained for comparison with other technologies as a baseline. Capping, excavation and onsite encapsulation, and excavation and offsite disposal would achieve the RAOs and be effective in treating source material when combined with paint encapsulation and excavation and offsite disposal of soils containing PCBs. In-situ chemical stabilization was determined to be ineffective in reducing lead leachability and will not meet RAOs because the direct contact pathway will not be mitigated (Arcadis 2015a). Based on these considerations, in-situ chemical stabilization is not considered a viable remedial technology and is not retained for further evaluation. Combinations of remedial technologies that are retained in the preliminary screening are further developed as remedial alternatives in Section 6.

6 DETAILED ANALYSIS OF ALTERNATIVES

Following the preliminary screening of remedial technologies, alternatives composed of multiple remedial technologies and designed to achieve RAOs were developed for further detailed analysis. Each alternative was evaluated using the criteria presented in Section 6.1. A summary of the estimated quantities for each remedial alternative is presented in Table 9. The detailed analysis for each alternative is summarized below and in Table 10. Capital and O&M costs were evaluated for each alternative based on the conceptual approach and include present value costs for 30 years. Cost estimates were prepared in general accordance with regulatory guidance for cost estimating (USEPA 2000) and are presented in Appendix I.

6.1 Sub-Criteria for Alternatives Evaluation

Alternatives were evaluated using the criteria outlined in 40 CFR § 300.430. These criteria are considered as threshold, primary balancing, or modifying criteria. Threshold criteria must be met for any alternative to be considered for implementation. Primary balancing criteria are the basis for comparison between alternatives. Modifying criteria will be considered during the evaluation. Additional details on the considerations for each criterion are provided below.

- Threshold criteria:
  - Overall protection of human health and the environment.
  - Compliance with ARARs.
- Primary balancing criteria:
  - Long-term effectiveness and permanence.
    - Risks presented by residual contaminants remaining following implementation of the remedy.
    - Reliability of technical components and controls used to manage untreated or residual wastes.
  - Reduction of toxicity, mobility, or volume through treatment:
    - Quantity of material treated, expected degree of reductions, and irreversibility of treatment processes.
    - Type, quantity, and risks associated with residual materials generated during treatment.
  - Short-term effectiveness:
    - Risks associated with implementation of the remedy to the community that may impact human health.
    - Protection of workers and the reliability of any temporary controls required to mitigate hazards associated with remedy implementation.
    - Environmental impacts associated with implementation of the remedy and the reliability of any required controls or mitigation measures.

    - Duration to implement the remedial alternative and achieve remedial objectives.
  - Implementability:
    - Technical feasibility of designing and constructing the remedial alternative to meet the RAOs given site conditions and other factors.
    - Availability of equipment, services, skilled personnel, and construction materials.
    - Reliability of the technologies employed.
    - Administrative requirements for coordination or permitting with other offices and agencies.
  - Cost:
    - Capital costs for implementation of the remedial alternative, including direct and indirect costs for construction, equipment, disposal, engineering, and permitting.
    - O&M costs incurred during the RA and following primary construction activities, including administrative costs, maintenance and repair costs for engineered controls, and costs for periodic site inspections and reviews.
- Modifying criteria:
  - State acceptance:
    - Issues and concerns of state or local support agencies.
  - Community acceptance:
    - Issues and concerns of the general public.

6.2 Site-Wide Elements

The alternatives considered below contain common elements that will be implemented under each scenario (except Alternative 1 – No Action). These components are consistent between alternatives because they address specific risks where there are limited or no alternative options that will satisfy the criteria listed in Section 6.1.

6.2.1 Excavation and Offsite Disposal of Polychlorinated Biphenyl Contaminated Soil

Soil containing PCBs at concentrations greater than the MTCA Method A cleanup level will be excavated and transferred to an offsite disposal facility for management. Due to the access limitations present at the site, a barge crane or other means to transfer equipment and soil onsite and offsite will be required. Soil will be transferred from the site on a barge and to trucks or rail cars for transport to an approved facility for landfill disposal or treatment. Waste may be designated as dangerous waste in accordance with Washington Dangerous Waste Regulations (Chapter 173-303-070 WAC) or hazardous waste in accordance with the Resource Conservation and Recovery Act (40 CFR § 261) and TSCA (40 CFR § 761). Sample results from the 2019 RI indicate that PCB-impacted soil will be classified as a Washington

State dangerous waste. However, stockpile samples of excavated soils within the PCB-impacted area will need to be tested by a laboratory to confirm proper classification prior to transportation and disposition.

Excavation and offsite disposal of soil containing PCBs is highly protective of future site uses and will eliminate any future risks associated with human exposure to the waste at the site. The technology to implement the remedy is generally available, including equipment and skilled labor, but likely specialized given the access limitations and constraints present at the site. Short-term impacts to site users will include limited access during implementation. The risk of exposure for site workers and the general public to contaminated soil is present but can be mitigated with engineering and administrative controls (i.e. short-term closure to public access) and personal protective equipment (PPE) for site workers. The timeline for completion of the remedy is relatively short and no ongoing O&M will be required following implementation of the remedy. Removing and transporting the waste will require coordination with state and local agencies, including Ecology, which requires documentation and reporting for dangerous waste generators. The costs associated with excavation and offsite disposal of PCB-contaminated soil are incorporated into the costs for each alternative.

6.2.2 Repair of Building Encapsulation

The exterior surfaces of the Duplex, Light and Fog Signal Building, and Boathouse where encapsulation has deteriorated or been damaged will be repaired and encapsulated to prevent further flaking or migration of lead-based paint to soil. Based on the condition of each damaged area, surfaces may be scraped or sanded to remove loose paint, encapsulated with an approved coating designed to control lead-based paint, and painted to match the previous color and finish. Waste materials will be collected and transported offsite for disposal in accordance with local, state, and federal requirements at an approved disposal facility.

Encapsulation is an effective source control measure for lead-based paint and mitigates direct contact exposure when building materials are intact. The technology is widely used and the skilled labor and materials required to implement are readily available. The long-term effectiveness of the remedy can vary, depending on weathering and exposure to sun. Periodic maintenance and repair can improve the reliability and effectiveness of encapsulation. The risk for exposure to site workers can be mitigated with engineering and administrative controls and PPE. Short-term impacts may include limited access to the site during implementation. The timeline for implementation is relatively short. The costs associated with repairing the encapsulation present on buildings at the site is estimated at approximately $30,000, which is included in the total cost for each alternative evaluated below.

6.2.3 Removal and Replacement of Potential Asbestos Tile Roofing

Potential asbestos containing roof materials on the Duplex will be removed and disposed of by a certified asbestos abatement company to mitigate the possibility of future asbestos impacts. Materials will be handled and disposed in compliance with applicable regulations. Once potential asbestos removal is complete, a new roof will be installed. The replacement roofing materials will be selected by the USCG in consultation with the Washington State Department of Archaeology and Historic Preservation.

The methods and techniques used in the removal of asbestos roofing vary by material, roof structure, and other factors. Safe removal and disposal of asbestos work can be complex; therefore, the detailed approach used for the Duplex will be determined based on discussions with the asbestos abatement contractor. Regardless of the methods chosen, roof removal is the most effective strategy to eliminate long-term risk and is a widely used approach for asbestos. Short-term impacts may include limited access to the site during implementation. The timeline for implementation is relatively short. For the purposes of this FFS, the costs associated with asbestos removal and roof replacement are assumed to be approximately $120,000 based on input from contractors capable of performing the work. The actual costs for abatement and replacement of the roof may vary depending on the selected materials and approach. Transportation of materials, equipment, and personnel to and from Burrows Island are not incorporated into these costs.

6.2.4 Repair of Site Access Staircase

Damage to the staircase connecting to the dock location near the Boathouse on the north portion of the site was noted in January 2020. The damage appears to have been the result of storm surge eroding the support structure under the concrete pier near the middle of the stairs. The dock and staircase are the primary access point for the site. Since the structure is severely undermined, it could sustain further damage prior to or during construction that would limit access or potentially endanger site workers. As part of the remedial action, the staircase will be repaired to facilitate safe access to the work area. The repair will likely consist of pouring concrete around the base of the pier to stabilize the structure. If deemed necessary, additional armoring may be placed to protect against storm surge. The estimated costs for repair work are assumed to be approximately $50,000 based on input from contractors capable of performing the work. The cost estimate assumes that the repair work will comply with the substantive requirements of applicable permits, but obtaining permits will not be required since the work will be performed as part of a CERCLA Remedial Action.

6.3 Alternative 1 – No Action

6.3.1 Description

Alternative 1 consists of no RA to address site soil. This technology is retained as a baseline for comparison to the other alternatives in accordance with CERCLA guidance. Alternative 1 will not achieve the soil RAOs and is not protective of human health and the environment because site COCs will remain in soil and people and terrestrial receptors may be exposed to the contamination.

6.3.2 Assessment

Alternative 1 is technically practicable and implementable, but it does not mitigate risks and has low long- and short-term effectiveness because unacceptable levels of contamination will remain. This alternative does not incorporate soil treatment or resource recovery technologies. There is no cost for this alternative.

6.4 Alternative 2 – Capping

6.4.1 Description

Alternative 2 will consist of placement of an engineered cap over areas where soil impacts from lead and petroleum contaminants are greater than MTCA Method A cleanups levels to achieve RAOs by eliminating the direct contact exposure pathway. The cap components, design, and configuration will be evaluated further during design if this RA is selected, but for the FFS it is assumed to consist of a geotextile layer overlain with 2 feet of general fill suitable for plant growth that will be revegetated to mitigate surface erosion. Surface preparation will include removal of vegetation currently present and minor grading to ensure the stability of the capping materials. Trees will be maintained to the extent possible, with capping materials placed and cut to fit around trees as needed. Limited vegetation removal or trimming will be required to provide access to select areas. Fill materials will be lightly compacted to provide a stable surface and material will be seeded with a selection of grasses that are native and require minimal watering. Debris, such as the metal material covering the helicopter pad, will be removed and transported offsite for disposal (approximately 20 tons). Under this alternative, materials and equipment will likely be transported to the site using marine equipment, including barges and cranes. As discussed in Section 6.2, PCB-contaminated soil will be removed and disposed offsite and repairs will be implemented to the lead-based paint encapsulation on site buildings under this alternative. Based on the conceptual estimates provided in Table 2, approximately 26,000 square feet of capping will be required (approximately 2,200 cubic yards of backfill material). A conceptual layout of Alternative 2 is presented on Figure 13.

Site controls, including signage and ongoing restrictions on subsurface excavation and development, will be required to maintain the cap and mitigate contact with contaminated materials. Annual O&M will likely include inspections of the cap to ensure that it is stable and not eroding, and periodic repair of the capping materials and vegetation. For the purpose of the cost estimate, it is assumed that more robust maintenance activities will be required every five years and include mobilizing heavy equipment and materials to the site to repair and rehabilitate capping areas.

6.4.2 Assessment

Alternative 2 will be protective of human health and the environment and will meet RAOs. The soil RAOs will be met when implementation is complete (i.e., cleanup time of less than 1 year); however, long-term monitoring will be required to confirm that the protectiveness is maintained. This alternative will mitigate the direct contact exposure risk for soil. The construction of this alternative will be implementable using commercially available equipment and materials but will require the placement of land use restrictions (i.e., subsurface soil disturbing activities) on the capped areas. Capping is considered effective and reliable in the long term and short term for remediating soil but this alternative will require restrictions on a larger portion of the site, with up to 26,000 square feet of area requiring controls compared to 11,000 square feet for Alternative 3 and zero for Alternative 4. This alternative will not incorporate treatment or resource recovery technology. Long-term operation, maintenance, and monitoring will be required to ensure protection of human health and compliance with RAOs. The capped areas will require periodic inspections and maintenance of institutional controls. The maintenance will include repair and replacement of capping materials and revegetation as necessary. Institutional controls, which may include restrictive covenants, will likely include requirements to maintain the cap and to follow soil management procedures if the remaining impacted soil is disturbed.

Capital costs for Alternative 2 are estimated to be $875,000. Costs for O&M projected over 30 years in present worth are estimated to be $556,000. The estimated 30-year present worth cost is approximately $1,440,000 for Alternative 2 (rounded to the next ten thousand dollars). The detailed cost estimates and assumptions are included in Appendix I.

6.5 Alternative 3 – Excavation with Onsite Encapsulation

6.5.1 Description

Alternative 3 will include excavation of soil exceeding MTCA Method A cleanup levels and placement in a consolidated onsite repository constructed to contain the contaminated materials in a manner that is protective of human health and the environment and limit land use restriction areas. Soil will be excavated to depths where either refusal is encountered (bedrock) or where confirmation sampling confirms that soil remaining in place has COC concentrations less than MTCA Method A cleanup levels.

The excavated soil will be placed into a lined and capped onsite repository, south of the Duplex. To contain the materials and isolate them from surface water, the repository liner and cap will consist of a low permeability geosynthetic clay liner with a geocomposite applied on the top and sides of the repository for drainage. Soil will be excavated and stockpiled prior to construction of the repository. The subgrade for the repository will be prepared by removing vegetation and completing minor grading as needed in the selected location. Once the bottom of the repository is installed, soil will be transferred to the repository and compacted. A geosynthetic clay liner will be placed over the compacted soil, followed by a geocomposite drainage layer, and then cover soil (clean backfill). The repository cover will be revegetated with native grasses following completion to mitigate surface erosion. The estimated soil volume that will be excavated is 1,350 cubic yards, with 940 cubic yards placed in the onsite repository. As discussed in Section 6.2, PCB-contaminated soil (approximately 410 cubic yards) will be removed and disposed offsite and repairs will be implemented to the lead-based paint encapsulation on site buildings under this alternative. A conceptual layout of Alternative 3 is shown on Figure 14.

Following confirmation sampling to verify soil excavation is complete, excavation areas will be graded, backfilled, and/or revegetated. For the cost estimates included in the FFS, backfill will be imported to restore excavated areas to within approximately 12 inches of original grade (e.g., imported backfill will be installed where excavation depths exceed 12 inches) and as cover for the repository (up to 12 inches of cover), with a total estimated volume of approximately 920 cy. Backfill materials will be screened prior to import and placement to confirm that concentrations of potential COCs are less than MTCA Method A cleanup levels. Additional institutional controls such as fencing and signage will be installed around the repository to protect the structure and prevent damage. Periodic inspections and maintenance will be required to verify that the cap is functioning as designed. For the purpose of the cost estimate, it is assumed that more robust maintenance activities will be required every ten years and include mobilizing heavy equipment and materials to the site to repair and rehabilitate the repository.

6.5.2 Assessment

Alternative 3 is protective of human health and the environment and will meet RAOs. This alternative will mitigate the direct soil contact exposure risk by consolidating soil that exceeds MTCA Method A cleanup levels in an engineered repository. The RAOs will be met when implementation is complete (i.e., cleanup time of less than 1 year). Long-term O&M will be required to verify that the repository is maintained and functioning as designed, including periodic inspections and maintenance of the repository and institutional controls. This alternative can be implemented using readily available skilled labor and equipment.

Similar to Alternative 2, equipment and materials will likely be mobilized to the site using marine equipment, including barges and cranes. Excavation with onsite containment is considered highly effective and reliable in the long term for mitigating risks to human health and the environment. Short-term impacts associated with construction will include limited or restricted site use during construction and risks of site workers being exposed to contaminated media at the site. Site access restrictions will be limited to a few weeks to months during implementation. Risks to site workers can be readily mitigated using engineering controls, administrative controls, and PPE. This alternative will not incorporate treatment or resource recovery technology. Institutional controls, which may include restrictive covenants, will include requirements to restrict excavation in the repository and to maintain fencing and signage around the repository to limit potential access and exposure.

Capital costs for this alternative are higher than Alternative 2 and will include long-term O&M costs to confirm the remedy continues to be protective of human health and in compliance with RAOs. Capital costs for Alternative 3 are estimated to be $1,020,000. Costs for O&M projected over 30 years in present worth are estimated to be $447,000. The total estimated 30-year present worth cost is approximately $1,470,000 for Alternative 3 (rounded to the next ten thousand dollars). The detailed cost estimate and assumptions are included in Appendix I.

6.6 Alternative 4 – Excavation with Offsite Disposal

6.6.1 Description

Alternative 4 will include excavation of soil exceeding MTCA Method A cleanup levels and transfer to an offsite approved disposal facility to meet RAOs. Soil extents and depths will be the same as Alternative 3 and will extend to a depth where refusal is encountered (bedrock) or where confirmation sampling confirmed that COC concentrations in the soil remaining in place was less than MTCA Method A cleanup levels. Excavated soil will likely be handled and transferred to an offsite loading site, repackaged for transportation via rail or road, and transported to a landfill designed and licensed to contain soil containing site COCs. Excavated soil may be stockpiled onsite or loaded directly into an appropriate container (e.g., roll-off bin) for offsite transport and disposal. Similar to Alternative 3, confirmation sampling will be conducted during implementation to verify the remedial excavation extents. A conceptual layout of soil removal areas for Alternative 4 is shown on Figure 15.

Available soil characterization data from samples collected during the RI indicate that concentrations of site COCs are primarily nonhazardous (other than PCBs as described in Section 6.2.1). As discussed in Section 6.2, PCB-contaminated soil will be removed and disposed offsite and repairs will be implemented to the lead-based paint encapsulation on site buildings under this alternative. Approximately 1,350 cy of soil will be excavated and disposed of offsite under this alternative to meet MTCA Method A cleanup levels at the site, including approximately 410 cy of PCB-contaminated soil.

Following confirmation sampling to verify soil excavation is complete, excavation areas will be graded, backfilled, and revegetated. For the cost estimates included in the FFS, backfill will be imported to restore excavated areas to within approximately 12 inches of original grade (e.g., imported backfill will be installed where excavation depths exceed 12 inches), with a total estimated volume of approximately 510 cy. Backfill materials will be screened prior to import and placement to confirm concentrations of potential COCs are less than MTCA Method A cleanup levels. No additional ongoing O&M will be required.

6.6.2 Assessment

Alternative 4 is protective of human health and the environment and will meet RAOs. This alternative is highly effective in mitigating the direct contact exposure risk for soil by removing soil that exceeds MTCA Method A cleanup levels. The RAOs will be met when implementation is complete (i.e., cleanup time of less than 1 year). This alternative is technically feasible and will be implementable using commercially available equipment and materials.

Similar to Alternatives 2 and 3, equipment, materials, and waste will likely be mobilized and demobilized to the site using marine equipment, including barges and cranes. Excavation and offsite disposal at a facility designed and licensed to manage site wastes is considered highly effective and reliable in the long term. Short-term risks to the public are higher due to the increased volume that will be transported offsite compared to Alternatives 2 and 3. Risks to site workers can be readily mitigated using engineering controls, administrative controls, and PPE. Restrictions and controls on site access will be similar to Alternative 3 and will last weeks to months during construction and restoration activities.

While capital costs for this alternative are the highest of the four alternatives evaluated, no long-term OMM costs will be associated with the remedy. Institutional controls will not be required with this alternative because all soils exceeding MTCA Method A cleanup levels will be removed. Capital costs for Alternative 4 are estimated to be $1,300,000. There are no O&M costs associated with this alternative. The detailed cost estimate and assumptions are included in Appendix I.

6.7 Comparative Analysis

The alternatives described above were evaluated and compared against the sub-criteria for alternatives evaluation (Section 6.1). Protectiveness and compliance with ARARs are threshold criteria that must be met for any remedy. Balancing criteria are the basis for comparison between alternatives that meet the threshold criteria. The comparative analysis includes evaluation of the relative ratings of the remedial alternatives for each criterion. Each criterion is discussed individually in Sections 6.7.1 through 6.7.9, and the list of alternatives is provided below:

- Alternative 1 – No Action
- Alternative 2 – Capping
- Alternative 3 – Excavation with Onsite Encapsulation
- Alternative 4 – Excavation with Offsite Disposal

6.7.1 Overall Protection of Human Health and the Environment

Soil exceeding MTCA Method A cleanup levels have been identified as presenting a risk to human health and the environment. Alternative 1 will not mitigate risk. Alternative 2 will mitigate risk by directly controlling the exposure pathway to soil requiring remediation; however, impacted soil that exceeds MTCA Method A cleanup levels will be left in place. Alternatives 3 and 4 will provide the greatest level of risk mitigation because they will remove and contain soil requiring remediation in an engineered onsite repository (Alternative 3) or an offsite permitted landfill (Alternative 4).

The removal and offsite management of PCB contaminated soil in Alternatives 2, 3 and 4 will be protective of human health and the environment by mitigating the potential for direct exposure at the site. Repair of building encapsulation will also be protective by reducing the potential for direct exposure to contaminated building materials and additional contamination of soil from flaking and deteriorating paint.

6.7.2 Compliance with Applicable or Relevant and Appropriate Requirements

Alternative 1 will not comply with ARARs because it will not address impacted soil that exceeds MTCA Method A cleanup levels. Alternative 2 will be moderately protective, because it will control the exposure pathway for soil requiring remediation and will comply with ARARs when paired with administrative controls (i.e., land use restrictions). Alternatives 3 and 4 will be more protective than the other soil alternatives because they will remove and contain contaminated soil in an engineered onsite repository or an offsite permitted landfill. Both Alternatives 3 and 4 will comply with ARARs, although Alternative 3 will also require administrative and institutional controls (i.e., fencing) to protect the repository maintained onsite.

6.7.3 Long-Term Effectiveness and Permanence

Alternatives 2 and 3 will be effective in the long term when paired with administrative controls. Compared to Alternative 1, both options will reduce the risks associated with direct exposure to soil and can be maintained to be effective over a long period of time with regular maintenance. Alternative 2 will provide a less robust solution and maintain contaminants in place over a larger area. The proposed cap areas are also located adjacent to buildings and pathways with higher potential public use and access. The cap installed in areas where roots and vegetation are present may be more susceptible to damage through time, lowering the overall permanence of the solution. Alternative 3 will consolidate material in a repository with a smaller footprint and more robust construction than the cap in Alternative 2, which will increase the long-term effectiveness and permanence of the solution compared to Alternative 2. The location of the cap would also be away from the primary areas where site visitors and the public would be accessing and could be further separated with a fence. Alternative 4 will be the most effective and permanent solution, because it removes all soil exceeding MTCA Method A cleanup levels from the site.

Excavation and offsite management of PCB contaminated soil will be an effective and permanent solution, and will be implemented under Alternatives 2, 3, and 4. Building encapsulation will also be effective, but may require periodic maintenance and upkeep to ensure the lead-based paint materials are contained.

6.7.4 Reduction of Toxicity, Mobility, or Volume Through Treatment

None of the alternatives considered in this evaluation will provide for treatment of contaminants present at the site. Lead is not readily transformed and is not easily separated from soil. The primary mechanism for risk reduction in Alternatives 2, 3, and 4 will be elimination or mitigation of the direct contact pathway, which is the primary exposure route for surface soil at the site. PCBs can be treated in soil, but concentrations present are less than 50 mg/kg and may be handled and disposed of at an approved landfill facility pursuant to 40 CFR 761.61.

6.7.5 Short-Term Effectiveness

Short-term impacts associated with construction will include limited and restricted access to the site, exposure to contaminated media transferred offsite for disposal, and risks to site workers. Alternatives 2, 3, and 4 can be implemented in similar timeframes and will likely be complete within weeks to months. Restricted public access will be similar during implementation of all three alternatives. The potential for exposure to contaminated media from the site will exist under all three options, although Alternative 4 includes removal and transfer of a larger quantity of contaminated soil and therefore carries the largest risk to the public. Potential exposure of site workers to contaminated media will be greatest for Alternatives 3 and 4, because soil will be removed and handled multiple times. Risks can be reduced with careful implementation of engineering and administrative controls, such as the use of enclosed and covered trucks or rail containers, stormwater best management practices, and monitoring.

6.7.6 Implementability

Alternatives 2, 3, and 4 can be readily implemented with available technology, skilled labor, and equipment. The technologies implemented as part of all three alternatives is reliable, although Alternatives 2 and 3 will require ongoing O&M and administrative controls. The effort for coordination and planning will be similar for all three alternatives.

6.7.7 Cost

Cost effectiveness is determined through an analysis of incremental costs, incremental risk reduction and other benefits of alternatives considered, taking into account the total anticipated short- and long-term costs of RA alternatives, including the total anticipated cost of O&M. An evaluation of capital and O&M costs was conducted for each alternative based on the conceptual remedial approach and the estimated cleanup timeframes. The cost estimate was prepared in general accordance with regulatory guidance for cost estimating (USEPA 2000). Cost estimates for each alternative are provided in Appendix I and summarized below.

The 30-year present worth costs were estimated for all four remedial alternatives. Alternative 1 has no costs associated with it but provides no risk reduction. The total capital costs were lowest for Alternative 2 ($875,000) and highest for Alternative 4 ($1,300,000). Costs for O&M were lowest for Alternative 4 (none) and highest for Alternative 2 ($556,000). The total net present value including 30 years of O&M costs and rounded to the next ten thousand dollars were $1,440,000 for Alternative 2, $1,470,000 for Alternative 3, and $1,300,000 for Alternative 4.

6.7.8 State Acceptance

Copies of draft documents have been provided to Ecology for review. Ecology concurs with the USCG that Alternative 4 provides the highest level of protection for the community and stakeholders and agrees with the selection of Alternative 4.

6.7.9 Community Acceptance

A public meeting was held at the Anacortes Public Library on January 10, 2020 for interested community members and other stakeholders to comment and discuss the RI/FFS with the USCG. Two public advertisements for the meeting were placed in the Anacortes American and Skagit Valley Herald newspapers in the December 15 and 18, 2019 issues, respectively. Revisions based on the public comments have been incorporated into the RI/FFS. A transcript of the public meeting and a table summarizing public comments and responses are included in Appendix J.

7 REMEDY SELECTION

Based on the detailed evaluation outlined in Section 6 and consideration for threshold, primary balancing, and modifying criteria, Alternative 4 is the most suitable solution for managing and remediating contaminated soil present at the site. Considering future site use, Alternative 4 provides the most effective and permanent option for varying uses that benefit the public, meet USCG objectives for transferring the site to NWSS, and achieve the RAOs.

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TABLES

Table 1
Sampling Information and Laboratory Methods
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington

Analyte	Sample Type	Analytical Method	Number of Samples[1]
Total Lead	ISM Composite[2]	USEPA Method 6010D	75
TCLP Lead	ISM Composite[2]	USEPA Method 1311/6010D	20
Total Lead	Discrete	USEPA Method 6010D	9
Polychlorinated Biphenyls	Discrete	USEPA Method 8082A	30
Gasoline Range Organics	Discrete	NWTPH-Gx	6
Diesel Range Organics	Discrete	NWTPH-Dx	103
Heavy Oil	Discrete	NWTPH-Dx	103
Mineral Oil	Discrete	NWTPH-Dx	30
Total Petroleum Hydrocarbons	Discrete	NWEPH	3
BTEX	Discrete	USEPA Method 8260C	2
cPAHs	Discrete	USEPA Method 8270D/SIM	3

Notes:

BTEX = benzene, toluene, ethylbenzene, and xylenes

cPAHs = carcinogenic polyaromatic hydrocarbons

ISM = incremental sampling methodology

TCLP = toxicity characteristic leaching procedure

USEPA = United States Environmental Protection Agency

1. Sample count includes field duplicates.

2. ISM composite samples were prepared for analysis by air drying, soil disaggregation, sieveing particles greater than 2 millimeters, and subsampling using the Japanese slab-cake method.

Table 2
ISM Increment Collection Summary
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington

DU	ISM Increments Collected				
	0-0.5 feet	0.5-1.0 feet	1.0-1.5 feet	1.5-2.0 feet	2.0-2.5 feet
DU-01	30/30	29/30	24/30	--	--
DU-02	90/90	30/30	--	--	--
DU-03	30/30	30/30	--	--	--
DU-04	30/30	30/30	--	--	--
DU-05	30/30	30/30	--	--	--
DU-06	90/90	21/30	13/30	6/30	2/30[1]
DU-07	30/30	25/30	--	--	--
DU-08	90/90	27/30	19/30	--	--
DU-09	25/30	17/30	--	--	--
DU-10	30/30	26/30	--	--	--
DU-11	30/30	29/30	--	--	--
DU-12	30/30	30/30	--	--	--
DU-13	90/90	29/30	--	--	--
DU-14	30/30	29/30	--	--	--
DU-15	29/30	29/30	15/30	--	--
DU-16	30/30	30/30	--	--	--
DU-17	30/30	30/30	--	--	--
DU-18	30/30	30/30	--	--	--

Notes:

Acronyms and Abbreviations:

DU = decision unit

1. Increments from the 2.0-2.5 feet interval from DU-06 were collected and analyzed as discrete samples.

Table 3
Incremental Sampling Analytical Results
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington

Sample ID	Date	Decision Unit	Area	Depth (feet bgs)	Total Lead (mg/kg)	TCLP Lead (mg/L)
MTCA Method A Soil Cleanup Level[1]/Dangerous Waste Characteristic[2]					**250**	**5**
ISM-01-A-0-0.5	3/25/2019	1	105 - Boathouse	0-0.5	190	--
ISM-01-A-0.5-1.0	3/26/2019	1	105 - Boathouse	0.5-1	110	--
ISM-01-A-1.0-1.5	3/27/2019	1	105 - Boathouse	1-1.5	43	--
ISM-02-A-0-0.5	3/25/2019	2	105 - Boathouse	0-0.5	61	--
ISM-02-A-0.5-1.0	3/26/2019	2	105 - Boathouse	0.5-1	35	--
ISM-02-B-0-0.5	3/27/2019	2	105 - Boathouse	0-0.5	50	--
ISM-02-C-0-0.5	3/27/2019	2	105 - Boathouse	0-0.5	85	--
ISM-03-A-0-0.5	3/25/2019	3	--	0-0.5	68	--
ISM-03-A-0.5-1.0	3/25/2019	3	--	0.5-1	30	--
ISM-04-A-0-0.5	3/27/2019	4	104 - OIC Quarters	0-0.5	**280**	< 0.20
ISM-04-A-0.5-1.0	3/27/2019	4	104 - OIC Quarters	0.5-1	74	--
ISM-05-A-0-0.5	3/28/2019	5	104 - OIC Quarters	0-0.5	64	--
ISM-05-A-0.5-1.0	3/28/2019	5	104 - OIC Quarters	0.5-1	56	--
ISM-06-A-0-0.5	3/25/2019	6	102 - Oil and Paint Storage Building	0-0.5	**1,300**	0.33
ISM-06-B-0-0.5	3/27/2019	6	102 - Oil and Paint Storage Building	0-0.5	**2,000**	0.97
ISM-06-C-0-0.5	3/27/2019	6	102 - Oil and Paint Storage Building	0-0.5	**1,500**	0.7
ISM-06-A-0.5-1.0	3/26/2019	6	102 - Oil and Paint Storage Building	0.5-1	**630**	0.26
ISM-06-A-1.0-1.5	3/27/2019	6	102 - Oil and Paint Storage Building	1-1.5	**390**	0.21
ISM-06-A-1.5-2.0	3/27/2019	6	102 - Oil and Paint Storage Building	1.5-2	**400**	0.34
ISM-07-A-0-0.5	3/26/2019	7	102 - Oil and Paint Storage Building	0-0.5	**470**	< 0.20
ISM-07-A-0.5-1.0	3/26/2019	7	102 - Oil and Paint Storage Building	0.5-1	62	--
ISM-08-A-0-0.5	3/26/2019	8	101 - Light and Fog Signal Building	0-0.5	**1,300**	0.33
ISM-08-B-0-0.5	3/27/2019	8	101 - Light and Fog Signal Building	0-0.5	**1,100**	< 0.20
ISM-08-C-0-0.5	3/27/2019	8	101 - Light and Fog Signal Building	0-0.5	**1,300**	< 0.20
ISM-08-A-0.5-1.0	3/26/2019	8	101 - Light and Fog Signal Building	0.5-1	160	--
ISM-08-A-1.0-1.5	3/27/2019	8	101 - Light and Fog Signal Building	1-1.5	**540**	< 0.20
ISM-09-A-0-0.5	3/28/2019	9	101 - Light and Fog Signal Building	0-0.5	150	--
ISM-09-A-0.5-1.0	3/28/2019	9	101 - Light and Fog Signal Building	0.5-1	75	--
ISM-10-A-0-0.5	3/27/2019	10	--	0-0.5	57	--
ISM-10-A-0.5-1.0	3/27/2019	10	--	0.5-1	19	--
ISM-11-A-0-0.5	3/27/2019	11	103 - Duplex	0-0.5	**450**	0.24
ISM-11-A-0.5-1.0	3/26/2019	11	103 - Duplex	0.5-1	120	--
ISM-12-A-0-0.5	3/28/2019	12	103 - Duplex	0-0.5	**280**	< 0.20
ISM-12-A-0.5-1.0	3/28/2019	12	103 - Duplex	0.5-1	68	--
ISM-13-A-0-0.5	3/28/2019	13	103 - Duplex	0-0.5	170	--
ISM-13-B-0-0.5	3/29/2019	13	103 - Duplex	0-0.5	130	--
ISM-13-C-0-0.5	3/29/2019	13	103 - Duplex	0-0.5	200	--
ISM-13-A-0.5-1.0	3/29/2019	13	103 - Duplex	0.5-1.0	62	--
ISM-14-A-0-0.5	3/29/2019	14	10,000-gallon AST	0-0.5	**350**	< 0.20
ISM-14-A-0.5-1.0	3/29/2019	14	10,000-gallon AST	0.5-1.0	130	--
ISM-15-A-0-0.5	3/29/2019	15	107 - Firehouse Pump Building	0-0.5	160	--
ISM-15-A-0.5-1.0	3/29/2019	15	107 - Firehouse Pump Building	0.5-1.0	**260**	< 0.20
ISM-15-A-1.0-1.5	3/30/2019	15	107 - Firehouse Pump Building	1.0-1.5	72	--
ISM-16-A-0-0.5	3/30/2019	16	Water Tanks	0-0.5	18	--

Table 3
Incremental Sampling Analytical Results
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington

Sample ID	Date	Decision Unit	Area	Depth (feet bgs)	Total Lead (mg/kg)	TCLP Lead (mg/L)
MTCA Method A Soil Cleanup Level[1]/Dangerous Waste Characteristic[2]					**250**	**5**
ISM-16-A-0.5-1.0	3/30/2019	16	Water Tanks	0.5-1.0	9	--
ISM-17-A-0-0.5	3/30/2019	17	Water Tanks	0-0.5	91	--
ISM-17-A-0.5-1.0	3/30/2019	17	Water Tanks	0.5-1.0	41	--
ISM-18-A-0-0.5	3/30/2019	18	104 - OIC Quarters	0-0.5	220	--
ISM-18-A-0.5-1.0	3/30/2019	18	104 - OIC Quarters	0.5-1.0	180	--

Notes:

1. Screening level based on MTCA Method A Soil Cleanup Levels for Unrestricted Land Uses, WAC Chapter 173-340-900, Table 740-1.
2. Dangerous waste characteristic for lead is based on Toxicity Characteristic Leaching Procedure (TCLP) test by EPA Method 1311, as outlined in WAC 173-303-090.

Bold and highlighted values are greater than their respective MTCA Method A cleanup level

MTCA = Model Toxics Control Act

Lead by EPA Method 6020A

-- = not analyzed

< = analyte was not detected. The associated value is the analyte reporting limit.

DUP = Duplicate sample

mg/kg = milligrams per kilogram

mg/L = milligrams per liter

Table 4
Sampling Unit Analytical Results
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington

Sample ID	Date	Decision Unit	Area	Depth (feet bgs)	Total Lead (mg/kg)	TCLP Lead (mg/L)
MTCA Method A Soil Cleanup Level[1]/Dangerous Waste Characteristic[2]					**250**	**5**
ISM-04-1-0-0.5	3/27/2019	4	104 - OIC Quarters	0 - 0.5	130	--
ISM-04-2-0-0.5	3/27/2019	4	104 - OIC Quarters	0 - 0.5	160	--
ISM-04-3-0-0.5	3/27/2019	4	104 - OIC Quarters	0 - 0.5	160	--
ISM-04-4-0-0.5	3/27/2019	4	104 - OIC Quarters	0 - 0.5	**280**	--
ISM-06-1-1.0-1.5	3/27/2019	6	102 - Oil and Paint Storage Building	1.0 - 1.5	150	--
ISM-06-2-1.0-1.5	3/27/2019	6	102 - Oil and Paint Storage Building	1.0 - 1.5	100	--
ISM-06-3-1.0-1.5	3/27/2019	6	102 - Oil and Paint Storage Building	1.0 - 1.5	**690**	--
ISM-06-4-1.0-1.5	3/27/2019	6	102 - Oil and Paint Storage Building	1.0 - 1.5	**1,000**	0.71
ISM-06-1-1.5-2.0	3/27/2019	6	102 - Oil and Paint Storage Building	1.5 - 2.0	11	--
ISM-06-2-1.5-2.0	3/27/2019	6	102 - Oil and Paint Storage Building	1.5 - 2.0	11	--
ISM-06-3-1.5-2.0	3/27/2019	6	102 - Oil and Paint Storage Building	1.5 - 2.0	180	--
ISM-06-4-1.5-2.0	3/27/2019	6	102 - Oil and Paint Storage Building	1.5 - 2.0	**630**	--
ISM-12-1-0-0.5	3/28/2019	12	103 - Duplex	0 - 0.5	**280**	--
ISM-12-2-0-0.5	3/28/2019	12	103 - Duplex	0 - 0.5	**330**	--
ISM-12-3-0-0.5	3/28/2019	12	103 - Duplex	0 - 0.5	**640**	<0.20
ISM-12-4-0-0.5	3/28/2019	12	103 - Duplex	0 - 0.5	170	--
ISM-14-1-0-0.5	3/29/2019	14	10,000-gallon AST	0 - 0.5	**300**	--
ISM-14-2-0-0.5	3/29/2019	14	10,000-gallon AST	0 - 0.5	**420**	<0.20
ISM-15-1-0.5-1.0	3/29/2019	15	107 - Firehouse Pump Building	0.5 - 1.0	24	--
ISM-15-2-0.5-1.0	3/29/2019	15	107 - Firehouse Pump Building	0.5 - 1.0	55	--
ISM-15-3-0.5-1.0	3/29/2019	15	107 - Firehouse Pump Building	0.5 - 1.0	**6,600**	--
ISM-15-4-0.5-1.0	3/29/2019	15	107 - Firehouse Pump Building	0.5 - 1.0	47	--
ISM-18-1-0-0.5	3/30/2019	18	104 - OIC Quarters	0 - 0.5	**460**	<0.20
ISM-18-2-0-0.5	3/30/2019	18	104 - OIC Quarters	0 - 0.5	83	--
ISM-18-3-0-0.5	3/30/2019	18	104 - OIC Quarters	0 - 0.5	34	--
ISM-18-4-0-0.5	3/30/2019	18	104 - OIC Quarters	0 - 0.5	220	--

Notes:

1. Screening level based on MTCA Method A Soil Cleanup Levels for Unrestricted Land Uses, WAC Chapter 173-340-900, Table 740-1.
2. Dangerous waste characteristic for lead is based on Toxicity Characteristic Leaching Procedure (TCLP) test by EPA Method 1311, as outlined in WAC 173-303-090.

Bold and highlighted values are greater than their respective MTCA Method A cleanup level
MTCA = Model Toxics Control Act
Lead by EPA Method 6020A
-- = not analyzed
< = analyte was not detected. The associated value is the analyte reporting limit.
mg/kg = milligrams per kilogram
mg/L = milligrams per liter

Table 5a
Discrete Sampling Analytical Results - Total Lead and TPH
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington

Location	Depth (feet bgs)	Sample ID	Date	Area	Total Lead	GRO	DRO	HO	Mineral Oils
MTCA Method A Soil Cleanup Level[1]					**250**	**30/100[2]**	**2,000**	**2,000**	**--**
SB-112-1	0-0.5	SB-112-1-0-0.5	3/31/2019	112 (10,000-Gal AST)	--	--	100 J	910	--
SB-112-1	0.5-0.7	SB-112-1-0.5-0.7	3/31/2019	112 (10,000-Gal AST)	--	--	150	1,000	--
SB-112-2	0-0.5	SB-112-2-0-0.5	3/31/2019	112 (10,000-Gal AST)	--	--	36	280	--
SB-112-2	1.0-1.5	SB-112-2-1-1.5	3/31/2019	112 (10,000-Gal AST)	--	--	230	150	--
SB-112-3	0-0.5	SB-112-3-0-0.5	3/31/2019	112 (10,000-Gal AST)	--	--	40	340	--
SB-112-3-1	1.0-1.3	SB-112-3-1-1.3	3/31/2019	112 (10,000-Gal AST)	--	--	<30	79	--
SB-112-4	0-0.5	SB-112-4-0-0.5	3/31/2019	112 (10,000-Gal AST)	--	--	110	340	--
SB-112-4	0.5-1.0	SB-DUP-2	3/31/2019	112 (10,000-Gal AST)	--	--	<30	<60	--
SB-112-4	0.5-1.0	SB-112-4-0.5-1	3/31/2019	112 (10,000-Gal AST)	--	--	<31	67	--
SB-112-5	0-0.5	SB-112-5-0-0.5	3/31/2019	112 (10,000-Gal AST)	--	--	350	850	--
SB-112-5	0.5-0.9	SB-112-5-0.5-0.9	3/31/2019	112 (10,000-Gal AST)	--	--	270	260	--
SB-112-6	0-0.5	SB-112-6-0-0.5	3/31/2019	112 (10,000-Gal AST)	--	--	2,000	**2,700**	--
SB-112-6	1.0-1.5	SB-112-6-1-1.5	3/31/2019	112 (10,000-Gal AST)	--	--	240	150	--
SB-112-7	0-0.5	SB-112-7-0-0.5	3/31/2019	112 (10,000-Gal AST)	--	--	120	520	--
SB-112-7	0.5-0.8	Sb-112-7-0.5-0.8	3/31/2019	112 (10,000-Gal AST)	--	--	130	130	--
SB-112-8	0-0.5	SB-112-8-0-0.5	3/31/2019	112 (10,000-Gal AST)	--	--	280	380	--
SB-112-8	0-0.5	SB-DUP-3	3/31/2019	112 (10,000-Gal AST)	--	--	310	460	--
SB-112-8	1.0-1.5	SB-112-8-1-1.5	3/31/2019	112 (10,000-Gal AST)	--	--	64	<61	--
SB-112-9	0-0.5	SB-112-9-0-0.5	3/31/2019	112 (10,000-Gal AST)	--	--	52	340	--
SB-112-9	0.5-1.0	SB-112-9-0.5-1	3/31/2019	112 (10,000-Gal AST)	--	--	89	190	--
SB-112-10	0-0.5	SB-112-10-0-0.5	3/31/2019	112 (10,000-Gal AST)	--	--	81	120	--
SB-112-10	0.5-1.0	SB-112-10-0.5-1	3/31/2019	112 (10,000-Gal AST)	--	--	93	390	--
SB-112-11	0-0.5	SB-112-11-0-0.5	3/31/2019	112 (10,000-Gal AST)	--	--	390	240	--
SB-112-11	1.5-2.0	SB-112-11-1.5-2	3/31/2019	112 (10,000-Gal AST)	--	--	100	180	--
SB-112-12	0-0.5	SB-112-12-0-0.5	3/31/2019	112 (10,000-Gal AST)	--	--	170	520	--
SB-112-12	1.0-1.5	SB-112-12-1-1.5	3/31/2019	112 (10,000-Gal AST)	--	--	48	83	--
SB-PL-1	0-0.5	SB-PL-1-0-0.5	3/31/2019	Pipeline	--	--	38	87	--
SB-PL-2	1.0-1.5	SB-PL-2-1-1.5	3/31/2019	Pipeline	--	--	46	120	--

Table 5a
Discrete Sampling Analytical Results - Total Lead and TPH
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington

Location	Depth (feet bgs)	Sample ID	Date	Area	Total Lead	GRO	DRO	HO	Mineral Oils
MTCA Method A Soil Cleanup Level[1]					**250**	**30/100[2]**	**2,000**	**2,000**	**--**
SB-PL-3	0-0.5	SB-PL-3-0-0.5	3/31/2019	Pipeline	--	--	32	170	--
SB-PL-4	1.0-1.5	SB-PL-4-1-1.5	3/31/2019	Pipeline	--	--	<32	210	--
SB-PL-5	0-0.5	SB-PL-5-0-0.5	3/31/2019	Pipeline	--	--	56	210	--
SB-PL-6	1.0-1.5	SB-PL-6-1-1.5	3/31/2019	Pipeline	--	--	33	120	--
SB-PL-6	1.0-1.5	SB-DUP-4	3/31/2019	Pipeline	--	--	<33	120	--
SB-PL-7	0-0.5	SB-PL-7-0-0.5	3/31/2019	Pipeline	--	--	71	360	--
SB-PL-8	1.0-1.5	SB-PL-8-1-1.5	3/31/2019	Pipeline	--	--	30	<57	--
SB-PL-9	0-0.5	SB-PL-9-0-0.5	3/31/2019	Pipeline	--	--	<34	290	--
SB-PL-10	2.0-2.5	SB-PL-10-2-2.5	3/31/2019	Pipeline	--	--	<28	70	--
SB-PL-11	0.5-1.0	SB-PL-11-0.5-1	3/31/2019	Pipeline	--	--	<30	<60	--
SB-PL-12	1.0-1.5	SB-PL-12-1-1.5	3/31/2019	Pipeline	--	--	<30	<59	--
SB-PL-13	1.0-1.5	SB-PL-13-1-1.5	3/31/2019	Pipeline	--	--	<29	<58	--
SB-PL-14	1.0-1.5	SB-PL-14-1-1.5	3/31/2019	Pipeline	--	--	46	<55	--
SB-101-1	0-0.5	SB-101-1-0-0.5	3/31/2019	101 (Lighthouse)	--	--	160	620	--
SB-101-1	2.0-2.5	SB-101-1-2-2.5	3/31/2019	101 (Lighthouse)	--	--	650	220	--
SB-101-2	0-0.5	SB-101-2-0-0.5	3/31/2019	101 (Lighthouse)	--	--	79	220	--
SB-101-2	0-0.5	SB-DUP-5	3/31/2019	101 (Lighthouse)	--	--	87	210	--
SB-101-2	2.0-2.5	SB-101-2-2-2.5	3/31/2019	101 (Lighthouse)	--	--	260	110	--
SB-101-3	0-0.5	SB-101-3-0-0.5	3/31/2019	101 (Lighthouse)	--	--	57	360	--
SB-101-3	2.0-2.5	SB-101-3-2-2.5	3/31/2019	101 (Lighthouse)	--	--	73	91	--
SB-101-4	0-0.5	SB-101-4-0-0.5	4/1/2019	101 (Lighthouse)	--	--	<100	330	110
SB-101-4	2.0-2.5	SB-101-4-2.0-2.5	4/1/2019	101 (Lighthouse)	--	--	<440	270	460
SB-101-4	2.0-2.5	SB-DUP-8	4/1/2019	101 (Lighthouse)	--	--	<370	240	380
SB-101-5	0-0.5	SB-101-5-0-0.5	4/1/2019	101 (Lighthouse)	--	--	<94	360	110
SB-101-5	0.5-1.0	SB-101-5-0.5-1.0	4/1/2019	101 (Lighthouse)	--	--	<68	140	77
SB-101-6	0-0.5	SB-101-6-0-0.5	4/1/2019	101 (Lighthouse)	--	--	<32	190	<32
SB-101-6	0.5-1.0	SB-101-6-0.5-1.0	4/1/2019	101 (Lighthouse)	--	--	<83	<60	78
SB-101-7	0.5-1.0	SB-101-7-0.5-1.0	4/1/2019	101 (Lighthouse)	--	--	48	290	<47

Table 5a
Discrete Sampling Analytical Results - Total Lead and TPH
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington

Location	Depth (feet bgs)	Sample ID	Date	Area	Total Lead	GRO	DRO	HO	Mineral Oils
MTCA Method A Soil Cleanup Level[1]					**250**	**30/100[2]**	**2,000**	**2,000**	**--**
SB-101-7	1.5-2.0	SB-101-7-1.5-2.0	4/1/2019	101 (Lighthouse)	--	--	<34	<65	44
SB-101-8	0-0.5	SB-101-8-0-0.5	4/1/2019	101 (Lighthouse)	--	--	<860	900	930
SB-101-8	1.0-1.5	SB-101-8-1.0-1.5	4/1/2019	101 (Lighthouse)	--	--	<140	150	140
SB-101-9	0-0.5	SB-101-9-0-0.5	4/1/2019	101 (Lighthouse)	--	--	<200	180	190 J
SB-101-9	0-0.5	SB-DUP-9	4/1/2019	101 (Lighthouse)	--	--	<62	240	65 J
SB-101-9	1.5-2.0	SB-101-9-1.5-2.0	4/1/2019	101 (Lighthouse)	--	--	<160	66	170
SB-101-10	0-0.5	SB-101-10-0-0.5	4/1/2019	101 (Lighthouse)	--	--	<88	240	94
SB-101-10	0.5-1.0	SB-101-10-0.5-1.0	4/1/2019	101 (Lighthouse)	--	--	<48	<57	56
SB-101-11	0-0.5	SB-101-11-0-0.5	4/1/2019	101 (Lighthouse)	--	--	<35	210	<35
SB-101-11	0.5-1.0	SB-101-11-0.5-1.0	4/1/2019	101 (Lighthouse)	--	--	<31	150	<31
SB-101-12	0-0.5	SB-101-12-0-0.5	4/1/2019	101 (Lighthouse)	--	--	<39	220	47
SB-101-12	1.0-1.5	SB-101-12-1.0-1.5	4/1/2019	101 (Lighthouse)	--	--	<29	120	<29
SB-101-13	0-0.5	SB-101-13-0-0.5	4/1/2019	101 (Lighthouse)	--	--	37	290	<39
SB-101-13	1.0-1.5	SB-101-13-1.0-1.5	4/1/2019	101 (Lighthouse)	--	--	<30	160	<30
SB-DUP-10		SB-DUP-10	4/1/2019	101 (Lighthouse)	--	--	37	120	<33
SB-101-14	0-0.5	SB-101-14-0-0.5	4/1/2019	101 (Lighthouse)	--	--	<35	130	<35
SB-101-14	1.0-1.5	SB-101-14-1.0-1.5	4/1/2019	101 (Lighthouse)	--	--	<31	<61	<31
SB-101-15	0-0.5	SB-101-15-0-0.5	4/1/2019	101 (Lighthouse)	--	--	<36	140	<36
SB-101-15	0.5-1.0	SB-101-15-0.5-1.0	4/1/2019	101 (Lighthouse)	--	--	<35	140	<35
SB-101-16	0-0.5	SB-101-16-0-0.5	4/1/2019	101 (Lighthouse)	--	--	<34	87	<34
SB-101-16	0-0.5	SB-DUP-11	4/1/2019	101 (Lighthouse)	--	--	<33	73	<33
SB-101-16	2.0-2.5	SB-101-16-2.0-2.5	4/1/2019	101 (Lighthouse)	--	--	<28	<56	<28
SB-107-1	0-0.5	SB-107-1-0-0.5	3/31/2019	107 (Firehouse Pump Bldg.)	--	--	530	760	--
SB-107-1	1.0-1.5	SB-107-1-1-1.5	3/31/2019	107 (Firehouse Pump Bldg.)	--	--	710	720	--
SB-107-2	0-0.5	SB-107-2-0-0.5	3/31/2019	107 (Firehouse Pump Bldg.)	--	--	420	890	--
SB-107-2	0.5-1.0	SB-107-2-0.5-1	3/31/2019	107 (Firehouse Pump Bldg.)	--	--	270	500	--
SB-107-3	0-0.5	SB-107-3-0-0.5	3/31/2019	107 (Firehouse Pump Bldg.)	--	--	**2,700**	**2,900**	--
SB-107-3	0.5-1.0	SB-107-3-0.5-1	3/31/2019	107 (Firehouse Pump Bldg.)	--	--	1,600	**2,300**	--

Table 5a
Discrete Sampling Analytical Results - Total Lead and TPH
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington

Location	Depth (feet bgs)	Sample ID	Date	Area	Total Lead	GRO	DRO	HO	Mineral Oils
MTCA Method A Soil Cleanup Level[1]					**250**	**30/100**[2]	**2,000**	**2,000**	**--**
SB-107-4	0-0.5	SB-107-4-0-0.5	3/31/2019	107 (Firehouse Pump Bldg.)	--	--	1,300	1,300	--
SB-107-4	0-0.5	SB-DUP-6	3/31/2019	107 (Firehouse Pump Bldg.)	--	--	1,000	1,100	--
SB-107-4	0.5-1.0	SB-107-4-0.5-1	3/31/2019	107 (Firehouse Pump Bldg.)	--	--	370	350	--
SB-107-5	0-0.5	SB-107-5-0-0.5	3/31/2019	107 (Firehouse Pump Bldg.)	--	--	140	400	--
SB-107-5	0.5-1.0	SB-107-5-0.5-1	3/31/2019	107 (Firehouse Pump Bldg.)	--	--	130	300	--
SB-107-6	0-0.5	SB-107-6-0-0.5	3/31/2019	107 (Firehouse Pump Bldg.)	--	--	920	1,200	--
SB-107-6	0.5-1.0	SB-107-6-0.5-1	3/31/2019	107 (Firehouse Pump Bldg.)	--	--	580	810	--
SB-104-1	0-0.5	SB-104-1-0-0.5	3/31/2019	104 (OIC Quarters)	--	--	56	400	--
SB-104-1	2.5-3.0	SB-104-1-2.5-3	3/31/2019	104 (OIC Quarters)	--	--	<30	100	--
SB-104-2	0-0.5	SB-104-2-0-0.5	3/31/2019	104 (OIC Quarters)	--	--	120	290	--
SB-104-2	4.0-4.5	SB-104-2-4-4.5	3/31/2019	104 (OIC Quarters)	--	--	74	96	--
SB-104-3	0-0.5	SB-104-3-0-0.5	3/31/2019	104 (OIC Quarters)	--	--	36	190	--
SB-104-3	2.5-3.0	SB-104-3-2.5-3	3/31/2019	104 (OIC Quarters)	--	--	<29	69	--
SB-102-1	0-0.5	SB-102-1-0-0.5	4/1/2019	102 (Oil and Paint Storage Bldg.)	--	<11	36	330	--
SB-102-1	0-0.5	SB-DUP-7	4/1/2019	102 (Oil and Paint Storage Bldg.)	--	<10	88	440	--
SB-102-1	1.5-2.0	SB-102-1-1.5-2.0	4/1/2019	102 (Oil and Paint Storage Bldg.)	--	10	<35	100	--
SB-102-2	0-0.5	SB-102-2-0-0.5	4/1/2019	102 (Oil and Paint Storage Bldg.)	--	18	140	690	--
SB-102-3	0-0.5	SB-102-3-0-0.5	4/1/2019	102 (Oil and Paint Storage Bldg.)	--	<14	150	860	--
SB-102-3	0.5-1.0	SB-102-3-0.5-1.0	4/1/2019	102 (Oil and Paint Storage Bldg.)	--	<13	<35	220	--
SB-06-10	2.0-2.5	SB-06-10-2.0-2.5	3/27/2019	DU 6 (Oil and Paint Storage Bldg.)	**1,800**	--	--	--	--
SB-06-22	3.0-3.5	SB-06-22-3.0-3.5	3/27/2019	DU 6 (Oil and Paint Storage Bldg.)	10	--	--	--	--
SB-106-1	0-0.5	SB-106-1-0-0.5	3/31/2019	106 (Pumphouse and spring cistern)	44	--	--	--	--
SB-106-1	2.0-2.3	SB-106-1-2-2.3	3/31/2019	106 (Pumphouse and spring cistern)	<6.2	--	--	--	--
SB-106-2	0-0.5	SB-106-2-0-0.5	3/31/2019	106 (Pumphouse and spring cistern)	110	--	--	--	--
SB-106-2	2.0-2.5	SB-106-2-2.0-2.5	3/31/2019	106 (Pumphouse and spring cistern)	13	--	--	--	--
SB-106-2	2.0-2.5	SB-DUP-1	3/31/2019	106 (Pumphouse and spring cistern)	9	--	--	--	--
SB-106-3	0-0.5	SB-106-3-0-0.5	3/31/2019	106 (Pumphouse and spring cistern)	7	--	--	--	--
SB-106-3	2.0-2.5	SB-106-3-2-2.5	3/31/2019	106 (Pumphouse and spring cistern)	<6.0	--	--	--	--

Table 5a
Discrete Sampling Analytical Results - Total Lead and TPH
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington

Location	Depth (feet bgs)	Sample ID	Date	Area	Total Lead	GRO	DRO	HO	Mineral Oils
MTCA Method A Soil Cleanup Level[1]					**250**	**30/100**[2]	**2,000**	**2,000**	**--**
SED-1[3]	0-0.5	SED-1	4/1/2019	Shoreline	<5.3	--	--	--	--
SED-2[3]	0-0.5	SED-2	4/1/2019	Shoreline	<5.9	--	--	--	--

Notes:

1. Screening level based on MTCA Method A Soil Cleanup Levels for Unrestricted Land Uses, WAC Chapter 173-340-900, Table 740-1.
2. Screening level for GRO is 100 mg/kg if benzene is not detected and 30 mg/kg if it is present.
3. Samples SED-1 and SED-2 were collected from exposed sand in intertidal area to the northeast of the Boathouse.

Bold and highlighted values are greater than their respective MTCA Method A cleanup level
bgs = below ground surface
DRO = Total petroleum hydrocarbons, diesel range organics by NWTPH-Dx Method
DUP = Duplicate sample
GRO = Total petroleum hydrocarbons, gasoline range organics by NWTPH-Gx Method
HO = Total petroleum hydrocarbons, heavy oil range by NWTPH-Dx Method
Lead by EPA Method 6020A
Mineral Oil by NWTPH-Dx Method
MTCA = Model Toxics Control Act
mg/kg = milligrams per kilogram
J = The compound was positively identified; however, the associated numerical value is an established concentration only.
< = analyte was not detected. The associated value is the analyte reporting limit.
-- = not analyzed

Table 5b

Discrete Sampling Analytical Results - TPH and VOCs

United States Coast Guard
Burrows Island Light Station
Anacortes, Washington

Location	MTCA Method A Soil Cleanup Level[1]	SB-112-6	SB-107-3	SB-107-3
Depth (feet bgs)		**0-0.5**	**0-0.5**	**0.5-1.0**
Sample ID		**SB-112-6-0-0.5**	**SB-107-3-0-0.5**	**SB-107-3-0.5-1**
Date		**3/31/2019**	**3/31/2019**	**3/31/2019**
Area		**112 (10,000-Gal AST)**	**107 (Firehouse Pump Bldg.)**	**107 (Firehouse Pump Bldg.)**
C8-C10 Aliphatic	--	<5.0	280	51
C10-C12 Aliphatic	--	<5.0	8.0	6.6
C12-C16 Aliphatic	--	14	89	100
C16-C21 Aliphatic	--	190	740	500
C21-C34 Aliphatic	--	79	310	200
C8-C10 Aromatic	--	<5.0	33	6.1
C10-C12 Aromatic	--	<5.0	9.2	<5.0
C12-C16 Aromatic	--	<5.0	<5.0	<5.0
C16-C21 Aromatic	--	20	93	52
C21-C34 Aromatic	--	20	93	59
Benzene	**0.03**	<0.0018 UJ	<0.0015 UJ	--
Toluene	**7**	<0.0091 UJ	<0.0074 UJ	--
Ethylbenzene	**6**	<0.0018 UJ	<0.0015 UJ	--
Total Xylenes	**9**	<0.0054 UJ	<0.0045 UJ	--
Benzo(a)anthracene	--	<0.014	<0.0089	<0.0087
Chrysene	--	<0.023	<0.012	<0.0087
Benzo(b)fluoranthene	--	<0.011	<0.0089	<0.0087
Benzo(j,k)fluoranthene	--	<0.011	<0.0089	<0.0087
Benzo(a)pyrene	**0.1**	<0.011	<0.0089	<0.0087
Indeno(1,2,3-cd)pyrene	--	<0.011	<0.0089	<0.0087
Dibenz(a,h)anthracene	--	<0.011	<0.0089	<0.0087

Notes:

1. Screening level based on MTCA Method A Soil Cleanup Levels for Unrestricted Land Uses, WAC Chapter 173-340-900, Table 740-1.

Bold and highlighted values are greater than their respective MTCA Method A cleanup level
bgs = below ground surface
DUP = Duplicate sample
MTCA = Model Toxics Control Act
mg/kg = milligrams per kilogram
UJ = The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
< = analyte was not detected. The associated value is the analyte reporting limit.
-- = not analyzed

Table 5c
Discrete Sampling Analytical Results - Polychlorinated Biphenyls
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington

Location	Depth (feet bgs)	Sample ID	Date	Area	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs[2]
MTCA Method A Soil Cleanup Level[1]					--	--	--	--	--	--	--	**1**
SB-101-4	0-0.5	SB-101-4-0-0.5	4/1/2019	101 (Lighthouse)	<0.61 UJ	<0.61 UJ	<0.61 UJ	<0.61 UJ	<0.61 UJ	<0.61 UJ	2.9 J	**2.9**
SB-101-4	2.0-2.5	SB-101-4-2.0-2.5	4/1/2019	101 (Lighthouse)	<0.063	<0.063	<0.063	<0.063	<0.063	<0.063	0.37	0.37
SB-101-4	2.0-2.5	SB-DUP-8	4/1/2019	101 (Lighthouse)	<0.063	<0.063	<0.063	<0.063	<0.063	<0.063	0.52	0.52
SB-101-5	0-0.5	SB-101-5-0-0.5	4/1/2019	101 (Lighthouse)	<6.4 UJ	<6.4 UJ	<6.4 UJ	<6.4 UJ	<6.4 UJ	<6.4 UJ	45 J	**45**
SB-101-5	0.5-1.0	SB-101-5-0.5-1.0	4/1/2019	101 (Lighthouse)	<0.059	<0.059	<0.059	<0.059	<0.059	<0.059	0.95	0.95
SB-101-6	0-0.5	SB-101-6-0-0.5	4/1/2019	101 (Lighthouse)	<0.065	<0.065	<0.065	<0.065	<0.065	<0.065	0.58	0.58
SB-101-6	0.5-1.0	SB-101-6-0.5-1.0	4/1/2019	101 (Lighthouse)	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
SB-101-7	0-0.5	SB-101-7-0.5-1.0	4/1/2019	101 (Lighthouse)	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	1.2	**1.2**
SB-101-7	1.5-2.0	SB-101-7-1.5-2.0	4/1/2019	101 (Lighthouse)	<0.065	<0.065	<0.065	<0.065	<0.065	<0.065	0.11	0.11
SB-101-8	0-0.5	SB-101-8-0-0.5	4/1/2019	101 (Lighthouse)	<0.068	<0.068	<0.068	<0.068	<0.068	<0.068	0.28	0.28
SB-101-8	1.0-1.5	SB-101-8-1.0-1.5	4/1/2019	101 (Lighthouse)	<0.063	<0.063	<0.063	<0.063	<0.063	<0.063	0.26	0.26
SB-101-9	0-0.5	SB-101-9-0-0.5	4/1/2019	101 (Lighthouse)	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.64 J	0.64
SB-101-9	0-0.5	SB-DUP-9	4/1/2019	101 (Lighthouse)	<0.068	<0.068	<0.068	<0.068	<0.068	<0.068	1.3 J	**1.3**
SB-101-9	1.5-2.0	SB-101-9-1.5-2.0	4/1/2019	101 (Lighthouse)	<0.059	<0.059	<0.059	<0.059	<0.059	<0.059	<0.059	<0.059
SB-101-10	0-0.5	SB-101-10-0-0.5	4/1/2019	101 (Lighthouse)	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	1.4	**1.4**
SB-101-10	0.5-1.0	SB-101-10-0.5-1.0	4/1/2019	101 (Lighthouse)	<0.057	<0.057	<0.057	<0.057	<0.057	<0.057	0.32	0.32
SB-101-11	0-0.5	SB-101-11-0-0.5	4/1/2019	101 (Lighthouse)	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	0.68	0.68
SB-101-11	0.5-1.0	SB-101-11-0.5-1.0	4/1/2019	101 (Lighthouse)	<0.063	<0.063	<0.063	<0.063	<0.063	<0.063	0.28	0.28
SB-101-12	0-0.5	SB-101-12-0-0.5	4/1/2019	101 (Lighthouse)	<1.2 UJ	<1.2 UJ	<1.2 UJ	<1.2 UJ	<1.2 UJ	<1.2 UJ	4.3 J	**4.3**
SB-101-12	1.0-1.5	SB-101-12-1.0-1.5	4/1/2019	101 (Lighthouse)	<0.057	<0.057	<0.057	<0.057	<0.057	<0.057	1.2	**1.2**
SB-101-13	0-0.5	SB-101-13-0-0.5	4/1/2019	101 (Lighthouse)	<1.3 UJ	<1.3 UJ	<1.3 UJ	<1.3 UJ	<1.3 UJ	<1.3 UJ	6.4 J	**6.4**
SB-101-13	1.0-1.5	SB-101-13-1.0-1.5	4/1/2019	101 (Lighthouse)	<1.2 UJ	<1.2 UJ	<1.2 UJ	<1.2 UJ	<1.2 UJ	<1.2 UJ	4.9 J	**4.9**
SB-101-14	0-0.5	SB-DUP-10	4/1/2019	101 (Lighthouse)	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	1.2	**1.2**
SB-101-14	0-0.5	SB-101-14-0-0.5	4/1/2019	101 (Lighthouse)	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	1.7	**1.7**
SB-101-14	1.0-1.5	SB-101-14-1.0-1.5	4/1/2019	101 (Lighthouse)	<0.061	<0.061	<0.061	<0.061	<0.061	<0.061	1.2	**1.2**
SB-101-15	0-0.5	SB-101-15-0-0.5	4/1/2019	101 (Lighthouse)	<0.072	<0.072	<0.072	<0.072	<0.072	<0.072	0.32	0.32
SB-101-15	0.5-1.0	SB-101-15-0.5-1.0	4/1/2019	101 (Lighthouse)	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	0.28	0.28
SB-101-16	0-0.5	SB-101-16-0-0.5	4/1/2019	101 (Lighthouse)	<0.068	<0.068	<0.068	<0.068	<0.068	<0.068	0.40	0.40
SB-101-16	0-0.5	SB-DUP-11	4/1/2019	101 (Lighthouse)	<0.067	<0.067	<0.067	<0.067	<0.067	<0.067	0.51	0.51
SB-101-16	2.0-2.5	SB-101-16-2.0-2.5	4/1/2019	101 (Lighthouse)	<1.1 UJ	<1.1 UJ	<1.1 UJ	<1.1 UJ	<1.1 UJ	<1.1 UJ	3.8 J	**3.8**

Notes:
1. Screening level based on MTCA Method A Soil Cleanup Levels for Unrestricted Land Uses, WAC Chapter 173-340-900, Table 740-1.
2. Total PCBs are the sum of detected concentrations of Arochlor constituents. Where no concentrations were detected for any individual Arochlor compounds, the Total PCB concentration is assumed to be non-detect at the reporting limit.

Bold and highlighted values are greater than their respective MTCA Method A cleanup level
bgs = below ground surface
DUP = Duplicate sample
MTCA = Model Toxics Control Act
mg/kg = milligrams per kilogram
PCB = Polychlorinated biphenyls
J = The compound was positively identified; however, the associated numerical value is an established concentration only.
UJ = The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
-- = Not analyzed
< = analyte was not detected. The associated value is the analyte reporting limit.

Table 6
Summary Statistics for Replicate ISM Samples
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington

Sample ID	Date	Decision Unit	Area	Depth (feet bgs)	Total Lead (mg/kg)	Mean	SD	CV	Student's t 95% UCL
MTCA Method A Soil Cleanup Level					**250**				**--**
ISM-02-A-0.5-1.0	3/26/2019	2	105 - Boathouse	0.5-1	35	57	26	0.45	--
ISM-02-B-0-0.5	3/27/2019	2	105 - Boathouse	0-0.5	50				
ISM-02-C-0-0.5	3/27/2019	2	105 - Boathouse	0-0.5	85				
ISM-06-A-0-0.5	3/25/2019	6	102 - Oil and Paint Storage Building	0-0.5	**1,300**	1,600	361	0.23	--
ISM-06-B-0-0.5	3/27/2019	6	102 - Oil and Paint Storage Building	0-0.5	**2,000**				
ISM-06-C-0-0.5	3/27/2019	6	102 - Oil and Paint Storage Building	0-0.5	**1,500**				
ISM-08-A-0-0.5	3/26/2019	8	101 - Light and Fog Signal Building	0-0.5	**1,300**	1,233	115	0.094	1,428
ISM-08-B-0-0.5	3/27/2019	8	101 - Light and Fog Signal Building	0-0.5	**1,100**				
ISM-08-C-0-0.5	3/27/2019	8	101 - Light and Fog Signal Building	0-0.5	**1,300**				
ISM-13-A-0-0.5	3/28/2019	13	103 - Duplex	0-0.5	170	167	35	0.21	226
ISM-13-B-0-0.5	3/29/2019	13	103 - Duplex	0-0.5	130				
ISM-13-C-0-0.5	3/29/2019	13	103 - Duplex	0-0.5	200				

Notes:

1. Screening level based on MTCA Method A Soil Cleanup Levels for Unrestricted Land Uses, WAC Chapter 173-340-900, Table 740-1.
2. Student's t test was used to calculate UCLs in accordance with ITRC Technical and Regulatory Guidance, Incremental Sampling Methodology, February 2012.

Bold and highlighted values are greater than their respective MTCA Method A cleanup level

bgs = below ground surface

CV = coefficient of variance

MTCA = Model Toxics Control Act

mg/kg = milligrams per kilogram

SD = standard deviation

UCL = upper confidence limit

Table 7
Estimated Remedial Quantities
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington

Remedial Area	Estimated Removal Depth (feet bgs)	Contaminants above MTCA Method A CULs	DU Surface Area (SF)	Estimated Removal Volume (CY)
A	0.5	Lead	2,070	38
B	1.5	Lead	1,100	61
C	2	Lead	650	48
D	3	Lead	600	67
E	1	Lead	3,690	137
F	0.5	Lead	1,210	22
G	0.5	Lead	790	15
H	0.5	Lead	8,290	154
I	2	Lead, GRO, HO	4,400	326
J	2	Lead, PCB	1,910	141
K	3	Lead, PCB	2,460	273
L	1	Lead	680	25
M	0.5	Lead, HO	1,150	21
N	0.5	Lead	90	2
O	0.5	Lead	400	7
P	0.5	Lead	320	6
Total			**29,810**	**1,350**

Notes:

CULs = cleanup levels

CY = cubic yard

bgs = below ground surface

GRO = gasoline range organics

HO = heavy oil

MTCA = Model Toxics Control Act

PCBs = polychlorinated biphenyl

SF = square feet

Table 8
Preliminary Remedial Technology Screening
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington

Remedial Technology	Effectiveness in Achieving RAOs	Effectiveness in Treating Source	Implementability	Preliminary Costs[1]	Retained for Detailed Analysis
No Action	No	No	High	$ -	Yes
Paint Encapsulation	No	Yes	High	$ 16,000	No
Capping	No	No	Medium	$ 880,000	No
Capping + Paint Encapsulation	No	Yes	Medium	$ 890,000	No
Capping + Paint Encapsulation + PCB Area Excavation (offsite disposal)	Yes	Yes	Medium	$ 1,300,000	Yes
Excavation (onsite encapsulation)	No	No	Medium	$ 1,060,000	No
Excavation (onsite encapsulation) + Paint Encapsulation + PCB Area Excavation (offsite disposal)	Yes	Yes	Medium	$ 1,300,000	Yes
Excavation (offsite disposal) + Paint Encapsulation	Yes	Yes	Medium	$ 1,080,000	Yes
In-situ Chemical Stabilization	No	No	Medium	$ 360,000	No
In-situ Chemical Stabilization + Paint Encapsulation + PCB Area Excavation (offsite disposal)	No	Yes	Medium	$ 610,000	No

Notes:

RAOs = remedial action objectives

1. Estimated costs include present value of 30 years of operations and maintenace (for capping and onsite encapsulation). Contingencies are not included.

Table 9
Alternative Quantity Summary
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington

Alternative	Description	Unit	Quantity
Alternative 2 - Capping	Cap Area	SF	26,000
	Soil Excavation and Disposal	CY	410
	Area Requiring Institutional Controls[1]	SF	26,000
Alternative 3 - Excavation and Onsite Encapsulation	Soil Excavation	CY	1,350
	Onsite Encapsulation	CY	940
	Offsite Disposal	CY	410
	Imported Backfill[2]	CY	510
	Area Requiring Institutional Controls[1]	SF	11,000
Alternative 4 - Excavation and Offsite Disposal	Soil Excavation	CY	1,350
	Offsite Disposal	CY	1,350
	Imported Backfill[2]	CY	510

Notes:

1. Institutional controls would be implemented in areas where contaminated soil is designed to remain in place onsite and may include restrictions on future development, fencing, or other barriers and demarcation.

2. Imported backfill is assumed for areas with removal greater than 1.0 feet bgs. Areas would be backfilled to 1.0 feet bgs and the remaining surface would be graded or backfilled using borrowed material from the site.

CY = cubic yard

SF = square feet

Table 10
Detailed Evaluation of Remedial Alternatives
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington

Alternative	Overall Protection of Human Health and the Environment	Compliance with ARARs	Long-term Effectiveness and Permanence	Reductions in Toxicity, Mobility, and Volume Through Treatment	Short-term Effectiveness	Implementability	Estimated Cost[1]	State Acceptance of Remedy	Community Acceptance of Remedy
Alternative 1 - No Action	Low - no change to current conditions.	Not compliant. Uncontrolled risks would remain in place.	Not effective.	No treatment included in alternative.	Potential exposure of to site visitors to uncontrolled contaminated materials.	Readily implemented.	$0	Low - not acceptable to Ecology	Low - no change would not allow transfer of property and not allow increased public access.
Alternative 2 - Capping[2]	Moderate - cap would mitigate direct contact pathway, but not reduce the size or area of contaimination. Direct contact for organisms in the soil still possible.	Complies with ARARs, but requires institutional controls and ongoing monitoring to comply with MTCA.	Effective when paired with institutional controls and monitoring.	No treatment included in alternative.	Potential exposure to site workers during implementation and to site visitors.	Readily implemented using available commercial products, equipment, and skilled labor. May substantially change grading and potentially be incompatible with maintenance of hisotorical structures.	$1,440,000	Low - Ecology preference for alternative that would eliminate risk and not maintain contaminants at the site.	Low - continued restrictions of site based on impacts remaining in place.
Alternative 3 - Excavation and Onsite Encapsulation[2]	High - direct contact pathway would be mitigated by consolidating materials in engineered repostitory.	Complies with ARARs, but requires institutional controls and ongoing monitoring to comply with MTCA.	Effective when paired with institutional controls and monitoring. More robust than Alternative 2.	No treatment included in alternative.	Potential exposure to site workers during implementation and to site visitors.	Readily implemented using available commercial products, equipment, and skilled labor. May substantially change site use and characteristics in the vicinity of hisotrical structures (i.e. fencing around repository).	$1,470,000	Low - Ecology preference for alternative that would eliminate risk and not maintain contaminants at the site.	Low - continued restrictions of site based on impacts remaining on site.
Alternative 4 - Excavation and Offsite Disposal[2]	High - direct contact pathway would be mitigated by offsite removal of materials.	Complies with ARARs and meets the definition of a permenent solution under MTCA.	Effective and permanent solution.	No treatment included in alternative.	Potential exposure to site workers during implementation and to the public during transportation of materials to disposal facility.	Readily implemented using available commercial products, equipment, and skilled labor.	$1,300,000	High - Ecology stated preference for Alternative 4 as protective of the communicty and stakeholders.	High - allows for transfer of property with no remaining restrictions and highest level of access. Stated preference of multiple stakeholder groups based on public comments.
Alternative 2/3/4 - PCB Soil Removal and Offsite Disposal	High - direct contact pathway would be mitigated by offsite removal of materials.	Complies with ARARs and meets the definition of a permenent solution under MTCA.	Effective and permanent solution.	None required, but may be implemented based on the requirements of disposal facility.	Potential exposure to site workers during implementation and to the public during transportation of materials to disposal facility.	Readily implemented using available commercial products, equipment, and skilled labor.	Costs included in Alternatives 2, 3 and 4.	High - Ecology stated preference for Alternative 4 as protective of the communicty and stakeholders.	High - allows for transfer of property with no remaining restrictions and highest level of access. Stated preference of multiple stakeholder groups based on public comments.
Alternative 2/3/4 - Building Encapsulation Repair and Removal of Asbestos Roofing Materials	High - direct contact pathway would be mititgated for exposure to building materials and reduction in risk of recontamination of soil from source material.	Complies with ARARs and may require intermittent maintenance.	Effective at mitigating direct contact and controlling source material.	Reduced mobility of source material due to encapsulation of paint and removal of roofing materials.	Potential exposure to site workers during implementation and to site visitors.	Readily implemented using available commercial products, equipment, and skilled labor.	Costs included in Alternatives 2, 3 and 4.	High - Ecology stated preference for Alternative 4 as protective of the communicty and stakeholders.	High - allows for transfer of property with no remaining restrictions and highest level of access. Stated preference of multiple stakeholder groups based on public comments.

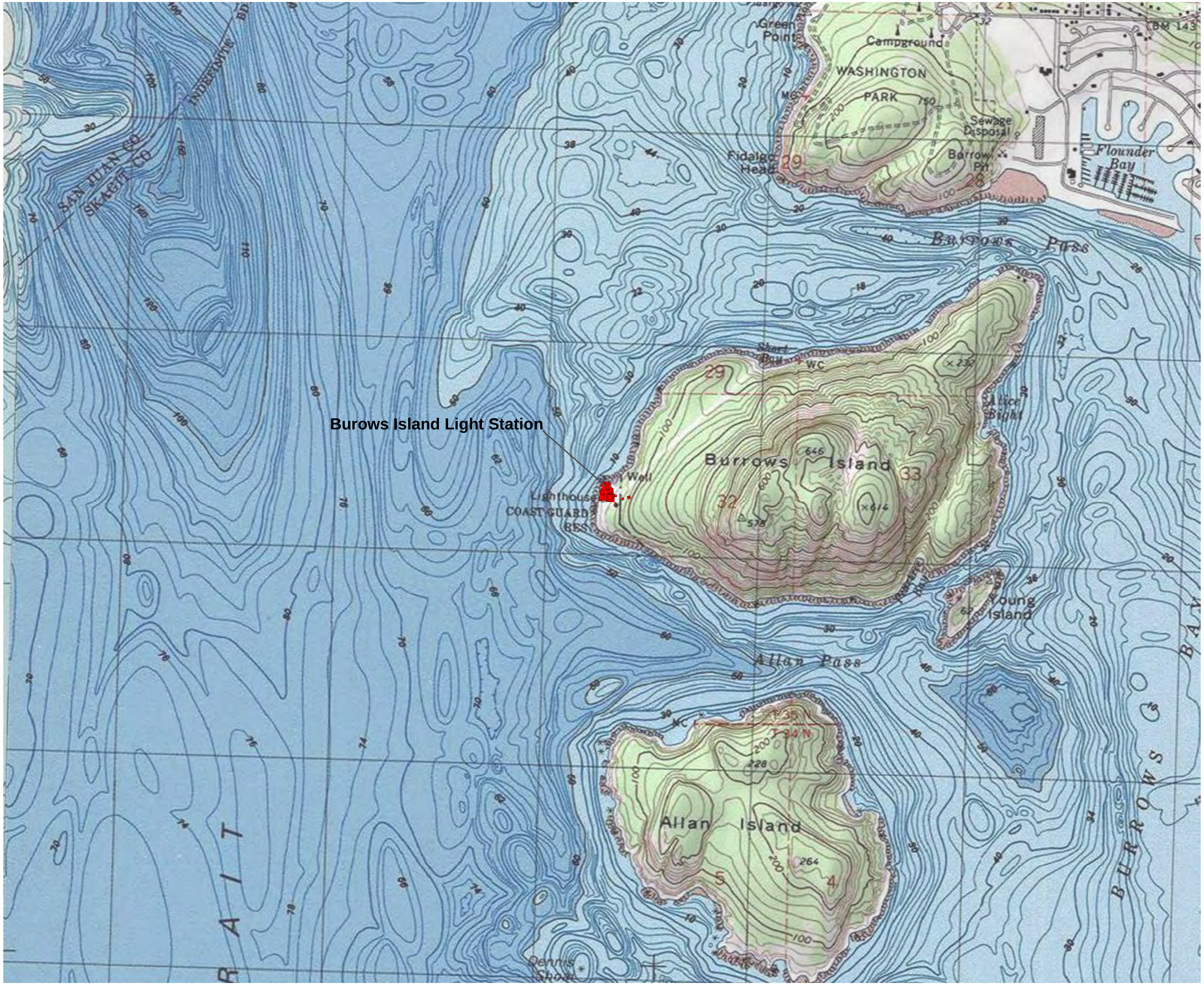
Notes:

ARAR = appropriate and relevant requirement
MTCA = Model Toxics Control Act
PCB = polychlorinated bipenyls

1. Estimated costs include present value of 30 years of operations and maintenace costs (assuming a 3% discount factor) and a 20 percent contingency on capital costs. Assumptions regarding units costs and details are provided in Appendix I.1. The level of accuracy of these estimated costs is “Order of Magnitude,” as defined by the American Association of Cost Engineers. The accuracy of an Order of Magnitude estimate is plus 50 percent and minus 30 percent. Cost estimates at this level may be used to compare alternatives, but should not be used to plan, finance, or develop projects. Changes in the cost elements are likely to occur during the engineering design of the remedial alternative. The cost estimate was prepared in general accordance with regulatory guidance for cost estimating (USEPA 2000). Unit costs were selected based on previous remediation and project experience and based on budgetary quotes for some materials and services.

2. Repair work to the stair case connecting the dock and the site will be completed to facilitate safe access to the work area as part of the remedial alternative.

FIGURES



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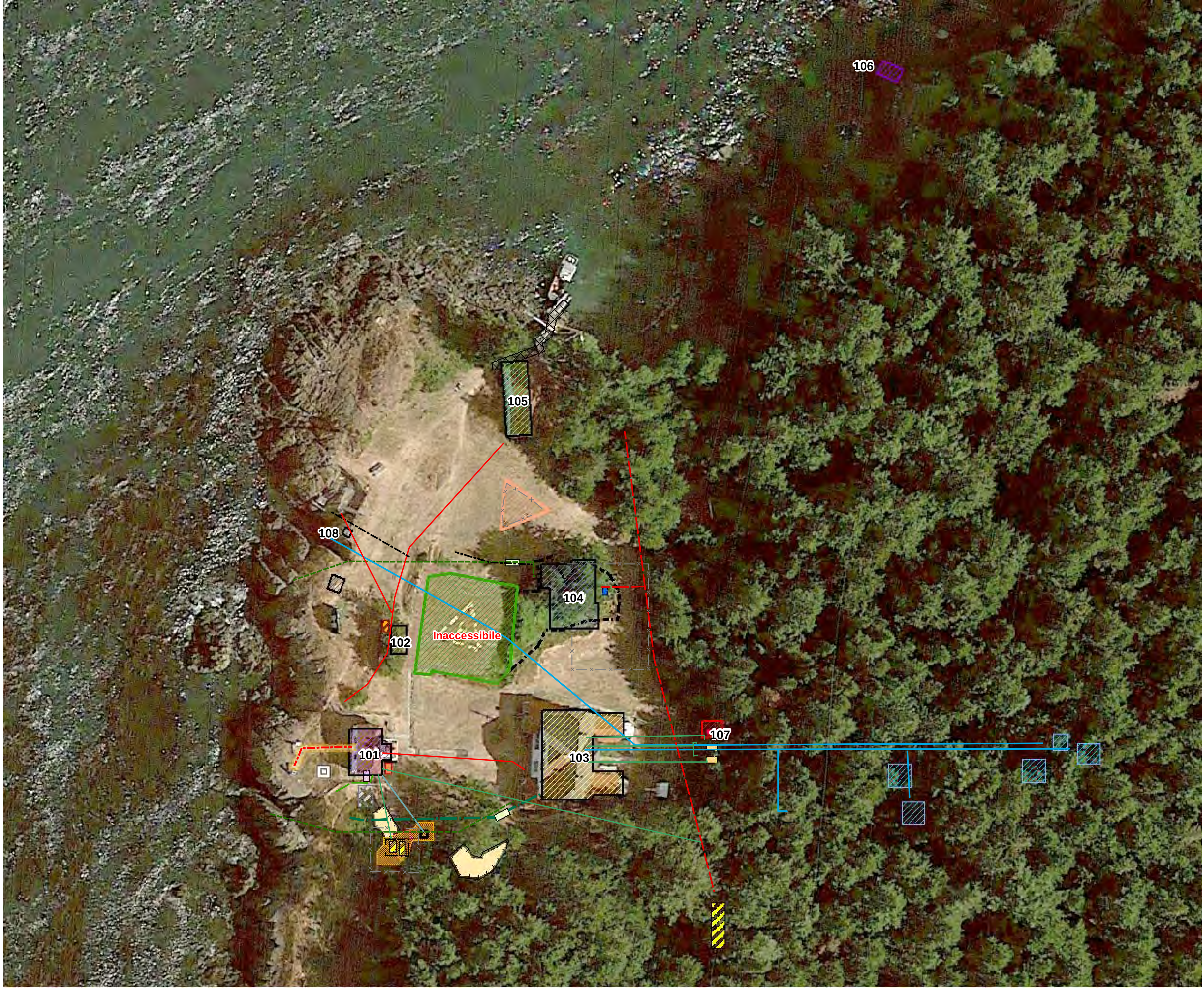
UNITED STATES COAST GUARD
BURROWS ISLAND LIGHT STATION
SKAGIT COUNTY, WASHINGTON
REMEDIAL INVESTIGATION AND FOCUSED FEASBILITY STUDY

Site Location Map

ARCADIS Design & Consultancy for natural and built assets

FIGURE
1

DIV/GROUP: ENV/IMDV DB: mayyar7350 LD: PIC: PM: TM:
PROJECT: PATH: Z:\GISProjects_ENV\Burrows_Island_Lighthouse_2018\MXD\Figure1_SiteLocationMap.mxd DATE: 7/24/2019 10:40:47 PM



LEGEND

Structures

▨ Lighthouse
▨ Oil and Paint Storage Building
☐ Duplex
▨ Officer In Charge Quarters
▨ Boathouse
▨ Pumphouse and Spring Cistern
▨ Firehouse Pump Building
☐ Saltwater Flushing Pumphouse
☐ Area Based on Accessibilty
■ 675-Gallon Fuel OIl Tank
▨ 540-Gallon Fuel Tank
▨ Excavated Tank Area
☐ Fuel Oil Tank
■ F.O. Tank
▨ 690-Gallon Fuel Tank
▨ Old Cistern
▨ Transformer Pad
■ Fire Pump
☐ Dark Staining
▨ Old Helicopter Pad
▨ Helicopter Pad
☐ Debris Pile
▩ Inaccessible Area
▨ Water Tanks/Platforms
▨ Elevated 10,000-Gallon Fuel Oil Tank
☐ Septic Tank
▨ Cistern
■ 675-Gallon Fuel Oil Tank
☐ Fuel Oil Tank
▨ Gasoline Storage Tank
☒ Landing/Dock

☐ 3-foot Utility Line Buffer
Active Electric Utility Line
Water Line
Electric Line
Septic Line
2-inch Abandoned Conduit
Tank Fence
Fuel Line
Drain Pipe
Concrete Containment
4-inch Sewer
Fence
3-inch Sewer Line
Fuel Pipe

Note:
1. Site features based on U.S. Coast Guard historical drawing Fire Protection, Water & Sewer Systems, Burrows Island Light Station, Dwg No. 60.5804, December 1960.

0 50 100
SCALE IN FEET

UNITED STATES COAST GUARD
BURROWS ISLAND LIGHT STATION
SKAGIT COUNTY, WASHINGTON
REMEDIAL INVESTIGATION AND FOCUSED FEASBILITY STUDY

Site Plan with Current and Historical Features

ARCADIS Design & Consultancy for natural and built assets

FIGURE
2

LEGEND

01 Decision Unit (DU)

SU-2 DU Subunit

Structures

▨ Lighthouse

▨ Oil and Paint Storage Building

▨ Duplex

▨ Officer In Charge Quarters

▨ Boathouse

▨ Pumphouse and Spring Cistern

▨ Firehouse Pump Building

▨ Saltwater Flushing Pumphouse

▨ Water Tanks/Platforms

▨ Elevated 10,000-Gallon Fuel Oil Tank

■ Septic Tank

■ 675-Gallon Fuel Oil Tank

■ Fuel Oil Tank

▨ Gasoline Storage Tank

▨ Landing/Dock

Notes:

1. Site features based on U.S. Coast Guard historical drawing Fire Protection, Water & Sewer Systems, Burrows Island Light Station, Dwg No. 60.5804, December 1960.

0 60 120

SCALE IN FEET

UNITED STATES COAST GUARD
BURROWS ISLAND LIGHT STATION
SKAGIT COUNTY, WASHINGTON
REMEDIAL INVESTIGATION AND FOCUSED FEASBILITY STUDY

Locations of Decision Units and Subunits

ARCADIS Design & Consultancy for natural and built assets

FIGURE

3

CITY: SAN FRANCISCO DIV/GROUP: ENV/IM DB: mayyar7350 LD: PIC: PM: TM:
PROJECT: PATH: Z:\GISProjects_ENV\Burrows_Island_Lighthouse_2018\MXD\Figure 3 - ISM Decision Units.mxd DATE: 7/25/2019 2:24:04 AM

CITY: SAN FRANCISCO DIV/GROUP: ENV/IM DB: mayyar7350 LD: PIC: PM: TM:
PROJECT: PATH: Z:\GISProjects_ENV\Burrows_Island_Lighthouse_2018\MXD\Figure 4 - Discrete Sampling Locations.mxd DATE: 7/24/2019 11:31:09 PM

LEGEND

- - - Fuel Pipe
● GRO
● LEAD
● PCB/MINERAL OILS/DRO/HO
● DRO/HO

Structures

▨ Lighthouse
▨ Oil and Paint Storage Building
▨ Duplex
▨ Officer In-Charge Quarters
▨ Boathouse
▨ Pumphouse and Spring Cistern
▨ Firehouse Pump Building
▨ Saltwater Flushing Pumphouse
▨ Water Tank/Platform
■ Fuel Oil Tank
▨ 540-Gallon Fuel Tank
▨ Excavated Transformer Area
▨ 690-Gallon Fuel Tank
▨ Old Cistern
▨ Transformer Pad
▨ Old Helicopter Pad
▨ Helicopter Pad
■ Debris Pile
▨ Elevated 10,000-Gallon Fuel Oil Tank
■ Septic Tank
■ 675-Gallon Fuel Oil Tank
▨ Gasoline Storage Tank
▨ Landing/Dock

Notes:
DRO - diesel range organics
GRO - gasoline range organics
HO - heavy oils
PCB - polychlorinated biphenyl

0 60 120
SCALE IN FEET

UNITED STATES COAST GUARD
BURROWS ISLAND LIGHT STATION
SKAGIT COUNTY, WASHINGTON
REMEDIAL INVESTIGATION AND FOCUSED FEASBILITY STUDY

Discrete Sample Locations

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FIGURE
4

CITY: SAN FRANCISCO DIV/GROUP: ENV/IM DB: mayyar7350 LD: PIC: PM: TM:
PROJECT: PATH: Z:\GISProjects_ENV\Burrows_Island_Lighthouse_2018\MXD\Figure 5 -ISM Total Lead Analytical Results 0-0.5 Feet.mxd DATE: 7/25/2019 2:31:39 AM

DU 02
Replicate B - 50 mg/kg
Replicate C - 85 mg/kg

DU 06
Replicate B - 2,000 mg/kg
Replicate C - 1,500 mg/kg

DU 08
Replicate B - 1,100 mg/kg
Replicate C - 1,300 mg/kg

DU 13
Replicate B - 130 mg/kg
Replicate C - 200 mg/kg

LEGEND

01 Decision Unit (DU)
SU-2 DU Subunit

Structures

▨ Lighthouse
▨ Oil and Paint Storage Building
▨ Duplex
▨ Officer In Charge Quarters
▨ Boathouse
▨ Firehouse Pump Building
▨ Saltwater Flushing Pumphouse
▨ Water Tanks/Platforms
▨ Elevated 10,000-Gallon Fuel Oil Tank
🟩 Septic Tank
🟪 675-Gallon Fuel Oil Tank
🟨 Fuel Oil Tank
▨ Gasoline Storage Tank
⊠ Landing/Dock

Lead Concentrations (mg/kg)

⬚ No ISM Sample Collected
🟩 0 - 250 mg/kg
🟨 250 - 500 mg/kg
🟦 500 - 1,000 mg/kg
🟫 > 1,000 mg/kg

Notes:

1. Site features based on U.S. Coast Guard historical drawing Fire Protection, Water & Sewer Systems, Burrows Island Light Station, Dwg No. 60.5804, December 1960.
2. mg/kg - milligrams per kilogram
3. ISM - incremental sampling methodology
4. > - greater than

0 60 120
SCALE IN FEET

UNITED STATES COAST GUARD
BURROWS ISLAND LIGHT STATION
SKAGIT COUNTY, WASHINGTON
REMEDIAL INVESTIGATION AND FOCUSED FEASBILITY STUDY

ISM Total Lead Analytical Results: 0 to 0.5 foot

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FIGURE
5

LEGEND

- 01 Decision Unit (DU)
- SU-2 DU Subunit

Structures

- ▨ Lighthouse
- ▨ Oil and Paint Storage Building
- ▨ Duplex
- ▨ Officer In Charge Quarters
- ▨ Boathouse
- ▨ Firehouse Pump Building
- ▨ Saltwater Flushing Pumphouse
- ▨ Water Tanks/Platforms
- ▨ Elevated 10,000-Gallon Fuel Oil Tank
- ■ Septic Tank
- ■ 675-Gallon Fuel Oil Tank
- ■ Fuel Oil Tank
- ▨ Gasoline Storage Tank
- ☒ Landing/Dock

Lead Concentrations (mg/kg)

- ░ No ISM Sample Collected
- ■ 0 - 250 mg/kg
- ■ 250 - 500 mg/kg
- ■ 500 - 1,000 mg/kg
- ■ > 1,000 mg/kg

Notes:

1. Site features based on U.S. Coast Guard historical drawing Fire Protection, Water & Sewer Systems, Burrows Island Light Station, Dwg No. 60.5804, December 1960.
2. mg/kg - milligrams per kilogram
3. ISM - incremental sampling methodology
4. > - greater than

0 60 120

SCALE IN FEET

UNITED STATES COAST GUARD
BURROWS ISLAND LIGHT STATION
SKAGIT COUNTY, WASHINGTON
REMEDIAL INVESTIGATION AND FOCUSED FEASBILITY STUDY

ISM Total Lead Analytical Results: 0.5 to 1 foot

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FIGURE
6

CITY: SAN FRANCISCO DIV/GROUP: ENV/IM DB: mayyar7350 LD: PIC: PM: TM:
PROJECT: PATH: Z:\GISProjects_ENV\Burrows_Island_Lighthouse_2018\MXD\Figure 6 -ISM Total Lead Analytical Results 0.5-1.0 Feet.mxd DATE: 7/24/2019 11:43:44 PM

CITY: SAN FRANCISCO DIV/GROUP: ENV/IM DB: mayyar7350 LD: PIC: PM: TM:
PROJECT: PATH: Z:\GISProjects_ENV\Burrows_Island_Lighthouse_2018\MXD\Figure 7 -ISM Total Lead Analytical Results 1.0-1.5 Feet.mxd DATE: 7/24/2019 11:49:28 PM

LEGEND

- 01 Decision Unit (DU)
- SU-2 DU Subunit

Structures

- ▨ Lighthouse
- ▨ Oil and Paint Storage Building
- ▨ Duplex
- ▨ Officer In Charge Quarters
- ▨ Boathouse
- ▨ Firehouse Pump Building
- ▨ Saltwater Flushing Pumphouse
- ▨ Water Tanks/Platforms
- ▨ Elevated 10,000-Gallon Fuel Oil Tank
- ■ Septic Tank
- ■ 675-Gallon Fuel Oil Tank
- ■ Fuel Oil Tank
- ▨ Gasoline Storage Tank
- ⊠ Landing/Dock

Lead Concentrations (mg/kg)

- ⬚ No ISM Sample Collected
- 🟩 0 - 250 mg/kg
- 🟨 250 - 500 mg/kg
- 🟦 500 - 1,000 mg/kg
- 🟫 > 1,000 mg/kg

Notes:

1. Site features based on U.S. Coast Guard historical drawing Fire Protection, Water & Sewer Systems, Burrows Island Light Station, Dwg No. 60.5804, December 1960.
2. mg/kg - milligrams per kilogram
3. ISM - incremental sampling methodology
4. > - greater than

0 60 120

SCALE IN FEET

UNITED STATES COAST GUARD
BURROWS ISLAND LIGHT STATION
SKAGIT COUNTY, WASHINGTON
REMEDIAL INVESTIGATION AND FOCUSED FEASBILITY STUDY

ISM Total Lead Analytical Results:
1 to 1.5 feet

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FIGURE
7

CITY: SAN FRANCISCO DIV/GROUP: ENV/IM DB: mayyar7350 LD: PIC: PM: TM:
PROJECT: PATH: Z:\GISProjects_ENV\Burrows_Island_Lighthouse_2018\MXD\Figure 8 -ISM Total Lead Analytical Results 1.5-2.0 Feet.mxd DATE: 7/24/2019 11:51:53 PM

LEGEND

01	Decision Unit (DU)
SU-2	DU Subunit

Structures

▨	Lighthouse
▨	Oil and Paint Storage Building
▨	Duplex
▨	Officer In Charge Quarters
▨	Boathouse
▨	Firehouse Pump Building
▨	Saltwater Flushing Pumphouse
▨	Water Tanks/Platforms
▨	Elevated 10,000-Gallon Fuel Oil Tank
▨	Septic Tank
▨	675-Gallon Fuel Oil Tank
▨	Fuel Oil Tank
▨	Gasoline Storage Tank
▨	Landing/Dock

Lead Concentrations (mg/kg)

⬜	No ISM Sample Collected
🟩	0 - 250 mg/kg
🟨	250 - 500 mg/kg
🟦	500 - 1,000 mg/kg
🟫	> 1,000 mg/kg

Notes:

1. Site features based on U.S. Coast Guard historical drawing Fire Protection, Water & Sewer Systems, Burrows Island Light Station, Dwg No. 60.5804, December 1960.
2. mg/kg - milligrams per kilogram
3. ISM - incremental sampling methodology
4. > - greater than

0 60 120

SCALE IN FEET

UNITED STATES COAST GUARD
BURROWS ISLAND LIGHT STATION
SKAGIT COUNTY, WASHINGTON
REMEDIAL INVESTIGATION AND FOCUSED FEASBILITY STUDY

ISM Total Lead Analytical Results: 1.5 to 2 feet

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FIGURE
8

Sample	SB-06-10
Depth	2.0-2.5
Total Lead	**1,800**

LEGEND

- – – Fuel Pipe
- ○ Lead
- ○ Total Lead > 250 mg/kg

Structures

- ▨ Lighthouse
- ▨ Oil and Paint Storage Building
- ▨ Duplex
- ▨ Officer In-Charge Quarters
- ▨ Boathouse
- ▨ Pumphouse and Spring Cistern
- ▨ Firehouse Pump Building
- ▨ Saltwater Flushing Pumphouse
- ▨ Water Tank/Platform
- ■ Fuel Oil Tank
- ▨ 540-Gallon Fuel Tank
- ▨ Excavated Transformer Area
- ▨ 690-Gallon Fuel Tank
- ▨ Old Cistern
- ▨ Transformer Pad
- ▨ Old Helicopter Pad
- ▨ Helicopter Pad
- ▨ Debris Pile
- ▨ Elevated 10,000-Gallon Fuel Oil Tank
- ■ Septic Tank
- ■ 675-Gallon Fuel Oil Tank
- ▨ Gasoline Storage Tank
- ▨ Landing/Dock

Sample	Units	MTCA Method A Screening Level
Depth	feet bgs	--
Total Lead	mg/kg	**250**

Notes:

bgs - below ground surface
mg/kg - milligrams per kilogram

0 60 120

SCALE IN FEET

UNITED STATES COAST GUARD
BURROWS ISLAND LIGHT STATION
SKAGIT COUNTY, WASHINGTON
REMEDIAL INVESTIGATION AND FOCUSED FEASBILITY STUDY

Discrete Sample Results - Total Lead

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FIGURE

9

Sample	SB-107-3	
Depth	0-0.5	0.5-1.0
TPH-DRO	2,700	1,600
TPH-HO	2,900	2,300

Sample	SB-112-6
Depth	0-0.5
TPH-DRO	2,000
TPH-HO	2,700

LEGEND

- -	Fuel Pipe
●	GRO/DRO/HO
●	DRO/HO/Mineral Oil
●	Exceeds MTCA Method A standards

Structures

▨	Lighthouse
▨	Oil and Paint Storage Building
▨	Duplex
▨	Officer In-Charge Quarters
▨	Boathouse
▨	Firehouse Pump Building
▨	Saltwater Flushing Pumphouse
▨	Water Tank/Platform
■	Fuel Oil Tank
▨	540-Gallon Fuel Tank
▨	Excavated Transformer Area
▨	690-Gallon Fuel Tank
▨	Old Cistern
▨	Transformer Pad
▨	Old Helicopter Pad
▨	Helicopter Pad
▨	Debris Pile
▨	Elevated 10,000-Gallon Fuel Oil Tank
■	Septic Tank
■	675-Gallon Fuel Oil Tank
▨	Gasoline Storage Tank
▨	Landing/Dock

Sample	Units	MTCA Method A Screening Level
Depth	feet bgs	--
TPH-DRO	mg/kg	2,000
TPH-HO	mg/kg	2,000

Notes:
bgs - below ground surface
BTEX - benzene, toluene, ethylbenzene, xylenes
DRO - diesel range organics
GRO - gasoline range organics
HO - heavy oil
mg/kg - milligrams per kilogram
MTCA - Model Toxics Control Act
PCB - polychlorinated biphenyls
SVOC - semivolatile organic compounds
TPH - total petroleum hydrocarbons

1. Analytical samples from locations with GRO, DRO or HO concentrations above MTCA Method A screening levels were also analyzed for BTEX, SVOCs, and TPH fractions.

0 60 120
SCALE IN FEET

UNITED STATES COAST GUARD
BURROWS ISLAND LIGHT STATION
SKAGIT COUNTY, WASHINGTON
REMEDIAL INVESTIGATION AND FOCUSED FEASBILITY STUDY

Discrete Sampling Results - Petroleum Hydrocarbons

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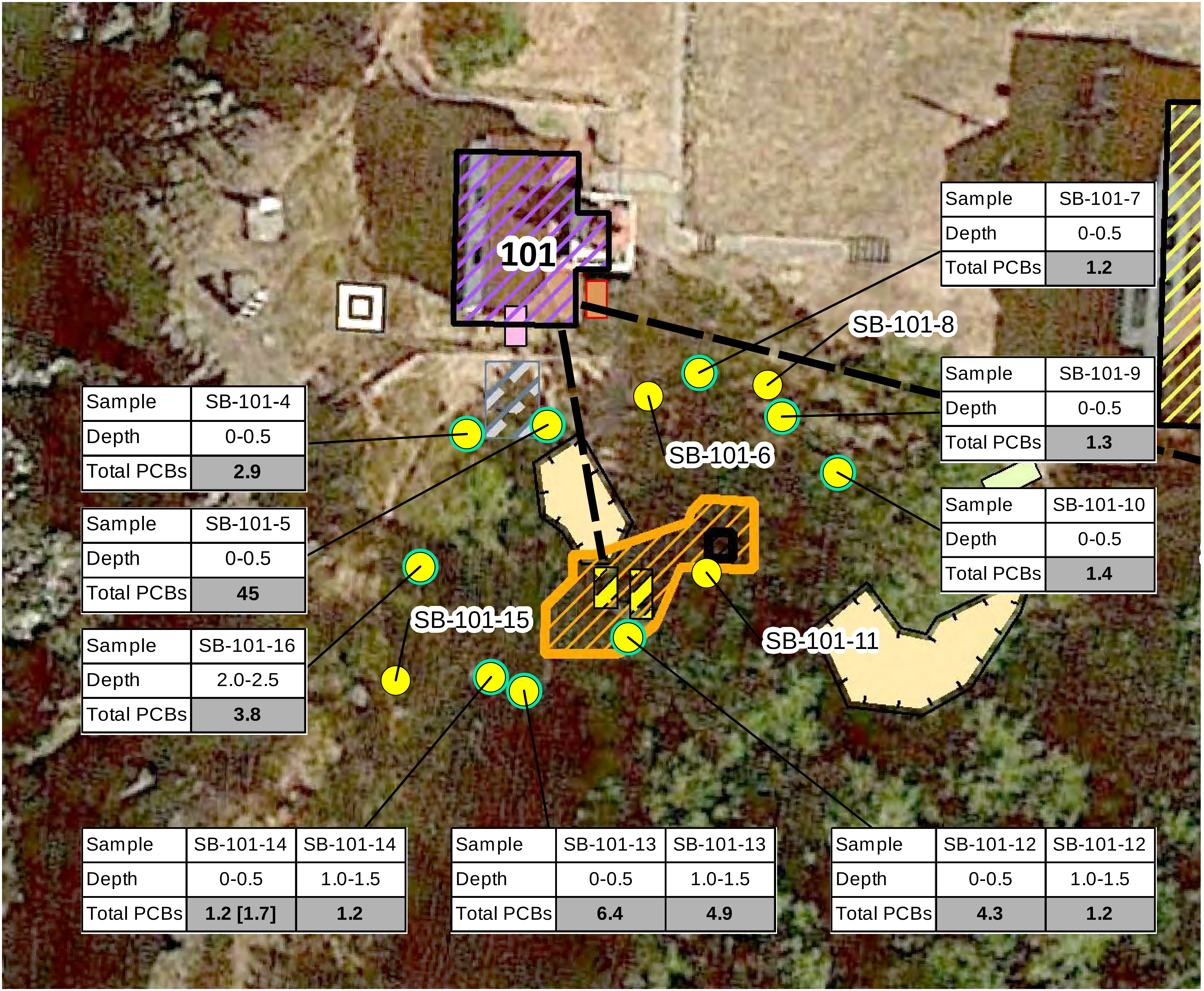
FIGURE
10

CITY: SAN FRANCISCO DIV/GROUP: ENV/IM DB: mayyar7350 LD: PIC: PM: TM:
PROJECT: PATH: Z:\GISProjects_ENV\Burrows_Island_Lighthouse_2018\MXD\Figure 10 - Discrete Petroleum.mxd DATE: 7/25/2019 7:10:45 AM



Sample	SB-101-7
Depth	0-0.5
Total PCBs	1.2

Sample	SB-101-9
Depth	0-0.5
Total PCBs	1.3

Sample	SB-101-10
Depth	0-0.5
Total PCBs	1.4

Sample	SB-101-4
Depth	0-0.5
Total PCBs	2.9

Sample	SB-101-5
Depth	0-0.5
Total PCBs	45

Sample	SB-101-16
Depth	2.0-2.5
Total PCBs	3.8

Sample	SB-101-14	SB-101-14
Depth	0-0.5	1.0-1.5
Total PCBs	1.2 [1.7]	1.2

Sample	SB-101-13	SB-101-13
Depth	0-0.5	1.0-1.5
Total PCBs	6.4	4.9

Sample	SB-101-12	SB-101-12
Depth	0-0.5	1.0-1.5
Total PCBs	4.3	1.2

LEGEND

- - - Fuel Pipe
● PCB
◉ Total PCBs > 1 mg/kg

Structures

▨ Lighthouse
▨ Duplex
🟧 Fuel Oil Tank
▨ 540-Gallon Fuel Tank
▨ Excavated Transformer Area
▨ 690-Gallon Fuel Tank
▨ Old Cistern
▨ Transformer Pad
▨ Debris Pile
🟩 Septic Tank
🟪 675-Gallon Fuel Oil Tank

Sample	Units	MTCA Method A Screening Level
Depth	feet bgs	--
Total PCBs	mg/kg	1.0

Notes:
bgs - below ground surface
mg/kg - milligrams per kilogram
PCB - polychlorinated biphenyls
> - greater than

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SKAGIT COUNTY, WASHINGTON
REMEDIAL INVESTIGATION AND FOCUSED FEASBILITY STUDY

Discrete Sample Results - PCBs

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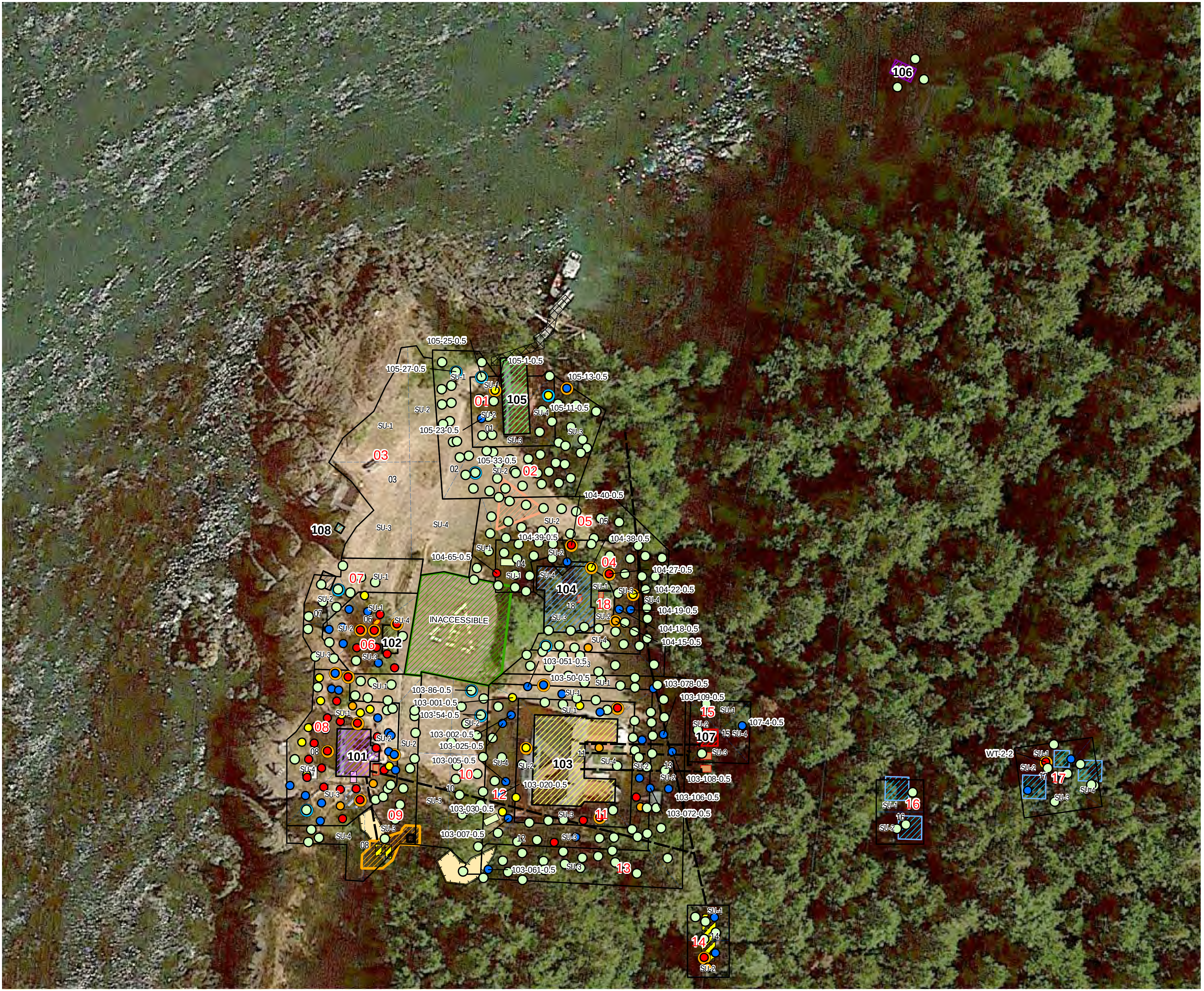
FIGURE
11

CITY: SAN FRANCISCO DIV/GROUP: ENV/IM DB: mayyar7350 LD: PIC: PM: TM:
PROJECT: PATH: Z:\GISProjects_ENV\Burrows_Island_Lighthouse_2018\MXD\Figure 11 - Discrete PCBs.mxd DATE: 7/25/2019 7:16:01 AM



LEGEND

Discrete Sample Lead Concentration (mg/kg)

- ● Lead Concentration 0 - 250
- ● Lead Concentration > 250

Corrected XRF Lead Concentration (mg/kg), 0 to 6 inches bgs

- ● 0 - 250
- ● 251 - 500
- ● 501 - 750
- ● 751 - 1,000
- ● >1,000
- ☐ Decision Unit (DU)
- ☐ DU Subunit
- ━ ━ Fuel Pipe

Structures

- ▨ Lighthouse
- ▨ Oil and Paint Storage Building
- ▨ Duplex
- ▨ Officer In-Charge Quarters
- ▨ Boathouse
- ▨ Pumphouse and Spring Cistern
- ▨ Firehouse Pump Building
- ▨ Saltwater Flushing Pumphouse
- ▨ Water Tank/Platform
- ■ Fuel Oil Tank
- ▨ 540-Gallon Fuel Tank
- ▨ Excavated Transformer Area
- ▨ 690-Gallon Fuel Tank
- ▨ Old Cistern
- ▨ Transformer Pad
- ▨ Old Helicopter Pad
- ▨ Helicopter Pad
- ■ Debris Pile
- ▨ Elevated 10,000-Gallon Fuel Oil Tank
- ■ Septic Tank
- ■ 675-Gallon Fuel Oil Tank
- ▨ Gasoline Storage Tank
- ☒ Landing/Dock

Notes:

1. XRF lead concentrations were adjusted based on the correlations between laboratory analytical and XRF field screening results. Results were corrected using the following formula:
   Y = 1.136X - 0.02354 where
   Y = Log of the corrected XRF concentration
   X = Log of the XRF field measurement concentration.
   Logarithms in the equation are in base 10.
2. Discrete samples were submitted for laboratory analysis to provide comparisons with XRF results.

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November 2018 Sampling Results and ISM Decision Units

ARCADIS Design & Consultancy for natural and built assets

FIGURE
12

CITY: SAN FRANCISCO DIV/GROUP: ENV/IM DB: mestifanos LD: PIC: PM: TM:
PROJECT: PATH: Z:\GISProjects_ENV\Burrows_Island_Lighthouse_2018\MXD\Figure 12 - November 2018 Sampling Results and ISM DU Boundaries.mxd DATE: 10/8/2019 2:13:56 PM

LEGEND
- A Excavation Areas
- ▨ Capped Areas
- ⬚ Polychlorinated Biphenyl Area

Structures
- ▨ Lighthouse
- ▨ Oil and Paint Storage Building
- ▨ Duplex
- ▨ Officer In Charge Quarters
- ▨ Boathouse
- ▨ Firehouse Pump Building
- ▨ Saltwater Flushing Pumphouse
- ▨ Water Tanks/Platforms
- ▨ Elevated 10,000-Gallon Fuel Oil Tank
- ■ Septic Tank
- ■ 675-Gallon Fuel Oil Tank
- ■ Fuel Oil Tank
- ▨ Gasoline Storage Tank
- ⊠ Landing/Dock

Excavation Depth (feet bgs)
- 🟦 2.0 feet
- 🟩 3.0 feet

Notes:

1. Site features based on U.S. Coast Guard historical drawing Fire Protection, Water & Sewer Systems, Burrows Island Light Station, Dwg No. 60.5804, December 1960.
2. Removal depths and extents based on ISM and discrete data and are estimated where delineation with samples below the applicable Model Toxics Control Act Method A Cleanup Levels is not available.
3. bgs - below ground surface
4. Soil will be excavated to the target depths indicated or to refusal if bedrock is encountered before the target depth.
5. Obstructions present within the excavation areas, including trees, rocks, hard surfaces, or other natural features will be maintained to the extent possible and soil removal may be less than target depths.
6. Structures or other features, including fencing, sidewalks, and stairs, will be maintained. Soil may be sloped or offset from structures implemented to protect structures.
7. Demarcation geotextile and two feet of topsoil will serve as capping material for lead-impacted areas.

0 60 120

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Alternative 2 - Excavation and Capping

ARCADIS Design & Consultancy for natural and built assets

FIGURE
13

CITY: SAN FRANCISCO DIV/GROUP: ENV/IM DB: mestifanos LD: PIC: PM: TM:
PROJECT: PATH: Z:\GISProjects_ENV\Burrows_Island_Lighthouse_2018\MXD\Figure 13 - Alternative 4 - Capping.mxd DATE: 10/8/2019 3:23:24 PM

LEGEND

- A Excavation Areas
- ┌ ┐ Polychlorinated Biphenyl Area

Structures

- ▨ Lighthouse
- ▨ Oil and Paint Storage Building
- ▨ Duplex
- ▨ Officer In Charge Quarters
- ▨ Boathouse
- ▨ Firehouse Pump Building
- ▨ Saltwater Flushing Pumphouse
- ▨ Repository
- ▨ Water Tanks/Platforms
- ▨ Elevated 10,000-Gallon Fuel Oil Tank
- ▭ Septic Tank
- ▭ 675-Gallon Fuel Oil Tank
- ▭ Fuel Oil Tank
- ▨ Gasoline Storage Tank
- ▩ Landing/Dock

Excavation Depth (feet bgs)

- 🟩 0.5 foot
- 🟪 1.0 foot
- 🟨 1.5 feet
- 🟦 2.0 feet
- 🟫 2.5 feet
- 🟩 3.0 feet

Notes:

1. Site features based on U.S. Coast Guard historical drawing Fire Protection, Water & Sewer Systems, Burrows Island Light Station, Dwg No. 60.5804, December 1960.
2. Removal depths and extents based on ISM and discrete data and are estimated where delineation with samples below the applicable Model Toxics Control Act Method A Cleanup Levels is not available.
3. bgs - below ground surface
4. Soil will be excavated to the target depths indicated or to refusal if bedrock is encountered before the target depth.
5. Obstructions present within the excavation areas, including trees, rocks, hard surfaces, or other natural features will be maintained to the extent possible and soil removal may be less than target depths.
6. Structures or other features, including fencing, sidewalks, and stairs, will be maintained. Soil may be sloped or offset from structures implemented to protect structures.
7. PCB soils may be segregated based on disposal facility requirements.
8. "The repository is designed with 3:1 side slopes, 3 feet of height, and 10% additional volume. A barrier will be placed to prevent contact with the repository. "

0 60 120

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Alternative 3 - Excavation and Onsite Repository

ARCADIS Design & Consultancy for natural and built assets

FIGURE

14

CITY: SAN FRANCISCO DIV/GROUP: ENV/IM DB: mestifanos LD: PIC: PM: TM:
PROJECT: PATH: Z:\GISProjects_ENV\Burrows_Island_Lighthouse_2018\MXD\Figure 14 - Alternative 3 - Excavation and Onsite Repository.mxd DATE: 10/8/2019 2:51:09 PM

LEGEND

A Excavation Areas

▭ Polychlorinated Biphenyl Area

Structures

- ▨ Lighthouse
- ▨ Oil and Paint Storage Building
- ▨ Duplex
- ▨ Officer In Charge Quarters
- ▨ Boathouse
- ▨ Firehouse Pump Building
- ▨ Saltwater Flushing Pumphouse
- ▨ Water Tanks/Platforms
- ▨ Elevated 10,000-Gallon Fuel Oil Tank
- ■ Septic Tank
- ■ 675-Gallon Fuel Oil Tank
- ■ Fuel Oil Tank
- ▨ Gasoline Storage Tank
- ▩ Landing/Dock

Excavation Depth (feet bgs)

- ■ 0.5 foot
- ■ 1.0 foot
- ■ 1.5 feet
- ■ 2.0 feet
- ■ 2.5 feet
- ■ 3.0 feet

Notes:

1. Site features based on U.S. Coast Guard historical drawing Fire Protection, Water & Sewer Systems, Burrows Island Light Station, Dwg No. 60.5804, December 1960.
2. Removal depths and extents based on ISM and discrete data and are estimated where delineation with samples below the applicable Model Toxics Control Act Method A Cleanup Levels is not available.
3. bgs - below ground surface
4. Soil will be excavated to the target depths indicated or to refusal if bedrock is encountered before the target depth.
5. Obstructions present within the excavation areas, including trees, rocks, hard surfaces, or other natural features will be maintained to the extent possible and soil removal may be less than target depths.
6. Structures or other features, including fencing, sidewalks, and stairs, will be maintained. Soil may be sloped or offset from structures implemented to protect structures.
7. PCB soils may be segregated based on disposal facility requirements.

0 60 120

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Alternative 4 - Excavation and Offsite Disposal

ARCADIS Design & Consultancy for natural and built assets

FIGURE
15

CITY: SAN FRANCISCO DIV/GROUP: ENV/IM DB: mestifanos LD: PIC: PM: TM:
PROJECT: PATH: Z:\GISProjects_ENV\Burrows_Island_Lighthouse_2018\MXD\Figure 15 - Alternative 4 - Excavation and Offsite Disposal.mxd DATE: 10/8/2019 2:54:18 PM

APPENDIX A

Field Sampling Memorandum, November 2019

MEMO

Arcadis U.S., Inc.
2300 Clayton Road
Suite 400
Concord
California 94520
Tel 925 274 1100
Fax 925 726 0121

To:

James Hall, USCG

Copies:

From:

Arcadis

Date:

November 26, 2018

Arcadis Project No.:

B0003010.0006

Subject:

Mobilization 1 Summary Memorandum
USCG Burrows Island Light Station
Burrows Island, Skagit County, Washington

Arcadis U.S., Inc. (Arcadis) has prepared this memorandum on behalf of the United States Coast Guard (USCG) to summarize Mobilization 1 field activities that were conducted at the Burrows Island Light Station, located in Skagit County, Washington (the site) and to identify key site conditions. The activities described in this memorandum were conducted as part of the Remedial Investigation, Focused Feasibility Study, and Remedial Design for the Burrows Island Light Station under task order number 70Z088-18-F-PXA01700. Field activities were completed between November 13th and 16th, 2018 in accordance with the Field Sampling Memorandum for Mobilization 1 document dated November 11, 2018. The memo was modified to include laboratory analytical reports on July 26, 2019.

The Burrows Island Light Station (site) encompasses approximately 2 acres on the west side of Burrows Island, near Anacortes, Washington. The site is primarily open and grassy and is surrounded by wooded areas, which have overgrown some of the former structures. Access to the site is from a fixed concrete dock, located on the north side of the site. The area is on a bluff with steep, rocky slopes to the west and north extending down to the water. Many of the structures at the site have been removed or demolished, including:

- Officer in Charge Quarters and associated fuel oil tank(s)
- Water treatment system
- Generators
- 10,000-gallon above ground fuel oil tank

- Oil/Paint building
- Transformer and fuel storage tanks adjacent to light building
- Water tanks

Remaining infrastructure at the site includes the following:

- Light and fog signal building
- Boathouse
- Duplex
- Fixed dock and stairs
- Pumphouse and spring cistern
- Saltwater flushing pumphouse
- Helicopter landing pad

Additional remaining infrastructure includes various sidewalks, fencing, pipelines and other minor structures. At least some of the structures are known to have been painted with lead-based paint, which has deteriorated and spread to soil in the areas surrounding the buildings. In addition, petroleum products, including gasoline and fuel oil have been stored on site. In 1980, there was a documented spill of polychlorinated biphenyl (PCB) containing transformer oil located south of the light and fog signal building. The approximate locations of current and former structures are shown on **Figure 1.**

The objectives of Mobilization 1 were as follows:

- Identify locations of all existing and historic site features to the extent that these locations can be visually identified in the field.
- Photo document study area (existing and former infrastructure).
- Identify areas for visual evidence of contamination (e.g., stained soils, paint chips, impaired vegetation, etc.).
- Identify approximate depth to bedrock at each sampling area (e.g., select hand auger locations).
- Visually assess conditions of existing painted structures for evidence of deterioration of painted surfaces (chipping, flaking, etc.).
- Identify areas where soil sampling is not practicable or is unsafe due to steep slopes, dense vegetation (that cannot be readily cleared), bedrock outcroppings, or other adverse conditions. Determinations of unsafe or inaccessible areas will be made by the field team leader in consultation-with the field staff. Inaccessible areas will be documented in the field notes and photo documentation.
- Perform initial XRF screening of surficial soils (ground surface to 6 inches below ground surface [bgs]) at various locations within 40 feet of existing or historical painted structures to inform the final selection of decision units and future sampling locations for lead. Sample locations will be determined in the field with the goal of collecting one surface soil reading for every 100 to 150 square feet of accessible area within 40 linear feet of current and historical structures (see Attachment A). The

number of readings collected is approximate and will dependent on field conditions (weather, obstructions, etc.).

- Evaluate subsurface soils (> 6 inches bgs) using XRF in select areas where indications of elevated surface lead concentrations are observed. Approximately one-third of the soil screening locations will be evaluated further. These locations will be selected based on elevated screening results as determined in the field.
- Collect and analyze soil samples for lead using EPA Method 6010 at select locations that are co-located with XRF sample locations to establish correlation between analytical data and XRF data.

SITE RECONNISANCE

All the buildings identified as part of the investigation were accessed during the field event. The locations shown on Figure 1 were generally consistent with observations in the field, with exceptions noted below. The overall condition of each structure or former structure were assessed and clear visual markers of paint chips or other potentially contaminated materials were noted. In addition, obstructions or areas that could not be sampled were observed. A photo log is provided in **Attachment 1**. A summary of the observations for each structure is provided below:

Light and Fog Signal Building (101)

- Structure is intact and generally appears to be in good condition.
- Paint chipping was visible on some window sills and trim. Green trim paint was previously encapsulated based on historical documentation but is significantly weathered and the encapsulation is no longer viable. White paint generally appears to be intact.
- A brush pile and debris were observed south of the light and fog signal building in the general vicinity of the 1980 transformer oil release. Recent tree and vegetation removal was conducted in 2017 to make the signal light visible and extends south from building with materials stacked in various piles.
- A concrete pad and cistern identified south of the light and fog signal building. These appear to be consistent with historical drawings.
- Soil staining or dark coloration was apparent in the area near the former transformer. Three soil samples were collected in the area of discolored soil for PCB analysis (TP-1, TP-2, and TP-3).
- Bedrock outcroppings were visible on the west side of building towards the water.

Former Oil & Paint Storage Building (102)

- The only remaining part of the structure is a concrete footing, retaining wall and a concrete anchor. These areas could not be sampled due to the lack of surface soil and presence of obstructions.
- Shallow bedrock was present west of the former Oil and Paint Storage Building.
- The helicopter pad is adjacent to the concrete footing to the east.

Duplex (103)

- This structure is generally intact. There has been repair work completed on the roof (as evidenced by the pile of roofing material located southeast of the building) and porch.
- Visible paint chipping and sloughing was observed in areas on trim and from porches. Paint is also very weathered in drip lines and where it is exposed to water running off the roof. Paint chips are visible in grass and soil in some areas surrounding the building.
- Fencing around the east side of the building is in poor condition. Paint is very weathered and flaking.
- Two tanks on east side of building are in poor condition with rust and some paint flaking.
- Building materials that appear to be painted are present to the south of the building and on porches. The team was unable to ascertain if these materials are historical or more recent.
- Debris piles were observed southeast of the building, including roofing material and brush. Additional debris piles were located west of the building. These areas could not be accessed for sampling.
- Daylighted pipelines were present along the west and south sides of the building.

Former Officer In Charge Quarters (104)

- The foundation and other remnants of the former building are overgrown by trees and ivy. Limited soil or sampling was possible within the apparent building footprint. Concrete debris and voids were apparent within the former building footprint.
- The area to the west of the former building footprint is not accessible due to steep slope and the helicopter pad.

Boathouse (105)

- This structure is intact and appears to be in good condition. The dock, stairs, and deck on north side of building appear to be in good shape and have been replaced since original construction with metal and treated lumber.
- Apparent soil excavation and replacement of siding was observed along the east, south and west sides of the building.
- Some building materials with paint were encountered east of the building.
- The north side of the boathouse is inaccessible for sampling due to steep slope and rocks.

Pumphouse & Spring Cistern (106)

- This structure is intact and appears to be in good condition. The building is constructed of concrete with a concrete cistern. Paint cans were found inside the building and garden hoses were in the cistern and just outside the building.
- Access to this area is limited due to a steep slope to get down to the building. There is area surrounding the building that could be sampled.

Former Firehouse Pump Building (107)

- No structure is present, although the concrete pad remains. The area surrounding the pad is very overgrown with trees and brush. Sampling access is limited due to brush and trees.

Salt Water Flushing Pumphouse (108)

- The structure is intact and appears to be in poor condition with flaking and weathered paint. Stairs leading to the structure are exposed with no railing to protect from fall.
- Some woody debris and sediment were present within the structure, but it appears to be contained on the concrete footing. No soil present is present in the area surrounding the building. The concrete footing and foundation appear to have been poured directly onto bedrock.

Former Water Tanks (109, 110, 111)

- Five tank platforms were identified. These platforms were located generally east of the locations shown on historical drawings. The wooden platforms and remaining infrastructure were in poor condition. No tanks are currently present.
- Painted materials were visible. The piping that was observed appears to lead towards the Duplex, which is consistent with historical drawings.

Former Above Ground Fuel Oil Tank (112)

- The concrete saddle for the 10,000-gallon tank remains, but the tank is no longer present. The area is heavily overgrown with ivy and brush.
- Pipeline connections are visible at the former loading area east of the boathouse and adjacent to the former tank.

Other Structures and Obstructions

- The helicopter pad consists of interlocking metal plates and is located in the central portion of the site. The plates remain intact with some vegetation growing through the connections.
- A former helicopter landing area is located to the north of the current helicopter pad.

CURRENT SITE CONDITIONS

The site encompasses approximately 2 acres on the west side of Burrows Island, near Anacortes, Washington. The site is primarily open and grassy and is surrounded by wooded areas, which have overgrown some of the former structures. Access to the site is from a fixed concrete dock, located on the north side of the site. The area is on a bluff with steep, rocky slopes to the west and north extending down to the water. The soils at the site consist of a shallow sandy soil lens with no evidence of significant groundwater existing within the current site footprint, beyond potentially minor perched areas or saturated pore space during the wet season. The site generally slopes towards the bluff, with the northeastern portion of the site containing a steep heavily forested slope leading to a beach that is submerged at high tide. The beach consists primarily of cobbles based on visual inspections. Future Site use

The USCG plans to transfer the light station to the Northwest Schooner Society (NWSS) pursuant to the National Historic Lighthouse Preservation Act of 2000 (NHLPA) and CERCLA §120(h) once the site is cleaned up to a level that is protective of human health and environment. The NWSS intends to restore the site to reflect various periods of time, and to rehabilitate the duplex to a condition that would allow guests to stay on site for short periods of time. They envision having a rotating caretaker to remain on site for extended periods not to exceed 6 months.

SOIL SAMPLING AND XRF ANALYSIS

Soil samples were collected adjacent to former and current structures and screened using an XRF analyzer. Samples were collected within 40 feet of the limits or former boundaries of Buildings 101, 102, 103, 104 and 105 at a frequency of 1 sample per 100 to 150 square feet. Areas that were obstructed or unsafe to access were not sampled. Initial samples were collected from approximately 0 to 0.5 feet using hand tools and placed in plastic bags for on-site XRF analysis. Analytical samples were collected from select locations representing the range of lead concentrations measured using the XRF analyzer and sent to Onsite Environmental Inc. located in Redmond, Washington (Onsite) for analysis of lead by United States Environmental Protection Agency (USEPA) Method 6010. Samples from locations deeper than 6 inches were collected in select locations where concentrations measured using the XRF analyzer exceeded 250 parts per million (ppm). A summary of sampling results is provided in **Table 1.** A summary of the XRF sampling data is provided in **Table 2**. Field documentation is provided in **Attachment 2**.

Lead concentrations measured with the XRF analyzers ranged from non-detect to approximately 9,000 ppm. The highest lead concentrations observed during the sampling event were generally in the vicinity of the Light and Fog Signal Building (101) and the Former Oil & Paint Storage Building (102). Lead concentrations above 1,000 ppm were observed in the soil surrounding the Duplex (103), Former Officer In Charge Quarters (104), Former Water Tanks (109, 110, 111), and the Former Above Ground Fuel Tank (112). Lead concentrations in soil generally decreased further from the structures, but there were areas of spatial variability that could be associated with historical infrastructure or debris that has been relocated. Minimal concentrations of lead were observed in samples from the Pumphouse & Spring Cistern (106) and the Former Firehouse Pump Building (107). Additional observations made during soil sampling are summarized below:

- The 0 to 0.5-foot sample from location WT-2-2 adjacent on the water tanks contained elevated lead (>2,000 ppm). Additional samples were collected from the 0.5 to 1.0 foot and 1.0 to 1.5-foot interval to provide further vertical delineation at this location. Soil samples were collected from the apparent outlet of the tank and were in the vicinity of a visible pipeline going west towards the Duplex.

- Soil sampling location 104-27 on the northeast side of the former officer in charge quarters building contained charcoal and other woody debris with elevated XRF readings (>1,000 ppm) from surface to 2 feet bgs.

- Soil sampling locations within 10 feet of the Duplex structure were spatial varied and included samples from the areas that were previously excavated as well as samples outside of the sidewalk surrounding the building. The locations collected within the sidewalk surrounding the structure are noted on Table 1.

INVESTIGATION DERIVED WASTE

Soil generated from sampling activities was collected and composited in closed-top 5-gallon containers and stored onsite in the basement of the duplex building. Additional general waste (i.e. PPE, plastic bags, and other materials that contacted soil) were collected and sealed in a plastic garbage bag and stored onsite with soil waste. Waste characterization samples were collected from the composited soil and the general waste and were submitted to Onsite for analysis of lead by USEPA Method 1311.

SUMMARY

Structures associated with the Light Station were located and visually assessed to determine the condition of the materials and observe if signs of paint or other potentially contaminated materials are present in the surrounding areas. All locations were identified and documented. Soil samples were collected for XRF analysis to evaluate the presence of lead in soils surrounding current and former structures. Based on preliminary XRF results, lead appears to be present at levels greater than 500 ppm in areas surrounding 7 of the structures. Generally it appears that the concentrations of lead decrease as the distance from the buildings increase. Step out samples collected by ERRG in 2009 demonstrated an average of a 66% reduction in concentration after a 5-foot step out. XRF results from the Mobilization 1 were generally consistent with high concentrations observed close to buildings or former structures and decreasing concentrations moving away from the structures. There does not appear to be evidence of surface water distributing lead along concentrated flow paths, primarily due to the lack of source material near any visible surface channels. In general, sheet flow does not appear be a significant transport mechanism for lead at this site based on the preliminary data.

ATTACHMENTS

Table 1 – XRF Sample Log

Table 2 – XRF Results Summary

Table 3 – Initial Mobilization Summary Table

Figure 1 – Site Location Map

Figure 2 – Decision Unit Boundaries with XRF Sample Results November 2018 Sampling Event

Attachment 1 – Photo Log

Attachment 2 – Field Forms

TABLES

Table 1
XRF Sample Log
USCG Burrows Island Light Station
Burrows Island, Washington

Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm)[1]
101-01-0.5	11/14/2018	1537	Light and Fog Signal	0 - 0.5	0 - 10	986 ± 18
101-02-0.5	11/14/2018	1541	Light and Fog Signal	0 - 0.5	0 - 10	1920 ± 29
101-02-1.0	11/15/2018	1206	Light and Fog Signal	0.5 - 1.0	0 - 10	50 ± 4
101-03-0.5	11/14/2018	1544	Light and Fog Signal	0 - 0.5	0 - 10	1515 ± 25
101-04-0.5	11/14/2018	1546	Light and Fog Signal	0 - 0.5	0 - 10	591 ± 14
101-05-0.5	11/14/2018	1547	Light and Fog Signal	0 - 0.5	0 - 10	3592 ± 48
101-06-0.5	11/14/2018	1549	Light and Fog Signal	0 - 0.5	0 - 10	1455 ± 24
101-07-0.5	11/14/2018	1548	Light and Fog Signal	0 - 0.5	0 - 10	931 ± 13
101-08-0.5	11/15/2018	1549	Light and Fog Signal	0 - 0.5	0 - 10	8975 ± 67
101-08-1.0	11/15/2018	1208	Light and Fog Signal	0.5 - 1.0	0 - 10	404 ± 9
101-09-0.5	11/15/2018	1551	Light and Fog Signal	0 - 0.5	0 - 10	2529 ± 28
101-10-0.5	11/15/2018	1553	Light and Fog Signal	0 - 0.5	0 - 10	2367 ± 27
101-11-0.5	11/15/2018	1555	Light and Fog Signal	0 - 0.5	0 - 10	838 ± 15
101-12-0.5	11/15/2018	1556	Light and Fog Signal	0 - 0.5	0 - 10	5885 ± 51
101-12-1.0	11/15/2018	1210	Light and Fog Signal	0.5 - 1.0	0 - 10	1206 ± 17
101-12-1.5	11/15/2018	1540	Light and Fog Signal	1.0 - 1.5	0 - 10	279 ± 10
101-13-0.5	11/14/2018	1555	Light and Fog Signal	0 - 0.5	10 - 20	404 ± 11
101-14-0.5	11/14/2018	1557	Light and Fog Signal	0 - 0.5	10 - 20	761 ± 15
101-15-0.5	11/14/2018	1559	Light and Fog Signal	0 - 0.5	10 - 20	921 ± 15
101-15-1.0	11/15/2018	1224	Light and Fog Signal	0.5 - 1.0	10 - 20	45 ± 5
101-16-0.5	11/14/2018	1601	Light and Fog Signal	0 - 0.5	10 - 20	775 ± 14
101-17-0.5	11/14/2018	1602	Light and Fog Signal	0 - 0.5	10 - 20	1126 ± 19
101-17-1.0	11/15/2018	1212	Light and Fog Signal	0.5 - 1.0	10 - 20	208 ± 7
101-18-0.5	11/15/2018	1602	Light and Fog Signal	0 - 0.5	10 - 20	510 ± 10
101-19-0.5	11/15/2018	1558	Light and Fog Signal	0 - 0.5	10 - 20	388 ± 8
101-20-0.5	11/15/2018	1600	Light and Fog Signal	0 - 0.5	10 - 20	366 ± 9
101-21-0.5	11/15/2018	1559	Light and Fog Signal	0 - 0.5	10 - 20	271 ± 7

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Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm)[1]
101-22-0.5	11/15/2018	937	Light and Fog Signal	0 - 0.5	10 - 20	276 ± 7
101-23-0.5	11/15/2018	941	Light and Fog Signal	0 - 0.5	10 - 20	446 ± 9
101-23-1.0	11/15/2018	1215	Light and Fog Signal	0.5 - 1.0	10 - 20	161 ± 6
101-24-0.5	11/15/2018	948	Light and Fog Signal	0 - 0.5	10 - 20	90 ± 4
101-25-0.5	11/15/2018	951	Light and Fog Signal	0 - 0.5	10 - 20	148 ± 5
101-26-0.5	11/15/2018	952	Light and Fog Signal	0 - 0.5	10 - 20	824 ± 12
101-27-0.5	11/15/2018	953	Light and Fog Signal	0 - 0.5	10 - 20	702 ± 12
101-27-1.0	11/15/2018	1318	Light and Fog Signal	0.5 - 1.0	10 - 20	808 ± 15
101-28-0.5	11/15/2018	955	Light and Fog Signal	0 - 0.5	10 - 20	219 ± 7
101-29-0.5	11/15/2018	957	Light and Fog Signal	0 - 0.5	10 - 20	62 ± 4
101-30-0.5	11/15/2018	938	Light and Fog Signal	0 - 0.5	10 - 20	307 ± 9
101-31-0.5	11/15/2018	940	Light and Fog Signal	0 - 0.5	10 - 20	884 ± 15
101-32-0.5	11/15/2018	948	Light and Fog Signal	0 - 0.5	20 - 30	78 ± 5
101-33-0.5	11/15/2018	950	Light and Fog Signal	0 - 0.5	20 - 30	360 ± 10
101-34-0.5	11/15/2018	952	Light and Fog Signal	0 - 0.5	20 - 30	386 ± 10
101-35-0.5	11/15/2018	954	Light and Fog Signal	0 - 0.5	20 - 30	388 ± 10
101-36-0.5	11/15/2018	956	Light and Fog Signal	0 - 0.5	20 - 30	509 ± 12
101-37-0.5	11/15/2018	958	Light and Fog Signal	0 - 0.5	20 - 30	1367 ± 19
101-38-0.5	11/15/2018	1000	Light and Fog Signal	0 - 0.5	20 - 30	678 ± 13
101-39-0.5	11/15/2018	1000	Light and Fog Signal	0 - 0.5	20 - 30	397 ± 9
101-40-0.5	11/15/2018	958	Light and Fog Signal	0 - 0.5	20 - 30	160 ± 6
101-41-0.5	11/15/2018	1029	Light and Fog Signal	0 - 0.5	20 - 30	147 ± 5
101-42-0.5	11/15/2018	1031	Light and Fog Signal	0 - 0.5	20 - 30	273 ± 6
101-43-0.5	11/15/2018	1033	Light and Fog Signal	0 - 0.5	20 - 30	313 ± 8
101-44-0.5	11/15/2018	1035	Light and Fog Signal	0 - 0.5	20 - 30	237 ± 6
101-45-0.5	11/15/2018	1036	Light and Fog Signal	0 - 0.5	20 - 30	78 ± 4
101-46-0.5	11/15/2018	1039	Light and Fog Signal	0 - 0.5	20 - 30	44 ± 3

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Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm)[1]
101-47-0.5	11/15/2018	1040	Light and Fog Signal	0 - 0.5	30 - 40	19 ± 3
101-48-0.5	11/15/2018	1042	Light and Fog Signal	0 - 0.5	30 - 40	103 ± 5
101-49-0.5	11/15/2018	1028	Light and Fog Signal	0 - 0.5	30 - 40	62 ± 5
101-50-0.5	11/15/2018	1033	Light and Fog Signal	0 - 0.5	20 - 30	328 ± 9
101-51-0.5	11/15/2018	1035	Light and Fog Signal	0 - 0.5	20 - 30	3239 ± 44
101-52-0.5	11/15/2018	1037	Light and Fog Signal	0 - 0.5	30 - 40	60 ± 5
101-53-0.5	11/15/2018	1039	Light and Fog Signal	0 - 0.5	30 - 40	38 ± 4
101-54-0.5	11/15/2018	1042	Light and Fog Signal	0 - 0.5	30 - 40	61 ± 4
101-55-0.5	11/15/2018	1043	Light and Fog Signal	0 - 0.5	30 - 40	86 ± 6
101-56-0.5	11/15/2018	1045	Light and Fog Signal	0 - 0.5	30 - 40	132 ± 6
101-57-0.5	11/15/2018	1047	Light and Fog Signal	0 - 0.5	30 - 40	99 ± 5
101-58-0.5	11/15/2018	1048	Light and Fog Signal	0 - 0.5	30 - 40	104 ± 5
101-59-0.5	11/15/2018	1043	Light and Fog Signal	0 - 0.5	30 - 40	45 ± 4
101-60-0.5	11/15/2018	1046	Light and Fog Signal	0 - 0.5	30 - 40	34 ± 3
102-01-0.5	11/14/2018	1221	Oil & Paint Storage	0 - 0.5	30 - 40	133 ± 5
102-02-0.5	11/14/2018	1224	Oil & Paint Storage	0 - 0.5	30 - 40	82 ± 4
102-03-0.5	11/14/2018	1226	Oil & Paint Storage	0 - 0.5	30 - 40	120 ± 5
102-04-0.5	11/14/2018	1228	Oil & Paint Storage	0 - 0.5	20 - 30	420 ± 9
102-04-1.0	11/14/2018	1354	Oil & Paint Storage	0.5 - 1.0	20 - 30	123 ± 5
102-05-0.5	11/14/2018	1230	Oil & Paint Storage	0 - 0.5	20 - 30	91 ± 4
102-06-0.5	11/14/2018	1223	Oil & Paint Storage	0 - 0.5	20 - 30	52 ± 5
102-07-0.5	11/14/2018	1232	Oil & Paint Storage	0 - 0.5	20 - 30	67 ± 4
102-08-0.5	11/14/2018	1233	Oil & Paint Storage	0 - 0.5	20 - 30	82 ± 4
102-09-0.5	11/14/2018	1235	Oil & Paint Storage	0 - 0.5	10 - 20	88 ± 5
102-10-0.5	11/14/2018	1236	Oil & Paint Storage	0 - 0.5	10 - 20	248 ± 7
102-11-0.5	11/14/2018	1240	Oil & Paint Storage	0 - 0.5	10 - 20	334 ± 9
102-12-0.5	11/14/2018	1242	Oil & Paint Storage	0 - 0.5	10 - 20	1006 ± 18

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Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm)[1]
102-12-1.0	11/14/2018	1356	Oil & Paint Storage	0.5 - 1.0	10 - 20	51 ± 4
102-13-0.5	11/14/2018	1244	Oil & Paint Storage	0 - 0.5	20 - 30	1119 ± 18
102-13-1.0	11/14/2018	1358	Oil & Paint Storage	0.5 - 1.0	20 - 30	421 ± 10
102-14-0.5	11/14/2018	1247	Oil & Paint Storage	0 - 0.5	20 - 30	91 ± 5
102-15-0.5	11/14/2018	1250	Oil & Paint Storage	0 - 0.5	10 - 20	879 ± 16
102-15-1.5	11/14/2018	1457	Oil & Paint Storage	1.0 - 1.5	10 - 20	572 ± 10
102-15-1.0	11/14/2018	1415	Oil & Paint Storage	0.5 - 1.0	10 - 20	627 ± 13
102-16-0.5	11/14/2018	1253	Oil & Paint Storage	0 - 0.5	0 - 10	918 ± 17
102-16-1.0	11/14/2018	1420	Oil & Paint Storage	0.5 - 1.0	0 - 10	252 ± 9
102-17-0.5	11/14/2018	1240	Oil & Paint Storage	0 - 0.5	0 - 10	233 ± 6
102-18-0.5	11/14/2018	1242	Oil & Paint Storage	0 - 0.5	10 - 20	278 ± 7
102-19-0.5	11/14/2018	1244	Oil & Paint Storage	0 - 0.5	20 - 30	157 ± 6
102-20-0.5	11/14/2018	1245	Oil & Paint Storage	0 - 0.5	20 - 30	131 ± 5
102-21-0.5	11/14/2018	1249	Oil & Paint Storage	0 - 0.5	10 - 20	48 ± 4
102-22-0.5	11/14/2018	1333	Oil & Paint Storage	0 - 0.5	0 - 10	245 ± 6
102-23-0.5	11/14/2018	1335	Oil & Paint Storage	0 - 0.5	0 - 10	1001 ± 14
102-24-0.5	11/14/2018	1337	Oil & Paint Storage	0 - 0.5	10 - 20	4720 ± 42
102-24-1.0	11/14/2018	1422	Oil & Paint Storage	0.5 - 1.0	10 - 20	3718 ± 44
102-25-0.5	11/14/2018	1300	Oil & Paint Storage	0 - 0.5	20 - 30	4073 ± 40
102-25-1.0	11/14/2018	1425	Oil & Paint Storage	0.5 - 1.0	20 - 30	1191 ± 20
102-26-0.5	11/14/2018	1340	Oil & Paint Storage	0 - 0.5	20 - 30	1299 ± 17
102-26-1.0	11/14/2018	1427	Oil & Paint Storage	0.5 - 1.0	20 - 30	302 ± 9
102-27-0.5	11/14/2018	1333	Oil & Paint Storage	0 - 0.5	10 - 20	367 ± 10
102-28-0.5	11/14/2018	1339	Oil & Paint Storage	0 - 0.5	10 - 20	198 ± 7
102-29-0.5	11/14/2018	1342	Oil & Paint Storage	0 - 0.5	10 - 20	15 ± 4
102-30-0.5	11/14/2018	1345	Oil & Paint Storage	0 - 0.5	10 - 20	100 ± 6
102-31-0.5	11/14/2018	1400	Oil & Paint Storage	0 - 0.5	20 - 30	407 ± 9

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Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm)[1]
102-31-1.0	11/14/2018	1452	Oil & Paint Storage	0.5 - 1.0	20 - 30	217 ± 6
102-32-0.5	11/14/2018	1402	Oil & Paint Storage	0 - 0.5	20 - 30	252 ± 7
102-33-0.5	11/14/2018	1403	Oil & Paint Storage	0 - 0.5	20 - 30	5643 ± 48
102-33-1.0	11/14/2018	1450	Oil & Paint Storage	0.5 - 1.0	20 - 30	588 ± 11
102-34.0.5	11/14/2018	1410	Oil & Paint Storage	0 - 0.5	20 - 30	97 ± 4
102-35-0.5	11/14/2018	1415	Oil & Paint Storage	0 - 0.5	20 - 30	203 ± 7
102-36-0.5	11/14/2018	1417	Oil & Paint Storage	0 - 0.5	30 - 40	130 ± 6
102-37-0.5	11/14/2018	1418	Oil & Paint Storage	0 - 0.5	30 - 40	128 ± 5
102-38-0.5	11/14/2018	1422	Oil & Paint Storage	0 - 0.5	30 - 40	167 ± 6
102-39-0.5	11/14/2018	1424	Oil & Paint Storage	0 - 0.5	30 - 40	143 ± 6
102-40-0.5	11/14/2018	1425	Oil & Paint Storage	0 - 0.5	30 - 40	362 ± 8
102-41-0.5	11/14/2018	1427	Oil & Paint Storage	0 - 0.5	30 - 40	215 ± 6
102-42-0.5	11/14/2018	1428	Oil & Paint Storage	0 - 0.5	30 - 40	42 ± 4
103-001-0.5	11/15/2018	1343	Duplex	0 - 0.5	0 - 10	419 ± 11
103-002-0.5	11/15/2018	1345	Duplex	0 - 0.5	0 - 10	317 ± 9
103-003-0.5	11/15/2018	1346	Duplex	0 - 0.5	0 - 10	546 ± 13
103-004-0.5	11/15/2018	1347	Duplex	0 - 0.5	0 - 10	17 ± 4
103-005-0.5	11/15/2018	1349	Duplex	0 - 0.5	0 - 10	321 ± 9
103-006-0.5	11/15/2018	1351	Duplex	0 - 0.5	0 - 10	433 ± 11
103-007-0.5	11/15/2018	1352	Duplex	0 - 0.5	0 - 10	378 ± 40
103-008-0.5	11/15/2018	1353	Duplex	0 - 0.5	0 - 10	43 ± 5
103-009-0.5	11/15/2018	1356	Duplex	0 - 0.5	0 - 10	149 ± 7
103-010-0.5	11/15/2018	1357	Duplex	0 - 0.5	0 - 10	135 ± 7
103-011-0.5	11/15/2018	1358	Duplex	0 - 0.5	0 - 10	1352 ± 23
103-011-1.0	11/16/2018	1017	Duplex	0.5 - 1.0	0 - 10	130 ± 7
103-012-0.5	11/15/2018	1339	Duplex	0 - 0.5	0 - 10	1057 ± 19
103-012-1.0	11/16/2018	1018	Duplex	0.5 - 1.0	0 - 10	< 11

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Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm)[1]
103-013-0.5	11/15/2018	1340	Duplex	0 - 0.5	0 - 10	13 ± 4
103-014-0.5	11/15/2018	1340	Duplex	0 - 0.5	0 - 10	212 ± 8
103-015-0.5	11/15/2018	1326	Duplex	0 - 0.5	0 - 10	56 ± 6
103-016-0.5	11/15/2018	1327	Duplex	0 - 0.5	0 - 10	653 ± 14
103-017-0.5	11/15/2018	1329	Duplex	0 - 0.5	0 - 10	25 ± 5
103-018-0.5	11/15/2018	1331	Duplex	0 - 0.5	0 - 10	183 ± 8
103-019-0.5	11/15/2018	1333	Duplex	0 - 0.5	0 - 10	917 ± 17
103-019-1.0	11/16/2018	1016	Duplex	0.5 - 1.0	0 - 10	17 ± 4
103-020-0.5	11/15/2018	1334	Duplex	0 - 0.5	0 - 10	367 ± 10
103-021-0.5	11/15/2018	1310	Duplex	0 - 0.5	0 - 10	504 ± 10
103-022-0.5	11/15/2018	1336	Duplex	0 - 0.5	0 - 10	90 ± 5
103-023-0.5	11/15/2018	1337	Duplex	0 - 0.5	0 - 10	16 ± 4
103-024-0.5	11/15/2018	1416	Duplex	0 - 0.5	10 - 20	98 ± 6
103-025-0.5	11/15/2018	1420	Duplex	0 - 0.5	10 - 20	256 ± 8
103-026-0.5	11/15/2018	1421	Duplex	0 - 0.5	10 - 20	110 ± 6
103-027-0.5	11/15/2018	1423	Duplex	0 - 0.5	10 - 20	131 ± 6
103-028-0.5	11/15/2018	1424	Duplex	0 - 0.5	10 - 20	194 ± 7
103-029-0.5	11/15/2018	1426	Duplex	0 - 0.5	10 - 20	112 ± 6
103-030-0.5	11/15/2018	1427	Duplex	0 - 0.5	10 - 20	430 ± 11
103-031-0.5	11/15/2018	1428	Duplex	0 - 0.5	10 - 20	60 ± 4
103-032-0.5	11/15/2018	1430	Duplex	0 - 0.5	10 - 20	133 ± 6
103-033-0.5	11/15/2018	1431	Duplex	0 - 0.5	10 - 20	154 ± 6
103-034-0.5	11/15/2018	1417	Duplex	0 - 0.5	10 - 20	806 ± 15
103-035-0.5	11/15/2018	1419	Duplex	0 - 0.5	10 - 20	368 ± 9
103-036-0.5	11/15/2018	1421	Duplex	0 - 0.5	10 - 20	55 ± 5
103-037-0.5	11/15/2018	1423	Duplex	0 - 0.5	10 - 20	155 ± 7
103-038-0.5	11/15/2018	1425	Duplex	0 - 0.5	10 - 20	80 ± 6

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Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm)[1]
103-039-0.5	11/15/2018	1426	Duplex	0 - 0.5	10 - 20	699 ± 15
103-039-1.0	11/16/2018	1014	Duplex	0.5 - 1.0	10 - 20	< 11
103-040-0.5	11/15/2018	1428	Duplex	0 - 0.5	10 - 20	844 ± 16
103-041-0.5	11/15/2018	1430	Duplex	0 - 0.5	10 - 20	259 ± 8
103-042-0.5	11/15/2018	1431	Duplex	0 - 0.5	10 - 20	199 ± 7
103-043-0.5	11/15/2018	1433	Duplex	0 - 0.5	10 - 20	279 ± 8
103-044-0.5	11/15/2018	1434	Duplex	0 - 0.5	10 - 20	180 ± 7
103-045-0.5	11/15/2018	1436	Duplex	0 - 0.5	10 - 20	119 ± 6
103-046-0.5	11/15/2018	1437	Duplex	0 - 0.5	10 - 20	157 ± 6
103-047-0.5	11/15/2018	1439	Duplex	0 - 0.5	10 - 20	104 ± 6
103-048-0.5	11/15/2018	1440	Duplex	0 - 0.5	10 - 20	145 ± 6
103-049-0.5	11/15/2018	1441	Duplex	0 - 0.5	10 - 20	278 ± 8
103-050-0.5	11/15/2018	1443	Duplex	0 - 0.5	10 - 20	254 ± 8
103-051-0.5	11/15/2018	1435	Duplex	0 - 0.5	10 - 20	237 ± 8
103-052-0.5	11/15/2018	1503	Duplex	0 - 0.5	20 - 30	< 14
103-053-0.5	11/15/2018	1505	Duplex	0 - 0.5	20 - 30	37 ± 5
103-054-0.5	11/15/2018	1506	Duplex	0 - 0.5	20 - 30	124 ± 6
103-055-0.5	11/15/2018	1508	Duplex	0 - 0.5	20 - 30	88 ± 6
103-056-0.5	11/15/2018	1510	Duplex	0 - 0.5	20 - 30	65 ± 5
103-057-0.5	11/15/2018	1512	Duplex	0 - 0.5	20 - 30	57 ± 5
103-058-0.5	11/15/2018	1514	Duplex	0 - 0.5	20 - 30	52 ± 5
103-059-0.5	11/15/2018	1515	Duplex	0 - 0.5	20 - 30	12 ± 3
103-060-0.5	11/15/2018	1517	Duplex	0 - 0.5	20 - 30	92 ± 5
103-061-0.5	11/15/2018	1518	Duplex	0 - 0.5	20 - 30	231 ± 8
103-062-0.5	11/15/2018	1507	Duplex	0 - 0.5	20 - 30	29 ± 4
103-063-0.5	11/15/2018	1510	Duplex	0 - 0.5	20 - 30	39 ± 4
103-064-0.5	11/15/2018	1512	Duplex	0 - 0.5	20 - 30	55 ± 5

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103-065-0.5	11/15/2018	1514	Duplex	0 - 0.5	20 - 30	35 ± 4
103-066-0.5	11/15/2018	1517	Duplex	0 - 0.5	20 - 30	43 ± 4
103-067-0.5	11/15/2018	1520	Duplex	0 - 0.5	20 - 30	32 ± 4
103-068-0.5	11/15/2018	1520	Duplex	0 - 0.5	20 - 30	94 ± 6
103-069-0.5	11/15/2018	1521	Duplex	0 - 0.5	20 - 30	31 ± 4
103-070-0.5	11/15/2018	1522	Duplex	0 - 0.5	20 - 30	73 ± 5
103-071-0.5	11/15/2018	1524	Duplex	0 - 0.5	20 - 30	143 ± 6
103-072-0.5	11/15/2018	1526	Duplex	0 - 0.5	20 - 30	367 ± 10
103-073-0.5	11/15/2018	1526	Duplex	0 - 0.5	20 - 30	164 ± 6
103-074-0.5	11/15/2018	1523	Duplex	0 - 0.5	20 - 30	83 ± 6
103-075-0.5	11/15/2018	1525	Duplex	0 - 0.5	20 - 30	134 ± 6
103-076-0.5	11/15/2018	1529	Duplex	0 - 0.5	20 - 30	116 ± 5
103-077-0.5	11/15/2018	1532	Duplex	0 - 0.5	20 - 30	68 ± 5
103-078-0.5	11/15/2018	1533	Duplex	0 - 0.5	20 - 30	308 ± 9
103-079-0.5	11/15/2018	1535	Duplex	0 - 0.5	20 - 30	31 ± 4
103-080-0.5	11/15/2018	1536	Duplex	0 - 0.5	20 - 30	109 ± 5
103-081-0.5	11/15/2018	1530	Duplex	0 - 0.5	20 - 30	186 ± 7
103-082-0.5	11/15/2018	1531	Duplex	0 - 0.5	20 - 30	78 ± 5
103-083-0.5	11/15/2018	1533	Duplex	0 - 0.5	20 - 30	147 ± 7
103-084-0.5	11/15/2018	1534	Duplex	0 - 0.5	20 - 30	54 ± 5
103-085-0.5	11/15/2018	1536	Duplex	0 - 0.5	20 - 30	128 ± 6
103-086-0.5	11/15/2018	1547	Duplex	0 - 0.5	30 - 40	32 ± 4
103-087-0.5	11/15/2018	1548	Duplex	0 - 0.5	30 - 40	75 ± 5
103-088-0.5	11/15/2018	1550	Duplex	0 - 0.5	30 - 40	58 ± 5
103-089-0.5	11/15/2018	1552	Duplex	0 - 0.5	30 - 40	60 ± 5
103-090-0.5	11/15/2018	1553	Duplex	0 - 0.5	30 - 40	62 ± 5
103-091-0.5	11/15/2018	1555	Duplex	0 - 0.5	30 - 40	32 ± 4

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103-092-0.5	11/15/2018	1557	Duplex	0 - 0.5	30 - 40	32 ± 4
103-093-0.5	11/15/2018	1558	Duplex	0 - 0.5	30 - 40	19 ± 4
103-094-0.5	11/15/2018	1603	Duplex	0 - 0.5	30 - 40	< 11
103-095-0.5	11/15/2018	1604	Duplex	0 - 0.5	30 - 40	203 ± 6
103-096-0.5	11/15/2018	1606	Duplex	0 - 0.5	30 - 40	98 ± 5
103-097-0.5	11/15/2018	1613	Duplex	0 - 0.5	30 - 40	70 ± 6
103-098-0.5	11/15/2018	1615	Duplex	0 - 0.5	30 - 40	133 ± 6
103-099-0.5	11/15/2018	1616	Duplex	0 - 0.5	30 - 40	94 ± 6
103-100-0.5	11/15/2018	1618	Duplex	0 - 0.5	30 - 40	43 ± 5
103-101-0.5	11/15/2018	1619	Duplex	0 - 0.5	30 - 40	44 ± 5
103-102-0.5	11/15/2018	1620	Duplex	0 - 0.5	30 - 40	33 ± 4
103-103-0.5	11/15/2018	1622	Duplex	0 - 0.5	30 - 40	33 ± 4
103-104-0.5	11/15/2018	1623	Duplex	0 - 0.5	30 - 40	32 ± 4
103-105-0.5	11/16/2018	902	Duplex	0 - 0.5	30 - 40	47 ± 5
103-106-0.5	11/16/2018	904	Duplex	0 - 0.5	30 - 40	382 ± 10
103-107-0.5	11/16/2018	906	Duplex	0 - 0.5	30 - 40	115 ± 6
103-108-0.5	11/16/2018	907	Duplex	0 - 0.5	30 - 40	284 ± 8
103-109-0.5	11/16/2018	910	Duplex	0 - 0.5	30 - 40	326 ± 10
103-110-0.5	11/16/2018	611	Duplex	0 - 0.5	30 - 40	177 ± 7
103-111-0.5	11/16/2018	908	Duplex	0 - 0.5	30 - 40	34 ± 4
103-112-0.5	11/16/2018	910	Duplex	0 - 0.5	30 - 40	35 ± 4
103-113-0.5	11/16/2018	911	Duplex	0 - 0.5	30 - 40	147 ± 4
103-114-0.5	11/16/2018	913	Duplex	0 - 0.5	30 - 40	89 ± 5
103-115-0.5	11/16/2018	613	Duplex	0 - 0.5	30 - 40	87 ± 5
103-116-0.5	11/16/2018	615	Duplex	0 - 0.5	30 - 40	87 ± 5
103-117-0.5	11/16/2018	617	Duplex	0 - 0.5	30 - 40	118 ± 6
103-118-0.5	11/16/2018	915	Duplex	0 - 0.5	30 - 40	152 ± 6

Table 1
XRF Sample Log
USCG Burrows Island Light Station
Burrows Island, Washington

PRELIMINARY DRAFT

Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm)[1]
103-119-0.5	11/16/2018	917	Duplex	0 - 0.5	30 - 40	189 ± 6
103-120-0.5	11/16/2018	919	Duplex	0 - 0.5	30 - 40	159 ± 7
103-121-0.5	11/16/2018	919	Duplex	0 - 0.5	30 - 40	157 ± 6
104-01-0.5	11/16/2018	1035	OIC Quarters	0 - 0.5	10 - 20	182 ± 7
104-02-0.5	11/16/2018	1038	OIC Quarters	0 - 0.5	10 - 20	148 ± 7
104-03-0.5	11/16/2018	1039	OIC Quarters	0 - 0.5	10 - 20	134 ± 6
104-04-0.5	11/16/2018	1041	OIC Quarters	0 - 0.5	10 - 20	196 ± 7
104-05-0.5	11/16/2018	1041	OIC Quarters	0 - 0.5	10 - 20	193 ± 7
104-06-0.5	11/16/2018	1047	OIC Quarters	0 - 0.5	10 - 20	87 ± 5
104-07-0.5	11/16/2018	1048	OIC Quarters	0 - 0.5	20 - 30	72 ± 5
104-08-0.5	11/16/2018	1050	OIC Quarters	0 - 0.5	20 - 30	38 ± 5
104-09-0.5	11/16/2018	1051	OIC Quarters	0 - 0.5	10 - 20	88 ± 5
104-10-0.5	11/16/2018	1053	OIC Quarters	0 - 0.5	0 - 10	48 ± 5
104-11-0.5	11/16/2018	1107	OIC Quarters	0 - 0.5	0 - 10	146 ± 7
104-12-0.5	11/16/2018	1118	OIC Quarters	0 - 0.5	0 - 10	16 ± 3
104-13-0.5	11/16/2018	1119	OIC Quarters	0 - 0.5	0 - 10	75 ± 5
104-14-0.5	11/16/2018	1120	OIC Quarters	0 - 0.5	0 - 10	68 ± 5
104-15-0.5	11/16/2018	1044	OIC Quarters	0 - 0.5	0 - 10	590 ± 13
104-15-1.0	11/16/2018	1256	OIC Quarters	0.5 - 1.0	0 - 10	162 ± 7
104-16-0.5	11/16/2018	1045	OIC Quarters	0 - 0.5	10 - 20	197 ± 7
104-17-0.5	11/16/2018	1047	OIC Quarters	0 - 0.5	20 - 30	78 ± 5
104-18-0.5	11/16/2018	1049	OIC Quarters	0 - 0.5	0 - 10	289 ± 9
104-19-0.5	11/16/2018	1052	OIC Quarters	0 - 0.5	10 - 20	287 ± 9
104-20-0.5	11/16/2018	1053	OIC Quarters	0 - 0.5	20 - 30	73 ± 5
104-21-0.5	11/16/2018	1108	OIC Quarters	0 - 0.5	20 - 30	150 ± 6
104-22-0.5	11/16/2018	1109	OIC Quarters	0 - 0.5	10 - 20	427 ± 10
104-22-1.0	11/16/2018	1254	OIC Quarters	0.5 - 1.0	10 - 20	130 ± 5

Table 1
XRF Sample Log
USCG Burrows Island Light Station
Burrows Island, Washington

PRELIMINARY DRAFT

Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm)[1]
104-23-0.5	11/16/2018	1110	OIC Quarters	0 - 0.5	0 - 10	75 ± 5
104-24-0.5	11/16/2018	1111	OIC Quarters	0 - 0.5	30 - 40	196 ± 8
104-25-0.5	11/16/2018	1115	OIC Quarters	0 - 0.5	20 - 30	110 ± 7
104-26-0.5	11/16/2018	1116	OIC Quarters	0 - 0.5	10 - 20	148 ± 6
104-27-0.5	11/16/2018	1117	OIC Quarters	0 - 0.5	0 - 10	1241 ± 22
104-27-1.0	11/16/2018	1253	OIC Quarters	0.5 - 1.0	0 - 10	1890 ± 30
104-27-1.5	11/16/2018	1304	OIC Quarters	1.0 - 1.5	0 - 10	2095 ± 32
104-27-2.0	11/16/2018	1312	OIC Quarters	1.5 - 2.0	0 - 10	3345 ± 47
104-28-0.5	11/16/2018	1113	OIC Quarters	0 - 0.5	30 - 40	23 ± 4
104-29-0.5	11/16/2018	1112	OIC Quarters	0 - 0.5	20 - 30	98 ± 5
104-30-0.5	11/16/2018	1116	OIC Quarters	0 - 0.5	10 - 20	74 ± 5
104-31-0.5	11/16/2018	1135	OIC Quarters	0 - 0.5	20 - 30	15 ± 3
104-32-0.5	11/16/2018	1214	OIC Quarters	0 - 0.5	10 - 20	44 ± 5
104-33-0.5	11/16/2018	1212	OIC Quarters	0 - 0.5	20 - 30	< 12
104-34-0.5	11/16/2018	1208	OIC Quarters	0 - 0.5	30 - 40	22 ± 4
104-35-0.5	11/16/2018	1207	OIC Quarters	0 - 0.5	30 - 40	42 ± 5
104-36-0.5	11/16/2018	1214	OIC Quarters	0 - 0.5	20 - 30	80 ± 5
104-37-0.5	11/16/2018	1213	OIC Quarters	0 - 0.5	10 - 20	118 ± 5
104-38-0.5	11/16/2018	1150	OIC Quarters	0 - 0.5	0 - 10	444 ± 10
104-38-1.0	11/16/2018	1258	OIC Quarters	0.5 - 1.0	0 - 10	11 ± 3
104-39-0.5	11/16/2018	1152	OIC Quarters	0 - 0.5	0 - 10	307 ± 9
104-40-0.5	11/16/2018	1210	OIC Quarters	0 - 0.5	10 - 20	3447 ± 45
104-40-1.0	11/16/2018	1259	OIC Quarters	0.5 - 1.0	10 - 20	197 ± 8
104-41-0.5	11/16/2018	1209	OIC Quarters	0 - 0.5	20 - 30	86 ± 5
104-42-0.5	11/16/2018	1208	OIC Quarters	0 - 0.5	30 - 40	< 10
104-43-0.5	11/16/2018	1206	OIC Quarters	0 - 0.5	30 - 40	31 ± 3
104-44-0.5	11/16/2018	1205	OIC Quarters	0 - 0.5	20 - 30	52 ± 4

Table 1
XRF Sample Log
USCG Burrows Island Light Station
Burrows Island, Washington

PRELIMINARY DRAFT

Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm)[1]
104-45-0.5	11/16/2018	1154	OIC Quarters	0 - 0.5	10 - 20	84 ± 5
104-46-0.5	11/16/2018	1155	OIC Quarters	0 - 0.5	0 - 10	200 ± 7
104-47-0.5	11/16/2018	1139	OIC Quarters	0 - 0.5	0 - 10	90 ± 5
104-48-0.5	11/16/2018	1157	OIC Quarters	0 - 0.5	10 - 20	45 ± 4
104-49-0.5	11/16/2018	1158	OIC Quarters	0 - 0.5	20 - 30	43 ± 4
104-50-0.5	11/16/2018	1200	OIC Quarters	0 - 0.5	30 - 40	12 ± 4
104-51-0.5	11/16/2018	1202	OIC Quarters	0 - 0.5	30 - 40	17 ± 3
104-52-0.5	11/16/2018	1152	OIC Quarters	0 - 0.5	20 - 30	14 ± 4
104-53-0.5	11/16/2018	1154	OIC Quarters	0 - 0.5	10 - 20	29 ± 4
104-54-0.5	11/16/2018	1141	OIC Quarters	0 - 0.5	10 - 20	37 ± 4
104-55-0.5	11/16/2018	1155	OIC Quarters	0 - 0.5	20 - 30	35 ± 4
104-56-0.5	11/16/2018	1157	OIC Quarters	0 - 0.5	20 - 30	42 ± 4
104-57-0.5	11/16/2018	1159	OIC Quarters	0 - 0.5	20 - 30	55 ± 4
104-58-0.5	11/16/2018	1201	OIC Quarters	0 - 0.5	30 - 40	49 ± 5
104-59-0.5	11/16/2018	1202	OIC Quarters	0 - 0.5	30 - 40	58 ± 5
104-60-0.5	11/16/2018	1203	OIC Quarters	0 - 0.5	30 - 40	30 ± 4
104-61-0.5	11/16/2018	1204	OIC Quarters	0 - 0.5	30 - 40	34 ± 4
104-62-0.5	11/16/2018	1144	OIC Quarters	0 - 0.5	30 - 40	32 ± 4
104-63-0.5	11/16/2018	1146	OIC Quarters	0 - 0.5	0 - 10	160 ± 7
104-64-0.5	11/16/2018	1148	OIC Quarters	0 - 0.5	10 - 20	34 ± 3
104-65-0.5	11/16/2018	1134	OIC Quarters	0 - 0.5	20 - 30	1011 ± 18
104-65-1.0	11/16/2018	1309	OIC Quarters	0.5 - 1.0	20 - 30	1823 ± 38
104-65-1.5	11/16/2018	1318	OIC Quarters	1.0 - 1.5	20 - 30	165 ± 7
104-66-0.5	11/16/2018	1139	OIC Quarters	0 - 0.5	30 - 40	31 ± 4
104-67-0.5	11/16/2018	1140	OIC Quarters	0 - 0.5	30 - 40	16 ± 4
104-68-0.5	11/16/2018	1143	OIC Quarters	0 - 0.5	20 - 30	101 ± 6
104-69-0.5	11/16/2018	1145	OIC Quarters	0 - 0.5	10 - 20	39 ± 4

Table 1
XRF Sample Log
USCG Burrows Island Light Station
Burrows Island, Washington

Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm)[1]
104-70-0.5	11/16/2018	1147	OIC Quarters	0 - 0.5	0 - 10	87 ± 6
105-01-0.5	11/14/2018	956	Boathouse	0 - 0.5	0 - 10	448 ± 9
105-01-1.0	11/14/2018	1150	Boathouse	0.5 - 1.0	0 - 10	55 ± 5
105-02-0.5	11/14/2018	1002	Boathouse	0 - 0.5	0 - 10	126 ± 5
105-03-0.5	11/14/2018	1005	Boathouse	0 - 0.5	0 - 10	143 ± 5
105-04-0.5	11/14/2018	1007	Boathouse	0 - 0.5	0 - 10	130 ± 5
105-05-0.5'	11/14/2018	1009	Boathouse	0 - 0.5	0 - 10	79 ± 4
105-06-0.5'	11/14/2018	1012	Boathouse	0 - 0.5	0 - 10	67 ± 4
105-07-0.5	11/14/2018	956	Boathouse	0 - 0.5	0 - 10	81 ± 5
105-08-0.5	11/14/2018	959	Boathouse	0 - 0.5	0 - 10	44 ± 4
105-09-0.5	11/14/2018	1001	Boathouse	0 - 0.5	0 - 10	< 12
105-10-0.5	11/14/2018	1004	Boathouse	0 - 0.5	0 - 10	198 ± 7
105-11-0.5	11/14/2018	1007	Boathouse	0 - 0.5	0 - 10	412 ± 10
105-11-1.0	11/14/2018	1153	Boathouse	0.5 - 1.0	0 - 10	21 ± 4
105-12-0.5	11/14/2018	1015	Boathouse	0 - 0.5	0 - 10	52 ± 5
105-13-0.5	11/14/2018	1018	Boathouse	0 - 0.5	10 - 20	283 ± 8
105-13-1.0	11/14/2018	1152	Boathouse	0.5 - 1.0	10 - 20	10 ± 3
105-14-0.5	11/14/2018	1020	Boathouse	0 - 0.5	10 - 20	60 ± 4
105-15-0.5	11/14/2018	1022	Boathouse	0 - 0.5	10 - 20	35 ± 4
105-16-0.5	11/14/2018	1024	Boathouse	0 - 0.5	10 - 20	57 ± 3
105-17-0.5	11/14/2018	1020	Boathouse	0 - 0.5	10 - 20	31 ± 4
105-18-0.5	11/14/2018	1022	Boathouse	0 - 0.5	10 - 20	32 ± 4
105-19-0.5	11/14/2018	1024	Boathouse	0 - 0.5	10 - 20	24 ± 4
105-20-0.5	11/14/2018	1026	Boathouse	0 - 0.5	10 - 20	30 ± 4
105-21-0.5	11/14/2018	1043	Boathouse	0 - 0.5	10 - 20	36 ± 3
105-22-0.5	11/14/2018	1045	Boathouse	0 - 0.5	10 - 20	45 ± 3
105-23-0.5	11/14/2018	1047	Boathouse	0 - 0.5	10 - 20	223 ± 7

Table 1
XRF Sample Log
USCG Burrows Island Light Station
Burrows Island, Washington

Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm)[1]
105-24-0.5	11/14/2018	1050	Boathouse	0 - 0.5	10 - 20	134 ± 6
105-25-0.5	11/14/2018	1052	Boathouse	0 - 0.5	10 - 20	197 ± 6
105-26-0.5	11/14/2018	1041	Boathouse	0 - 0.5	10 - 20	207 ± 8
105-27-0.5	11/14/2018	1047	Boathouse	0 - 0.5	20 - 30	89 ± 5
105-28-0.5	11/14/2018	1049	Boathouse	0 - 0.5	20 - 30	31 ± 4
105-29-0.5	11/14/2018	1051	Boathouse	0 - 0.5	20 - 30	34 ± 4
105-30-0.5	11/14/2018	1053	Boathouse	0 - 0.5	20 - 30	48 ± 5
105-31-0.5	11/14/2018	1100	Boathouse	0 - 0.5	20 - 30	44 ± 3
105-32-0.5	11/14/2018	1102	Boathouse	0 - 0.5	20 - 30	44 ± 3
105-33-0.5	11/14/2018	1103	Boathouse	0 - 0.5	20 - 30	50 ± 3
105-34-0.5	11/14/2018	1105	Boathouse	0 - 0.5	20 - 30	32 ± 3
105-35-0.5	11/14/2018	1106	Boathouse	0 - 0.5	20 - 30	32 ± 4
105-36-0.5	11/14/2018	1107	Boathouse	0 - 0.5	20 - 30	26 ± 3
105-37-0.5	11/14/2018	1104	Boathouse	0 - 0.5	20 - 30	14 ± 4
105-38-0.5	11/14/2018	1105	Boathouse	0 - 0.5	20 - 30	22 ± 4
105-39-0.5	11/14/2018	1108	Boathouse	0 - 0.5	20 - 30	23 ± 4
105-40-0.5	11/14/2018	1109	Boathouse	0 - 0.5	20 - 30	57 ± 5
105-41-0.5	11/14/2018	1110	Boathouse	0 - 0.5	20 - 30	42 ± 5
105-42-0.5	11/14/2018	1111	Boathouse	0 - 0.5	30 - 40	30 ± 4
105-43-0.5	11/14/2018	1117	Boathouse	0 - 0.5	30 - 40	54 ± 4
105-44-0.5	11/14/2018	1120	Boathouse	0 - 0.5	30 - 40	22 ± 4
105-45-0.5	11/14/2018	1123	Boathouse	0 - 0.5	30 - 40	31 ± 4
105-46-0.5	11/14/2018	1125	Boathouse	0 - 0.5	30 - 40	26 ± 4
105-47-0.5	11/14/2018	1121	Boathouse	0 - 0.5	30 - 40	27 ± 3
105-48-0.5	11/14/2018	1123	Boathouse	0 - 0.5	30 - 40	21 ± 3
105-49-0.5	11/14/2018	1125	Boathouse	0 - 0.5	30 - 40	32 ± 3
105-50-0.5	11/14/2018	1127	Boathouse	0 - 0.5	30 - 40	66 ± 4

Table 1
XRF Sample Log
USCG Burrows Island Light Station
Burrows Island, Washington

Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm)[1]
105-51-0.5	11/14/2018	1129	Boathouse	0 - 0.5	30 - 40	25 ± 3
105-52-0.5	11/14/2018	1200	Boathouse	0 - 0.5	30 - 40	27 ± 3
105-53-0.5	11/14/2018	1202	Boathouse	0 - 0.5	30 - 40	18 ± 3
105-54-0.5	11/14/2018	1204	Boathouse	0 - 0.5	30 - 40	33 ± 3
105-55-0.5	11/14/2018	1206	Boathouse	0 - 0.5	30 - 40	55 ± 4
105-56-0.5	11/14/2018	1207	Boathouse	0 - 0.5	30 - 40	37 ± 4
105-57-0.5	11/14/2018	1208	Boathouse	0 - 0.5	30 - 40	35 ± 4
105-58-0.5	11/14/2018	1210	Boathouse	0 - 0.5	30 - 40	51 ± 5
105-59-0.5	11/14/2018	1212	Boathouse	0 - 0.5	30 - 40	51 ± 5
106-1-0.5	11/14/2018	1435	Pumphouse	0 - 0.5	0 - 10	111 ± 5
106-2-0.5	11/14/2018	1438	Pumphouse	0 - 0.5	0 - 10	61 ± 6
106-3-0.5	11/14/2018	1439	Pumphouse	0 - 0.5	0 - 10	9 ± 3
107-1-0.5	11/16/2018	1225	Firehouse Pump	0 - 0.5	0 - 10	51 ± 4
107-2-0.5	11/16/2018	1228	Firehouse Pump	0 - 0.5	0 - 10	65 ± 4
107-3-0.5	11/16/2018	1229	Firehouse Pump	0 - 0.5	0 - 10	42 ± 4
107-4-0.5	11/16/2018	1221	Firehouse Pump	0 - 0.5	0 - 10	281 ± 9
112-1-0.5	11/13/2018	1604	Above Ground Fuel Tank	0 - 0.5	0 - 10	557 ± 16
112-1-1.0	11/14/2018	1348	Above Ground Fuel Tank	0.5 - 1.0	0 - 10	64 ± 4
112-2-0.5	11/13/2018	1606	Above Ground Fuel Tank	0 - 0.5	0 - 10	1086 ± 18
112-2-1.0	11/14/2018	1344	Above Ground Fuel Tank	0.5 - 1.0	0 - 10	194 ± 6
112-3-0.5	11/13/2018	1607	Above Ground Fuel Tank	0 - 0.5	0 - 10	312 ± 9
112-4-0.5	11/13/2018	1610	Above Ground Fuel Tank	0 - 0.5	0 - 10	99 ± 2
112-5-0.5	11/13/2018	1612	Above Ground Fuel Tank	0 - 0.5	0 - 10	158 ± 7
112-6-0.5	11/13/2018	1614	Above Ground Fuel Tank	0 - 0.5	0 - 10	178 ± 7
112-7-0.5	11/13/2018	1615	Above Ground Fuel Tank	0 - 0.5	0 - 10	318 ± 9
112-8-0.5	11/13/2018	1617	Above Ground Fuel Tank	0 - 0.5	0 - 10	125 ± 6
WT-1-1-0.5	11/13/2018	1514	Water Tanks	0 - 0.5	0 - 10	127 ± 6

Table 1
XRF Sample Log
USCG Burrows Island Light Station
Burrows Island, Washington

Sample ID	Date	Time	Building/Structure	Sample Interval	Approximate Offset from Building (feet)	XRF Lead Concetration (ppm)[1]
WT-1-2-0.5	11/13/2018	1552	Water Tanks	0 - 0.5	0 - 10	63 ± 6
WT-1-3-0.5	11/13/2018	1554	Water Tanks	0 - 0.5	0 - 10	79 ± 6
WT-2-1-0.5	11/13/2018	1520	Water Tanks	0 - 0.5	0 - 10	97 ± 6
WT-2-2-0.5	11/13/2018	1522	Water Tanks	0 - 0.5	0 - 10	2222 ± 31
WT-2-2-1.0	11/13/2018	1620	Water Tanks	0.5 - 1.0	0 - 10	692 ± 14
WT-2-2-1.5	11/14/2018	1346	Water Tanks	1.0 - 1.5	0 - 10	159 ± 6
WT-2-3-0.5	11/13/2018	1527	Water Tanks	0 - 0.5	0 - 10	259 ± 9
WT-2-4-0.5	11/13/2018	1527	Water Tanks	0 - 0.5	0 - 10	142 ± 7
WT-3-1-0.5	11/13/2018	1531	Water Tanks	0 - 0.5	0 - 10	218 ± 9
WT-3-2-0.5	11/13/2018	1535	Water Tanks	0 - 0.5	0 - 10	< 10
WT-3-3-0.5	11/13/2018	1543	Water Tanks	0 - 0.5	0 - 10	108 ± 6
WT-4-1-0.5	11/13/2018	1546	Water Tanks	0 - 0.5	0 - 10	< 11
WT-4-2-0.5	11/13/2018	1549	Water Tanks	0 - 0.5	0 - 10	15 ± 4
WT-4-3-0.5	11/13/2018	1550	Water Tanks	0 - 0.5	0 - 10	< 11

Notes:

1. Concentrations that were not detected by the XRF analyzer are indicated by a "<" symbol with the detection level shown. The standard deviation provided by the XRF analyzer is indicated after the recorded value.

bgs = below ground surface
OIC = Officer In Charge
ppm = parts per million
XRF = x-ray fluorescence

Table 2
XRF Results Summary
USCG Burrows Island Light Station
Burrows Island, Washington

PRELIMINARY DRAFT

Sampling Area	Number of XRF Soil Samples	XRF Detected Lead Concentration Range (ppm)			Number of Samples Greater Than 300 ppm
		Low	High	Average[1]	
Light and Fog Signal Building (101)	68	19	8,975	795	38
Former Oil & Paint Storage Building (102)	53	15	5,643	650	21
Duplex (103)	125	12	1,352	184	21
Former Officer In Charge Quarters (104)	79	11	3,447	291	11
Boathouse (105)	62	10	448	74	2
Pumphouse & Spring Cistern (106)	3	9	111	60	0
Former Firehouse Pump Building (107)	4	42	281	110	0
Salt Water Flushing Pumphouse (108)	--[2]	--	--	--	--
Former Water Tanks (109, 110, 111)	15	15	2,222	348	2
Former Above Ground Fuel Oil Tank (112)	10	64	1,086	309	4

Notes:

1. Average concentration is presented for reference only. The result shown is not normalized to area and does not account for areas that could not be readily accessed for sampling. Concentrations may be skewed in areas where spatial distribution was not consistent around the entire structure.

2. No samples were collected from the area surrounding the Salt Water Flushing Pumphouse as there was not significant soil that could be readily collected.

ppm = parts per million

Concentration Range (ppm)	Number of XRF Soil Samples	Percent of Total
<175	267	64%
175-250	35	8%
250-500	56	13%
500-1000	29	7%
>1000	32	8%

Table 3
Mobilization 1 Summary Table
USCG Burrows Island Light Station
Burrows Island, Washington

Location ID	Location Name	Picture	XRF Samples	High (ppm)	Low (ppm)	Number of samples >300 ppm	Number of Analytical Samples	Comments
101	Light and Fog Signal Station		**68 total** 60, 0.0-0.5 feet 7, 0.5-1.0 feet 1, 1.0-1.5 feet	8,975 ± 67	19 ± 3	38	5	• Paint chipping visible on some window sills and trim. • Additional samples collected for PCB analysis from south of the building • Bedrock outcroppings visible on west side of building towards the water
102	Oil and Paint Storage Building		**53 total** 42, 0.0-0.5 feet 11, 0.5-1.0 feet	5,643 ± 48	15 ± 4	21	6	• Sloped area present west of the concrete pad with large aggregate, possibly a retaining wall or other structure • Shallow bedrock present west of former building
103	Duplex		**125 total** 121, 0.0-0.5 feet 4, 0.5-1.0 feet	1,352 ± 23	ND, <11	21	5	• Visible paint chipping and sloughing in areas on trim and from porches. Also very weathered in drip lines. • Removal area within parts of the sidewalks adjacent to building. • Fence around the east side of building is chipping and in poor condition.

Table 3
Mobilization 1 Summary Table
USCG Burrows Island Light Station
Burrows Island, Washington

Location ID	Location Name	Picture	XRF Samples	High (ppm)	Low (ppm)	Number of samples >300 ppm	Number of Analytical Samples	Comments
104	OIC Quarters		**79 total** 70, 0.0-0.5 feet 6, 0.5-1.0 feet 2, 1.0-1.5 feet 1, 1.5-2.0 feet	3,447 ± 45	ND, <10	11	7	• Foundation and other remnants of building present and overgrown by trees and ivy. Limited soil or sampling was possible within the apparent building footprint. • Location on NE side of former building encountered charcoal and other woody debris with elevated XRF readings (>1,000 ppm) from surface to 2 feet bgs. • West of footprint not accessible due to steep slope and helicopter pad.
105	Boathouse		**62 total** 59, 0.0-0.5 feet 3, 0.5-1.0 feet	448 ± 9	ND, <12	2	6	• Apparent excavation and replacement of siding along east, south and west sides. • North side inaccessible for sampling due to slope and rocks. • Some building materials with paint encountered east of the building
106	Pumphouse and Spring Cistern		**3 total** 3, 0.0-0.5 feet	111 ± 5	9 ± 3	0	0	• Access limited, steep slope to get down to the building. • Samples collected in sand/soil adjacent to buildings. • Limited area that could be sampled.

Table 3
Mobilization 1 Summary Table
USCG Burrows Island Light Station
Burrows Island, Washington

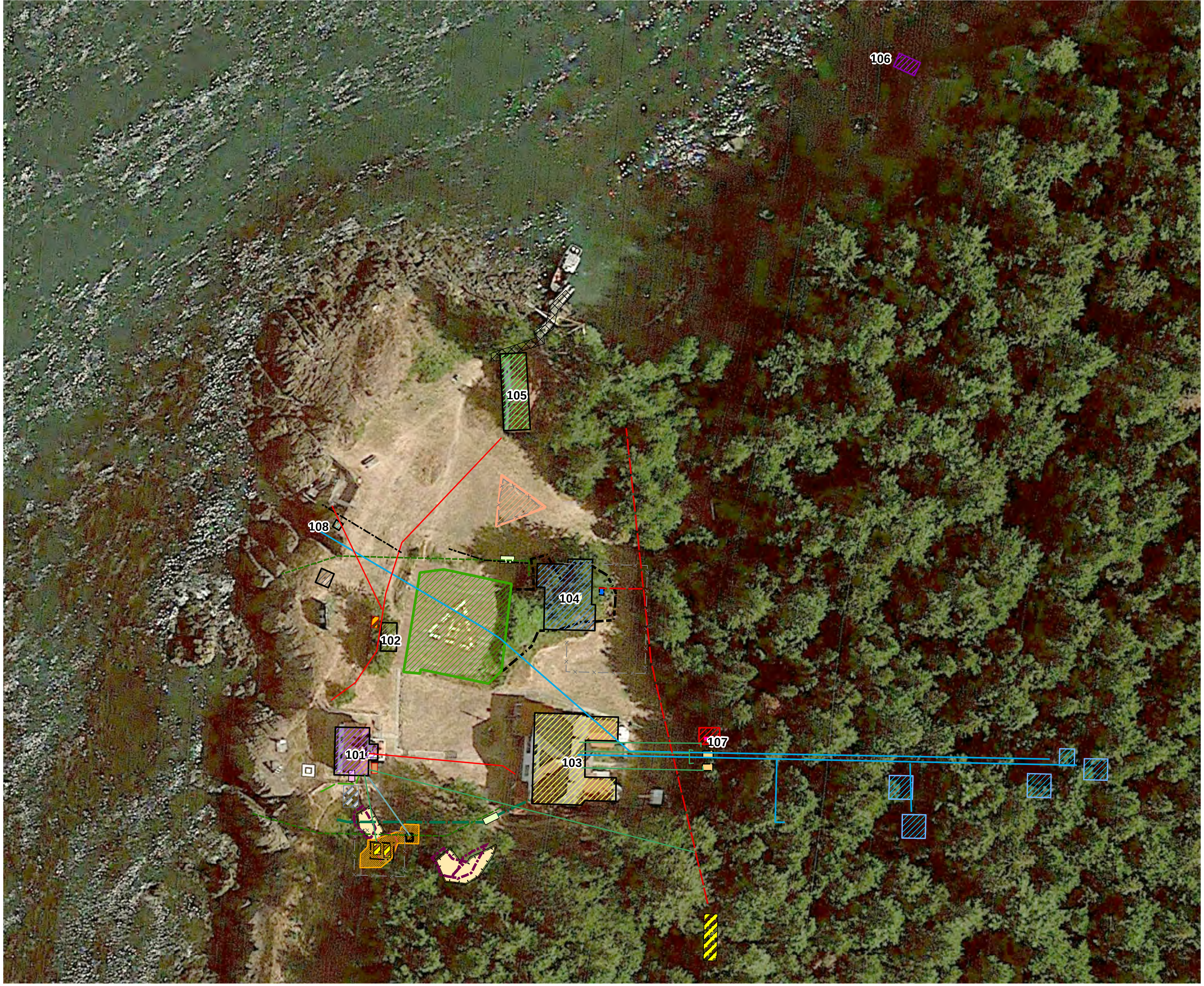
Location ID	Location Name	Picture	XRF Samples	High (ppm)	Low (ppm)	Number of samples >300 ppm	Number of Analytical Samples	Comments
107	Firehouse Pump Building		**4 total** 4, 0.0-0.5 feet	281 ± 9	31 ± 4	0	0	- Former pad very overgrown, sampling access is limited due to brush and trees.
108	Salt Water Flushing Pumphouse		None	--	--	--	--	- No XRF samples collected due to lack of soil in vicinity of the structure. - Some woody debris and sediment present within the structure, but appears to be contained on the concrete footing. - Concrete appears to have been poured directly onto bedrock/
109, 110, 111	Water Tanks		**15 total** 13, 0.0-0.5 feet 1, 0.5-1.0 feet 1, 1.0-1.5 feet	2,222 ± 31	ND, <11	2	2	- 4 tank stands identified and located, orientation different from that shown on historical drawings. - Tanks are collapsed, pad structures remain. Painted material visible as well as some piping. - Once location had elevated readings, with samples collected from two additional depths.

Table 3
Mobilization 1 Summary Table
USCG Burrows Island Light Station
Burrows Island, Washington

Location ID	Location Name	Picture	XRF Samples	High (ppm)	Low (ppm)	Number of samples >300 ppm	Number of Analytical Samples	Comments
112	10,000-Gallon Fuel AST		**9 total** 7, 0.0-0.5 2, 0.5-1.0	1,086 ± 18	64 ± 4	4	1	• Concrete stands for tank and pipeline components remaining, tank is no longer present. • Area overgrown with ivy and brush. • Pipeline visible at connection to former loading area east of the boathouse.

FIGURES

CITY: SAN FRANCISCO DIV/GROUP: ENV/IM DB: kgpeters LD: PIC: PM: TM:
PROJECT: PATH: Z:\GISProjects_ENV\Burrows_Island_Lighthouse_2018\MXD\Fig2_Site Plan with Current and Historical Features.mxd DATE: 1/25/2019 5:21:34 PM



LEGEND

Structures

- ▨ Lighthouse
- ▨ Oil and Paint Storage Building
- ▨ Double Dwelling
- ▨ Officer In Charge Quarters
- ▨ Boathouse
- ▨ Pumphouse and Spring Cistern
- ▨ Firehouse Pump Building
- ▨ Salt Water Flushing Pumphouse
- ☐ Area Based on Accessibilty
- ■ 675-Gallon Fuel OIl Tank
- ▨ 540-Gallon Fuel Tank
- ▨ Excavated Tank Area
- ☐ Fuel Oil Tank
- ■ F.O. Tank
- ▨ 690-Gallon Fuel Tank
- ▨ Old Cistern
- ▨ Transformer Pad
- ■ Fire Pump
- ☐ Dark Staining
- ▨ Old Helicopter Pad
- ▨ Helicopter Pad
- ☐ Debris Pile
- ▨ Inaccessible Area
- ▨ Water Tanks/Platforms
- ▨ Elevated 10,000-Gallon Fuel Oil Tank
- ■ Septic Tank
- ▨ Cistern
- ■ 675-Gallon Fuel Oil Tank
- ■ Fuel Oil Tank
- ▨ Gasoline Storage Tank
- ▨ Landing/Dock

- — Debris Pile
- — Water Line
- — Electric Line
- — Septic Line
- — 2 in Abandoned *
- — Tank Fence
- — Fuel Line
- — Drain Pipe
- — Concrete Contai*
- — 4 in Sewer
- — Fence
- — 3 in Sewer Line
- — Fuel Pipe

Note:
1. Site features based on U.S. Coast Guard historical drawing Fire Protection, Water & Sewer Systems, Burrows Island Light Station, Dwg No. 60.5804, December 1960.

0 50 100

SCALE IN FEET

BURROWS ISLAND LIGHT STATION
SKAGIT COUNTY, WASHINGTON

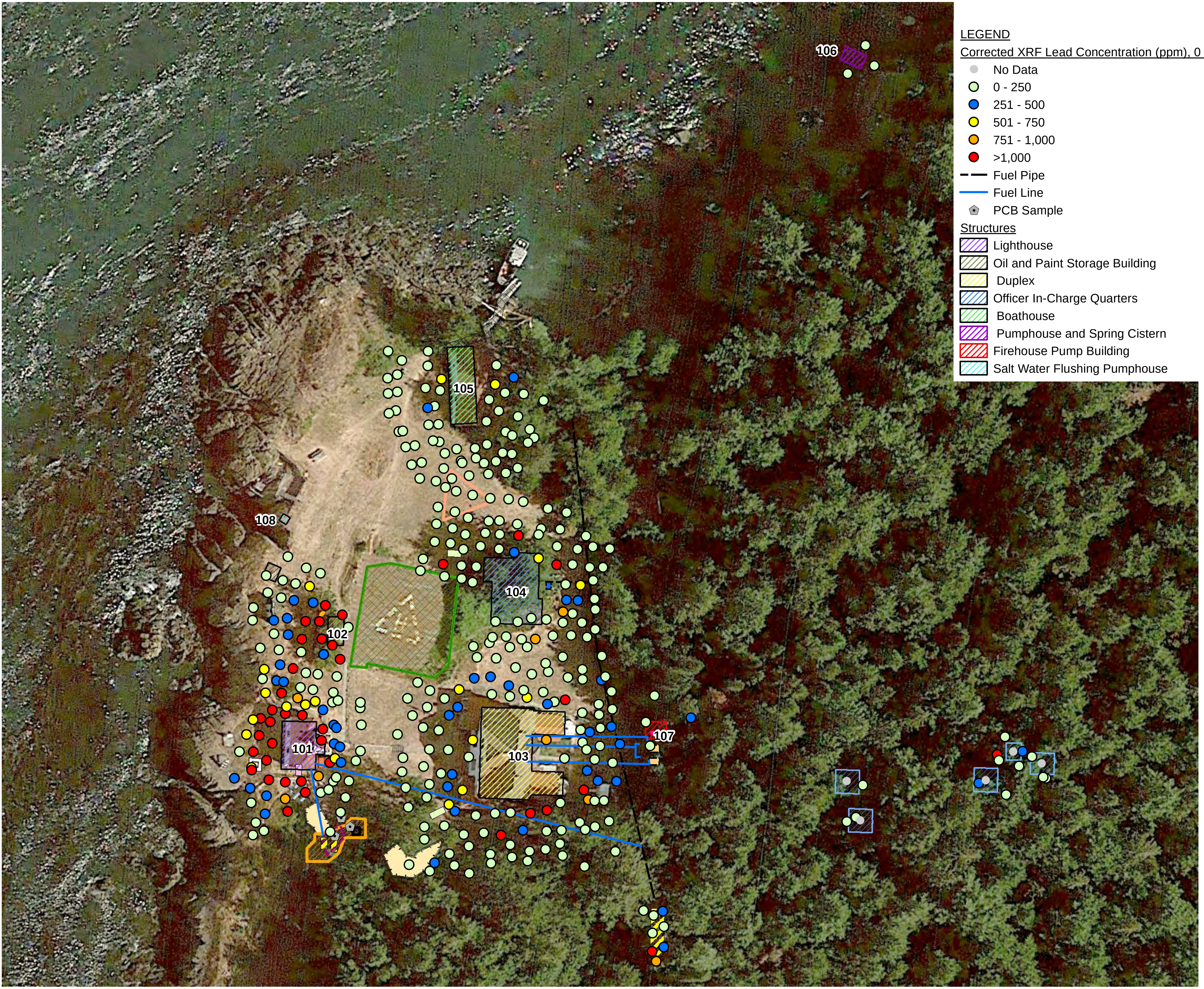
Site Plan with Current and Historical Features

ARCADIS Design & Consultancy for natural and built assets

FIGURE

1

CITY: SAN FRANCISCO DIV/GROUP: ENV/IM DB: jchen LD: PIC: PM: TM:
PROJECT: PATH: Z:\GISProjects_ENV\Burrows_Island_Lighthouse_2018\MXD\Memo_XRF SampleLocationsNovember_2018.mxd DATE: 2/18/2019 11:15:58 AM



LEGEND

Corrected XRF Lead Concentration (ppm), 0 to 6 inches bgs
- ● No Data
- ○ 0 - 250
- ● 251 - 500
- ● 501 - 750
- ● 751 - 1,000
- ● >1,000
- --- Fuel Pipe
- — Fuel Line
- ⬟ PCB Sample

Structures
- ▨ Lighthouse
- ▨ Oil and Paint Storage Building
- ▨ Duplex
- ▨ Officer In-Charge Quarters
- ▨ Boathouse
- ▨ Pumphouse and Spring Cistern
- ▨ Firehouse Pump Building
- ▨ Salt Water Flushing Pumphouse
- ■ 675-Gallon Fuel Oil Tank
- ▨ 540-Gallon Fuel Tank
- ▨ Excavated Tank Area
- ▨ Fuel Oil Tank
- ■ F.O. Tank
- ▨ 690-Gallon Fuel Tank
- ▨ Old Cistern
- ▨ Transformer Pad
- ■ Fire Pump
- ☐ Dark Staining
- ▨ Old Helicopter Pad
- ▨ Helicopter Pad
- ▨ Debris Pile
- ▨ Elevated 10,000-Gallon Fuel Oil Tank
- ■ Septic Tank
- ■ 675-Gallon Fuel Oil Tank
- ■ Fuel Oil Tank
- ▨ Gasoline Storage Tank
- ▨ Landing/Dock

Notes:
bgs - below ground surface
GPS - global positioning system
ppm - parts per million
\> - Greater than
XRF - X-ray fluorescence
PCB - polychlorinated biphenyls
1. Sampling locations were recorded in the field using GPS with an approximate horizontal accuracy of 3 feet.
2. XRF lead concentrations are adjusted based on the correlation between laboratory analytical and XRF field screening results. Results were corrected using the following formula: $Y = 1.136X - 0.02354$ Where,
   Y = Log of the corrected XRF concentration
   X = Log of the XRF field measurement concentration
   Logarithms in the equation are in base 10.
3. Site features based on U.S. Coast Guard historical drawing Fire Protection, Water & Sewer Systems, Burrows Island Light Station, Dwg No. 60.5804, December 1960.

0 60 120
SCALE IN FEET

BURROWS ISLAND LIGHT STATION
SKAGIT COUNTY, WASHINGTON

XRF SAMPLING RESULTS
NOVEMBER 2018 SAMPLING EVENT

ARCADIS Design & Consultancy for natural and built assets

FIGURE
2

ATTACHMENT 1

Photo Log

Project Photographs

Burrows Island Light Station
Burrows Island, Anacortes, WA

Photo: 1

Date:

11/13/2018

Description:

East side of light station

Location:

Light and Fog Signal Building (101)

Photo: 2

Date:

11/13/2018

Description:

Peeling paint at light station

Location:

Light and Fog Signal Building (101)

Project Photographs

Burrows Island Light Station
Burrows Island, Anacortes, WA

Photo: 3

Date:

11/13/2018

Description:

West side of light station

Location:

Light and Fog Signal Building (101)

Photo: 4

Date:

11/13/2018

Description:

North side of light station

Location:

Light and Fog Signal Building (101)

Project Photographs

Burrows Island Light Station
Burrows Island, Anacortes, WA

Photo: 5

Date:

11/13/2018

Description:

Pipe visible on southwest side of Light and Fog Signal Building

Location:

Light and Fog Signal Building (101)

Photo: 6

Date:

11/13/2018

Description:

North side of Duplex

Location:

Duplex (103)

Project Photographs

Burrows Island Light Station
Burrows Island, Anacortes, WA

Photo: 7

Date:

11/13/2018

Description:

West side of Duplex

Location:

Duplex (103)

Photo: 8

Date:

11/13/2018

Description:

Debris piles southwest of the Duplex

Location:

Duplex (103)

Project Photographs

Burrows Island Light Station
Burrows Island, Anacortes, WA

11/13/2018

Photo: 9

Date:

11/13/2018

Description:

Area of previous soil removal on south side of Duplex

Location:

Duplex (103)

11/15/2018

Photo: 10

Date:

11/15/2018

Description:

Peeling paint visible on east side of Duplex

Location:

Duplex (103)

Project Photographs

Burrows Island Light Station
Burrows Island, Anacortes, WA

Photo: 11

Date:

11/15/2018

Description:

Paint deterioration visible on drip lines and trim on north side of Duplex

Location:

Duplex (103)

Photo: 12

Date:

11/15/2018

Description:

Chipped paint in soil on west side of Duplex

Location:

Duplex (103)

Project Photographs

Burrows Island Light Station
Burrows Island, Anacortes, WA

Photo: 13

Date:

11/15/2018

Description:

Peeling paint on trim on north side of Duplex

Location:

Duplex (103)

Photo: 14

Date:

11/13/2018

Description:

Fence on east side of Duplex

Location:

Duplex (103)

Project Photographs

Burrows Island Light Station
Burrows Island, Anacortes, WA

Photo: 15

Date:

11/13/2018

Description:

East side of Duplex with water tanks

Location:

Duplex (103)

Photo: 16

Date:

11/13/2018

Description:

Fence and water tanks at southeast corner of Duplex

Location:

Duplex (103)

Project Photographs

Burrows Island Light Station
Burrows Island, Anacortes, WA

Photo: 17

Date:
11/13/2018

Description:
Remaining concrete support structure for tank

Location:
Former Above Ground Fuel Oil Tank (112)

Photo: 18

Date:
11/13/2018

Description:
Pipeline leading north from former tank

Location:
Former Above Ground Fuel Oil Tank (112)

Project Photographs

Burrows Island Light Station
Burrows Island, Anacortes, WA

Photo: 19

Date:
11/13/2018

Description:
West side of Boathouse

Location:
Boathouse (105)

Photo: 20

Date:
11/13/2018

Description:
Excavated area at southwest side of Boathouse

Location:
Boathouse (DU-105)

Project Photographs

Burrows Island Light Station
Burrows Island, Anacortes, WA

Photo: 21

Date:
11/13/2018

Description:
East side of Boathouse with excavated area

Location:
Boathouse (105)

Photo: 22

Date:
11/13/2018

Description:
North side of boathouse at entrance to dock

Location:
Boathouse (105)

Project Photographs

Burrows Island Light Station
Burrows Island, Anacortes, WA

11/15/2018

Photo: 23

Date:

11/15/2018

Description:

Cistern identified south of the Light and Fog Signal Building

Location:

Light and Fog Signal Building (101)

11/15/2018

Photo: 24

Date:

11/15/2018

Description:

Cistern identified south of the Light and Fog Signal Building

Location:

Light and Fog Signal Building (101)

Project Photographs

Burrows Island Light Station
Burrows Island, Anacortes, WA

Photo: 25

Date:

11/13/2018

Description:

Helicopter pad with Boathouse in distance and OIC Quarters uphill.

Location:

Helicopter pad

Photo: 26

Date:

11/13/2018

Description:

Concrete foundation from Former Oil & Paint Storage Building west of helicopter pad

Location:

Former Oil & Paint Storage Building (102)

Project Photographs

Burrows Island Light Station
Burrows Island, Anacortes, WA

Photo: 27

Date:

11/15/2018

Description:

Concrete foundation from Former Oil & Paint Storage Building west of helicopter pad

Location:

Former Oil & Paint Storage Building (102)

Photo: 28

Date:

11/15/2018

Description:

Obstruction west of Former Oil & Paint Storage Building

Location:

Former Oil & Paint Storage Building (102)

Project Photographs

Burrows Island Light Station
Burrows Island, Anacortes, WA

Photo: 29

Date:

11/13/2018

Description:

Location of former PCB oil spill

Location:

Light and Fog Signal Building (101)

Photo: 30

Date:

11/16/2018

Description:

Location of former PCB oil spill

Location:

Light and Fog Signal Building (101)

Project Photographs

Burrows Island Light Station
Burrows Island, Anacortes, WA

Photo: 31

Date:

11/16/2018

Description:

Location of former PCB oil spill

Location:

Light and Fog Signal Building (101)

Photo: 32

Date:

11/13/2018

Description:

Pipe in the back of the pumphouse building

Location:

Pumphouse and Spring Cistern (106)

Project Photographs

Burrows Island Light Station
Burrows Island, Anacortes, WA

Photo: 33

Date:

11/13/2018

Description:

Pumphouse

Location:

Pumphouse and Spring Cistern (106)

Photo: 34

Date:

11/13/2018

Description:

West-facing view of salt water flushing pumphouse

Location:

Salt Water Flushing Pumphouse (108)

Project Photographs

Burrows Island Light Station
Burrows Island, Anacortes, WA


11/16/2018

Photo: 35

Date:
11/16/2018

Description:
Salt water pumphouse on concrete foundation

Location:
Salt Water Flushing Pumphouse (108)


11/13/2018

Photo: 36

Date:
11/13/2018

Description:
Platform for water tank in the forest

Location:
Former Water Tanks (109, 110, 111)

Project Photographs

Burrows Island Light Station
Burrows Island, Anacortes, WA

Photo: 37

Date:

11/13/2018

Description:

Platform for water tank in the forest

Location:

Former Water Tanks (109, 110, 111)

Photo: 38

Date:

11/16/2018

Description:

Concrete foundation of Former Firehouse Pump Building

Location:

Former Firehouse Pump Building (107)

Project Photographs

Burrows Island Light Station
Burrows Island, Anacortes, WA

Photo: 39

Date:
11/13/2018

Description:
Vegetated area covering the former OIC Quarters

Location:
Former OIC Quarters (104)

Photo: 40

Date:
11/16/2018

Description:
Foundation and building debris from the OIC Quarters

Location:
Former OIC Quarters (104)

ATTACHMENT 2

Field Forms

ARCADIS Design & Consultancy for natural and built assets

Burrows Island XRF Sample Log

Project No.: B0003010.0006 **Page** ______ **of** ______

Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Julia Vidinish XRF Unit 5635

Sample Type: XRF **Date:** 11/14/18

Sampling Equipment: Probe / Trowel **Other** ____________

Shot #	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes	Samp
72	102-25-0.5	11/14/18	1300	med. brown, well-graded, sandy silt	4073±40	☑	100-0594	
76	102-22-0.5	11/14/18	1333	SAA	245± 6	☑	100-0595	
77	102-23-0.5	11/14/18	1335	SAA	1001±14	☑	100-0596	
78	102-24-0.5	11/14/18	1337	med brown, well-graded, sandy silt, high organics	4720±42	☑	100-0597	
79	102-26-0.5	11/14/18	1340	med. brown, well-graded, silty-sand	1299±17	☑	100-0598	
80	~~102~~ W112-2-1.0 ~~102-2-1~~	11/14/18	1344	med. brown, well-graded, sandy soil	194±6	☑	100-0599	
81	WT-2-2-1.5'	11/14/18	1346	med. brown, well-graded, sandy soil	159± 6	☑	100-0600	
82	~~109~~ 112-1-1'	11/14/18	1348	med brown, well graded, sandy plus gravel	64±4	☑	100-0602	
83	102-4-1	11/14/18	1354	med. brown, well graded, sandy silt	123±5	☑	100-0603	
84	102-12-1	11/14/18	1356	SAA	51± 4	☑	100-0604	
85	102-13-1	11/14/18	1358	SAA	421±10	☑	100-0605	X
86	102-31-0.5	11/14/18	1400	dark brown, well-graded, sandy silt	407±9	☑	100-0606	
87	102-32-0.5	11/14/18	1402	SAA	252±7	☑	100-0607	X
88	102-33-0.5	11/14/18	1403	SAA	5643±48	☑	100-0608	X
89	102-34-0.5	11/14/18	1410	SAA	97± 4	☑	100-0609	

ARCADIS Design & Consultancy for natural and built assets

Burrows Island XRF Sample Log

Project No.: B0003010.0006 Page____ of ____

Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Julia Vidonish XRF Unit 5635

Sample Type: XRF Date: 11/14/18

Sampling Equipment: Probe / Trowel Other____

Sample

Shot	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
53	105-55-0.5	11/14/18	1206	dark brown, well-graded + sand	55 ± 4	☑	100-0577
57	102-1-0.5	11/14/18	1221	dark brown, well-graded sandy silt	133 ± 5	☑	100-0578
58	102-2-0.5	11/14/18	1224	SAA	82 ± 4	☑	100-0579
59	102-3-0.5	11/14/18	1226	SAA	120 ± 5	☑	100-0580
60	102-4-0.5	11/14/18	1228	SAA	420 ± 9	☑	100-0581
61	102-5-0.5	11/14/18	1230	SAA	91 ± 4	☑	100-0582
62	102-7-0.5	11/14/18	1232	SAA	67 ± 4	☑	100-0583
63	102-8-0.5	11/14/18	1233	SAA	82 ± 4	☑	100-0585
64	102-9-0.5	11/14/18	1235	SAA	88 ± 5	☑	100-0586
65	102-10-0.5	11/14/18	1236	SAA	248 ± 7	☑	100-0587
66	102-17-0.5	11/14/18	1240	dark brown, well-graded sandy silt	233 ± 6	☑	100-0588
67	102-18-0.5	11/14/18	1242	medium brown, well-graded, sandy silt	278 ± 7	☑	100-0593
68	102-19-0.5	11/14/18	1244	SAA	157 ± 6	☑	100-0589
69	102-20-0.5	11/14/18	1245	SAA	131 ± 5	☑	100-0590
70	102-21-0.5	11/14/18	1249	SAA	48 ± 4	☑	100-0591

ARCADIS Design & Consultancy for natural and built assets

Burrows Island XRF Sample Log

Project No.: B0003010.0006
Page ____ of ____
Site Location: Burrows Island Light Station, Anacortes, WA
Personnel: Julia Vidonish
XRF Unit 5635
Sample Type: XRF
Date: ~~[illegible]~~ 11/14/18
Sampling Equipment: Probe / Trowel Other________

Sample

	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
90	102-35-0.5	11/14/18	1415	dark brown, well-gradad, sandy silt	203 ± 7	☑	100-0611
91	102-36-0.5	11/14/18	1417	SAA	130 ± 6	☑	100-0612
92	102-37-0.5	11/14/18	1418	SAA	128 ± 5	☑	100-0613
93	102-38-0.5	11/14/18	1422	SAA	167 ± 6	☑	100-0614
94	102-39-0.5	11/14/18	1424	SAA	143 ± 6	☑	100-0615
95	102-40-0.5	11/14/18	1425	SAA	362 ± 8	☑	100-0616
96	102-41-0.5	11/14/18	1427	SAA	215 ± 6	☑	100-0617
97	102-42-0.5	11/14/18	1428	SAA	42 ± 4	☑	100-0618
98	106-1-0.5	11/14/18	1435	med. brown, well-gradad, sandy silt	111 ± 5	☑	100-0619
99	106-2-0.5	11/14/18	1438	med. brown, well-graded, sandy silt w/ organics	61 ± 6	☑	101-0319 ~~[illegible]~~
100	106-3-0.5	11/14/18	1439	grey-brown sand, well graded	9 ± 3	☑	100-0620
104	102-33-1' (refusal at 9")	11/14/18	1450	dark brown well-gradea, sandy silt	588 ± 11	☑	100-0621
105	102-31-1'	11/14/18	1452	SAA	217 ± 6	☑	100-0622
106	102-15-1'	11/14/18	1457	SAA	572 ± 10	☑	100-0623
112	101-7-0.5	11/14/18	1548	dark brown, well-gradad, sandy silt	931 ± 13	☑	100-0625

Burrows Island XRF Sample Log

Project No.: B0003010.0006

Page______ of ______

Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Mark Ullery

XRF Unit: 10102

Sample Type: XRF

Date: 11/14/18

Sampling Equipment: Probe / Trowel Other__________

Shot #	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes	
57	105-59-0.5	11/14/18	1212	Well graded sand, no fines, black/grey	51±5	☒	101-285	
61	102-6-0.5	11/14/18	1223	Sandy silt, some organics, dk brown	52±5	☒	101-284	X
62	102-11-0.5	11/14/18	1240	Silty sand, some organics, black/dk brown	334±9	☒	101-296	
63	102-12-0.5	11/14/18	1242	SAA	1006±18	☒	101-294	
64	102-13-0.5	11/14/18	1244	SAA	1119±18	☒	101-297	
65	102-14-0.5	11/14/18	1247	SAA	91±5	☒	101-298	
66	102-15-0.5	11/14/18	1250	Silty sand, poorly graded dk brown	879±16	☒	101-300	
67	102-16-0.5	11/14/18	1253	SAA	918±17	☒	101-301	X
72	102-27-0.5	11/14/18	1333	Silty sand, poorly graded, dk brown	367±10	☒	101-303	
73	102-28-0.5	11/14/18	1339	SAA	198±7	☒	101-305	
74	102-29-0.5	11/14/18	1342	Silt with some sand, organics, dk brown	15±4	☒	101-306	
75	102-30-0.5	11/14/18	1345	SAA	100±6	☒	101-308	
76	102-15-1.0	11/14/18	1415	Sandy silt, poorly graded, dk brown	627±13	☒	101-310	X
77	102-16-1.0	11/14/18	1420	SAA	252±9	☒	101-312	
78	102-24-1.0	11/14/18	1422	~~Sand~~ Silty sand, some organics, black	3718±44	☒	101-313	

ARCADIS Design & Consultancy for natural and built assets

Burrows Island XRF Sample Log

Project No.: B0003010.0006 Page 1 of 4

Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Julia Vidonish & Kelsey Fray XRF unit #8580

Sample Type: XRF **Date:** 11/16/18

Sampling Equipment: Probe / Trowel Other________

Shot #	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
18	103-111-0.5	11/16/18	0908	Silty sand w/ gravel + trace organics	34±4	☑	100-0689
19	103-112-0.5		0910	S.A.A	35± 4	☑	100-0690
20	103-113-0.5		0911	S.A.A.	147±4	☑	100-0691
21	103-114-0.5		0913	S.A.A	89±5	☑	100-0692
22	103-118-0.5		0915	Silty sand w/ organics + gravel	152±6	☑	100-0696
23	103-119-0.5		0917	S.A.A	189± 6	☑	100-0697
24	103-120-0.5		0919	S.A.A.	157±6	☑	100-0699
25	104-3-0.5		1039	dark brown, well-graded, sandy silt	134±6	☑	100-0700
26	104-5-0.5		1041	SAA	193±7	☑	100-0701
27	104-15-0.5		1044	SAA	596±13	☑	100-0702
28	104-16-0.5		1045	SAA gv	[illegible]	197±7 ☑	100-0703
29	104-17-0.5		1047	SAA	78±5	☑	100-0704
30	104-18-0.5		1049	SAA	289±9	☑	100-0705
31	104-19-0.5		1052	SAA	287±9	☑	100-0706
32	104-20-0.5	↓	1053	SAA	73±5	☑	100-0707

ARCADIS Design & Consultancy for natural and built assets

Burrows Island XRF Sample Log

Project No.: B0003010.0006 Page_____ of _____

Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Mark Ullery XRF unit 10102

Sample Type: XRF Date: 11/13/18

Sampling Equipment: Probe / Trowel Other_____

Shot #	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes	Sample
39	~~109~~ 112-3-0.5	11/13/18	1607	SW with organics, dk brown	312 ± 9	☒	Julia's Phone	
40	~~109~~ 112-4-0.5	11/13/18	1610	SW, dk brown	99 ± 2	☒	Julia's Phone	
41	~~109~~ 112-5-0.5	11/13/18	1612	SW, dk brown	158 ± 7	☒	Julia's Phone	
42	~~109~~ 112-6-0.5	11/13/18	1614	SW, dk brown	178 ± 7	☒	Julia's Phone	
43	~~109~~ 112-7-0.5	11/13/18	1615	SW w/ gravel, dk brown	318 ± 9	☒	Julia's Phone	
44	~~109~~ 112-8-0.5	11/13/18	1617	SW, dk brown	125 ± 6	☒	Julia's Phone	
45	WT-2-2-1.0	11/13/18	1620	SW, dk brown	692 ± 14	☒	Julia's Phone	X
						☐		
						☐		
						☐		
						☐		
						☐		
						☐		
						☐		
						☐		

ARCADIS Design & Consultancy for natural and built assets

Burrows Island XRF Sample Log

Project No.: B0003010.0006 Page______of______

Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Mark Ullery XRF Unit 10102

Sample Type: XRF **Date:** 11/13/18

Sampling Equipment: Probe / Trowel Other______

Shot #	Sample ID	Date	Time	General Soil Description	Lead ppm	Photo Taken?	Notes	Sample
18	WT-1-1-0.5	11/13/18	1514	SW, dk brown w/ org	127 ± 6	☒	100-529	
19	WT-2-1-0.5	11/13/18	1520	SW, dk brown w/ org	97 ± 6	☒	100-531	
20	WT-2-2-0.5	11/13/18	1522	SW, dk brown w/ wood	2,222 ± 31	☒	100-533	X
22	WT-2-3-0.5	11/13/18	1527	SW, dk brown w/ org	259 ± 9	☒	100-534	
23	WT-2-4-0.5	11/13/18	1529	SW, dk brown.	142 ± 7	☒	100-535	
24	WT-3-1-0.5	11/13/18	1531	SW, dk brown w/ org	218 ± 9	☒	100-537	
25	WT-3-2-0.5	11/13/18	1535	SW, dk brown/grey	<10	☒	100-538	
28	WT-3-3-0.5	11/13/18	1543	Organic, black/brown	108 ± 6	☒	100-539	
29	WT-4-1-0.5	11/13/18	1546	SW, dk brown	<11	☒	100-540	
30	WT-4-2-0.5	11/13/18	1549	SW/dk brown, w/ org	15 ± 4	☒	100-542	
31	WT-4-3-0.5	11/13/18	1550	SW, dk brw w/ org	<11	☒	100-543	
32	WT-1-2-0.5	11/13/18	1552	SW, dk brown w/ org	63 ± 6	☒	~~100-544~~ Julia's phone	
33	WT-1-3-0.5	11/13/18	1554	SW, dk brown w/ org	79 ± 6	☒	Julia's Phone	
37	~~WT-104~~ ~~104~~ 112-1-0.5	11/13/18	1604	SW/w/ gravel, dk brown	557 ± 16	☒	" "	
38	~~104~~ 112-2-0.5	11/13/18	1606	SW, dk brown w/ org	1086 ± 18	☒	Julia's phone	X

ARCADIS Design & Consultancy for natural and built assets

Burrows Island XRF Sample Log

Project No.: B0003010.0006 Page______of______

Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Mark Ullery XRF Unit 10102

Sample Type: XRF Date: 11/14/18

Sampling Equipment: Probe / Trowel Other__________

Shot #	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
39	105-37-0.5	11/14/18	1104	Well graded sand w/ fines and trace gravel, black/brown	14±4	☒	101-264
40	105-38-0.5	11/14/18	1105	SAA	22±4	☒	101-266
41	105-39-0.5	11/14/18	1108	Well graded sand, dk brown/black	23±4	☒	101-267
42	105-40-0.5	11/14/18	1109	Well graded sand, trace woody debris, black/dk brown	57±5	☒	101-268
43	105-41-0.5	11/14/18	1110	Well graded sand, dk brown / black	42±5	☒	101-269
44	105-42-0.5	11/14/18	1111	Well graded sand, trace woody debris, light/dk brown	30±4	☒	101-270
48	105-43-0.5	11/14/18	1117	well graded sand, black/dk brown	54±4	☒	101-272
49	105-44-0.5	11/14/18	1120	SAA	22±4	☒	101-273
50	105-45-0.5	11/14/18	1123	well graded sand, black/dk brown	31±4	☒	101-274
51	105-46-0.5	11/14/18	1125	well graded, trace woody debris, black/dk brown	26±4	☒	101-275
52	105-1-1.0	11/14/18	1150	Well graded sand, ~~light~~ brown	55±5	☒	101-276
53	105-11-1.0	11/14/18	1153	Well graded sand, dk brown/black	21±4	☒	101-278
54	105-56-0.5	11/14/18	1207	well graded sand, with fines, black/dk brown	37±4	☒	101-279
55	105-57-0.5	11/14/18	1208	SAA	35±4	☒	101-281
56	105-58-0.5	11/14/18	1210	SAA	51±5	☒	101-282

Burrows Island XRF Sample Log

Project No.: B0003010.0006 Page_____of_____

Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Mark Ullery XRF Unit 10102

Sample Type: XRF Date: 11/14/18

Sampling Equipment: Probe / Trowel Other________

Shot #	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes	
21	105-7-0.5	11/14/18	0956	Well graded sand, black	81±5	☒	101-247	
22	105-8-0.5	11/14/18	0959	SAA	44±4	☒	101-248	
23	105-9-0.5	11/14/18	1001	SAA	<12	☒	101-249	
~~23~~ 24	105-10-0.5	11/14/18	1004	SAA	198±7	☒	101-250	
25	105-11-0.5	11/14/18	1007	Well graded sand, some organics/wood, black	412±10	☒	101-251	X
26	105-12-0.5	11/14/18	1015	Well graded sand, black	52±5	☒	101-252	
27	105-17-0.5	11/14/18	1020	Sand with some fines, black	31±4	☒	101-253	
28	105-18-0.5	11/14/18	1022	SAA	32±4	☒	101-254	
29	105-19-0.5	11/14/18	1024	SAA	24±4	☒	101-255	
30	105-20-0.5	11/14/18	1026	SAA	30±4	☒	101-256	
34	105-~~28~~ 26-0.5	11/14/18	1041	Well graded sand w/ some organics, black/dk brown	207±8	☒	101-258	
~~32~~ 35	105-27-0.5	11/14/18	1047	Well graded sand, dk brown/black	~~20~~ 89±5	☒	101-~~E~~259	X
~~33~~ 36	105-28-0.5	11/14/18	1049	SAA	31±4	☒	101-260	
~~34~~ 37	105-29-0.5	11/14/18	1051	Well graded sand, dk brown/black w/ trace organics	34±4	☒	101-261	
38	105-30-0.5	11/14/18	1053	SAA	48±5	☒	101-262	

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Burrows Island XRF Sample Log

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Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Mark Ullery XRF Unit 10102

Sample Type: XRF **Date:** 11/14/18

Sampling Equipment: Probe / Trowel **Other**________

Shot #	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
79	102-25-1.0	11/14/18	1425	Silty Sand, poorly graded, fine, dk brown	1191±20	☒	101-314
80	102-26-1.0	11/14/18	1427	Silty sand, ~~Some~~ trace gravel, some org, dk brown	302±9	☒	101-315
87	101-1-0.5	11/14/18	1537	Sandy silt with some organics, brown	986±18	☒	101-318
88	101-2-0.5	11/14/18	1541	Silty Sand, some organics Brown	1920±29	☒	101-320
89	101-3-0.5	11/14/18	1544	Silty sand with some gravel and organics, brown	1515±25	☒	101-321
90	101-4-0.5	11/14/18	1546	Silty sand, trace gravel, dk brown	591±14	☒	101-322
91	101-5-0.5	11/14/18	1547	Silty sand, trace wood, brown	3592±48	☒	101-323
92	101-6-0.5	11/14/18	1549	Silty sand with organics dk brown	1455±24	☒	101-324
93	101-13-0.5	11/14/18	1555	~~Silt~~ Silt with organics, trace sand, dk brown	404±11	☒	101-328
94	101-14-0.5	11/14/18	1557	SAA	761±15	☒	101-329
95	[illegible] 101-15-0.5	11/14/18	1559	Sandy silt, dk brown	927±15	☒	101-330
96	101-16-0.5	11/14/18	1601	Silt, trace sand, dk brown	775±14	☒	101-331
97	101-17-0.5	11/14/18	1602	Silt, trace cobbles and Sand, brown	1126±19	☒	101-332
						☐	
						☐	

Burrows Island XRF Sample Log

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Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Julia Vidonish

XRF Unit 5635

Sample Type: XRF

Date: 11/14/18

Sampling Equipment: Probe / Trowel **Other** ________

	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
35	105-31-0.5	11/14/18	1100	brown, sand, well-graded	44±3	☑	100-0562
36	105-32-0.5	11/14/18	1102	SAA	44±3	☑	100-0563
37	105-33-0.5	11/14/18	1103	SAA	50±3	☑	100-0564
38	105-34-0.5	11/14/18	1105	SAA	32±3	☑	100-0565
39	105-35-0.5	11/14/18	1106	SAA	32±4	☑	100-0566
40	105-36-0.5	11/14/18	1107	SAA	26±3	☑	100-0567
44	105-47-0.5	11/14/18	1121	SAA	27±3	☑	100-0568
45	105-48-0.5	11/14/18	1123	SAA	21±3	☑	100-0569
46	105-49-0.5	11/14/18	1125	brown, sand, well graded, high organics	32±3	☑	100-0570
47	105-50-0.5	11/14/18	1127	SAA	66±4	☑	100-0571
48	105-51-0.5	11/14/18	1129	SAA	25±3	☑	100-0572
49	105-13-1	11/14/18	1152	light brown, well-graded sand	10±3	☑	100-0573
50	105-52-0.5	11/14/18	1200	dark brown, well-graded, sand	27±3	☑	100-0574
51	105-53-0.5	11/14/18	1202	SAA	18±3	☑	100-0575
52	105-54-0.5	11/14/18	1204	SAA	33±3	☑	100-0576

Sample

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Burrows Island XRF Sample Log

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Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Julia Vidonish XRF Unit #5635

Sample Type: XRF **Date:** 11/14/2018

Sampling Equipment: Probe / Trowel **Other** ____

Shot #	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes	Sample
17	105-1-0.5'	11/14/18	0956	Well graded, Sandy, some gravel Dark brown, high organics	448 ± 9	☑	100-0545 ~~100-0543~~ 2~	X
18	105-2-0.5'	11/14/18	1002	Well graded, brown, sand, some gravel	126 ± 5	☑	100-0546	
19	105-3-0.5'	11/14/18	1005	well graded sand, brown	143 ± 5	☑	100-0547	
20	105-4-0.5'	11/14/18	1007	well graded sand, brown	130 ± 5	☑	100-0548	
21	105-5-0.5'	11/14/18	1009	well graded, brown, Sand, organics	79 ± 4	☑	100-0549	
22	105-6-0.5'	11/14/18	1012	well graded, sand, brown	67 ± 4	☑	100-0551	
23	105-13-0.5'	11/14/18	1018	well graded sand with large organic fraction + wood	283 ± 8	☑	2 100-0553	X
24	105-14-0.5'	11/14/18	1020	well graded, Sandy, brown	60 ± 4	☑	100-0554	
25	105-15-0.5'	11/14/18	1022	well graded, sandy, brown	35 ± 4	☑	100-0555	
26	105-16-0.5'	11/14/18	1024	dark brown, well-graded, sandy	57 ± 3	☑	100-0556	
30	105-21-0.5	11/14/18	1043	dark brown, well-graded, sand	36 ± 3	☑	100-0557	
31	105-22-0.5	11/14/18	1045	dark brown, well-graded Sand	45 ± 3	☑	100-0558	
32	105-23-0.5	11/14/18	1047	dark brown, well-graded sand	223 ± 7	☑	100-0559	
33	105-24-0.5	11/14/18	1050	dark brown, well-graded, sand	134 ± 6	☑	100-0560	
34	105-25-0.5	11/14/18	1052	SAA	197 ± 6	☑	100-0561	X

Burrows Island XRF Sample Log

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Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Kelsey Franz XRF-10102

Sample Type: XRF Date:

Sampling Equipment: Probe / Trowel Other

Shot #	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes	
57	103-14-0.5	11/15/18	1340	Sandy Silt w/ gravel + trace org.	212±8	☑	101-0380	
58	103-1-0.5	11/15/18	1343	Silty sand w/ trace organics	414±11	☑	101-0381	
59	103-2-0.5	11/15/18	1345	Silty sand w/ trace gravel + organics	317±9	☑	101-0382	
60	103-3-0.5	11/15/18	1346	sandy silt w/ gravel + trace org.	546±13	☑	101-0383	X
61	103-4-0.5	11/15/18	1347	s.a.a.	17±4	☑	101-0384	
62	103-5-0.5	11/15/18	1349	silty sand w/ gravel + trace organics	321±9	☑	101-0385	
63	103-6-0.5	11/15/18	1351	s.a.a.	433±11	☑	101-0386	
64	103-7-0.5	11/15/18	1352	Sandy Silt w/ gravel + trace org.	378±10	☑	101-0387	
65	103-8-0.5	11/15/18	1353	s.a.a.	43±5	☑	101-0388	
66	103-9-0.5	11/15/18	1356	s.a.a.	149±7	☑	101-0389	
67	103-10-0.5	11/15/18	1357	silty sand w/ gravel + trace org.	135±7	☑	101-0390	
68	103-11-0.5	11/15/18	1358	s.a.a.	1352±23	☑	101-0391	
72	103-34-0.5	11/15/18	1417	s.a.a.	866±15	☑	101-0392	
73	103-35-0.5	11/15/18	1419	s.a.a.	368±9	☑	101-0393	
74	103-36-0.5	11/15/18	1421	sandy silt w/ gravel + trace org.	55±5	☑	101-0394	

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Burrows Island XRF Sample Log

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Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: K. Haslam XRF Ser. No 8580

Sample Type: XRF Date: 11-15-2018

Sampling Equipment: Probe / Trowel Other

Shot #	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
17	103-24-0.5	11/15/18	14:16	Silty Sand w/ organics	98 ± 6	☒	100-0657
18	103-25-0.5	11/15/18	14:20	SAA	256 ± 8	☒	100-0658
19	103-26-0.5		14:21	SAA	110 ± 6	☒	100-0659
20	103-27-0.5		14:23	Silty Sand; black	131 ± 6	☒	100-0660
21	103-28-0.5		14:24	Silty Sand w/ some gravel	194 ± 7	☒	100-0661
22	103-29-0.5		14:26	SAA	112 ± 6	☒	100-0662
23	103-30-0.5		14:27	SAA	430 ± 11	☒	100-0663
24	103-31-0.5		14:28	SAA	60 ± 4	☒	100-0664
25	103-32-0.5		14:30	SAA	133 ± 6	☒	100-0665
26	103-33-0.5		14:31	SAA; lots of organics	154 ± 6	☒	100-0666
28	103-51-0.5		14:35	Silty Sand w/ organics	237 ± 8	☒	100-0667
33	103-62-0.5		15:07	Silty Sand w/ some gravel	29 ± 4	☒	100-669
34	103-63-0.5		15:10	SAA	39 ± 4	☒	100-670
35	103-64-0.5		15:12	SAA	55 ± 5	☒	100-671
36	103-65-0.5		15:14	SAA	35 ± 4	☒	100-672

ARCADIS Design & Consultancy for natural and built assets

Burrows Island XRF Sample Log

Project No.: B0003010.0006

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Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Kelsey Franz

XRF Unit 10102

Sample Type: XRF

Date: 11/15/18

Sampling Equipment: Probe / Trowel Other

Shot#	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
93	103-53-0.5	11/15/18	1505	Silty Sand w/ gravel + trace organics	37±5	☑	101-0410
94	103-54-0.5	11/15/18	1506	S.A.A	124±6	☑	101-0411
96	103-56-0.5	11/15/18	1510	S.A.A	65±5	☑	101-0413
97	103-57-0.5	11/15/18	1512	S.A.A.	57±5	☑	101-0414
95	103-55-0.5	11/15/18	1508	S.A.A.	88±6	☑	101-0412
98	103-58-0.5	11/15/18	1514	S.A.A	52±5	☑	101-0415
99	103-59-0.5	11/15/18	1515	S.A.A	12±3	☑	101-0416
100	103-60-0.5	11/15/18	1517	S.A.A	92±5	☑	101-0417
101	103-61-0 5	11/15/18	1518	S.A.A	231±8	☑	101-0418
102	103-68 0.5	11/15/18	1520	S.A.A.	94±6	☑	101-0420
103	103-69-0.5	11/15/18	1521	Sandy Silt w/ gravel + trace organics	31±4	☑	101-0421
104	103-74-0.5	11/15/18	1523	Silty Sand w/ gravel + trace organics	83±6	☑	101-0422
105	103-75-0.5	11/15/18	1525	S.A.A	134±6	☑	101-0423
106	103-72-0.5	11/15/18	1526	S.A.A.	367±10	☑	101-0424
107	103-81-0.5	11/15/18	1530	S.A.A.	186±7	☑	101-0425

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Burrows Island XRF Sample Log

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Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Kelsey Franz XRF Unit 10102

Sample Type: XRF **Date:** 11/15/18

Sampling Equipment: Probe / Trowel Other__________

Shot#	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes	
108	103-82-0.5	11/15/18	1531	Silty Sand w/ gravel & trace organics	78±5	☑	101-0426	
109	103-83-0.5	11/15/18	1533	S.A.A.	147±7	☑	101-0427	
110	103-84-0.5	11/15/18	1534	S.A.A.	54±5	☑	101-0428	
111	103-85-0.5	11/15/18	1536	S.A.A	128±6	☑	101-0429	
115	103-86-0.5	11/15/18	1547	S.A.A	32±4	☑	101-0430	X
116	103-87-0.5	11/15/18	1548	S.A.A	75±5	☑	101-0431	
117	103-88-0.5	11/15/18	1550	S.A.A	58±5	☑	101-0433	
118	103-89-0.5	11/15/18	1552	S.A.A	60±5	☑	101-0434	
119	103-90-0.5	11/15/18	1553	Silty Sand + gravel w/ trace org.	62±5	☑	101-0435	
120	103-91-0.5	11/15/18	1555	S.A.A	32±4	☑	101-0436	
121	103-92-0.5	11/15/18	1557	Silty Sand w/ gravel + trace organics	32±4	☑	101-0437	
122	103-93-0.5	11/15/18	1558	S.A.A	19±4	☑	101-0438	
123	103-94-0.5	11/15/18	1603	S.A.A	<11	☑	101-0439	
124	103-95-0.5	11/15/18	1604	S.A.A	203±6	☑	101-0440	
125	103-96-0.5	11/15/18	1606	S.A.A	98±5	☑	101-0441	

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Burrows Island XRF Sample Log

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Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Kelsey Franz XRF unit 10102

Sample Type: XRF Date: 11/15/18

Sampling Equipment: Probe / Trowel Other

Shot #	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes	
75	103-37-0.5	11/15/18	1423	silty sand w/ gravel + trace organics	155+7	☑	101-0395	
76	103-38-0.5	11/15/18	1425	s.a.a.	80±6	☑	101-0396	
77	103-39-0.5	11/15/18	1426	s.a.a.	699±15	☑	101-0397	
78	103-40-0.5	11/15/18	1428	s.a.a.	849±16	☑	101-0398	
79	103-41-0.5	11/15/18	1430	s.a.a	259±8	☑	101-0399	
80	103-42-0.5	11/15/18	1431	s.a.a.	199±7	☑	101-0400	
81	103-43-0.5	11/15/18	1433	s.a.a.	279±8	☑	101-0401	
82	103-44-0.5	11/15/18	1434	s.a.a.	180±7	☑	101-0402	
83	103-45-0.5	11/15/18	1436	s.a.a.	119±6	☑	101-0403	
84	103-46-0.5	11/15/18	1437	s.a.a.	157±6	☑	101-0404	
85	103-47-0.5	11/15/18	1439	s.a.a.	104±6	☑	101-0405	
86	103-48-0.5	11/15/18	1440	s.a.a.	145±6	☑	101-0406	
87	103-49-0.5	11/15/18	1441	s.a.a.	278±8	☑	101-0407	
88	103-50-0.5	11/15/18	1443	s.a.a.	254±8	☑	101-0408	X
92	103-52-0.5	11/15/18	1503	s.a.a.	<14	☑	101-0409	

Burrows Island XRF Sample Log

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Project No.: B0003010.0006

Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Mark Ullery

XRF Unit 10102

Sample Type: XRF

Date: 11/15/18

Sampling Equipment: Probe / Trowel Other

*Shot #	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes	
35	101-55-0.5	11/15/18	1043	Silty sand, some organics, dk brown	86±6	☒	101-354	
36	101-56-0.5	11/15/18	1045	silty sand, dk brown	132±6	☑	101-355	
37	101-57-0.5	11/15/18	1047	Silty sand, trace organics, dk brown	99±5	☑	101-356	
41	101-15-1	11/15/18	1224	silty sand w/ gravel and organics	45±5	☑	101-0368	
46	101-27-1'	11/15/18	1318	S.a.a.	808±15	☑	101-0367	
47	103-15-0.5	11/15/18	1326	silty sand with gravel	56±6	☑	101-0370	
48	103-16-0.5	11/15/18	1327	S.a.a.	653±14	☑	101-0371	
49	103-17-0.5	11/15/18	1329	S.a.a	25±5	☑	101-0372	
50	103-18-0.5	11/15/18	1331	S.a.a.	183±8	☑	101-0373	
51	103-19-0.5	11/15/18	1333	Silty sand w/gravel and trace organics	917±17	☑	101-0374	X
52	103-20-0.5	11/15/18	1334	S.a.a.	367±10	☑	101-0375	
53	103-22-0.5	11/15/18	1336	sandy silt, w/gravel + organics	90±5	☑	101-0376	
54	103-23-0.5	11/15/18	1337	S.a.a.	16±4	☑	101-0377	
55	103-12-0.5	11/15/18	1339	silty sand w/ gravel + trace organics	1057±19	☑	101-0378	X
56	103-13-0.5	11/15/18	1340	S.a.a.	13±4	☐	101-0379	

ARCADIS Design & Consultancy for natural and built assets

Burrows Island XRF Sample Log

Project No.: B0003010.0006 Page 2 of ____

Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Kelsey Franz & Kyle Haslam XRF Unit = 5635

Sample Type: XRF Date: 11/15/18

Sampling Equipment: Probe / Trowel Other____

Shot #	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
35	101-46-0.5	11/15/18	1039	Silty Sand w/ organics	44±3	☑	100-0642
36	101-47-0.5	11/15/18	1040	S.a.a.	19±3	☑	100-0643
37	101-48-0.5	11/15/18	1042	Silty Sand w/ gravel and organics	103±5	☑	100-0644
38	101-59-0.5	11/15/18	1043	Silty Sand w/ organics	45±4	☑	100-0645
39	101-60-0.5	11/15/18	1046	Silty Sand w/ organics and some gravel	34±3	☑	100-0646
40	101-58-0.5	11/15/18	1048	Silty Sand w/ organics	104±5	☑	100-0647
51	103-21-0.5	11/15/18	13:10	Silty Sand w/ some gravel	504±10	☒	100-0654
~~52~~	~~103-23-0.5~~	~~11/15/18~~		~~Silty Sand w/ gravel; barn~~		☒	~~100-0656~~
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ARCADIS Design & Consultancy for natural and built assets

Burrows Island XRF Sample Log

Project No.: B0003010.0006 Page 1 of 4

Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Kelsey Franz XRF Unit # 10102

Sample Type: XRF Date: 11/16/18

Sampling Equipment: Probe / Trowel Other

Shot #	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
18	103-105-0.5	11/16/18	0902	Silty Soil w/ gravel + trace organics	47±5	☑	100-0683
19	103-106-0.5		0904	S.A.A.	382±10	☑	100-0684
20	103-107-0.5		0906	S.A.A	115±6	☑	100-0685
21	103-108-0.5		0907	S.A.A	284±8	☑	100-0686
22	103-109-0.5		0910	S.A.A	326±10	☑	100-0687
23	103-110-0.5		0911	S.A.A	177±7	☑	100-0688
24	103-115-0.5		0913	S.A.A	87±5	☑	100-0693
25	103-116-0.5		0915	S.A.A	87±5	☑	100-0694
26	103-117-0.5		0917	S.A.A	118±6	☑	100-0695
27	103-120-0.5		0919	Silty Sand w/ organics	159±7	☑	100-0698
31	103-39-1		1014	clay and silt w/ trace organics	<11	☑	101-0470
32	103-19-1		1016	silty sand w/ trace organics + gravel	17±4	☑	101-0471
33	103-11-1		1017	silty sand w/ some clay and trace organics	130±7	☑	101-0472
34	103-12-1		1018	silty sand w/ trace organics + gravel	<11	☑	101-0473
		↓				☐	

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Burrows Island XRF Sample Log

Project No.: B0003010.0006 Page 2 of

Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: K. Haslam XRF Ser. No. 85580

Sample Type: XRF Date: 11-15-2018

Sampling Equipment: Probe / Trowel Other

Shot #	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
37	103-66-0.5	11/15/18	15:17	Silty Sand w/ gravel & organics	43±4	☒	100-673
38	103-67-0.5		15:20	SAA	32±4	☒	100-674
39	103-70-0.5		15:22	SAA	73±5	☒	100-675
40	103-71-0.5		15:24	SAA	143±6	☒	100-676
41	103-73-0.5		15:26	Silty Sand, black, organics	164±6	☒	100-677
42	103-76-0.5		15:29	SAA	116±5	☒	100-678
43	103-77-0.5		15:32	SAA	68±5	☒	100-679
44	103-78-0.5		15:33	SAA	308±9	☒	100-680
45	103-79-0.5		15:35	SAA	31±4	☒	100-681
46	103-80-0.5		15:36	SAA	109±5	☒	100-682
47						☐	
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Burrows Island XRF Sample Log

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Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Kelsey Franz XRF unit 10102

Sample Type: XRF **Date:** 11/15/18

Sampling Equipment: Probe / Trowel **Other**

	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
126	103-97-0.5	11/15/18	1613	silty sand w/gravel + trace organics	70 ± 6	☑	101-0442
127	103-98-0.5	11/15/18	1615	S.A.A.	133±6	☑	101-0444
128	103-99-0.5	11/15/18	1616	S.A.A.	94 ± 6	☑	101-0445
129	103-100-0.5	11/15/18	1618	S.A.A	43±5	☑	101-0446
130	103-101-0.5	11/15/18	1619	S.A.A	44±5	☑	101-0447
131	103-102-0.5	11/15/18	1620	S.A.A	33± 4	☑	101-0449
132	103-103-0.5	11/15/18	1622	S.AA	33±4	☑	101-0450
133	103-104-0.5	11/15/18	1623	S.A.A	32±4	☑	101-0451
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ARCADIS Design & Consultancy for natural and built assets

Burrows Island XRF Sample Log

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Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Julia Vidonish / Kelsey Franz XRF Unit = 5635

Sample Type: XRF Date: 11/15/18

Sampling Equipment: Probe / Trowel Other____

Shot #	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes	
17	101-22-0.5	11/15/18	0937	Sandy, Silt w/ organics	276±7	☑	100-0626	
18	101-23-0.5	11/15/18	0941	S.a.a.	446±9	☑	100-0627	
19	101-24-0.5	11/15/18	0948	S.a.a	90±4	☑	100-0628	
20	101-25-0.5	11/15/18	0951	S.a.a.	148±5	☑	100-0629	
21	101-26-0.5	11/15/18	0952	S.a.a.	824±12	☑	100-0630	X
22	101-27-0.5	11/15/18	0953	S.a.a	702±12	☑	100-0631	
23	100-28-0.5	11/15/18	0955	Sandy, silt w/ organics and some gravel	219±7	☑	100-0632	
24	100-29-0.5	11/15/18	0957	Silty Sand w/ organics	62±4	☑	100-0633	X
25	100-40-0.5	11/15/18	0958	Sandy silt w/ gravel and organics	160±6	☑	100-0634	
26	101-39-0.5	11/15/18	1000	S.a.a.	397±9	☑	100-0635	
30	101-41-0.5	11/15/18	1029	Silty Sand w/ organics	147±5	☑	100-0637	
31	101-42-0.5	11/15/18	1031	Silty Sand w/ organics and some gravel	273±6	☑	100-0638	
32	101-43-0.5	11/15/18	1033	Silty Sand w/ organics	313±8	☑	100-0639	X
33	101-44-0.5	11/15/18	1035	S.a.a.	237±6	☑	100-0640	
34	101-45-0.5	11/15/18	1036	S.a.a.	78±4	☑	100-0641	

ARCADIS Design & Consultancy for natural and built assets

Burrows Island XRF Sample Log

Project No.: B0003010.0006

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Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Julia Vidonish

XRF Unit 5635

Sample Type: XRF

Date: 11/14/18

Sampling Equipment: Probe / Trowel **Other**__________

Shot	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes	Sample
113	101-8-0.5	11/14/18	1549	dark brown, well-graded, sandy silt	8975 ± 67	☑	101-0325	X
114	101-9-0.5	11/14/18	1551	SAA	2539 ± 28	☑	101-0326	
115	101-10-0.5	11/14/18	1553	med brown, poorly-graded silt, minor sand	2367 ± 27	☑	Julia's phone	
116	101-11-0.5	11/14/18	1555	dark brown, well-graded, sandy silt	838 ± 15	☑	Julia's phone	X
117	101-12-0.5	11/14/18	1556	SAA	5885 ± 51	☑	Julia's phone	
118	101-19-0.5	11/14/18	1558	SAA	388 ± 8	☑	Julia's phone	
119	101-21-0.5	11/14/18	1559	SAA	271 ± 7	☑	Julia's phone	
120	101-20-0.5	11/14/18	1600	SAA	366 ± 9	☑	Julia's phone	
121	101-18-0.5	11/14/18	1602	SAA	510 ± 10	☑	Julia's phone	
44	101-2-1.0	11/15/18	12:06	Light brown silty sand w/ subrounded gravel	50 ± 4	☑	100-0648	
45	101-6-1.0	11/15/18	12:08	dark brown silty sand	404 ± 9	☑	100-0649	
46	101-12-1.0	11/15/18	12:10	SAA; organic matter	1,206 ± 17	☑	100-0650	
48	101-17-1.0	11/15/18	12:12	dark brown silty sand	208 ± 7	☑	100-0651	
49	101-23-1.0	11/15/18	12:15	SAA w/ some gravel	161 ± 6	☑	100-0652	
50	101-12-1.5	11/15/18	12:40	Silt w/ some gravel; dark brown	279 ± 10	☑	100-0653	

ARCADIS Design & Consultancy for natural and built assets

Burrows Island XRF Sample Log

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Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Mark Ulley XRF 10102

Sample Type: XRF Date:

Sampling Equipment: Probe / Trowel Other

Shot #	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
~~16~~ 17	101-30-0.5	11/15/18	938	Silty sand with some gravel with some organics, dk brown	307 ± 9	☒	101-333
~~17~~ 18	101-31-0.5	11/15/18	940	silty sand with some organics, dk brown	884 ± 15	☒	101-334
19	101-32-0.5	11/15/18	948	Silty sand, dk brown	78 ± 5	☒	~~101-340~~ 101-335
20	101-33-0.5	11/15/18	950	Silty sand with organics, dk brown	360 ± 10	☒	101-340
21	101-34-0.5	11/15/18	952	SAA	386 ± 10	☒	101-341
22	101-35-0.5	11/15/18	954	Silt, trace sand, dk brown	388 ± 10	☒	101-342
23	101-36-0.5	11/15/18	956	~~SAA~~ Silt, dk brown	509 ± 12	☒	101-343
24	101-37-0.5	11/15/18	958	Silt, with organics, dk brown	1367 ± 19	☒	101-344
25	101-38-0.5	11/15/18	1000	SAA	678 ± 13	☒	101-345
29	101-49-0.5	11/15/18	1028	~~Silty sand,~~ Silt, some organics, dk brown	62 ± 5	☒	101-348
30	101-50-0.5	11/15/18	1033	Silty sand, dk brown	328 ± 9	☒	101-~~350~~ 349
31	101-51-0.5	11/15/18	1035	Silty sand with gravel, dk brown	3239 ± 44	☒	101-350
32	101-52-0.5	11/15/18	1037	SAA	60 ± 5	☒	101-351
33	101-53-0.5	11/15/18	1039	SAA	38 ± 4	☒	101-352
34	101-54-0.5	11/15/18	1042	Sand with organics, dk brown/black	61 ± 4	☒	101-353

Burrows Island XRF Sample Log

Project No.: B0003010.0006 Page 3 of 4

Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Kelsey Frantz XRF unit #8580

Sample Type: XRF Date: 11/16/18

Sampling Equipment: Probe / Trowel Other

Shot#	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
51	104-45-0.5	11/16/18	1154	Silty sand w/ gravel + trace organics	84±5	☑	100-0723
52	104-46-0.5		1155	SAA	200±7	☑	100-0724
53	104-48-0.5		1157	SAA	45±4	☑	100-0725
54	104-49-0.5		~~1200~~ 1158	SAA	43±4	☑	100-0726
55	104-50-0.5		1200	SAA	12±4	☑	100-0727
56	104-51-0.5		1202	SAA	17±3	☑	100-0728
57	104-44-0.5		1205	SAA	52±4	☑	100-0729
58	104-43-0.5		1206	Silty clay w/ sand gravel + trace organics	31±3	☑	100-0730
59	104-42-0.5		1208	SAA	<10	☑	100-0731
60	104-41-0.5		1209	Silty sand w/ gravel + trace organics	86±5	☑	100-0732
61	104-40-0.5		1210	SAA	3447±45	☑	100-0733
62	104-37-0.5		1213	SAA	118±5	☑	100-0734
63	104-36-0.5		1214	SAA	80±5	☑	100-0735
64	107-1-0.5		1225	Silty sand w/ gravel + trace organics	51±4	☑	100-0736
65	107-2-0.5		1228	SAA	65±4	☑	100-0737

Burrows Island XRF Sample Log

Project No.: B0003010.0006 Page 4 of 4

Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Julia Vidonish XRF Unit # 10102

Sample Type: XRF Date: 11/16/18

Sampling Equipment: Probe / Trowel Other__________

	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
68	104-35-0.5	11/16/18	1207	med. brown, well-graded, sandy silt	42 ± 5	☑	101-0506
69	104-34-0.5		1208	SAA	22 ± 4	☑	101-0507
70	104-33-0.5		1212	SAA	<12	☑	101-0508
71	104-32-0.5		1214	SAA	44 ± 5	☑	101-0509
	~~104-22-1'~~					☐	
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Burrows Island XRF Sample Log

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Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Kelsey Franz XRF unit # 8580

Sample Type: XRF Date: 11/16/18

Sampling Equipment: Probe / Trowel Other______

Shot#	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
66	107-3-0.5	11/16/18	1229	Silty sand w/ gravel + organics	42±4	☑	100-0738
67	107-4-0.5		1221	SAA	281±9	☑	100-0739
73	104-27-1		1253	silty sand w/ gravel + trace organics	1890±30	☑	101-0513
74	104-22-1		1254	SAA	130±5	☑	101-0511
75	104-15-1		1256	SAA	162±7	☑	101-0512
76	104-38-1		1258	silty sand w/ clay, gravel + trace organics	11±3	☑	100-0754
77	104-40-1		1259	Silty sand w/ gravel + trace organics	197±8	☑	100-0755
78	104-27-1.5		1304	SAA + charcoal	2095±32	☑	100-0756
79	104-65-1.0		1309	S.A.A	1823±38	☑	100-0757
80	104-27-2.0		1312	Silty sand w/ gravel and charcoal, BLACK	3345±47	☑	100-0758
81	104-65-1.5'		1318	Silty sand w/ gravel + trace organics	165±7	☑	100-0759
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						☐	

Burrows Island XRF Sample Log

Project No.: B0003010.0006 Page 2 of 4

Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Julia Vidonish / Kelsey Franz XRF Unit # 10102

Sample Type: XRF Date: 11/16/18

Sampling Equipment: Probe / Trowel Other______

	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
35	104-1-0.5	11/16/18	1035	dark brown, well graded, sandy silt	182 ± 7	☑	101-0474
36	104-2-0.5	11/16/18	1038	SAA	148 ± 7	☑	101-0475
37	104-4-0.5	11/16/18	1041	SAA	196 ± 7	☑	101-0476
38	104-6-0.5	11/16/18	1047	SAA	87 ± 5	☑	101-0477
39	104-7-0.5	11/16/18	1048	SAA	72 ± 5	☑	101-0478
40	104-8-0.5	11/16/18	1050	SAA	38 ± 5	☑	101-0479
41	104-9-0.5	11/16/18	1051	SAA	88 ± 5	☑	101-0480
42	104-10-0.5	11/16/18	1053	SAA	48 ± 5	☑	101-0481
43	104-11-0.5	11/16/18	1107	SAA	146 ± 7	☑	101-0482
44	104-22-0.5	↓	1109	SAA	427 ± 10	☑	101-0483
45	104-24-0.5		1111	SAA	196 ± 8	☑	101-0484
46	104-25-0.5		1115	SAA	110 ± 7	☑	101-0485
47	104-26-0.5		1116	SAA	148 ± 6	☑	101-0486
48	104-27-0.5		1117	SAA	1241 ± 22	☑	101-0489
49	104-13-0.5		1119	SAA	75 ± 5	☑	101-0497

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Burrows Island XRF Sample Log

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Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Julia Vidonish XRF Unit 10102

Sample Type: XRF **Date:** 11/16/18

Sampling Equipment: Probe / Trowel **Other**

	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
53	104-65-0.5	11/16/18	1134	dark brown, well-graded, sandy silt	1011 ± 18	☑	101-0496
54	104-66-0.5		1139	SAA	31 ± 4	☑	101-0490
55	104-67-0.5		1140	SAA	16 ± 4	☑	101-0491
56	104-68-0.5		1143	med. brown, well-graded, sandy silt + organics	101 ± 6	☑	101-0492
57	104-69-0.5		1145	SAA	39 ± 4	☑	101-0493
58	104-70-0.5		1147	SAA	87 ± 6	☑	101-0494
59	104-52-0.5		1152	SAA	14 ± 4	☑	101-0495
60	104-53-0.5		1154	SAA	29 ± 4	☑	101-0498
61	104-55-0.5		1155	SAA	35 ± 4	☑	101-0499
62	104-56-0.5		1157	SAA	42 ± 4	☑	101-0500
63	104-57-0.5		1159	SAA	55 ± 4	☑	101-0501
64	104-58-0.5		1201	SAA	49 ± 5	☑	101-0502
65	104-59-0.5		1202	SAA	58 ± 5	☑	101-0503
66	104-60-0.5		1203	SAA	30 ± 4	☑	101-0504
67	104-61-0.5		1204	SAA	34 ± 4	☑	101-0505

Burrows Island XRF Sample Log

Page 2 of 4

Project No.: B0003010.0006

Site Location: Burrows Island Light Station, Anacortes, WA

Personnel: Julia Vidonish / Kelsey Frant

XRF unit # 8580

Sample Type: XRF

Date: 11/16/18

Sampling Equipment: Probe / Trowel

Other

	Sample ID	Date	Time	General Soil Description	Lead	Photo Taken?	Notes
33	104-21-0.5	11/16/18	1108	dark brown, well-graded, sandy silt	150±6	☑	100-0708
34	104-23-0.5		1110	SAA	75±5	☑	100-0709
35	104-29-0.5		1112	SAA	98±5	☑	100-0710
36	104-28-0.5		1113	SAA	23±4	☑	100-0711
37	104-30-0.5		1116	SAA	74±5	☑	100-0712
38	104-12-0.5		1118	SAA	16±3	☑	100-0713
39	104-14-0.5		1120	SAA	68±5	☑	100-0714
43	104-31-0.5		1135	SAA	15±3	☑	100-0715
44	104-47-0.5		1139	SAA	90±5	☑	100-0716
45	104-54-0.5		1141	med. brown, well-graded, sandy silt Tr organics	37±4	☑	100-0717
46	104-62-0.5		1144	SAA	32±4	☑	100-0718
47	104-63-0.5		1146	SAA	160±7	☑	100-0719
48	104-64-0.5		1148	SAA	34±3	☑	100-0720
49	104-38-0.5		1150	silty sand w/ gravel & trace organics	444±10	☑	100-0721
50	104-39-0.5		1152	SAA	307±9	☑	100-0722

Standards

SiO_2 Blank

Shot #	time	Pb
8	0850	<10
9	0851	<10
10	0853	<10
11	0855	<10
12	0856	<11
~~42~~	1127	<10
	~~[illegible]~~	~~[illegible]~~
70	1248	<10

2781

Shot #	time	Pb
3	~~[illegible]~~ 0844	197 ± 7
4	0845	189 ± 7
5	0846	201 ± 7
6	0847	181 ± 7
7	0849	197 ± 7
40	1124	195 ± 7
~~[illegible]~~	~~[illegible]~~	~~132 ± 8~~
72	1252	194 ± 7

2702

Shot #	time	Pb
13	0857	132 ± 7
14	0858	115 ± 7
15	0900	121 ± 7
16	0902	122 ± 7
17	0904	129 ± 7
41	1125	121 ± 7
~~[illegible]~~	1257	
71	1249	138 ± 8

Calibration: NIST 2702 11/13/18 XRF unit 10102

Shot #		Pb (mg/kg)
3		122 ± 8 mg/kg
4		114 ± 8
5		114 ± 8
6		116 ± 8
7		114 ± 8
35	1359	109 ± 7

NIST 2781

Shot #		Pb (mg/kg)
8		187 ± 7
9		178 ± 7
10		186 ± 7
11		183 ± 7
12		180 ± 7
36	1400	171 ± 7

SiO_2 Blank

Shot #		Pb (mg/kg)
13		< 13
14		< 13
15		< 14
16		< 14
17		< 14
34	1358	< 14

Calibration Log: XRF Unit 10102 11/14/18

Change battery at 1530

NIST 2702

Shot #	Time	Pb (ppm)
6	0920	106 ± 8
7	0927	119 ± 8
8	0928	121 ± 8
9	0929	106 ± 8
10	0930	118 ± 8

SiO2 Blank

Shot #	Time	Pb (ppm)
11	0933	< 14
12	0935	< 15
13	0937	< 15
14	0939	< 16
15	0941	< 14

NIST 2781

Shot #	Time	Pb (ppm)
16	0943	187 ± 7
17	0945	182 ± 7
18	0947	187 ± 7
19	0948	181 ± 7
20	0949	181 ± 7

SiO2

Shot #	Time	Pb (ppm)
31	1028	< 14
45	1114	< 15
58	1216	< 15
68	1326	< 16
81	1444	< 11
84	1531	< 13

NIST 2781

Shot #	Time	Pb (ppm)
32	1030	173 ± 7
47	1117	190 ± 7
59	1218	187 ± 7
70	1330	181 ± 7
83	1448	184 ± 7
85	1533	172 ± 7

NIST 2702

Shot #	Time	Pb (ppm)
33	1032	121 ± 8
46	1116	111 ± 8
~~59~~ 60	~~1218~~ 1220	106 ± 7
71	1333	115 ± 8
82	1446	115 ± 8
86	1535	115 ± 8

Calibration: XRF Unit 5635 11/14/18

SiO_2 Blank

Shot #	Time	Pb (ppm)	Shot #	Time	Pb (ppm)
2	0905	< 7	27	1027	< 10
3	0907	< 7	42	1116	< 9
4	0910	< 7	54	1213	< 9
5	0912	< 7	74	1327	< 9
6	0924	< 6	101	1441	< 8
			109	1543	11 ± 3

2781 Blank

Shot #	Time	Pb (ppm)	Shot #	Time	Pb (ppm)
7	0927	167 ± 6	28	1028	166 ± 6
8	0929	159 ± 5	41	1114	167 ± 6
9	0932	160 ± 6	55	1215	165 ± 6
10	0933	173 ± 6	73	1326	178 ± 6
11	0935	163 ± 6	103	1445	161 ± 6
			110	1545	161 ± 6

2702

Shot #	Time	Pb (ppm)	Shot #	Time	Pb (ppm)
12	0937	117 ± 7	29	1030	119 ± 6
13	0939	126 ± 7	43	1118	110 ± 6
14	0940	121 ± 6	56	1216	123 ± 7
15	0941	128 ± 7	75	1330	132 ± 7
16	0943	122 ± 7	102	1444	130 ± 7
			111	1546	132 ± 7

11/15/2018 Serial No 8580

~~Shot #~~

SiO2

Shot	Time	Lead
2	13:37	<12
3	13:39	<12
4	13:41	<12
5	13:42	<10
6	13:43	<11
29	14:37	<10

2781

Shot	Time	Lead
7	13:45	195 ± 7
8	13:46	188 ± 7
9	13:48	185 ± 7
10	13:49	188 ± 7
11	13:50	192 ± 7
30	14:39	188 ± 7

2702

Shot	Time	Lead
12	13:52	127 ± 7
13	13:53	120 ± 7
14	13:54	124 ± 7
15	13:56	124 ± 7
16	13:57	116 ± 7
31	14:41	125 ± 7

SiO2 Blank

Shot #	time	reading (Pb)
2	0832	<16
3	0835	<16
4	0837	<17
5	0839	<15
7	0843	<15
28	1009	<14
51	1125	<14
~~[illegible]~~		~~<15~~

2702

Shot #	time	Pb
6	0841	121±8
8	0844	111 ± 8
9	08 46	107±8
10	0847	118±8
11	0849	103±8
12	0850	123±8
30	1012	111 ± 8
50	1124	120 ± 8

2781

Shot #	time	Pb
13	0852	187 ± 7
14	0854	186 ± 7
15	0855	169 ± 7
16	0856	181 ± 7
17	0858	175 ± 7
29	1010	183 ± 7
52	1126	179 ± 7

11/15/18

SiO_2

Shot #	Time	Lead
2	0857	< 9
13	0915	< 7
14	0916	< 7
15	0917	< 7
16	0918	< 7
28	~~[illegible]~~ 1010	< 9
42	1055	< 9

2781

Shot #	Time	Lead
3	0859	175 ± 6
4	0900	167 ± 6
5	0902	165 ± 8
6	0903	165 ± 6
7	0904	158 ± 5
29	1012	165 ± 6
41	1054	166 ± 6

2702

Shot #	Time	Lead
8	0906	122 ± 6
9	0908	122 ± 7
10	0910	119 ± 6
11	0912	125 ± 7
12	0914	119 ± 6
27	1007	123 ± 7
42	1057	126 ± 7

Calibration log: XRF Unit 10102 11/15/18

SiO2 Blank

Shot #	Time	Pb (ppm)
2	900	<15
3	903	<14
4	905	<14
5	907	<15
6	909	<14
26	1005	<14
38	1050	<14

Shot #	time	Pb (ppm)
43	1310	<14
69	1400	<15
89	1444	<15
112	1538	<16

NIST 2781

Shot #	Time	Pb (ppm)
7	911	195 ± 8
8	912	181 ± 7
9	914	184 ± 7
10	916	185 ± 7
11	917	177 ± 7
27	1008	168 ± 7

Shot #	Time	Pb (ppm)
39	1052	179 ± 7
44	1313	177 ± 7
70	1403	190 ± 7
90	1445	181 ± 7
113	1539	183 ± 7

NIST 2702

Shot #	Time	Pb (ppm)
12	920	115 ± 8
13	923	110 ± 8
14	924	108 ± 8
15	925	113 ± 8
16	926	102 ± 7
28	1010	106 ± 8

Shot #	Time	Pb (ppm)
40	1054	115 ± 8
45	1317	112 ± 8
71	1404	116 ± 8
91	1407	108 ± 8
114	1540	109 ± 8

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

November 27, 2018

Josh Gravenmier
Arcadis U.S., Inc.
1100 Olive Way, Suite 800
Seattle, WA 98101

Re: Analytical Data for Project USCG Burrows Island
Laboratory Reference No. 1811-174

Dear Josh:

Enclosed are the analytical results and associated quality control data for samples submitted on November 19, 2018.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: November 27, 2018
Samples Submitted: November 19, 2018
Laboratory Reference: 1811-174
Project: USCG Burrows Island

Case Narrative

Samples were collected on November 16, 2018 and received by the laboratory on November 19, 2018. They were maintained at the laboratory at a temperature of $2^{o}C$ to $6^{o}C$.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: November 27, 2018
Samples Submitted: November 19, 2018
Laboratory Reference: 1811-174
Project: USCG Burrows Island

PCBs EPA 8082A

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TP-1**					
Laboratory ID:	11-174-32					
Aroclor 1016	**ND**	0.083	EPA 8082A	11-26-18	11-26-18	
Aroclor 1221	**ND**	0.083	EPA 8082A	11-26-18	11-26-18	
Aroclor 1232	**ND**	0.083	EPA 8082A	11-26-18	11-26-18	
Aroclor 1242	**ND**	0.083	EPA 8082A	11-26-18	11-26-18	
Aroclor 1248	**ND**	0.083	EPA 8082A	11-26-18	11-26-18	
Aroclor 1254	**ND**	0.083	EPA 8082A	11-26-18	11-26-18	
Aroclor 1260	**1.7**	0.083	EPA 8082A	11-26-18	11-26-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*52*	*39-130*				
Client ID:	**TP-2**					
Laboratory ID:	11-174-33					
Aroclor 1016	**ND**	1.5	EPA 8082A	11-26-18	11-27-18	
Aroclor 1221	**ND**	1.5	EPA 8082A	11-26-18	11-27-18	
Aroclor 1232	**ND**	1.5	EPA 8082A	11-26-18	11-27-18	
Aroclor 1242	**ND**	1.5	EPA 8082A	11-26-18	11-27-18	
Aroclor 1248	**ND**	1.5	EPA 8082A	11-26-18	11-27-18	
Aroclor 1254	**ND**	1.5	EPA 8082A	11-26-18	11-27-18	
Aroclor 1260	**7.3**	1.5	EPA 8082A	11-26-18	11-27-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	---	*39-130*				S
Client ID:	**TP-3**					
Laboratory ID:	11-174-34					
Aroclor 1016	**ND**	0.092	EPA 8082A	11-26-18	11-26-18	
Aroclor 1221	**ND**	0.092	EPA 8082A	11-26-18	11-26-18	
Aroclor 1232	**ND**	0.092	EPA 8082A	11-26-18	11-26-18	
Aroclor 1242	**ND**	0.092	EPA 8082A	11-26-18	11-26-18	
Aroclor 1248	**ND**	0.092	EPA 8082A	11-26-18	11-26-18	
Aroclor 1254	**ND**	0.092	EPA 8082A	11-26-18	11-26-18	
Aroclor 1260	**0.84**	0.092	EPA 8082A	11-26-18	11-26-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*44*	*39-130*				

Date of Report: November 27, 2018
Samples Submitted: November 19, 2018
Laboratory Reference: 1811-174
Project: USCG Burrows Island

PCBs EPA 8082A
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1126S1					
Aroclor 1016	**ND**	0.050	EPA 8082A	11-26-18	11-26-18	
Aroclor 1221	**ND**	0.050	EPA 8082A	11-26-18	11-26-18	
Aroclor 1232	**ND**	0.050	EPA 8082A	11-26-18	11-26-18	
Aroclor 1242	**ND**	0.050	EPA 8082A	11-26-18	11-26-18	
Aroclor 1248	**ND**	0.050	EPA 8082A	11-26-18	11-26-18	
Aroclor 1254	**ND**	0.050	EPA 8082A	11-26-18	11-26-18	
Aroclor 1260	**ND**	0.050	EPA 8082A	11-26-18	11-26-18	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*82*	*39-130*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB1126S1										
	SB	SBD	SB	SBD		SB	SBD				
Aroclor 1260	**0.349**	**0.349**	0.500	0.500	N/A	**70**	**70**	56-124	0	18	
Surrogate:											
DCB						*85*	*84*	*39-130*			

Date of Report: November 27, 2018
Samples Submitted: November 19, 2018
Laboratory Reference: 1811-174
Project: USCG Burrows Island

% MOISTURE

Date Analyzed: 11-20-18

Client ID	Lab ID	% Moisture
TP-1	11-174-32	40
TP-2	11-174-33	34
TP-3	11-174-34	45

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

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Analytical Laboratory Testing Services
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Chain of Custody

Page 1 of 4

Laboratory Number: 11-174

Company: Arcadis
Project Number:
Project Name: USCG Burrows Island
Project Manager: Josh Graveunier
Sampled by: Mark Wiley

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	Total Pb (6010)				% Moisture
1	WT-2-2-0.5	11/13/18	1510	Soil	1																		X				
2	WT-2-2-1.0	11/13/18	1520	Soil	1																		X				
3	109-2-0.5	11/13/18	1600	Soil	1																		X				
4	102-32-0.5	11/14/18	1100	Soil	1																		X				
5	105-33-0.5	11/14/18	1103	Soil	1																		X				
6	102-13-1.0	11/14/18	1358	Soil	1																		X				
7	105-11-0.5	11/14/18	1007	Soil	1																		X				
8	102-33-0.5	11/14/18	1403	Soil	1																		X				
9	105-13-0.5	11/14/18	1018	Soil	1																		X				
10	105-25-0.5	11/14/18	1052	Soil	1																		X				

	Signature	Company	Date	Time
Relinquished		Arcadis	11/19/18	1000
Received	Eileen Clark	Alpha	11/19/18	12:15
Relinquished	Eileen Clark	Alpha	11/19/18	12:15
Received		OSE	11/19/18	1215
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

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Chain of Custody

Page 2 of 4

Laboratory Number: 11-174

Company: Arcadis
Project Number:
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	Total Pb (6010)				% Moisture
11	105-27-0.5	11/14/18	1047	Soil	1																		X				X
12	105-1-0.5	11/14/18	0956	Soil	1																		X				
13	102-16-0.5	11/14/18	1253	Soil	1																		X				
14	102-15-1.0	11/14/18	1415	Soil	1																		X				
15	102-6-0.5	11/14/18	1223	Soil	1																		X				
16	101-43-0.5	11/15/18	1139	Soil	1																		X				
17	101-11-0.5	11/15/18	1136	Soil	1																		X				
18	101-8-0.5	11/15/18	1135	Soil	1																		X				
19	101-26-0.5	11/15/18	1137	Soil	1																		X				
20	101-29-0.5	11/15/18	1138	Soil	1																		X				

	Signature	Company	Date	Time
Relinquished		Arcadis	11/14/18	1000
Received	Eileen Clark	Alpha	11/19/18	12:15
Relinquished	Eileen Clark	Alpha	11/19/18	12:15
Received		OSE	11/19/18	1215
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

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Chain of Custody

Page 3 of 4

Laboratory Number: 11-174

Company: Arcadis
Project Number:
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	Total Pb (6010)				% Moisture
21	104-22-0.5	11/16/18	1109	Soil	1																		X				
22	104-27-0.5	11/16/18	1117	Soil	1																		X				
23	104-38-0.5	11/16/18	1150	Soil	1																		X				
24	104-40-0.5	11/16/18	1210	Soil	1																		X				
25	104-15-0.5	11/16/18	1044	Soil	1																		X				
26	104-1-0.5	11/16/18	1035	Soil	1																		X				
27	103-19-0.5	11/15/18	1333	Soil	1																		X				
28	103-50-0.5	11/15/18	1543	Soil	1																		X				
29	103-3-0.5	11/15/18	1346	Soil	1																		X				
30	103-86-0.5	11/15/18	1547	Soil	1																		X				

	Signature	Company	Date	Time
Relinquished		Arcadis	11/19/18	1000
Received	Eileen Clark	Alpha	11/19/18	12:45
Relinquished	Eileen Clark	Alpha	11/19/18	12:15
Received		OSE	11/19/18	1215
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☐ Level III ☐ Level IV ☐
Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

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Chain of Custody

Page 4 of 4

Laboratory Number: 11-174

Company: Arcadis
Project Number:
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals [illegible]	HEM (oil and grease) 1664A	Total Pb (6010)				% Moisture
31	PPE-1	11/16/18	845	Solid	1																X						
32	TP-1	11/16/18	850	Soil	1										X												X
33	TP-2	11/16/18	855	Soil	1										X												|
34	TP-3	11/16/18	900	Soil	1										X												|
35	WC-1	11/16/18	1235	Soil	1																X						
36	103-12-0.5	11/15/18	1339	Soil	1																		X				X
37	103-~~84~~-0.5	11/15/18	1506	Soil	1																		X				|
38	104-40-0.5	11/15/18	1130	Soil	1																		X				|

	Signature	Company	Date	Time
Relinquished		Arcadis	11/19/18	1000
Received	Eileen Clark	Alpha	11/19/18	12:15
Relinquished	Eileen Clark	Alpha	11/19/18	12:15
Received		OSE	11/19/18	1215
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

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Environmental Inc.
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November 29, 2018

Josh Gravenmier
Arcadis U.S., Inc.
1100 Olive Way, Suite 800
Seattle, WA 98101

Re: Analytical Data for Project USCG Burrows Island
Laboratory Reference No. 1811-174

Dear Josh:

Enclosed are the analytical results and associated quality control data for samples submitted on November 19, 2018.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: November 29, 2018
Samples Submitted: November 19, 2018
Laboratory Reference: 1811-174
Project: USCG Burrows Island

Case Narrative

Samples were collected on November 13, 14, 15 and 16, 2018 and received by the laboratory on November 19, 2018. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

TCLP Metals EPA 1311/6010D/7470A Analysis

Due to a limited amount of sample, less than the required 100g was tumbled for TCLP analysis. The amount of sample used was: (40 g).

Total Lead EPA 6010D Analysis

The Matrix Spike/ Matrix Spike Duplicate recoveries for Lead are outside control limits due to matrix inhomogeneity . The samples were re-extracted and re-analyzed with similar results. The Spike Blank recovery was 96%.

The Matrix Spike/Matrix Spike Duplicate RPD for Lead is outside control limits due to matrix inhomogeneity. The samples were re-extracted and re-analyzed with similar results.

Please note that any other QA/QC issues associated with these extractions and analyses will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: November 29, 2018
Samples Submitted: November 19, 2018
Laboratory Reference: 1811-174
Project: USCG Burrows Island

TCLP METALS
EPA 1311/6010D/7470A

Matrix: TCLP Extract
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**PPE-1**					
Laboratory ID:	11-174-31					
Arsenic	**ND**	0.40	EPA 6010D	11-29-18	11-29-18	
Barium	**ND**	0.20	EPA 6010D	11-29-18	11-29-18	
Cadmium	**ND**	0.020	EPA 6010D	11-29-18	11-29-18	
Chromium	**ND**	0.020	EPA 6010D	11-29-18	11-29-18	
Lead	**ND**	0.20	EPA 6010D	11-29-18	11-29-18	
Mercury	**ND**	0.0050	EPA 7470A	11-29-18	11-29-18	
Selenium	**ND**	0.40	EPA 6010D	11-29-18	11-29-18	
Silver	**ND**	0.040	EPA 6010D	11-29-18	11-29-18	
Client ID:	**WC-1**					
Laboratory ID:	11-174-35					
Arsenic	**ND**	0.40	EPA 6010D	11-29-18	11-29-18	
Barium	**0.52**	0.20	EPA 6010D	11-29-18	11-29-18	
Cadmium	**ND**	0.020	EPA 6010D	11-29-18	11-29-18	
Chromium	**ND**	0.020	EPA 6010D	11-29-18	11-29-18	
Lead	**0.25**	0.20	EPA 6010D	11-29-18	11-29-18	
Mercury	**ND**	0.0050	EPA 7470A	11-29-18	11-29-18	
Selenium	**ND**	0.40	EPA 6010D	11-29-18	11-29-18	
Silver	**ND**	0.040	EPA 6010D	11-29-18	11-29-18	

Date of Report: November 29, 2018
Samples Submitted: November 19, 2018
Laboratory Reference: 1811-174
Project: USCG Burrows Island

TCLP METALS
EPA 1311/6010D/7470A
QUALITY CONTROL

Matrix: TCLP Extract
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1129TM1					
Arsenic	**ND**	0.40	EPA 6010D	11-29-18	11-29-18	
Barium	**ND**	0.20	EPA 6010D	11-29-18	11-29-18	
Cadmium	**ND**	0.020	EPA 6010D	11-29-18	11-29-18	
Chromium	**ND**	0.020	EPA 6010D	11-29-18	11-29-18	
Lead	**ND**	0.20	EPA 6010D	11-29-18	11-29-18	
Selenium	**ND**	0.40	EPA 6010D	11-29-18	11-29-18	
Silver	**ND**	0.040	EPA 6010D	11-29-18	11-29-18	
Laboratory ID:	MB1129T1					
Mercury	**ND**	0.0050	EPA 7470A	11-29-18	11-29-18	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	11-174-31										
	ORIG	DUP									
Arsenic	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Barium	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Cadmium	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Chromium	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Lead	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Selenium	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Silver	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Laboratory ID:	11-174-35										
Mercury	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	11-174-31										
	MS	MSD	MS	MSD		MS	MSD				
Arsenic	**3.85**	**3.96**	4.00	4.00	ND	**96**	**99**	75-125	3	20	
Barium	**3.96**	**4.00**	4.00	4.00	ND	**99**	**100**	75-125	1	20	
Cadmium	**1.78**	**1.80**	2.00	2.00	ND	**89**	**90**	75-125	1	20	
Chromium	**3.86**	**3.88**	4.00	4.00	ND	**97**	**97**	75-125	0	20	
Lead	**9.16**	**9.23**	10.0	10.0	ND	**92**	**92**	75-125	1	20	
Selenium	**4.08**	**4.09**	4.00	4.00	ND	**102**	**102**	75-125	0	20	
Silver	**0.934**	**0.936**	1.00	1.00	ND	**93**	**94**	75-125	0	20	
Laboratory ID:	11-174-35										
Mercury	**0.0447**	**0.0466**	0.0500	0.0500	ND	**89**	**93**	75-125	4	20	

Date of Report: November 29, 2018
Samples Submitted: November 19, 2018
Laboratory Reference: 1811-174
Project: USCG Burrows Island

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**WT-2-2-0.5**					
Laboratory ID:	11-174-01					
Lead	**1800**	7.5	EPA 6010D	11-26-18	11-26-18	
Client ID:	**WT-2-2-1.0**					
Laboratory ID:	11-174-02					
Lead	**970**	5.9	EPA 6010D	11-26-18	11-26-18	
Client ID:	**109-2-0.5**					
Laboratory ID:	11-174-03					
Lead	**520**	6.3	EPA 6010D	11-26-18	11-26-18	
Client ID:	**102-32-0.5**					
Laboratory ID:	11-174-04					
Lead	**380**	8.8	EPA 6010D	11-26-18	11-26-18	
Client ID:	**105-33-0.5**					
Laboratory ID:	11-174-05					
Lead	**54**	7.0	EPA 6010D	11-26-18	11-26-18	
Client ID:	**102-13-1.0**					
Laboratory ID:	11-174-06					
Lead	**850**	7.1	EPA 6010D	11-26-18	11-26-18	
Client ID:	**105-11-0.5**					
Laboratory ID:	11-174-07					
Lead	**180**	5.8	EPA 6010D	11-26-18	11-26-18	
Client ID:	**102-33-0.5**					
Laboratory ID:	11-174-08					
Lead	**11000**	40	EPA 6010D	11-26-18	11-26-18	

Date of Report: November 29, 2018
Samples Submitted: November 19, 2018
Laboratory Reference: 1811-174
Project: USCG Burrows Island

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**105-13-0.5**					
Laboratory ID:	11-174-09					
Lead	**1800**	6.4	EPA 6010D	11-26-18	11-26-18	
Client ID:	**105-25-0.5**					
Laboratory ID:	11-174-10					
Lead	**220**	6.7	EPA 6010D	11-26-18	11-26-18	
Client ID:	**105-27-0.5**					
Laboratory ID:	11-174-11					
Lead	**88**	6.6	EPA 6010D	11-26-18	11-26-18	
Client ID:	**105-1-0.5**					
Laboratory ID:	11-174-12					
Lead	**2900**	7.3	EPA 6010D	11-26-18	11-26-18	
Client ID:	**102-16-0.5**					
Laboratory ID:	11-174-13					
Lead	**1100**	7.1	EPA 6010D	11-26-18	11-26-18	
Client ID:	**102-15-1.0**					
Laboratory ID:	11-174-14					
Lead	**700**	7.1	EPA 6010D	11-26-18	11-26-18	
Client ID:	**102-6-0.5**					
Laboratory ID:	11-174-15					
Lead	**78**	7.7	EPA 6010D	11-26-18	11-26-18	
Client ID:	**101-43-0.5**					
Laboratory ID:	11-174-16					
Lead	**440**	7.7	EPA 6010D	11-26-18	11-26-18	

Date of Report: November 29, 2018
Samples Submitted: November 19, 2018
Laboratory Reference: 1811-174
Project: USCG Burrows Island

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**101-11-0.5**					
Laboratory ID:	11-174-17					
Lead	**7400**	350	EPA 6010D	11-26-18	11-26-18	
Client ID:	**101-8-0.5**					
Laboratory ID:	11-174-18					
Lead	**35000**	760	EPA 6010D	11-26-18	11-26-18	
Client ID:	**101-26-0.5**					
Laboratory ID:	11-174-19					
Lead	**920**	6.7	EPA 6010D	11-26-18	11-26-18	
Client ID:	**101-29-0.5**					
Laboratory ID:	11-174-20					
Lead	**50**	7.0	EPA 6010D	11-26-18	11-26-18	
Client ID:	**104-22-0.5**					
Laboratory ID:	11-174-21					
Lead	**370**	8.1	EPA 6010D	11-26-18	11-26-18	
Client ID:	**104-27-0.5**					
Laboratory ID:	11-174-22					
Lead	**1700**	6.4	EPA 6010D	11-26-18	11-26-18	
Client ID:	**104-38-0.5**					
Laboratory ID:	11-174-23					
Lead	**310**	6.3	EPA 6010D	11-26-18	11-26-18	
Client ID:	**104-40-0.5**					
Laboratory ID:	11-174-24					
Lead	**34**	6.1	EPA 6010D	11-26-18	11-26-18	

Date of Report: November 29, 2018
Samples Submitted: November 19, 2018
Laboratory Reference: 1811-174
Project: USCG Burrows Island

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**104-15-0.5**					
Laboratory ID:	11-174-25					
Lead	**560**	7.0	EPA 6010D	11-26-18	11-26-18	
Client ID:	**104-1-0.5**					
Laboratory ID:	11-174-26					
Lead	**170**	6.4	EPA 6010D	11-26-18	11-26-18	
Client ID:	**103-19-0.5**					
Laboratory ID:	11-174-27					
Lead	**840**	6.7	EPA 6010D	11-26-18	11-26-18	
Client ID:	**103-50-0.5**					
Laboratory ID:	11-174-28					
Lead	**260**	6.4	EPA 6010D	11-26-18	11-26-18	
Client ID:	**103-3-0.5**					
Laboratory ID:	11-174-29					
Lead	**290**	5.8	EPA 6010D	11-26-18	11-26-18	
Client ID:	**103-86-0.5**					
Laboratory ID:	11-174-30					
Lead	**24**	6.0	EPA 6010D	11-26-18	11-26-18	
Client ID:	**103-12-0.5**					
Laboratory ID:	11-174-36					
Lead	**800**	6.5	EPA 6010D	11-26-18	11-26-18	
Client ID:	**103-54-0.5**					
Laboratory ID:	11-174-37					
Lead	**82**	6.7	EPA 6010D	11-26-18	11-26-18	

Date of Report: November 29, 2018
Samples Submitted: November 19, 2018
Laboratory Reference: 1811-174
Project: USCG Burrows Island

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**104-40-0.5**					
Laboratory ID:	11-174-38					
Lead	**5500**	30	EPA 6010D	11-26-18	11-27-18	

Date of Report: November 29, 2018
Samples Submitted: November 19, 2018
Laboratory Reference: 1811-174
Project: USCG Burrows Island

TOTAL LEAD
EPA 6010D
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1126SM1					
Lead	**ND**	5.0	EPA 6010D	11-26-18	11-26-18	
Laboratory ID:	MB1126SM2					
Lead	**ND**	5.0	EPA 6010D	11-26-18	11-26-18	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	11-174-03										
	ORIG	DUP									
Lead	**418**	**444**	NA	NA		NA		NA	6	20	
Laboratory ID:	11-178-01										
	ORIG	DUP									
Lead	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	11-174-03										
	MS	MSD	MS	MSD		MS	MSD				
Lead	**702**	**907**	250	250	418	**113**	**195**	75-125	25	20	V,W
Laboratory ID:	11-178-01										
	MS	MSD	MS	MSD		MS	MSD				
Lead	**216**	**219**	250	250	ND	**86**	**88**	75-125	2	20	

Date of Report: November 29, 2018
Samples Submitted: November 19, 2018
Laboratory Reference: 1811-174
Project: USCG Burrows Island

% MOISTURE

Date Analyzed: 11-20-18

Client ID	Lab ID	% Moisture
WT-2-2-0.5	11-174-01	33
WT-2-2-1.0	11-174-02	16
109-2-0.5	11-174-03	20
102-32-0.5	11-174-04	43
105-33-0.5	11-174-05	29
102-13-1.0	11-174-06	29
105-11-0.5	11-174-07	14
102-33-0.5	11-174-08	38
105-13-0.5	11-174-09	22
105-25-0.5	11-174-10	26
105-27-0.5	11-174-11	24
105-1-0.5	11-174-12	31
102-16-0.5	11-174-13	30
102-15-1.0	11-174-14	29
102-6-0.5	11-174-15	35
101-43-0.5	11-174-16	35
101-11-0.5	11-174-17	29
101-8-0.5	11-174-18	34
101-26-0.5	11-174-19	26
101-29-0.5	11-174-20	28
104-22-0.5	11-174-21	38
104-27-0.5	11-174-22	22
104-38-0.5	11-174-23	20
104-40-0.5	11-174-24	18
104-15-0.5	11-174-25	28
104-1-0.5	11-174-26	22
103-19-0.5	11-174-27	25

Date of Report: November 29, 2018
Samples Submitted: November 19, 2018
Laboratory Reference: 1811-174
Project: USCG Burrows Island

% MOISTURE

Date Analyzed: 11-20-18

Client ID	Lab ID	% Moisture
103-50-0.5	11-174-28	22
103-3-0.5	11-174-29	13
103-86-0.5	11-174-30	16
103-12-0.5	11-174-36	23
103-54-0.5	11-174-37	26
104-40-0.5	11-174-38	18

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

OnSite Environmental Inc.
Analytical Laboratory Testing Services
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Chain of Custody

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Laboratory Number: 11-174

Company: Arcadis
Project Number:
Project Name: USCG Burrows Island
Project Manager: Josh Graveunier
Sampled by: Mark Wiley

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	Total Pb (6010)				% Moisture
1	WT-2-2-0.5	11/13/18	1510	Soil	1																		X				✓
2	WT-2-2-1.0	11/13/18	1520	Soil	1																		X				
3	109-2-0.5	11/13/18	1600	Soil	1																		X				
4	102-32-0.5	11/14/18	1100	Soil	1																		X				
5	105-33-0.5	11/14/18	1103	Soil	1																		X				
6	102-13-1.0	11/14/18	1358	Soil	1																		X				
7	105-11-0.5	11/14/18	1007	Soil	1																		X				
8	102-33-0.5	11/14/18	1403	Soil	1																		X				
9	105-13-0.5	11/14/18	1018	Soil	1																		X				
10	105-25-0.5	11/14/18	1052	Soil	1																		X				

	Signature	Company	Date	Time
Relinquished		Arcadis	11/19/18	1000
Received	Eileen Clark	Alpha	11/19/18	12:15
Relinquished	Eileen Clark	Alpha	11/19/18	12:15
Received		OSE	11/19/18	1215
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

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Analytical Laboratory Testing Services
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Chain of Custody

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Laboratory Number: 11-174

Company: Arcadis
Project Number:
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	Total Pb (6010)				% Moisture
11	105-27-0.5	11/14/18	1047	Soil	1																		X				X
12	105-1-0.5	11/14/18	0956	Soil	1																		X				
13	102-16-0.5	11/14/18	1253	Soil	1																		X				
14	102-15-1.0	11/14/18	1415	Soil	1																		X				
15	102-6-0.5	11/14/18	1223	Soil	1																		X				
16	101-43-0.5	11/15/18	1139	Soil	1																		X				
17	101-11-0.5	11/15/18	1136	Soil	1																		X				
18	101-8-0.5	11/15/18	1135	Soil	1																		X				
19	101-26-0.5	11/15/18	1137	Soil	1																		X				
20	101-29-0.5	11/15/18	1138	Soil	1																		X				

	Signature	Company	Date	Time
Relinquished		Arcadis	11/14/18	1000
Received	Eileen Clark	Alpha	11/19/18	12:15
Relinquished	Eileen Clark	Alpha	11/19/18	12:15
Received		OSE	11/19/18	1215
Relinquished				
Received				

Reviewed/Date

Reviewed/Date

Comments/Special Instructions

Data Package: Standard ☐ Level III ☐ Level IV ☐

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Chain of Custody

Page 3 of 4

Laboratory Number: 11-174

Company: Arcadis
Project Number:
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	Total Pb (6010)				% Moisture
21	104-22-0.5	11/16/18	1109	Soil	1																		X				
22	104-27-0.5	11/16/18	1117	Soil	1																		X				
23	104-38-0.5	11/16/18	1150	Soil	1																		X				
24	104-40-0.5	11/16/18	1210	Soil	1																		X				
25	104-15-0.5	11/16/18	1044	Soil	1																		X				
26	104-1-0.5	11/16/18	1035	Soil	1																		X				
27	103-19-0.5	11/15/18	1333	Soil	1																		X				
28	103-50-0.5	11/15/18	1543	Soil	1																		X				
29	103-3-0.5	11/15/18	1346	Soil	1																		X				
30	103-86-0.5	11/15/18	1547	Soil	1																		X				

	Signature	Company	Date	Time
Relinquished	Mark Ullery	Arcadis	11/19/18	1000
Received	Eileen Clark	Alpha	11/19/18	12:45
Relinquished	Eileen Clark	Alpha	11/19/18	12:15
Received		OSE	11/19/18	1215
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

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Page 4 of 4

Laboratory Number: 11-174

Company: Arcadis
Project Number:
Project Name: USCG Burrows Island
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Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	Total Pb (6010)				% Moisture
31	PPE-1	11/16/18	845	Solid	1																X						
32	TP-1	11/16/18	850	Soil	1										X												X
33	TP-2	11/16/18	855	Soil	1										X												|
34	TP-3	11/16/18	900	Soil	1										X												|
35	WC-1	11/16/18	1235	Soil	1																X						
36	103-12-0.5	11/15/18	1339	Soil	1																		X				X
37	103-54-0.5	11/15/18	1506	Soil	1																		X				|
38	104-40-0.5	11/15/18	1130	Soil	1																		X				|

	Signature	Company	Date	Time
Relinquished		Arcadis	11/19/18	1000
Received	Eileen Clark	Alpha	11/19/18	12:15
Relinquished	Eileen Clark	Alpha	11/19/18	12:15
Received		OSE	11/19/18	1215
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

APPENDIX B

Field Documentation

Daily Field Logs

Utility Locate Report

X-Ray Fluorescence Field Log

DAILY LOG

Project No.: B00003010.0006 Page ______ of ______

Site Location: Burrows Island, WA

Prepared By: Mark Ullery

Personnel: Mark Ullery, Julia Vidonish, Alex Pink, Emily Zikmund, Ryan Brauchla, Daniel Gilbert

Date	Time	Description of Activities
3/25/19	600	Meet at Seattle Arcadis field room (Mark, Julia, Alex, Emily), pack up equipment and prepare to mobilize to Anacortes. Ryan and Daniel meet separately to mobilize.
	830	Arrive at Skyline Marina, complete H&S tailgate with the team. Unload equipment and prepare for mobilization to Burrows Island.
	930	Load onto boat and travel to Burrows Island.
	945	Arrive at Burrows Island. Unload equipment and stage near the boathouse. Complete initial inspection of site. Utility markings and ISM sample locaiton flags appear to be intact
	1000	Set up working are near the Duplex. Complete initialization and calibration of XRF instrument (see calibration log). Prepare for soil sampling (see FieldNow logs).
	1505	Complete XRF analysis on ISM-DU-03-0.5-1.0. Average concentration from selected samples is 38.4 mg/kg. No additional sampling depths attempted.
	1520	Complete XRF analysis on ISM-DU-01-0.5-1.0. Average concentration is 263.5 mg/kg. Additional sample from 1.0-1.5 feet bgs will be collected.
	1722	Collect equipment blank EB-032519 using DI water and a decontaminated sampling spoon used for compositing.
	1730	Wrap up sampling for the day. ISM composite and SU samples collected for ISM-01-A-0-0.5, ISM-01-A-0.5-1.0, ISM-02-A-0-0.5, ISM-03-A-0-0.5, ISM-03-A-0.5-1.0, and ISM-06-A-0-0.5. Increments collected for ISM-02-A-0.5-1.0, but will be processed tomorrow. Increment sample collection was started for ISM-06-A-0.5-1.0, but not finished. Sample collection and processing will be completed tomorrow.
	1800	Demobilize from Burrows Island to Anacortes. Pack samples and head to hotel. Arcadis off-site.

DAILY LOG

Project No.: B00003010.0006 Page ______ of ______

Site Location: Burrows Island, WA

Prepared By: Mark Ullery

Personnel: Mark Ullery, Julia Vidonish, Alex Pink, Emily Zikmund, Ryan Brauchla, Daniel Gilbert

Date	Time	Description of Activities
3/26/19	715	Mobilize to Skyline Marina, complete tailgate H&S meeting.
	800	Board Island Express ferry and mobilize to Burrows Island.
	815	Arrive at Burrows Island. Unload equipment, set up work area near the Duplex and prepare for sampling. See sample logs.
	830	Initialize XRF unit. Internal calibrations good. Calibrate to standards, see calibration log.
	1000	Completed XRF analysis on ISM-02-A-0.5-1.0. Average total lead concentration of 33.7 mg/kg. No additional depth intervals required.
	1010	Encountered shallow refusal in numerous locations in DU-06. In instances where refusal was between 0.5 and 1.0 feet, sample was collected for compositing and XRF analysis with the refusal depth noted. If refusal encountered at less than 0.5 feet in multiple borings near the sample location, no samples were collected as noted.
	1120	Completed XRF analysis on ISM-06-A-0.5-1.0. Average total lead concentration of 380.5 mg/kg. Will collect additional ISM sample from 1.0-1.5 feet bgs interval.
	1330	Completed XRF analysis on ISM-07-A-0.5-1.0. Average lead concentration of 28.2 mg/kg. No additional depth intervals required.
	1510	Complete XRF analysis on ISM-01-A-1.0-1.5. Average lead concentration of 63.2 mg/kg. No additional depth intervals required.
	1600	Complete XRF analysis on ISM-08-A-0.5-1.0. Average lead concentration of 341.7 mg/kg. Additional ISM sample from 1.0-1.5 feet bgs interval will be collected.
	1710	Complete XRF analysis on ISM-11-A-0.5-1.0. Average lead concentration of 68.5 mg/kg. No additional depth intervals required.
	1800	Completed sampling for the day and packed up equipment. Collected soil increments from DU-11 0-0.5 feet bgs interval and the B and C replicates from DU-02, but did not have time to complete processing. Samples will be composited and processed tomorrow.
	1824	Collect equipment blank EB-032619 using DI water and a decontaminated sampling spoon used for compositing.
	1900	Pickup from Burrows Island by Island Express. Return to Anacortes. Arcadis off-site.

DAILY LOG

Project No.: B00003010.0006 Page ______ of ______

Site Location: Burrows Island, WA

Prepared By: Mark Ullery

Personnel: Mark Ullery, Julia Vidonish, Alex Pink, Emily Zikmund, Ryan Brauchla, Daniel Gilbert

Date	Time	Description of Activities
3/27/19	715	Arrive at Skyline Marina, complete H&S tailgate, prepare for boarding ferry.
	800	Board Island Express ferry and mobilize to Burrows Island.
	815	Arrive at Burrows Island. Unload equipment, set up work are near the Duplex and prepare for sampling. See sampling forms.
	830	Initialze XRF unit. Internal claibrations good. Calibrate to standards. See calibration log.
	1010	Complete sample collection and XRF analysis of increments from ISM-08-A-1.0-1.5. Average lead concentration of 89.8 mg/kg. Refusal at less than 1.0 feet encountered in 11 increment sample locations with no samples. No additional depth intervals required based on XRF results.
	1035	Complete sample collection and XRF analysis of increments from ISM-06-A-1.0-1.5. Average lead concentration of 621.5 mg/kg. Refusal at less than 1.0 feet encountered in 15 increment sample locations with no samples. Additional depth interval will be attempted in locations that can be sampled. Metal chunk noted in sample from 06-10-1.0-1.5 with an XRF result of >3,000 mg/kg.
	1150	Complete sample collection and XRF analysis of increments from ISM-06-A-1.5-2.0. Refusal encountered at depths less than 1.5 feet in 24 increment locations resulting in no samples. Average lead concentration in samples that were collected is 306.7 mg/kg. Additional depth interval will be attempted.
	1200	Discuss addiitonal sampling in DU-06 with Paul McCullough. Refusal encountered in all but 2 increment locations at less than 2 feet. Decide to obtain discrete soil samples from the maximum depth that can be readily sampled in locations 06-10 and 06-22.
	1240	Collect SB-06-10-2.0-2.5 at 1240. Refusal encountered at 2.6 feet. Collect SB-06-22-3.0-3.5 at 1242. Refusal encountered at 3.5 feet.
	1645	Complete sample collection and XRF analysis of increments from ISM-04-A-0.5-1.0. Average lead concentration of 64.5 mg/kg. No additional depth intervals required based on XRF results.
	1745	Complete sample collection and XRF analysis of increments from ISM-10-A-0.5-1.0. Average lead concentraiton of 21.8 mg/kg. No additional depths required based on XRF results.
	1830	Complete sampling for the day, pack up equipment and prepared for demobilization.
	1835	Collect equipment blank EB-032719 using DI water and a decontaminated hand auger.
	1915	Transfer equipment and personnel to the pickup point for the ferry.
	2000	Demobilize from the site on the Island Express ferry. Arcadis off-site.

DAILY LOG

Project No.: B00003010.0006 Page ______ of ______

Site Location: Burrows Island, WA

Prepared By: Mark Ullery

Personnel: Mark Ullery, Julia Vidonish, Alex Pink, Emily Zikmund, Ryan Brauchla, Daniel Gilbert

Date	Time	Description of Activities
3/28/19	615	Arrive at Skyline Marina, complete H&S tailgate, prepare for boarding ferry.
	645	Board Island Express ferry and mobilize to Burrows Island.
	700	Arrive at Burrows Island. Unload equipment, set up work are near the Duplex and prepare for sampling. See sampling forms.
	715	Complete XRF initialization. Internal checks good. See calibration log.
	800	Relocated select locations in DU 09 based on the presence of solid material/concrete on the south side of Building 101, outside of the fence line. Locations that were adjusted are noted in Collector with updated locations.
	830	Encountered shallow refusal less than 0.5 feet in 9 locations, with no samples collected in 5 locations due to the presence of concrete or hard material. These locations could not be readily relocated within the DU, so no samples were collected.
	915	Complete sample collection and XRF analysis on increments from ISM-09-A-0.5-1.0. Average lead concentration of 94.8 mg/kg. No additional depth intervals required based on XRF results.
	1150	Complete sample collection and XRF analysis on increments from ISM-05-A-0.5-1.0. Average lead concentration of 40.7 mg/kg. No additional depth intervals required based on XRF results.
	1315	Complete sample collection and XRF analysis on increments from ISM-12-0.5-1.0. Average lead concentration of 32.8 mg/kg. No additional depth intervals required based on XRF results.
	1415	Complete sample collection for ISM-13-A-0.5-1.0. Will complete XRF on samples tomorrow. Clean up equipment and prepare for demobilization.
	1430	Demobilize from the site on Island Express ferry. Arcadis off-site.

DAILY LOG

Project No.: B00003010.0006 Page ______ of ______

Site Location: Burrows Island, WA

Prepared By: Mark Ullery

Personnel: Mark Ullery, Julia Vidonish, Alex Pink, Emily Zikmund, Ryan Brauchla, Daniel Gilbert

Date	Time	Description of Activities
3/29/19	615	Arrive at Skyline Marina, complete H&S tailgate, prepare for boarding ferry.
	645	Board Island Express ferry and mobilize to Burrows Island.
	700	Arrive at Burrows Island. Unload equipment, set up work are near the Duplex and prepare for sampling. See sampling forms.
	715	Complete XRF initialization. Internal checks good. See calibration log.
	800	Complete XRF analysis of samples from ISM-13-A-0.5-1.0. Average lead concentration is 66.5 mg/kg. No additional depth intervals required based on XRF results.
	1050	Complete collection and XRF analysis of samples from ISM-14-A-0.5-1.0. Average lead concentration is 103.8 mg/kg. No additional depth intervals required based on XRF results.
	1230	Mark out locations in DU 16 by measuring tape instead of GPS due to close sample spacing and poor GPS signal. Locations 16-8, 16-9, 16-13, 16-14, 16-18, 16-19, 16-23 and 16-24 were adjusted outside of the footprint of the former tank structures so that they could be accessed. Locations were placed at the closest point near the edge of the remaining portion of the structures.
	1340	Complete sample collection and XRF analysis for ISM-15-A-0.5-1.0. Two locations within concrete pad and no samples were recovered. Average lead concentration is 1218 mg/kg. Will collect samples from 1.0-1.5 foot interval.
	1415	Clean up sampling equipment and prepare for demobilization.
	1445	Demobilize from the site on the Island Express Ferry. Arcadis off-site.

DAILY LOG

Project No.: B00003010.0006 Page ______ of ______

Site Location: Burrows Island, WA

Prepared By: Mark Ullery

Personnel: Mark Ullery, Julia Vidonish, Alex Pink, Emily Zikmund, Daniel Gilbert

Date	Time	Description of Activities
3/30/19	730	Arrive at Skyline Marina, complete H&S tailgate, prepare for boarding ferry.
	800	Board Island Express ferry and mobilize to Burrows Island.
	815	Arrive at Burrows Island. Unload equipment, set up work are near the Duplex and prepare for sampling. See sampling forms.
	820	Collect equipment blank EB-033019 from decontaminated hand auger.
	830	Complete XRF initialization. Internal checks good. See calibration log.
	900	Mark out DU 17 using measuring tape instead of GPS due to poor signal.
	1005	Complete XRF analysis of samples from ISM-16-A-0.5-1.0. All samples analyzed were non-detect. No additional depth intervals required based on XRF results.
	1200	Mark out DU 18 locations. Access is generally good, except for the sloped area covered in ivy on the west side of the DU adjacent to the helicopter pad. Locations recorded in Collector.
	1250	Complete sample collection and XRF analysis for ISM-17-A-0.5-1.0. Lead detected in one of six samples analyzed at a concentration of 53 mg/kg.
	1315	Complete sample colleciton and XRF analysis for ISM-15-A-1.0-1.5. Refusal encountered at 1.0 feet or less in 15 sample locations resulting in no samples. Average lead concentration in samples analyzed by XRF is 45.5 mg/kg. No additional depth intervals based on XRF results.
	1605	Complete sample collection and XRF analysis for ISM-18-A-0.5-1.0. Average lead concentration is 49 mg/kg. No additional depth intervals based on XRF results.
	1615	Complete sampling and pack up equipment. Prepare for demobilizatoin.
	1630	Demobilize from the site on the Island Express ferry. Arcadis off-site.

DAILY LOG

Project No.: B00003010.0006 Page ______ of ______

Site Location: Burrows Island, WA

Prepared By: Mark Ullery

Personnel: Mark Ullery, Julia Vidonish, Alex Pink, Emily Zikmund, Daniel Gilbert

Date	Time	Description of Activities
3/31/19	730	Arrive at Skyline Marina, complete H&S tailgate, prepare for boarding ferry.
	800	Board Island Express ferry and mobilize to Burrows Island.
	815	Arrive at Burrows Island. Unload equipment, set up work are near the Duplex and prepare for sampling. See sampling forms.
	910	Complete discrete sample collection around Building 106.
	1240	Complete discrete sample collection around former 10,000-gallon above ground tank (Building 112). Generally encountered shallow refusal at less than 2 feet. Samples were collected from the deepest interval that could be obtained before refusal.
	1440	Complete collection of discrete samples along the pipelines. Where possible, the samples were collected from the interval below the pipeline. If the depth was not known or could not be determined, samples were collected from the deepest interval that could be obtained before refusal. PL-8, PL-9 and PL-10 were relocated in the approximate location of the pipeline based on field observations and utility marks.
	1515	Complete sampling around the tank associated with Building 101.
	1620	Complete sampling around the tanks associated with Building 107. Shallow refusal encountered in deeper samples at around 1 foot bgs.
	1700	Complete sampling around tank associated with Building 104. Sample from location SB-104-2 was likely from backfill material that was replaced following removal of UST. Material was a well graded sand and different from material in surrounding area. Deeper sample was collected from beneath the backfill in apparant native material. Locations SB-104-1 and SB-104-3 were located outside of backfill. Samples were collected from deepest intervals that could be obtained.
	1715	Clean up work area and demobilze from site on the Island Express Ferry. Arcadis off-site.

DAILY LOG

Project No.: B00003010.0006 Page ______ of ______

Site Location: Burrows Island, WA

Prepared By: Mark Ullery

Personnel: Mark Ullery, Julia Vidonish, Alex Pink, Emily Zikmund, Daniel Gilbert

Date	Time	Description of Activities
3/31/19	730	Arrive at Skyline Marina, complete H&S tailgate, prepare for boarding ferry.
	800	Board Island Express ferry and mobilize to Burrows Island.
	815	Arrive at Burrows Island. Unload equipment, set up work are near the Duplex and prepare for sampling. See sampling forms.
	915	Collect equipment blank from hand auger prior to starting sampling, EB-033119.
	1045	Called David at Onsite and realized that the incorrect VOAs had been filled for benzene analysis. Methanol VOAs had been used for discrete samples on 3/31 instead of sodium bisulfate preserved bottles. Since benzene is a contingent analysis, David said they should be able to meet the detection limit with the methanol VOA or by collection an additional sample from the unpreserved jars that were submittted for non-volatile analysis. Discussed with Paul and determined this was an appropriate path forward. Correct bottle ware for volatiles is available for samples from Building 102, which is the only known gasoline storage area.
	1050	Complete sampling around former tank associated with Building 102. Encounter shallow refusal in sample locaitons SB-102-2 and SB-102-3. No deeper sample could be obtained from SB-102-2.
	1100	Probe and mark out discrete sample locations around former transformer area. Use shovel to try to find the edge of concrete fill so that samples can be collected outside of the fill area. 12 sampling locations selected and recorded in Collector.
	1306	Collect equipment blank from hand auger, EB-040119.
	1310	Complete sampling around the former transformer pad associated with Building 101. Encountered shallow refusal in select locations as noted in field forms. Deeper samples collected from the deepest interval that could be obtained prior to refusal.
	1330	Clean and pack up equipment. Move soil and liquid drums to the north basement in the Duplex building. 14 soil drums and 2 liquid drums were generated.
	1400	Collect SED-01 from location below tide line in sandy beach adjacent to Boathouse. Material consists of sand with cobbles.
	1403	Collect waste characterization sample from decontamination water, PW-040119.
	1405	Collect SED-02 from along erosion line above the beach as far from the tide line as is accessible. Location is approximately 25 feet to the west of SED-01. Material is sandy with cobbles.
	1445	Demobilize equipment and supplies on the Island Express ferry. Return to Skyline Marina.
	1500	Complete inventory of samples and generate COCs.
	1700	Rent additional van to provide enough space for equipment and supplies. Load equipment.
	1800	Demobilize from Anacortes and head to Seattle Arcadis office.
	1930	Unload equipment and samples. Place sample jars in refrigerator for storage overnight to be transferred to the lab tomorrow.

MARCH 25, 2019
BURROWS ISLAND LIGHT STATION

DOSIMETERS : OPERATOR 1 ⇒ JULIA VIDONISH
OPERATOR 2 ⇒ Mark ULLERY
OPERATOR 3 ⇒ ALEX PINK
OPERATOR 4 ⇒ EMILY ZIKMUND
OPERATOR 5 ⇒ DANIEL GILBERT
OPERATOR 6 ⇒ RYAN BRACHULA

XRF SAMPLE LOG

CALIBRATION WITH CLIP (11:00)

Time	Sample ID	Pb READING	READING #
11:22	SiO_2	ND <19	3
11:24	SiO_2	ND <19	4
11:26	SiO_2	ND <19	5
11:28	SiO_2	ND <20	6
11:30	SiO_2	ND <19	7
11:32	SiO_2	ND <19	8
11:33	SiO_2	ND <19	9
11:34	SiO_2	ND <19	10
11:35	SiO_2	ND <20	11
11:37	SiO_2	ND <19	12
11:38	2709	16 ± 4	13
11:40	2709	ND <12	14
11:41	2709	ND <13	15
11:43	2709	ND <12	16
11:44	2709	13 ± 4	17
11:46	2709	19 ± 4	18
11:47	2709	ND <12	19
11:49	2709	14 ± 4	20
11:50	2709	18 ± 4	21
11:52	2709	13 ± 4	22
11:54	2781	185 ± 7	23
11:56	2781	194 ± 7	24
11:57	2781	185 ± 7	25
11:59	2781	193 ± 7	26
12:00	2781	185 ± 7	27

→

Time	Sample ID	Pb Reading	Reading #
12:02	2781	200 ± 7	28
12:04	2781	186 ± 7	29
12:05	2781	191 ± 7	30
12:06	2781	195 ± 8	31
12:08	2781	187 ± 7	32
2:40	3-5-0.5-1	87 ± 6	34
2:42	2781	168 ± 7	35
2:44	2709	ND <13	36
2:45	SiO2	ND <48	37
2:46	3-8-0.5-1	35 ± 4	38
3:00 ~~2:48~~	3-16-0.5-1	ND < 11	~~39~~ 40
3:01 ~~[illegible]~~	3-22-0.5-1	24 ± 4	~~40~~ 41
15:03	3-26-0.5-1	35 ± 5	42
15:09	01-05-0.5-1	131 ± 6	43
15:11	01-14-0.5-1	72 ± 5	44
15:13	01-11-0.5-1	1180 ± 19	45
15:15	01-17-0.5-1	78 ± 5	46
15:17	01-22-0.5-1	30 ± 4	47
15:18	01-27-0.5-1	90 ± 6	48

Clip calib.

MARCH 26, 2019
BURROWS ISLAND, WA

XRF SAMPLE LOG

CALIBRATION ~~Reg~~ ^{2} (CLIP (@ 8:5~~4~~ ^{2}.

TIME	SAMPLE ID	Pb READING	READING #
(CLIP (@ 8:54)			5
8:55	SiO_2	ND<9	6
8:56	SiO_2	ND<10	7
8:57	SiO_2	ND<10	8
8:59	SiO_2	ND<9	9
9:00	SiO_2	ND<10	10
9:01	SiO_2	ND<10	11
9:02	SiO_2	ND<10	12
9:03	SiO_2	ND<11	13
9:04	SiO_2	ND<9	14
9:06	SiO_2	ND<10	15
9:07	2702	136 ± 10	16
9:08	2702	116 ± 9	17
9:09	2702	155 ± 11	18
9:10	2702	131 ± 10	19
9:11	2702	155 ± 11	20
9:13	2702	144 ± 10	21
9:14	2702	138 ± 10	22
9:15	2702	164 ± 11	23
9:16	2702	161 ± 11	24
9:17	2702	131 ± 10	25
9:19	2781	211 ± 10	26
9:21	2781	227 ± 11	27
9:23	2781	222 ± 11	28
9:24	2781	211 ± 10	29
9:25	2781	205 ± 10	30
9:26	2781	215 ± 10	31
9:27	2781	192 ± 10	32
9:29	2781	211 ± 10	33
9:30	2781	211 ± 10	34
9:31	2781	208 ± 10	35

TIME	SAMPLE ID	Pb READING	READING #
9:44	2-5A-0.5-1	72 ± 5	36
9:45	2-13A-0.5-1	15 ± 3	37
9:46	2-8A-0.5-1	30 ± 4	38
9:48	2-18A-0.5-1	15 ± 3	39
9:52	2-24A-0.5-1	36 ± 3	40
9:54	2-29A-0.5-1	34 ± 4	41
10:56	SiO_2	ND<6	42
10:57	2702	131 ± 7	43
10:59	2781	206 ± 7	44
11:04	6-8-0.5-1	115 ± 6	45
11:06	6-9-0.5-1	581 ± 13	46
11:09	6-13-0.5-1	292 ± 9	47
11:12	6-20-0.5-1	150 ± 6	48
11:14	6-24-0.5-1	40 ± 4	49
11:16	6-29-0.5-1	110 ± 5	50
1307	SiO_2	ND<7	54
1309	2702	136 ± 7	55
1311	2781	206 ± 7	56
1313	7-29-0.5-1.0	14 ± 3	57
1315	7-25-0.5-1.0	82 ± 5	58
1317	7-20-0.5-1.0	16 ± 3	59
1318	7-2-0.5-1.0	ND<8	60
1321	7-15-0.5-1.0	21 ± 4	61
1322	7-9-0.5-1.0		
1454	2702	146 ± 7	65
1455	2781	218 ± 7	66
1457	01-11-1.0-1.5	~~96 ±~~ 97 ± 5	67
1500	01-05-1.0-1.5	119 ± 5	68
1507	01-14-1.0-1.5	15 ± 3	69
1508	01-17-1.0-1.5	24 ± 3	70
1509	01-22-1.0-1.5	35 ± 3	71
1510	01-27-1.0-1.5	89 ± 5	72
1548	08-4A-0.5-1	432 ± 10	73
1550	08-7A-0.5-1	54 ± 4	74
1552	08-12A-0.5-1	393 ± 10	75
1554	08-16A-0.5-1	ND<9	76
1556	08-22A-0.5-1	63 ± 4	77
1557	08-27A-0.5-1	1106 ± 19	78
1652	2702	55 ± 4	79
1654	2781	221 ± 7	80

TIME	SAMPLE ID	Pb READING	READING #
1655	SiO_2	ND<7	81
1657	11-1-0.5-1	72 ± 5	82
1659	11-6-0.5-1	ND <10	83
1702	11-12-05-1	113 ± 6	84
1707	11-17-0.5-1	ND <10	85
1709	11-21-0.5-1	172 ± 7	86
1710	11-26-0.5-1	54 ± 4	87

March 27, 2018
Burrows Island

Time	Sample ID	Pb Reading	Reading #
STANDARD	(CLIP) @ 8:43		
8:45	SiO_2	ND < 6	3
08:49	2781	211 ± 7	4
08:50	2781	215 ± 7	5
08:52	2781	203 ± 7	6
08:53	2781	219 ± 7	7
08:54	2781	208 ± 7	8
08:55	2781	211 ± 7	9
08:56	2781	220 ± 7	10
08:58	2781	198 ± 7	11
08:59	2781	221 ± 9	12
09:01	2781	210 ± 7	13
09:04	2702	133 ± 7	14
09:06	2702	133 ± 7	15
09:07	2702	130 ± 7	16
09:08	2702	139 ± 7	17
09:12	2702	135 ± 7	18
09:13	2702	141 ± 7	19
09:16	2702	140 ± 7	20
09:17	2702	153 ± 7	21
09:19	2702	124 ± 7	22
09:32	2702	126 ± 7	23
09:58	08-05-1.0-1.5	79 ± 6	24
09:59	08-07-1.0-1.5	48 ± 4	25
10:00	08-12-1.0-1.5	38 ± 4	26
10:02	08-16-1.0-1.5	ND < 9	27
10:05	08-22-1.0-1.5	77 ± 5	28
10:06	08-27-1.0-1.5	288 ± 8	29
10:19	06-07-1.0-1.5	ND < 8	30
10:21	06-10-1.0-1.5	3253 ± 43	31
10:24	06-13-1.0-1.5	415 ± 11	32
10:25	06-21-1.0-1.5	10 ± 3	33
10:27	06-26-1.0-1.5	ND < 9	34
10:31	06-29-1.0-1.5	34 ± 4	35
10:35	06-10-1.0-1.5 (REDO)	3846 ± 49	36

↳ piece of metal found in 06-10-1.0-1.5 bag, causing skewed reading. Re-tested sample with metal piece removed

05/27/14

Time	Sample ID	Pb Reading	Reading #	
11:02	06-10-1.5-2.0	417 ± 10	37	
11:19	~~0~~ 2702	138 ± 7	38	
11:20	2781	211 ± 7	39	
1135	6-10-1.5-2.0	629 ± 13	40	
1137	6-15-1.5-7.0	168 ± 7	41	
1140	6-7-1.5-2.0	ND<8	42	
1141	6-13-1.5-2.0	206 ± 8	43	
1144	6-12-1.5-2.0	819 ± 16	44	
1146	6-22-1.5-2.0	ND<10	45	
16:17	SiO_2	ND<6	47	
16:19	2702	138 ± 7	48	
16:21	2781	207 ± 7	49	
16:30	04-05-0.5-1.0	16 ± 3	50	
16:32	04-09-0.5-1.0	30 ± 4	51	
16:36	04-17-0.5-1.0	138 ± 7	52	
16:37	04-20-0.5-1.0	29 ± 4	53	
16:39	04-24-0.5-1.0	51 ± 4	54	
16:41	04-29-0.5-1.0	133 ± 6	55	
17:24	10-29-0.5-1.0	ND<9	56	
17:27	10-19-0.5-1.0	19 ± 5	57	
17:28	10-16-0.5-1.0	25 ± 3	58	(2 samples, don't include in average
17:29	10-10-0.5-1.0	48 ± 4	59	
17:37	10-3-0.5-1.0	15 ± 3	60	
17:38	10-5-0.5-1.0	30 ± 4	61	
17:41	10-15-0.5-1.0	10 ± 3	62	

MARCH 28, 2019
BURROWS ISLAND LIGHT STATION

TIME	SAMPLE NAME	Pb READING	READING #	
717	SiO_2	ND<6	2	
0719	2702	129 ± 7	3	
0722	2702	139 ± 7	4	
0724	2702	137 ± 7	5	
0725	2702	147 ± 7	6	
0728	2702	132 ± 7	7	
0729	2702	136 ± 7	8	
0731	2702	128 ± 7	9	
0733	2702	135 ± 7	10	
0734	2702	128 ± 7	11	
0735	2702	141 ± 7	12	
0736	2781	200 ± 7	13	
0737	2781	199 ± 7	14	
0738	2781	211 ± 7	15	
0739	2781	212 ± 22	16	
0741	2781	209 ± 7	17	
0743	2781	217 ± 12	18	
0744	2781	200 ± 10	19	
0745	2781	177 ± 15	20	
0747	2781	220 ± 7	21	
0748	2781	217 ± 7	22	
0900	SiO_2	ND<6	23	
0901	2702	147 ± 7	24	
0902	2781	206 ± 7	25	
0904	09-03 - 0.5-1.0	69 ± 4	26	
0905	09-08 - 0.5-1.0	301 ± 9	27	
0907	09-11 - 0.5-1.0	59 ± 5	28	
0908	09-15-0.5-1.0	103 ± 5	29	
0909	09-26-0.5-1.0	20 ± 3	30	
0910	09-29-0.5-1.0	17 ± 3	31	
1113	SiO_2	ND<6	32	
1114	2702	136 ± 7	33	← Standardized w/ clip
1116	2781	211 ± 8	35	
1137	05-01-0.5-1	16 ± 3	36	
1138	05-05-0.5-1	16 ± 3	37	
1140	05-13-0.5-1	21 ± 3	38	
1142	05-17-0.5-1	32 ± 4	39	
1144	05-22-0.5-1	61 ± 4	40	

3/28/19
BURROWS ISLAND

TIME	SAMPLE ID	Pb READING	READING #
1146	05-27 — 0.5-1	98 ± 5	41
1246	SiO_2	ND<7	42
1248	2702	136 ± 7	43
1249	2781	210 ± 7	44
1257	12-1-0.5-1	ND<8	45
1301	12-5 - 0.5-1	22 ± 8	46
1303	12-8 - 0.5-1	36 ± 4	47
1305	12-12 - 0.5-1	19 ± 3	48
1306	12-19 — 0.5-1	54 ± 5	49
1308	12-26 - 0.5-1	58 ± 4	50

3/29/19

BUDDONS ISLAND LIGHT STATION

TIME	SAMPLE ID	Pb READING	READING #
0720	SiO_2	ND<7	3
0723	2702	129 ± 7	4
0724	2702	130 ± 7	5
0725	2702	146 ± 7	6
0726	2702	139 ± 7	7
0728	2702	132 ± 7	8
0729	2702	135 ± 7	9
0731	2702	133 ± 7	10
0732	2702	133 ± 7	11
0733	2702	130 ± 7	12
0734	2702	140 ± 7	13
0736	2781	204 ± 7	14
0740	2781	217 ± 8	15
0741	2781	228 ± 8	16
0742	2781	209 ± 7	17
0743	2781	215 ± 8	18
0744	2781	221 ± 8	19
0745	2781	203 ± 7	20
0746	2781	207 ± 7	21
0747	2781	230 ± 14	22
0748	2781	216 ± 7	23
0750	~~ISM~~ 13-02A-0.5-1	91 ± 5	24
0753	13-06A-0.5-1	ND<10	25
0754	13-12A-0.5-1	112 ± 12	26
0756	13-18A-0.5-1	31 ± 3	27
0758	13-22A-0.5-1	97 ± 5	28
0759	13-28A-0.5-1	58 ± 4	29
1000	Switch to XRF unit 10102		
1007	SiO_2	ND<9	2
1009	2781	191 ± 8	3
1012	2702	119 ± 8	4
1013	2781	208 ± 8	5
1017	2781	197 ± 8	6
1018	2781	202 ± 8	7
1019	2781	195 ± 8	8
1020	2781	190 ± 8	9
1021	2781	204 ± 8	10

Time	Sample	Pb Result (mg/kg)	Shot #
1022	2781	186±8	11
1023	2781	191±8	12
1024	2781	196±8	13
1027	2702	111±8	14
1029	2702	113±8	15
1032	2702	117±8	16
1033	2702	109±8	17
1034	2702	115±8	18
1035	2702	114±8	19
1036	2702	114±8	20
1038	2702	125±8	21
1040	2702	118±8	22
1041	14-05-0.5-1.0	ND<10	23
1043	14-08-0.5-1.0	194±7	24
1044	14-11-0.5-1.0	70±5	25
1047	14-20-0.5-1.0	31±4	26
1048	14-26-0.5-1.0	32±4	27
1049	14-23-0.5-1.0	286±9	28
1320	SiO_2	ND<8	29
1321	2781	177±8	30
1323	2702	121±8	31
1325	15-3-0.5-1	ND<12	32
1326	15-9-0.5-1	ND<10	33
1327	15-11-0.5-1	ND<13	34
1329	15-18-0.5-1	1439±24	35
1331	15-22-0.5-1	5708±66	36
1333	15-30-0.5-1	128±6	37

March 30, 2019
Burrows Island Light Station
XRF Log

Time	Sample ID	Pb Reading	Reading #	
0850	SiO2	ND<11	3	
0852	2781	176 ± 9	4	
0854	2781	183 ± 9	5	
0855	2781	183 ± 9	6	
0858	2781	169 ± 9	7	
0859	2781	174 ± 9	8	
0901	2781	165 ± 9	9	
0903	2781	189 ± 9	10	
0909	2781	180 ± 9	11	
0912	2781	168 ± 9	12	
0914	2781	176 ± 9	13	
0915	2702	102 ± 8	14	
0917	2702	103 ± 8	15	
0918	2702	99 ± 8	16	
0920	2702	116 ± 8	17	
0923	2702	114 ± 8	18	
0925	2702	118 ± 9	19	
0927	2702	97 ± 8	20	
0930	2702	101 ± 8	21	
0931	2702	98 ± 8	22	
0933	2702	100 ± 8	23	
✓ 0945	16-2-0.5-1.0	ND<10	24	
✓ 0946	16-29-0.5-1	ND<12	25	
✓ 0948	16-10-0.5-1	ND<12	26	
0949	~~16-13-0.5-1~~	ND<11	27	Disregard
0950	~~16-16-0.5-1~~	ND<11	28	
0952	~~16-23-0.5-1~~	ND<10	29	
0958	16-13-0.5-1	ND<10	30	
1001	16-23-0.5-1	ND<12	31	
1003	16-16-0.5-1	ND<9	32	
1230	SiO2	ND<10	33	
1234	2781	190 ± 8	34	
1236	2702	111 ± 8	35	
1238	17-03-0.5-1	ND<11	36	
1240	17-10-0.5-1	ND<9	37	

TIME	SAMPLE ID	Pb READING	READING #
1241	17-13-0.5-1	53 ± 5	38
1244	17-21-0.5-1	ND<11	39
1246	17-23-0.5-1	ND<12	40
1247	17-30-0.5-1	ND<12	41
1256	15-04-1.0-1.5	ND<11	42
1259	15-10-1.0-1.5	13 ± 4	44
1300	15-11-1.0-1.5	ND<11	45
1302	15-20-1.0-1.5	ND<11	46
1305	15-22-1.0-1.5	108 ± 7	47
1306	15-28-1.0-1.5	59 ± 5	48
1522	2702	108 ± 8	49
1523	2781	177 ± 8	50
1540	SiO_2	ND<10	51
1548	18-29-0.5-1.0	62 ± 5	52
1553	18-08-0.5-1.0	55 ± 5	53
1556	18-11-0.5-1.0	39 ± 5	54
1557	18-02-0.5-1.0	101 ± 6	55
1558	18-19-0.5-1.0	ND<12	56
1601	18-23-0.5-1.0	25 ± 5	57

3/31/19
DISCRETE SAMPLES

SAMPLE ID	PID (ppm)
112-08-0-0.5	4.5
112-08 -[illegible]1.	

} recorded in tablet

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CORPORATE ADDRESS
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6742 West Buckskin Rd., Pocatello, Id 83204

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SEATTLE/ SAC / AK / HAW-PACIFIC RIM
15151 52nd Ave. South, Suite 2 Seattle, WA 98188
1 866 804-5734
SOCAL
9065 Calle Del Verde, Santee, CA 92071
619 562-0972
EXLORE SAFELY

ULS SERVICES CORP

GEOMARKOUT a trade name of ULS

Work Order Agreement

Job Site Location Burrows Island Coast Guard Light Station	Job W.A.	
City, State Burrows Island, Anacortes Washington	Job Date 26 FEB 19	
CLIENT ARCADIS	FIELD TIME 0730-100 (5.5)REPORT 2	LABOR HOURS W/REPORT/ HRS 7.5
ADDRESS		FAXED
CITY, STATE, ZIP SEATTLE		TELEPHONED

WORK REQUESTED: LOCATE REPORTED ABANDONED FUEL PIPING AND ELECTRIC ASSOCIARED WITH SOLAR PANEL LIGHT HOUSE.

WORK PERFORMED	PRELIMINARY REVIEW OF CLIENT PROVIDED UTILITY DRAWINGS/AS-BUILTS: LIMITED
VISUAL SITE INSPECTION (MANHOLES, DRAINS): SURFACE ONLY	EMPCL CONDUCTIVE UTILITY SURVEY: CHECKED YES GAS: X ELECTRIC: X COMM.: X WATER: X
EMIMD METAL DETECTION SURVEY : AMBIENT NOISE AND SETTINGS LOW NOISE | GAIN 7 | LOW ELV VERY GOOD RESPONSE	EM INSERTION : NF - INSERTION METHODS NONE DUE TO HS
GPR NON-CONDUCTIVE SURVEY : AVAILABLE AT SITE HOWEVER NOT UTILIZED IN THIS EFFORT	CLIENT ON-SITE REVIEW OF FINDINGS:

GENERAL LIMITATIONS

NOTE: The work described herein is performed to industry standards (or higher) using multiple methodology and QA/QC protocol. ULS cannot guarantee the accuracy or the ability to detect all underground facilities and potential interferences. Non-conductive or conductive utilities/facilities may not be detected due to variables and constraints beyond ULS control. Where known, constraints and limitations will be brought to the client's attention. Excavation work may result in injury to persons and/or damage to facilities. Client and/or excavator are advised to take all steps necessary to avoid contact with underground facilities. This includes, but is not limited to, safe digging practices, hand tooling in congested areas and within two feet on side of marked utilities (distance may vary by law), utility drawing review, site facilities representative review, and "one-call" utilities notification. ULS and its representatives are not responsible for injury to persons or damage to facilities. This document and accompanying pages will be delivered to the client before commencement of intrusive work for the client's review. If any questions arise, please notify our office immediately.

NOTE: Specific comments/limitations/constraints, known and recognized will be recorded on attached pages (field notes). Caution – some facilities (conductive or non- conductive) may not be detected. Not all limitations and constraints may be recognized.

SIGNATURE OF ULS REPRESENTATIVE ON-SITE MWB		PAGE OF 1


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……

GEOMARKOUT

EXPLORE SAFELY

BURROWS ISLAND COAST GUARD LIGHT STATION

26 FEB 19

METHODS AND GENERAL OBSERVATIONS:

METHODS:

ARRIVED MARINA COMPLETED HS TAILGATE AND MOBILIZED TO ISLAND CG STATION (SITE). COMPLETED SITE WALK TO REVIEW SURVEY AREAS (PROPOSED ZONES). CHECKED FOR SURFACE UTILITY MANIFESTATIONS SUCH AS VALVES, METERS, CONDUITS, TRENCHING SEAMS –SCARS. CHECKED FOR UTILITY VAULTS, SD INLETS, AND MH COVERS. BEGAN MARKOUT WORK.

METHODS UTILIZED INCLUDE: EM PIPE AND CABLE LOCATOR USING AMBIENT, GROUND INDUCTION AND CONNNECTION MODE SWEEPS. EM INDUCTION METAL DETECTOR, FOCUSED INLINE INDUCTION AT ABANDONED PIPING.

A CARTISIAN GRID PATH IS WALKED AT EACH PROPOSED ZONE USING ALL METHODOLOGY. A GENERAL SURVEY OF AREA IS ALSO CONDUCTED.

OBSERVATIONS ARE MARKED WITH RED PAINT AND OBSERVATIONS COLLECTED WITH A WAAS ENABED GPS WITH ESRI ARCPAD SOFTWARE.

SITE CALIBRATION - GENERAL OBSERVATIONS

EM PIPE AND CABLE TRANSMITTER TO RECIEVER (GROUND INDUCTION AND CONNECTION) BROADCASTING IS **EXCELLENT.**. EMIMD METAL DETECTOR BACKGROUND EM NOISE IS LOW WITH EXCELLENT SIGNAL. GPR IS NOT USED IN EFFORT AT THIS TIME.

SEE QA / QC OBSERVATION COMMENTS TO RIGHT SIDE / ABOVE AND SPECIFIC OBSERVATIONS / COMMENTS BELOW ……………………………….>

X	QA / QC Follows
X	
X	ONECALL /DIG ALERT RECALL YES
X	UTILITY MAINS INACTIVE (1 &2) ACTIVE SOLAR (3)
X	ELECTRIC – BOATHOUSE TO LIGHTHOUSE DUPLEX TO LIGHTHOUSE SOLAR E TO LIGHTHOUSE
X	TELEPHONE NONE
X	NAT/ PROPANE GAS -NONE .
X	WATER PIPING NEAR BUILDINGS. SEE FIGURES. SOME MAYBE NOT FOUND THIS EFFORT DUE TO TIME CONSTRAINT.
X	SEWER/STORM SEPTIC TANK OBSERVED WEST OF FORMER BLDG (NE HELCOPTER PAD). DRAIN INTO ANDOUT HOWEVER EXTENT EFFLUENT NOT DETERMINED DUE TO TIME
X	
X	DRAIN LINES ANDOR CLEANOUT OPENINGS ARE EXPOSED ON SURFACE. NOT ALL ARE LOCATED DUE TO TIME. SNAKE INSERT OR GPR MAY BE REQUIRED.
X	UNKNOWN WATER OR STEAM CONDENSOR CISTERN IS OBSERVED SOUTH SIDE LIGHT HOUSE.
	FUELS SYSTEM REPORTED TRACED LINES .
	.

GEOMARKOUT
EXPLORE SAFELY

BURROWS ISLAND COAST GUARD LIGHT STATION

26 FEB 19

SPECIFIC OBSERVATIONS AND COMMENTS OR CONCERNS:

REMOTE FUEL LINE FROM BOAT HOUSE AREA 105 TO FORMER AST

APPROXIMATE 3-4 DIA STEEL LINE IS OBSERVED ON SURFACE AND TRACED UNDERGROUND WITH NS TREND BETWEEN 105 AREA AND FORMER AST SE OF 103.

FUEL PIPE LATERAL SPUR FROM FUEL LINE TO FORMER BLDG 104

A SECOND FUEL PIPE IS VISUALY OBSERVED FROM FORMER AST SE 103 AND TRENDS NORTH WITH REMOTE FILL FUEL PIPE UP TO FORMER BUILDING 104 WHERE IT TURNS LEFT.

LIGHT HOUSE BLDG

A FUEL PIPE REPORTED ASSOCIATED UST AT LIGHTHOUSE TRENDING SE TO AST SE OF 103 IS NOT FOUND. AREA AROUND AST CRADLE AND PIPE THERE IS CHECKED VISUALLY AND NO VALVES OR LATERALS OBSERVED OTHER THAN REPORTED ABOVE. GEOPHYSICAL LINE TRACING METHODS USED HOWEVER NO PIPING DETECTED.

DUPLEX BLDG

TWO FUEL PIPES REPORTED ASSOCIATED WITH AST EAST OF BLDG 103
ARE NOT FOUND. AREA AROUND BLDG IS CHECKED VISUALLY AND NO
VALVES OR LATERALS OBSERVED OTHER THAN WATER PIPE VALVES. GEOPHYSICAL
TRACING METHODS USED HOWEVER NO PIPING DETECTED. PIPING IS REPORTED AS SMALL
COPPER TUBING.

ELECTRIC

ELECTRIC CABLING IS DETECTED FROM SOLAR PANEL WEST LIGHTHOUSE, EAST TO BLDG 103, NORTH TO BOAT HOUSE 105. A FORTH POSSIBLE CABLE DETECTED AND CONFIRMED WITH POT HOLE REVEALS A CABLE TRENDING SE FROM LIGHT HOUSE TOWARDS NORTH END AST AND CONTINUES EAST TOWARDS PRIVY AND WATER TANKS.

LIMITED TIME ON ISLAND.

LOCATE ENERGY ISOLATION INCLUDING WATER JACKHAMMER, AIRKNIFE / DIG CAREFULLY TO SAFE ANDPRUDENT DEPTH AT EACH LOCATION.


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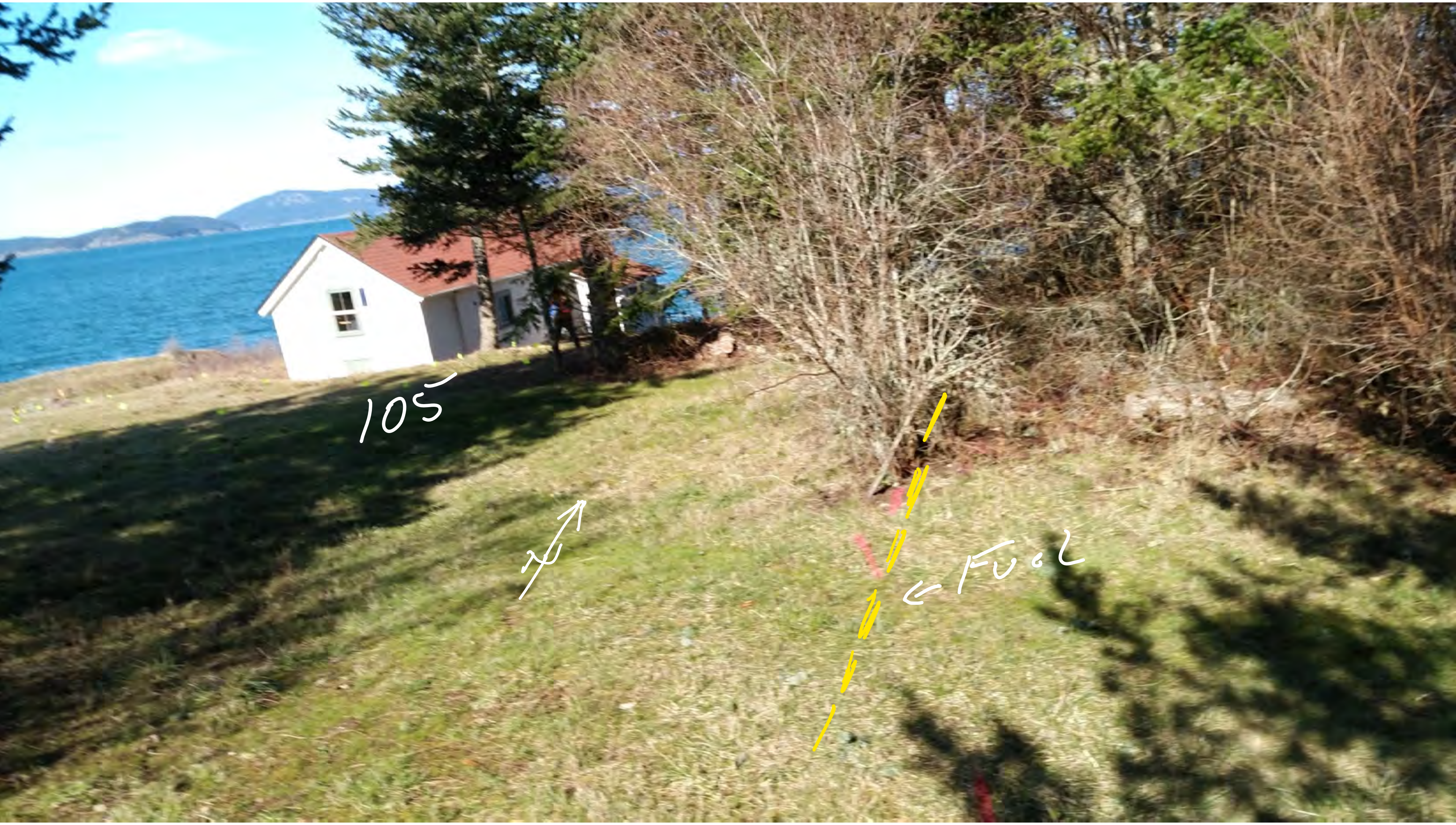
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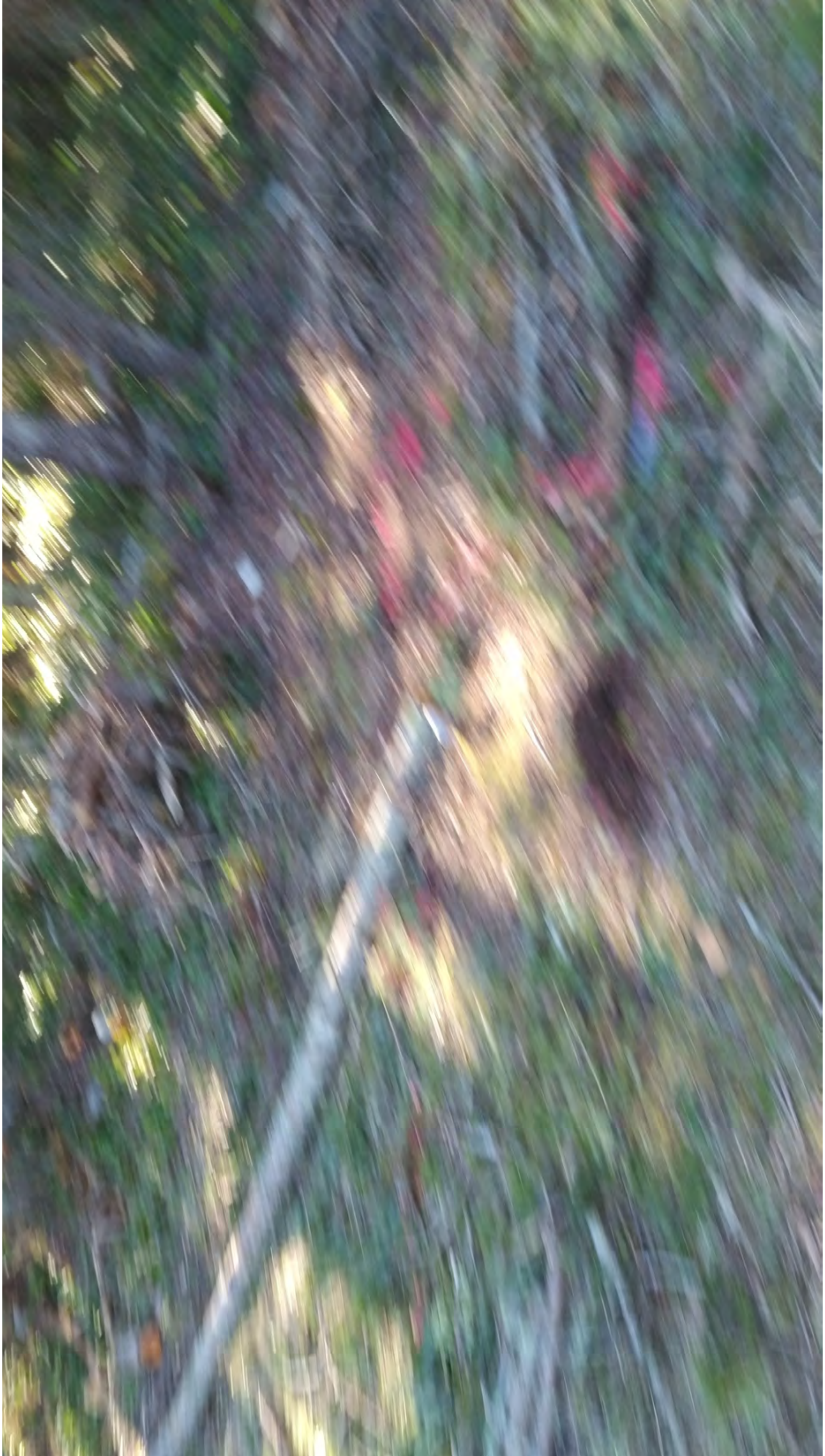

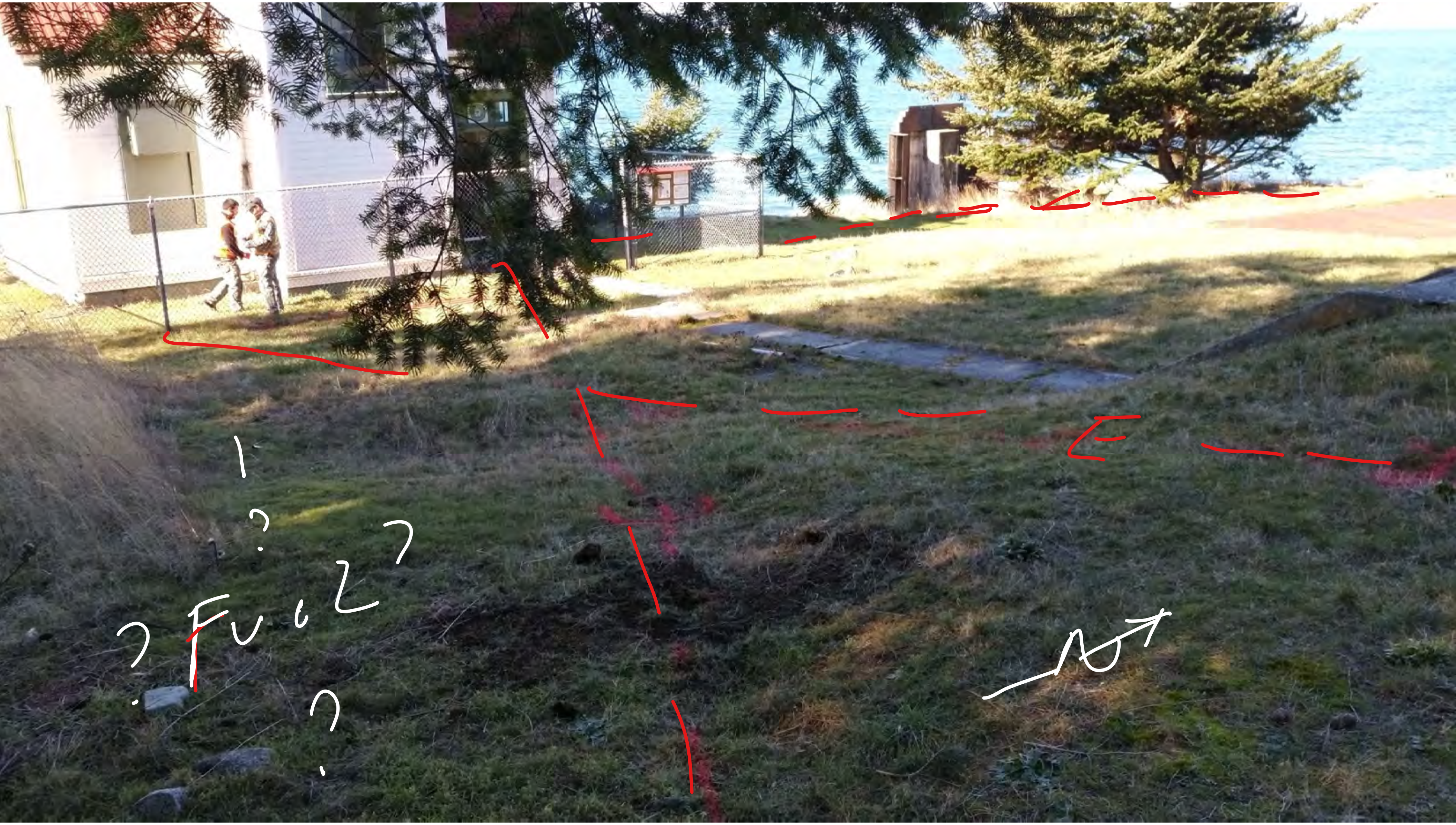
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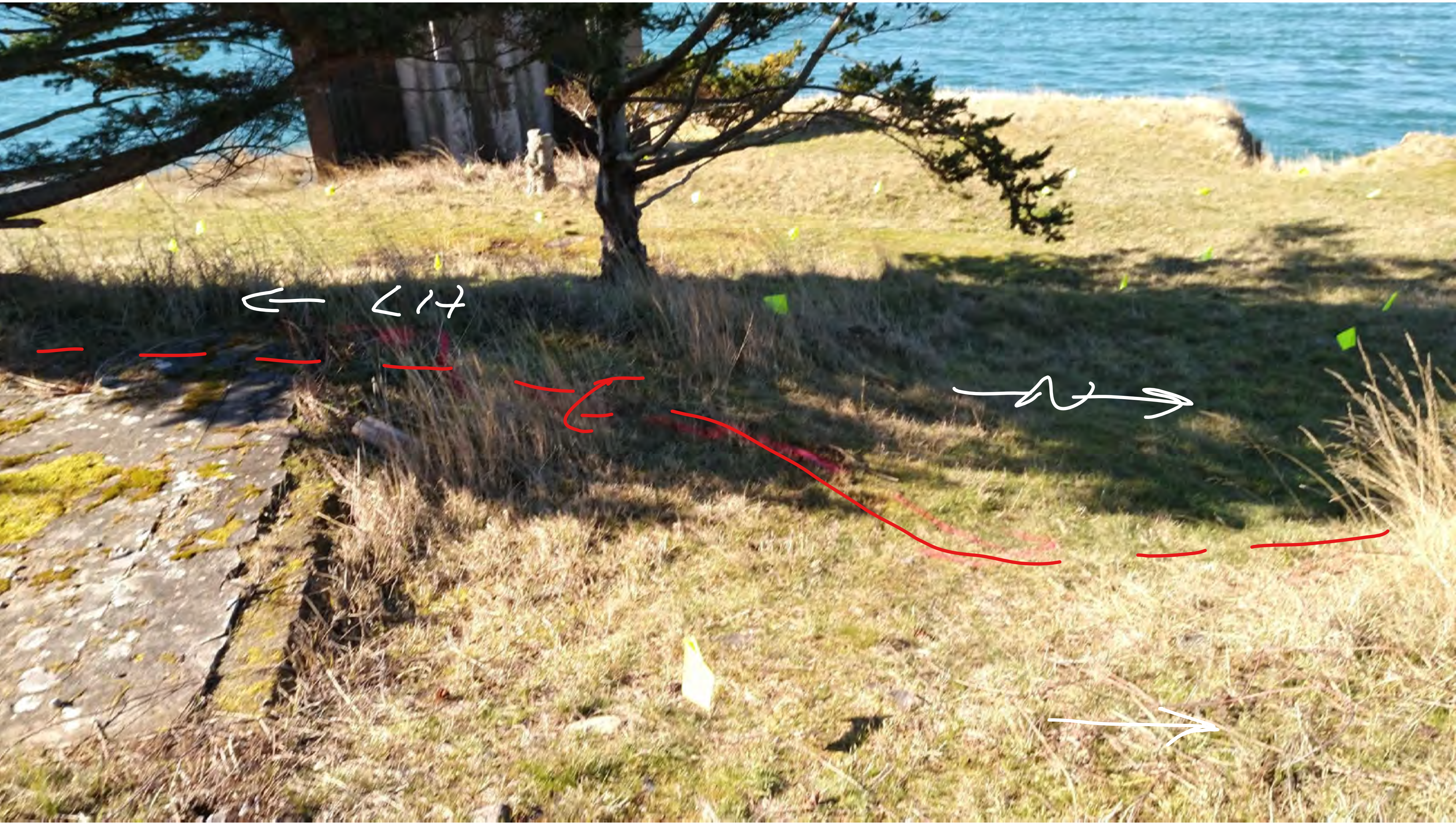

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APPENDIX C

Photo Log

United States Coast Guard
Burrows Island Light Station
Skagit County, Washington

Photograph: 1

Description:
Layout of ISM sampling increment locations marked with yellow pin flags. Locations were marked using tablet and GPS.

Location:
Burrows Island Light Station

Photograph taken by:
Mark U.

Date: 3/27/2019

Photograph: 2

Description:
Collection of ISM sampling increments using hand auger. Soil was collected and placed in bags. Time and date recorded in the tablet.

Location:
Burrows Island Light Station

Photograph taken by:
Mark U.

Date: 3/27/2019

Photograph: 3

Description:
Increment sample from DU-02 marked with unique identifier indicting location and depth and ready for processing.

Location:
Burrows Island Light Station

Photograph taken by:
Mark U.

Date: 3/25/2019

Photograph: 4

Description:
Increment samples organized by DU and awaiting processing. Samples were processed after all the increments for an ISM sample were collected and confirmed.

Location:
Burrows Island Light Station

Photograph taken by:
Julia V.

Date: 3/26/2019

Photograph: 5

Description:
XRF analysis station. Samples were selected for analysis that were spatially representative of the DU. Average concentration from XRF was them compared to cleanup level.

Location:
Burrows Island Light Station

Photograph taken by:
Julia V.

Date: 3/26/2019

Photograph: 6

Description:
After analysis, composite samples were collected using decontaminated metal spoons. SUs were also collected in addition to primary DUs.

Location:
Burrows Island Light Station

Photograph taken by:
Julia V.

Date: 3/26/2019

Photograph: 7

Description:
ISM composite samples were collected following XRF analysis and QC'ed using the tablet. An equal soil volume was collected from each increment and composited.

Location:
Burrows Island Light Station

Photograph taken by:
Julia V.

Date: 3/26/2019

Photograph: 8

Description:
Beach area adjacent to the dock during low tide.

Location:
Burrows Island Light Station

Photograph taken by:
Mark U.

Date: 3/26/2019

Photograph: 9

Description:
Beach area adjacent to the dock during high tide.

Location:
Burrows Island Light Station

Photograph taken by:
Mark U.

Date: 3/27/2019

Photograph: 10

Description:
Beach area adjacent to the dock during low tide.

Location:
Burrows Island Light Station

Photograph taken by:
Mark U.

Date: 3/26/2019

Photograph: 11

Description:
Beach area adjacent to the dock during high tide.

Location:
Burrows Island Light Station

Photograph taken by:
Mark U.

Date: 3/27/2019

Photograph: 12

Description:
Building 106 building inspection and sampling.

Location:
Burrows Island Light Station

Photograph taken by:
Mark U.

Date: 3/31/2019

Photograph: 13

Description:
Building 106 seep outlet.

Location:
Burrows Island Light Station

Photograph taken by:
Mark U.

Date: 3/31/2019

Photograph: 14

Description:
Waste containers staged in north basement of duplex.

Location:
Burrows Island Light Station

Photograph taken by:
Mark U.

Date: 4/1/2019

APPENDIX D

Laboratory Analytical Reports

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

April 17, 2019

Josh Gravenmier
Arcadis U.S., Inc.
1100 Olive Way, Suite 800
Seattle, WA 98101

Re: Analytical Data for Project B0003010.0006
Laboratory Reference No. 1903-283

Dear Josh:

Enclosed are the analytical results and associated quality control data for samples submitted on March 28, 2019.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

Blair Goodrow
Project Manager

Enclosures

Date of Report: April 17, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283
Project: B0003010.0006

Case Narrative

Samples were collected on March 25, 26, 27, and 28, 2019 and received by the laboratory on March 28, 2019. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

TCLP Lead EPA 1311/6010D Analysis

Due to a limited amount of sample, less than the required 100g was tumbled for TCLP analysis. The amount of samples ISM-04-A-0-0.5, ISM-06-A-1.0-1.5, ISM-06-A-1.5-2.0, ISM-08-C-0-0.5 (03-283-36, 03-283-72, 03-283-77, and 03-283-96) used in order of the samples was 80g, 70g, 20g and 90g.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: April 17, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283
Project: B0003010.0006

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-01-A-0-0.5**					
Laboratory ID:	03-283-01					
Lead	**190**	5.2	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-01-A-0.5-1.0**					
Laboratory ID:	03-283-06					
Lead	**110**	5.2	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-01-A-1.0-1.5**					
Laboratory ID:	03-283-11					
Lead	**43**	5.3	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-02-A-0-0.5**					
Laboratory ID:	03-283-16					
Lead	**61**	5.3	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-02-A-0.5-1.0**					
Laboratory ID:	03-283-20					
Lead	**35**	5.3	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-02-B-0-0.5**					
Laboratory ID:	03-283-24					
Lead	**50**	5.6	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-02-C-0-0.5**					
Laboratory ID:	03-283-25					
Lead	**85**	5.6	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-03-A-0-0.5**					
Laboratory ID:	03-283-26					
Lead	**68**	5.6	EPA 6010D	4-3-19	4-3-19	

Date of Report: April 17, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283
Project: B0003010.0006

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-03-A-0.5-1.0**					
Laboratory ID:	03-283-31					
Lead	**30**	5.4	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-04-A-0-0.5**					
Laboratory ID:	03-283-36					
Lead	**280**	5.7	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-04-A-0.5-1.0**					
Laboratory ID:	03-283-41					
Lead	**74**	5.3	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-05-A-0-0.5**					
Laboratory ID:	03-283-50					
Lead	**64**	5.4	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-05-A-0.5-1.0**					
Laboratory ID:	03-283-55					
Lead	**56**	5.3	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-06-A-0-0.5**					
Laboratory ID:	03-283-60					
Lead	**1300**	5.8	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-06-B-0-0.5**					
Laboratory ID:	03-283-65					
Lead	**2000**	5.7	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-06-C-0-0.5**					
Laboratory ID:	03-283-66					
Lead	**1500**	5.7	EPA 6010D	4-3-19	4-3-19	

Date of Report: April 17, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283
Project: B0003010.0006

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-06-A-0.5-1.0**					
Laboratory ID:	03-283-67					
Lead	**630**	5.4	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-06-A-1.0-1.5**					
Laboratory ID:	03-283-72					
Lead	**390**	5.6	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-06-A-1.5-2.0**					
Laboratory ID:	03-283-77					
Lead	**400**	5.2	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-07-A-0-0.5**					
Laboratory ID:	03-283-82					
Lead	**470**	6.2	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-07-A-0.5-1.0**					
Laboratory ID:	03-283-86					
Lead	**62**	5.4	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-08-A-0-0.5**					
Laboratory ID:	03-283-90					
Lead	**1300**	5.7	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-08-B-0-0.5**					
Laboratory ID:	03-283-95					
Lead	**1100**	5.7	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-08-C-0-0.5**					
Laboratory ID:	03-283-96					
Lead	**1300**	5.6	EPA 6010D	4-3-19	4-3-19	

Date of Report: April 17, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283
Project: B0003010.0006

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-08-A-0.5-1.0**					
Laboratory ID:	03-283-97					
Lead	**160**	5.4	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-08-A-1.0-1.5**					
Laboratory ID:	03-283-102					
Lead	**540**	5.3	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-09-A-0-0.5**					
Laboratory ID:	03-283-107					
Lead	**150**	5.8	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-09-A-0.5-1.0**					
Laboratory ID:	03-283-112					
Lead	**75**	5.1	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-10-A-0-0.5**					
Laboratory ID:	03-283-117					
Lead	**57**	5.3	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-10-A-0.5-1.0**					
Laboratory ID:	03-283-122					
Lead	**19**	5.1	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-11-A-0-0.5**					
Laboratory ID:	03-283-127					
Lead	**450**	5.8	EPA 6010D	4-8-19	4-8-19	
Client ID:	**ISM-11-A-0.5-1.0**					
Laboratory ID:	03-283-132					
Lead	**120**	5.4	EPA 6010D	4-8-19	4-8-19	

Date of Report: April 17, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283
Project: B0003010.0006

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-12-A-0-0.5**					
Laboratory ID:	03-283-137					
Lead	**280**	5.5	EPA 6010D	4-8-19	4-8-19	
Client ID:	**ISM-12-A-0.5-1.0**					
Laboratory ID:	03-283-148					
Lead	**68**	5.4	EPA 6010D	4-8-19	4-8-19	
Client ID:	**ISM-13-A-0-0.5**					
Laboratory ID:	03-283-153					
Lead	**170**	5.7	EPA 6010D	4-8-19	4-8-19	

Date of Report: April 17, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283
Project: B0003010.0006

TOTAL LEAD
EPA 6010D
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0403SM1					
Lead	**ND**	5.0	EPA 6010D	4-3-19	4-3-19	
Laboratory ID:	MB0403SM2					
Lead	**ND**	5.0	EPA 6010D	4-3-19	4-3-19	
Laboratory ID:	MB0408SM1					
Lead	**ND**	5.0	EPA 6010D	4-8-19	4-8-19	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	03-283-01										
	ORIG	DUP									
Lead	**181**	**186**	NA	NA		NA		NA	3	20	
Laboratory ID:	03-283-86										
	ORIG	DUP									
Lead	**57.9**	**52.5**	NA	NA		NA		NA	10	20	
Laboratory ID:	03-301-02										
	ORIG	DUP									
Lead	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	03-283-01										
	MS	MSD	MS	MSD		MS	MSD				
Lead	**414**	**378**	250	250	181	**93**	**79**	75-125	9	20	
Laboratory ID:	03-283-86										
	MS	MSD	MS	MSD		MS	MSD				
Lead	**259**	**262**	250	250	57.9	**80**	**82**	75-125	1	20	
Laboratory ID:	03-301-02										
	MS	MSD	MS	MSD		MS	MSD				
Lead	**222**	**224**	250	250	ND	**89**	**90**	75-125	1	20	

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-06-10-2.0-2.5**					
Laboratory ID:	03-283-142					
Lead	**1800**	6.4	EPA 6010D	4-2-19	4-2-19	

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-06-22-3.0-3.5**					
Laboratory ID:	03-283-143					
Lead	**9.7**	5.9	EPA 6010D	4-2-19	4-2-19	

Date of Report: April 17, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283
Project: B0003010.0006

TOTAL LEAD
EPA 6010D
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0402SM1					
Lead	**ND**	5.0	EPA 6010D	4-2-19	4-2-19	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	03-304-22										
	ORIG	DUP									
Lead	**8.50**	**7.45**	NA	NA		NA		NA	13	20	
MATRIX SPIKES											
Laboratory ID:	03-304-22										
	MS	MSD	MS	MSD		MS	MSD				
Lead	**236**	**238**	250	250	8.50	**91**	**92**	75-125	1	20	

Date of Report: April 17, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283
Project: B0003010.0006

TOTAL LEAD
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EB-032819**					
Laboratory ID:	03-283-144					
Lead	**ND**	1.1	EPA 200.8	4-5-19	4-5-19	
Client ID:	**EB-032719**					
Laboratory ID:	03-283-145					
Lead	**ND**	1.1	EPA 200.8	4-5-19	4-5-19	
Client ID:	**EB-032619**					
Laboratory ID:	03-283-146					
Lead	**ND**	1.1	EPA 200.8	4-5-19	4-5-19	
Client ID:	**EB-032519**					
Laboratory ID:	03-283-147					
Lead	**ND**	1.1	EPA 200.8	4-5-19	4-5-19	

Date of Report: April 17, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283
Project: B0003010.0006

TOTAL LEAD
EPA 200.8
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0405WM1					
Lead	**ND**	1.1	EPA 200.8	4-5-19	4-5-19	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	03-303-01										
	ORIG	DUP									
Lead	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	03-303-01										
	MS	MSD	MS	MSD		MS	MSD				
Lead	**110**	**114**	111	111	ND	**99**	**103**	75-125	3	20	

Date of Report: April 17, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283
Project: B0003010.0006

TCLP LEAD
EPA 1311/6010D

Matrix: TCLP Extract
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-04-A-0-0.5**					
Laboratory ID:	03-283-36					
Lead	**ND**	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	**ISM-06-A-0-0.5**					
Laboratory ID:	03-283-60					
Lead	**0.33**	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	**ISM-06-B-0-0.5**					
Laboratory ID:	03-283-65					
Lead	**0.97**	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	**ISM-06-C-0-0.5**					
Laboratory ID:	03-283-66					
Lead	**0.70**	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	**ISM-06-A-0.5-1.0**					
Laboratory ID:	03-283-67					
Lead	**0.26**	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	**ISM-06-A-1.0-1.5**					
Laboratory ID:	03-283-72					
Lead	**0.21**	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	**ISM-06-A-1.5-2.0**					
Laboratory ID:	03-283-77					
Lead	**0.34**	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	**ISM-07-A-0-0.5**					
Laboratory ID:	03-283-82					
Lead	**ND**	0.20	EPA 6010D	4-17-19	4-17-19	

Date of Report: April 17, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283
Project: B0003010.0006

TCLP LEAD
EPA 1311/6010D

Matrix: TCLP Extract
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-08-A-0-0.5**					
Laboratory ID:	03-283-90					
Lead	**0.33**	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	**ISM-08-B-0-0.5**					
Laboratory ID:	03-283-95					
Lead	**ND**	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	**ISM-08-C-0-0.5**					
Laboratory ID:	03-283-96					
Lead	**ND**	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	**ISM-08-A-1.0-1.5**					
Laboratory ID:	03-283-102					
Lead	**ND**	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	**ISM-11-A-0-0.5**					
Laboratory ID:	03-283-127					
Lead	**0.24**	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	**ISM-12-A-0-0.5**					
Laboratory ID:	03-283-137					
Lead	**ND**	0.20	EPA 6010D	4-17-19	4-17-19	

Date of Report: April 17, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283
Project: B0003010.0006

TCLP LEAD
EPA 1311/6010D
QUALITY CONTROL

Matrix: TCLP Extract
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0417TM1					
Lead	**ND**	0.20	EPA 6010D	4-17-19	4-17-19	
Laboratory ID:	MB0417TM2					
Lead	**ND**	0.20	EPA 6010D	4-17-19	4-17-19	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	03-283-67										
	ORIG	DUP									
Lead	**0.256**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	03-283-67										
	MS	MSD	MS	MSD		MS	MSD				
Lead	**9.83**	**9.82**	10.0	10.0	0.256	**96**	**96**	75-125	0	20	

% MOISTURE

Date Analyzed: 4-2&5-19

Client ID	Lab ID	% Moisture
ISM-01-A-0-0.5	03-283-01	4
ISM-01-A-0.5-1.0	03-283-06	4
ISM-01-A-1.0-1.5	03-283-11	5
ISM-02-A-0-0.5	03-283-16	5
ISM-02-A-0.5-1.0	03-283-20	6
ISM-02-B-0-0.5	03-283-24	12
ISM-02-C-0-0.5	03-283-25	11
ISM-03-A-0-0.5	03-283-26	11
ISM-03-A-0.5-1.0	03-283-31	7
ISM-04-A-0-0.5	03-283-36	12
ISM-04-A-0.5-1.0	03-283-41	6
ISM-05-A-0-0.5	03-283-50	7
ISM-05-A-0.5-1.0	03-283-55	6
ISM-06-A-0-0.5	03-283-60	14
ISM-06-B-0-0.5	03-283-65	12
ISM-06-C-0-0.5	03-283-66	13
ISM-06-A-0.5-1.0	03-283-67	8
ISM-06-A-1.0-1.5	03-283-72	11
ISM-06-A-1.5-2.0	03-283-77	4
ISM-07-A-0-0.5	03-283-82	19
ISM-07-A-0.5-1.0	03-283-86	7
ISM-08-A-0-0.5	03-283-90	12
ISM-08-B-0-0.5	03-283-95	12
ISM-08-C-0-0.5	03-283-96	11
ISM-08-A-0.5-1.0	03-283-97	8
ISM-08-A-1.0-1.5	03-283-102	6
ISM-09-A-0-0.5	03-283-107	14

Date of Report: April 17, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283
Project: B0003010.0006

% MOISTURE

Date Analyzed: 4-2&5-19

Client ID	Lab ID	% Moisture
ISM-09-A-0.5-1.0	03-283-112	3
ISM-10-A-0-0.5	03-283-117	5
ISM-10-A-0.5-1.0	03-283-122	2
ISM-11-A-0-0.5	03-283-127	13
ISM-11-A-0.5-1.0	03-283-132	8
ISM-12-A-0-0.5	03-283-137	10
SB-06-10-2.0-2.5	03-283-142	22
SB-06-22-3.0-3.5	03-283-143	16
ISM-12-A-0.5-1.0	03-283-148	8
ISM-13-A-0-0.5	03-283-153	12

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

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Chain of Custody

Page 1 of 17

Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
1	ISM-01-A-0-0.5	3/25/19	1401	Soil	1	X			X
2	ISM-01-1-0-0.5	↓	1402	↓	1	X		On Hold	
3	ISM-01-2-0-0.5		1403		1	X		On Hold	
4	ISM-01-3-0-0.5		1404		1	X		On Hold	
5	ISM-01-4-0-0.5		1405		1	X		On Hold	
6	ISM-01-A-0.5-1.0	3/26/19	1428		1	X			X
7	ISM-01-1-0.5-1.0	↓	1429		1	X		On Hold	
8	ISM-01-2-0.5-1.0		1430		1	X		On Hold	
9	ISM-01-3-0.5-1.0		1431		1	X		On Hold	
10	ISM-01-4-0.5-1.0		1432		1	X		On Hold	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received	Kelly Lissell	OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

(X) Added 4/9/19 STA

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
11	~~[illegible]~~ ISM-01-A-1.0-1.5	3/27/19	1525	Soil	1	X			X
12	ISM-01-1-1.0-1.5	↓	1526	↓	1	X		On Hold	
13	ISM-01-2-1.0-1.5		1527		1	X		On Hold	
14	ISM-01-3-1.0-1.5		1528		1	X		On Hold	
15	ISM-01-4-1.0-1.5		1529		1	X		On Hold	
16	ISM-02-A-~~08~~ 0-0.5	3/25/19	1622		1	X			X
17	ISM-02-1-0-0.5	↓	1623		1	X		On Hold	
18	ISM-02-2-0-0.5		1624		1	X		On Hold	
19	ISM-02-3-0-0.5		1625		1	X		On Hold	
	~~ISM-02-4-0-0.5~~		~~1626~~		~~1~~	~~X~~		~~On Hold~~	

	Signature	Company	Date	Time
Relinquished	Ryan [illegible]	Arcadis	3/28/19	1723
Received	Vicki Ullery	OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	20	ISM-02-A-0.5-1.0	3/26/19	1041	Soil	1	X			X
✓	21	ISM-02-1-0.5-1.0	↓	1042	↓	1	X		On Hold	
✓	22	ISM-02-2-0.5-1.0		1043		1	X		On Hold	
✓	23	ISM-02-3-0.5-1.0		1044		1	X		On Hold	
✓	24	ISM-02-B-0-0.5	3/27/19	910		1	X			X
✓	25	ISM-02-C-0-0.5	3/27/19	916		1	X			X
✓	26	ISM-03-A-0-0.5	3/25/19	1258		1	X			X
✓	27	ISM-03-1-0-0.5	3/25/19	1259		1	X		On Hold	
✓	28	ISM-03-2-0-0.5	3/25/19	1300		1	X		On Hold	
✓	29	ISM-03-3-0-0.5	3/25/19	1301		1	X		On Hold	

	Signature	Company	Date	Time
Relinquished	Ryan W Bell	Arcadis	3/28/19	1723
Received	Kelly Lizzeo	OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ______ (other)

Laboratory Number: 03-283

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓ 30	Ism-03-4-0-0.5	3/25/19	1302	Soil	1	X		On Hold	
✓ 31	Ism-03-A-0.5-1.0	3/25/19	1538		1	X			X
✓ 32	Ism-03-1-0.5-1.0		1539		1	X		On Hold	
✓ 33	Ism-03-2-0.5-1.0		1540		1	X		On Hold	
✓ 34	Ism-03-3-0.5-1.0		1541		1	X		On Hold	
✓ 35	Ism-03-4-0.5-1.0	↓	1542		1	X		On Hold	
✓ 36	Ism-04-A-0-0.5	3/27/19	~~1603~~ 1503		1	X	⊗		X
✓ 37	Ism-04-1-0-0.5		~~1626~~ 1526		1	X		On Hold	
✓ 38	Ism-04-2-0-0.5		~~1627~~ 1527		1	X		On Hold	
✓ 39	Ism-04-3-0-0.5	↓	~~1628~~ 1528	↓	1	X		On Hold	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)			% moisture
✓ 40	ISM-04-4-0-0.5	3/27/19	~~1122~~ 1529	Soil	1	X		On Hold		/
✓ 41	ISM-04-A-0.5-1.0	3/27/19	1718		1	X				X
✓ 42	ISM-04-1-0.5-1.0		1719		1	X		On Hold		
✓ 43	ISM-04-2-0.5-1.0		1720		1	X		On Hold		
✓ 44	ISM-04-3-0.5-1.0		1721		1	X		On Hold		
✓ 45	ISM-04-4-0.5-1.0	↓	1722		1	X		On Hold		
	~~ISM-05-A-0-0.5~~	~~3/28/19~~	~~1106~~		~~1~~	~~X~~			mu	
	~~ISM-05-1-0-0.5~~		~~1107~~		~~1~~	~~X~~		~~On Hold~~		
	~~ISM-05-2-0-0.5~~		~~1108~~		~~1~~	~~X~~		~~On H~~		
	~~ISM-05-3-0-0.5~~	↓	~~1109~~	↓	~~1~~	~~X~~				

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)	% moisture
✓ 50	ISM-05-A-0-0.5	03/28/19	11:06	Soil	1	X		X
✓ 51	ISM-05-1-0-0.5	03/28/19	11:07			X	ON HOLD	
✓ 52	ISM-05-2-0-0.5	03/28/19	11:08			X	ON HOLD	
✓ 53	ISM-05-3-0-0.5	03/28/19	11:09			X	ON HOLD	
✓ 54	ISM-05-4-0-0.5	03/28/19	11:10			X	ON HOLD	
✓ 55	ISM-05-A-0.5-1.0	03/28/19	12:28			X		X
✓ 56	ISM-05-1-0.5-1.0	03/28/19	12:29			X	ON HOLD	
✓ 57	ISM-05-2-0.5-1.0	03/28/19	12:30			X	ON HOLD	
✓ 58	ISM-05-3-0.5-1.0	03/28/19	12:31			X	ON HOLD	
✓ 59	ISM-05-4-0.5-1.0	03/28/19	12:32			X	ON HOLD	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)	% moisture
✓ 60	ISM-06-A-0-0.5	03/25/19	1713 ~~051323~~	Soil	1	X	ⓧ	X
✓ 61	ISM-06-1-0-0.5	│	1714	│	│	│	ON HOLD	
✓ 62	ISM-06-2-0-0.5	│	1715	│	│	│	ON HOLD	
✓ 63	ISM-06-3-0-0.5	│	1716	│	│	│	ON HOLD	
✓ 64	ISM-06-4-0-0.5	↓	1717	│	│	│	ON HOLD	
✓ 65	ISM-06-B-0-0.5	03/27/19	1805	│	│	│	ⓧ	X
✓ 66	ISM-06-C-0-0.5	03/27/19	1840	│	│	│	ⓧ	X
✓ 67	ISM-06-A-0.5-1.0	03/26/19	1146	│	│	│	ⓧ	X
✓ 68	ISM-06-1-0.5-1.0	│	1147	│	│	│	ON Hold	
✓ 69	ISM-06-2-0.5-1.0	│	1148	│	│	│	ON Hold	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

OnSite Environmental Inc.
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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	70	ISM-06-3-0.5-1.0	03/26/19	1149	Soil	1	x		ON HOLD	
✓	71	ISM-06-4-0.5-1.0	03/26/19	1150					ON HOLD	
✓	72	ISM-06-A-1.0-1.5	03/27/19	1056				ⓧ		X
✓	73	ISM-06-1-1.0-1.5		1115					ON HOLD	
✓	74	ISM-06-2-1.0-1.5		1116					ON HOLD	
✓	75	ISM-06-3-1.0-1.5		1117					ON HOLD	
✓	76	ISM-06-4-1.0-1.5		1118					ON HOLD	
✓	77	ISM-06-A-1.5-2.0		1146				ⓧ		X
✓	78	ISM-06-1-1.5-2.0		1153					ON HOLD	
✓	79	ISM-06-2-1.5-2.0	↓	1154	↓	↓	↓		ON HOLD	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
80	ISM-06-3-1.5-2.0	03/27/19	1155	Soil	1	X		ON HOLD	
81	ISM-06-4-1.5-2.0	03/27/19	1156		1	X		ON HOLD	
	~~ISM-06-A-2.0-2.5~~ EZ								
	~~SB-06-A~~ EZ								
82	ISM-07-A-0-0.5	03/26/19	1238		1	X	X		X
83	ISM-07-1-0-0.5		1239		1	X		ON HOLD	
84	ISM-07-2-0-0.5		1240		1	X		ON HOLD	
85	ISM-07-3-0-0.5		1241		1	X		ON HOLD	
86	ISM-07-A-0.5-1.0		1348		1	X			X
87	ISM-07-1-0.5-1.0		1349		1	X		ON HOLD	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	88	ISM-07-2-0.5-1.0	03/26/19	1350	Soil	1	X		ON HOLD	
✓	89	ISM-07-3-0.5-1.0	03/26/19	1351		1	X		ON HOLD	
✓	90	ISM-08-A-0-0.5		1602		1	X	ⓧ		X
✓	91	ISM-08-1-0-0.5		1616		1	X		ON HOLD	
✓	92	ISM-08-2-0-0.5		1617		1	X		ON HOLD	
✓	93	ISM-08-3-0-0.5		1618		1	X		ON HOLD	
✓	94	ISM-08-4-0-0.5		1619		1	X		ON HOLD	
✓	95	ISM-08-B-0-0.5	03/27/19	1220		1	X	ⓧ		X
✓	96	ISM-08-C-0-0.5	03/27/19	1502		1	X	ⓧ		X
✓	97	ISM-08-A-0.5-1.0	03/26/19	1701		1	X			X

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	98	ISM-08-1-0.5-1.0	03/26/19	1733	Soil	1	X		ON HOLD	
✓	99	ISM-08-2-0.5-1.0		1734		1	X		ON HOLD	
✓	100	ISM-08-3-0.5-1.0		1735		1	X		ON HOLD	
✓	101	ISM-08-4-0.5-1.0		1736		1	X		ON HOLD	
✓	102	ISM-08-A-1.0-1.5	03/27/19	1027		1	X	Ⓧ		X
✓	103	ISM-08-1-1.0-1.5		1046		1	X		ON HOLD	
✓	104	ISM-08-2-1.0-1.5		1047		1	X		ON HOLD	
✓	105	ISM-08-3-1.0-1.5		1048		1	X		ON HOLD	
✓	106	ISM-08-4-1.0-1.5		1049		1	X		ON HOLD	
✓	107	ISM-09-A-0-0.5	03/28/19	0921		1	X			X

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

OnSite Environmental Inc.
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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ______ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	108	ISM-09-1-0-0.5	03/28/19	0922	Soil	1	X		ON HOLD	
✓	109	ISM-09-2-0-0.5		0923		1	X		ON HOLD	
✓	110	ISM-09-3-0-0.5		0924		1	X		ON HOLD	
✓	111	ISM-09-4-0-0.5		0925		1	X		ON HOLD	
✓	112	ISM-09-A-0.5-1.0		0944		1	X			X
✓	113	ISM-09-1-0.5-1.0		0945		1	X		ON HOLD	
✓	114	ISM-09-2-0.5-1.0		0946		1	X		ON HOLD	
✓	115	ISM-09-3-0.5-1.0		0947		1	X		ON HOLD	
✓	116	ISM-09-4-0.5-1.0		0948		1	X		ON HOLD	
✓	117	ISM-10-A-0.0-0.5	03/27/19	1613		1	X			X

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

OnSite Environmental Inc.
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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ______ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	118	ISM-10-1-0-0.5	03/27/19	1614	Soil	1	X		ON HOLD	
✓	119	ISM-10-2-0-0.5		1615					ON HOLD	
✓	120	ISM-10-3-0-0.5		1616					ON HOLD	
✓	121	ISM-10-4-0-0.5		1617					ON HOLD	
✓	122	ISM-10-A-0.5-1.0		1807						X
✓	123	ISM-10-1-0.5-1.0		1808					ON HOLD	
✓	124	ISM-10-2-0.5-1.0		1809					ON HOLD	
✓	125	ISM-10-3-0.5-1.0		1810					ON HOLD	
✓	126	ISM-10-4-0.5-1.0		1811					ON HOLD	
✓	127	ISM-11-A-0-0.5		0948				⊗		X

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

OnSite Environmental Inc.
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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ____ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
		~~ISM-11-~~ E3	~~03/~~							
✓	128	ISM-11-1-0-0.5	03/27/19	0949	Soil	1	X		ON HOLD	
✓	129	ISM-11-2-0-0.5		0950					ON HOLD	
✓	130	ISM-11-3-0-0.5		0951					ON HOLD	
✓	131	ISM-11-4-0-0.5		0952					ON HOLD	
✓	132	ISM-11-~~A~~-0.5-1.0	03/26/19	1808						X
✓	133	ISM-11-1-0.5-1.0		1809					ON HOLD	
✓	134	ISM-11-2-0.5-1.0		1810					ON HOLD	
✓	135	ISM-11-3-0.5-1.0		1811					ON HOLD	
✓	136	ISM-11-4-0.5-1.0		1812					ON HOLD	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

OnSite Environmental Inc.
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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ____________ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		%moisture
✓	137	ISM-12-A-0-0.5	03/28/19	1305	Soil	1	X	X		X
✓	138	ISM-12-1-0-0.5	03/28/19	1306					ON HOLD	
✓	139	ISM-12-2-0-0.5		1307					ON HOLD	
✓	140	ISM-12-3-0-0.5		1308					ON HOLD	
✓	141	ISM-12-4-0-0.5		1309					ON HOLD	
✓	142	SB-06-10-2.0-2.5 *	03/27/19	1240						X
✓	143	SB-06-22-3.0-3.5 *	03/27/19	1242						X

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

* Non MI Sample Processing.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

OnSite Environmental Inc.
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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ______ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)	~~% moisture~~
✓	144	EB-032819	3/28/19	1357	Water	1	X		~~X~~
✓	145	EB-032719	3/27/19	1838	↓	1	X		~~X~~
✓	146	EB-032619	3/26/19	1824		1	X		~~X~~
✓	147	EB-032519	3/25/19	1722		1	X		~~X~~

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Water Samples Preserved with HNO_3^-

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

OnSite Environmental Inc.
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Chain of Custody

Page 17 of 17

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

Laboratory Number: 03-283

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	148	ISM-12-A-0.5-1.0	03/28/19	1326	Soil	1	X			X
✓	149	ISM-12-1-0.5-1.0		1327				ON HOLD		
✓	150	ISM-12-2-0.5-1.0		1328				ON HOLD		
✓	151	ISM-12-3-0.5-1.0		1329				ON HOLD		
✓	152	ISM-12-4-0.5-1.0		1330				ON HOLD		
✓	153	ISM-13-A-0-0.5		1344						X
✓	154	ISM-13-1-0-0.5		1345				ON HOLD		
✓	155	ISM-13-2-0-0.5		1346				ON HOLD		
✓	156	ISM-13-3-0-0.5		1347				ON HOLD		
		~~ISM-13-4-0-0.5~~ E3		~~134~~				~~ON HOLD~~		

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

OnSite
Environmental Inc.
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May 24, 2019

Josh Gravenmier
Arcadis U.S., Inc.
1100 Olive Way, Suite 800
Seattle, WA 98101

Re: Analytical Data for Project B0003010.0006
Laboratory Reference No. 1903-283B

Dear Josh:

Enclosed are the analytical results and associated quality control data for samples submitted on March 28, 2019.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

Blair Goodrow
Project Manager

Enclosures

Date of Report: May 24, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283B
Project: B0003010.0006

Case Narrative

Samples were collected on March 25, 26, 27, and 28, 2019 and received by the laboratory on March 28, 2019. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Total Lead EPA 6010D Analysis

Samples were sieved through a 2mm sieve prior to digestion and percent moisture determination.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: May 24, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283B
Project: B0003010.0006

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-04-1-0-0.5**					
Laboratory ID:	03-283-37					
Lead	**130**	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-04-2-0-0.5**					
Laboratory ID:	03-283-38					
Lead	**160**	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-04-3-0-0.5**					
Laboratory ID:	03-283-39					
Lead	**160**	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-04-4-0-0.5**					
Laboratory ID:	03-283-40					
Lead	**280**	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-06-1-1.0-1.5**					
Laboratory ID:	03-283-73					
Lead	**150**	5.4	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-06-2-1.0-1.5**					
Laboratory ID:	03-283-74					
Lead	**100**	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-06-3-1.0-1.5**					
Laboratory ID:	03-283-75					
Lead	**690**	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-06-4-1.0-1.5**					
Laboratory ID:	03-283-76					
Lead	**1000**	5.1	EPA 6010D	5-21-19	5-21-19	

Date of Report: May 24, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283B
Project: B0003010.0006

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-06-1-1.5-2.0**					
Laboratory ID:	03-283-78					
Lead	**11**	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-06-2-1.5-2.0**					
Laboratory ID:	03-283-79					
Lead	**11**	5.1	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-06-3-1.5-2.0**					
Laboratory ID:	03-283-80					
Lead	**180**	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-06-4-1.5-2.0**					
Laboratory ID:	03-283-81					
Lead	**630**	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-12-1-0-0.5**					
Laboratory ID:	03-283-138					
Lead	**280**	5.1	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-12-2-0-0.5**					
Laboratory ID:	03-283-139					
Lead	**330**	5.1	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-12-3-0-0.5**					
Laboratory ID:	03-283-140					
Lead	**640**	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-12-4-0-0.5**					
Laboratory ID:	03-283-141					
Lead	**170**	5.1	EPA 6010D	5-21-19	5-21-19	

Date of Report: May 24, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283B
Project: B0003010.0006

TOTAL LEAD
EPA 6010D
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0521SM4					
Lead	**ND**	5.0	EPA 6010D	5-21-19	5-21-19	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	03-283-141										
	ORIG	DUP									
Lead	**161**	**168**	NA	NA		NA		NA	4	20	
MATRIX SPIKES											
Laboratory ID:	03-283-141										
	MS	MSD	MS	MSD		MS	MSD				
Lead	**377**	**385**	250	250	161	**86**	**90**	75-125	2	20	

Date of Report: May 24, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283B
Project: B0003010.0006

% MOISTURE

Date Analyzed: 5-22-19

Client ID	Lab ID	% Moisture
ISM-04-1-0-0.5	03-283-37	4
ISM-04-2-0-0.5	03-283-38	4
ISM-04-3-0-0.5	03-283-39	3
ISM-04-4-0-0.5	03-283-40	3
ISM-06-1-1.0-1.5	03-283-73	7
ISM-06-2-1.0-1.5	03-283-74	4
ISM-06-3-1.0-1.5	03-283-75	4
ISM-06-4-1.0-1.5	03-283-76	3
ISM-06-1-1.5-2.0	03-283-78	4
ISM-06-2-1.5-2.0	03-283-79	3
ISM-06-3-1.5-2.0	03-283-80	3
ISM-06-4-1.5-2.0	03-283-81	4
ISM-12-1-0-0.5	03-283-138	3
ISM-12-2-0-0.5	03-283-139	2
ISM-12-3-0-0.5	03-283-140	4
ISM-12-4-0-0.5	03-283-141	3

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

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Chain of Custody

Page 1 of 17

Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
1	ISM-01-A-0-0.5	3/25/19	1401	Soil	1	X			X
2	ISM-01-1-0-0.5	↓	1402	↓	1	X		On Hold	
3	ISM-01-2-0-0.5		1403		1	X		On Hold	
4	ISM-01-3-0-0.5		1404		1	X		On Hold	
5	ISM-01-4-0-0.5		1405		1	X		On Hold	
6	ISM-01-A-0.5-1.0	3/26/19	1428		1	X			X
7	ISM-01-1-0.5-1.0	↓	1429		1	X		On Hold	
8	ISM-01-2-0.5-1.0		1430		1	X		On Hold	
9	ISM-01-3-0.5-1.0		1431		1	X		On Hold	
10	ISM-01-4-0.5-1.0		1432		1	X		On Hold	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received	Kelly [illegible]	OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

(X) Added 4/9/19 STA

○ Added 5/14/19 STA
Total Lead

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)																				% moisture
✓ 11	ISM-01-A-1.0-1.5	3/27/19	1525	Soil	1	X																					X
✓ 12	ISM-01-1-1.0-1.5	↓	1526	↓	1	X		On Hold																			
✓ 13	ISM-01-2-1.0-1.5		1527		1	X		On Hold																			
✓ 14	ISM-01-3-1.0-1.5		1528		1	X		On Hold																			
✓ 15	ISM-01-4-1.0-1.5		1529		1	X		On Hold																			
✓ 16	ISM-02-A-0-0.5	3/25/19	1622		1	X																					X
✓ 17	ISM-02-1-0-0.5	↓	1623		1	X		On Hold																			
✓ 18	ISM-02-2-0-0.5		1624		1	X		On Hold																			
✓ 19	ISM-02-3-0-0.5		1625		1	X		On Hold																			
	~~ISM-02-4-0-0.5~~		~~1626~~		~~1~~	~~X~~		~~On Hold~~																			

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ____________ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	20	ISM-02-A-0.5-1.0	3/26/19	1041	Soil	1	X			X
✓	21	ISM-02-1-0.5-1.0	↓	1042	↓	1	X		On Hold	
✓	22	ISM-02-2-0.5-1.0		1043		1	X		On Hold	
✓	23	ISM-02-3-0.5-1.0		1044		1	X		On Hold	
✓	24	ISM-02-B-0-0.5	3/27/19	916		1	X			X
✓	25	ISM-02-C-0-0.5	3/27/19	916		1	X			X
✓	26	ISM-03-A-0-0.5	3/25/19	1258		1	X			X
✓	27	ISM-03-1-0-0.5	3/25/19	1259		1	X		On Hold	
✓	28	ISM-03-2-0-0.5	3/25/19	1300		1	X		On Hold	
✓	29	ISM-03-3-0-0.5	3/25/19	1301		1	X		On Hold	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ____________ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	30	Ism-03-4-0-0.5	3/25/19	1302	Soil	1	X		On Hold	
✓	31	Ism-03-A-0.5-1.0	3/25/19	1538		1	X			X
✓	32	Ism-03-1-0.5-1.0		1539		1	X		On Hold	
✓	33	Ism-03-2-0.5-1.0		1540		1	X		On Hold	
✓	34	Ism-03-3-0.5-1.0		1541		1	X		On Hold	
✓	35	Ism-03-4-0.5-1.0	↓	1542		1	X		On Hold	
✓	36	Ism-04-A-0-0.5	3/27/19	1503 ~~1603~~		1	X	⊗		X
✓	37	Ism-04-1-0-0.5		1526 ~~1626~~		1	⊗		~~On Hold~~	⊗
✓	38	Ism-04-2-0-0.5		1527 ~~1627~~		1	⊗		~~On Hold~~	⊗
✓	39	Ism-04-3-0-0.5	↓	1528 ~~1628~~	↓	1	⊗		~~On Hold~~	⊗

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				

Reviewed/Date

Reviewed/Date

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis

Project Number: B0003010.0006

Project Name: USCG Burrows Island

Project Manager: Josh Gravenmier

Sampled by:

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day

☐ 2 Days ☐ 3 Days

☐ Standard (7 Days)

☐ ____________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓ 40	ISM-04-4-0-0.5	3/27/19	~~[illegible]~~ 1529	Soil	1	X		~~On Hold~~	X
✓ 41	ISM-04-A-0.5-1.0	3/27/19	1718		1	X			X
✓ 42	ISM-04-1-0.5-1.0		1719		1	X		On Hold	
✓ 43	ISM-04-2-0.5-1.0		1720		1	X		On Hold	
✓ 44	ISM-04-3-0.5-1.0		1721		1	X		On Hold	
✓ 45	ISM-04-4-0.5-1.0		1722		1	X		On Hold	
	~~ISM-05-A-0-0.5~~	~~3/28/19~~	~~1106~~		~~1~~	~~X~~		mu	
	~~ISM-05-1-0-0.5~~		~~1107~~		~~1~~	~~X~~		~~On Hold~~	
	~~ISM-05-2-0-0.5~~		~~1108~~		~~1~~	~~X~~		~~On H~~	
	~~ISM-05-3-0-0.5~~		~~1109~~		~~1~~	~~X~~			

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received	Wesley Lisem	OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ulecy

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ______ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)	% moisture
✓	50	ISM-05-A-0-0.5	03/28/19	11:06	Soil	1	X		X
✓	51	ISM-05-1-0-0.5	03/28/19	11:07			X	ON HOLD	
✓	52	ISM-05-2-0-0.5	03/28/19	11:08			X	ON HOLD	
✓	53	ISM-05-3-0-0.5	03/28/19	11:09			X	ON HOLD	
✓	54	ISM-05-4-0-0.5	03/28/19	11:10			X	ON HOLD	
✓	55	ISM-05-A-0.5-1.0	03/28/19	12:28			X		X
✓	56	ISM-05-1-0.5-1.0	03/28/19	12:29			X	ON HOLD	
✓	57	ISM-05-2-0.5-1.0	03/28/19	12:30			X	ON HOLD	
✓	58	ISM-05-3-0.5-1.0	03/28/19	12:31			X	ON HOLD	
✓	59	ISM-05-4-0.5-1.0	03/28/19	12:32			X	ON HOLD	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓ 60	ISM-06-A-0-0.5	03/25/19	1713 ~~051323~~	Soil	1	X	ⓧ		X
✓ 61	ISM-06-1-0-0.5	│	1714	│	│	│		ON HOLD	
✓ 62	ISM-06-2-0-0.5	│	1715	│	│	│		ON HOLD	
✓ 63	ISM-06-3-0-0.5	│	1716	│	│	│		ON HOLD	
✓ 64	ISM-06-4-0-0.5	↓	1717	│	│	│		ON HOLD	
✓ 65	ISM-06-B-0-0.5	03/27/19	1805	│	│	│	ⓧ		X
✓ 66	ISM-06-C-0-0.5	03/27/19	1840	│	│	│	ⓧ		X
✓ 67	ISM-06-A-0.5-1.0	03/26/19	1146	│	│	│	ⓧ		X
✓ 68	ISM-06-1-0.5-1.0	│	1147	│	│	│		On Hold	
✓ 69	ISM-06-2-0.5-1.0	│	1148	│	│	│		On Hold	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	70	ISM-06-3-0.5-1.0	03/26/19	1149	Soil	1	x		ON HOLD	
✓	71	ISM-06-4-0.5-1.0	03/26/19	1150					ON HOLD	
✓	72	ISM-06-A-1.0-1.5	03/27/19	1056				⊗		X
✓	73	ISM-06-1-1.0-1.5		1115			⊗		~~ON HOLD~~	⊗
✓	74	ISM-06-2-1.0-1.5		1116			⊗		~~ON HOLD~~	⊗
✓	75	ISM-06-3-1.0-1.5		1117			⊗		~~ON HOLD~~	⊗
✓	76	ISM-06-4-1.0-1.5		1118			⊗		~~ON HOLD~~	⊗
✓	77	ISM-06-A-1.5-2.0		1146				⊗		X
✓	78	ISM-06-1-1.5-2.0		1153			⊗		~~ON HOLD~~	⊗
✓	79	ISM-06-2-1.5-2.0	↓	1154	↓	↓	⊗		~~ON HOLD~~	⊗

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	80	ISM-06-3-1.5-2.0	03/27/19	1155	Soil	1	ⓧ		~~ON HOLD~~	ⓧ
✓	81	ISM-06-4-1.5-2.0	03/27/19	1156		1	ⓧ		~~ON HOLD~~	ⓧ
		~~ISM-06-A-2.0-2.5~~ 83								
		~~SB-06-A~~ 83								
✓	82	ISM-07-A-0-0.5	03/26/19	1238		1	X	ⓧ		X
✓	83	ISM-07-1-0-0.5		1239		1	X		ON HOLD	
✓	84	ISM-07-2-0-0.5		1240		1	X		ON HOLD	
✓	85	ISM-07-3-0-0.5		1241		1	X		ON HOLD	
✓	86	ISM-07-A-0.5-1.0		1348		1	X			X
✓	87	ISM-07-1-0.5-1.0		1349		1	X		ON HOLD	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received	Kseu Ezseew	OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ______ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	88	ISM-07-2-0.5-1.0	03/26/19	1350	Soil	1	X		ON HOLD	
✓	89	ISM-07-3-0.5-1.0	03/26/19	1351		1	X		ON HOLD	
✓	90	ISM-08-A-0-0.5		1602		1	X	ⓧ		X
✓	91	ISM-08-1-0-0.5		1616		1	X		ON HOLD	
✓	92	ISM-08-2-0-0.5		1617		1	X		ON HOLD	
✓	93	ISM-08-3-0-0.5		1618		1	X		ON HOLD	
✓	94	ISM-08-4-0-0.5		1619		1	X		ON HOLD	
✓	95	ISM-08-B-0-0.5	03/27/19	1220		1	X	ⓧ		X
✓	96	ISM-08-C-0-0.5	03/27/19	1502		1	X	ⓧ		X
✓	97	ISM-08-A-0.5-1.0	03/26/19	1701		1	X			X

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/26/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	98	ISM-08-1-0.5-1.0	03/26/19	1733	Soil	1	X		ON HOLD	
✓	99	ISM-08-2-0.5-1.0		1734		1	X		ON HOLD	
✓	100	ISM-08-3-0.5-1.0		1735		1	X		ON HOLD	
✓	101	ISM-08-4-0.5-1.0		1736		1	X		ON HOLD	
✓	102	ISM-08-A-1.0-1.5	03/27/19	1027		1	X	X		X
✓	103	ISM-08-1-1.0-1.5		1046		1	X		ON HOLD	
✓	104	ISM-08-2-1.0-1.5		1047		1	X		ON HOLD	
✓	105	ISM-08-3-1.0-1.5		1048		1	X		ON HOLD	
✓	106	ISM-08-4-1.0-1.5		1049		1	X		ON HOLD	
✓	107	ISM-09-A-0-0.5	03/28/19	0921		1	X			X

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ______ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	108	ISM-09-1-0-0.5	03/28/19	0922	Soil	1	X		ON HOLD	
✓	109	ISM-09-2-0-0.5		0923		1	X		ON HOLD	
✓	110	ISM-09-3-0-0.5		0924		1	X		ON HOLD	
✓	111	ISM-09-4-0-0.5		0925		1	X		ON HOLD	
✓	112	ISM-09-A-0.5-1.0		0944		1	X			X
✓	113	ISM-09-1-0.5-1.0		0945		1	X		ON HOLD	
✓	114	ISM-09-2-0.5-1.0		0946		1	X		ON HOLD	
✓	115	ISM-09-3-0.5-1.0		0947		1	X		ON HOLD	
✓	116	ISM-09-4-0.5-1.0		0948		1	X		ON HOLD	
✓	117	ISM-10-A-0.0-0.5	03/27/19	1613		1	X			X

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ______ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
√	118	ISM-10-1-0-0.5	03/27/19	1614	Soil	1	X		ON HOLD	
√	119	ISM-10-2-0-0.5		1615					ON HOLD	
√	120	ISM-10-3-0-0.5		1616					ON HOLD	
√	121	ISM-10-4-0-0.5		1617					ON HOLD	
√	122	ISM-10-A-0.5-1.0		1807						X
√	123	ISM-10-1-0.5-1.0		1808					ON HOLD	
√	124	ISM-10-2-0.5-1.0		1809					ON HOLD	
√	125	ISM-10-3-0.5-1.0		1810					ON HOLD	
√	126	ISM-10-4-0.5-1.0		1811					ON HOLD	
√	127	ISM-11-A-0-0.5		0948				⊗		X

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
	~~ISM-11-~~ E3	~~03/~~							
128	ISM-11-1-0-0.5	03/27/19	0949	Soil	1	X		ON HOLD	
129	ISM-11-2-0-0.5		0950					ON HOLD	
130	ISM-11-3-0-0.5		0951					ON HOLD	
131	ISM-11-4-0-0.5		0952					ON HOLD	
132	ISM-11-~~A~~-0.5-1.0	03/26/19	1808						X
133	ISM-11-1-0.5-1.0		1809					ON HOLD	
134	ISM-11-2-0.5-1.0		1810					ON HOLD	
135	ISM-11-3-0.5-1.0		1811					ON HOLD	
136	ISM-11-4-0.5-1.0		1812					ON HOLD	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

Laboratory Number: 03-283

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		%moisture
✓ 137	ISM-12-A-0-0.5	03/28/19	1305	Soil	1	X	X		X
✓ 138	ISM-12-1-0-0.5	03/28/19	1306			X		~~ON HOLD~~	X
✓ 139	ISM-12-2-0-0.5		1307			X		~~ON HOLD~~	X
✓ 140	ISM-12-3-0-0.5		1308			X		~~ON HOLD~~	X
✓ 141	ISM-12-4-0-0.5		1309			X		~~ON HOLD~~	X
✓ 142	SB-06-10-2.0-2.5 *	03/27/19	1240						X
✓ 143	SB-06-22-3.0-3.5 *	03/27/19	1242						X

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

* Non MI Sample processing.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ______ (other)

Laboratory Number: 03-283

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)																				~~% moisture~~
✓ 144	EB-032819	3/28/19	1357	Water	1	X																					~~X~~
✓ 145	EB-032719	3/27/19	1835	↓	1	X																					~~X~~
✓ 146	EB-032619	3/26/19	1824	↓	1	X																					~~X~~
✓ 147	EB-032519	3/25/19	1722	↓	1	X																					~~X~~

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Water Samples preserved with HNO_3^-

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ______ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	148	ISM-12-A-0.5-1.0	03/28/19	1326	Soil	1	X			X
✓	149	ISM-12-1-0.5-1.0		1327					ON HOLD	
✓	150	ISM-12-2-0.5-1.0		1328					ON HOLD	
✓	151	ISM-12-3-0.5-1.0		1329					ON HOLD	
✓	152	ISM-12-4-0.5-1.0		1330					ON HOLD	
✓	153	ISM-13-A-0-0.5		1344						X
✓	154	ISM-13-1-0-0.5		1345					ON HOLD	
✓	155	ISM-13-2-0-0.5		1346					ON HOLD	
✓	156	ISM-13-3-0-0.5		1347					ON HOLD	
		~~ISM-13-4-0-0.5~~ EB		~~134~~					~~ON HOLD~~	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

OnSite
Environmental Inc.
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June 7, 2019

Josh Gravenmier
Arcadis U.S., Inc.
1100 Olive Way, Suite 800
Seattle, WA 98101

Re: Analytical Data for Project B0003010.0006
Laboratory Reference No. 1903-283C

Dear Josh:

Enclosed are the analytical results and associated quality control data for samples submitted on March 28, 2019.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

Blair Goodrow
Project Manager

Enclosures

Date of Report: June 7, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283C
Project: B0003010.0006

Case Narrative

Samples were collected on March 25, 26, 27, and 28, 2019 and received by the laboratory on March 28, 2019. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

TCLP Lead EPA 1311/6010D Analysis

Due to a limited amount of sample, less than the required 100g was tumbled for TCLP analysis. The amount of sample used for ISM-06-4-1.0-1.5, (03-283-76) was 10g and the amount of sample used for ISM-12-3-0-0.5, (03-283-140) was 25g.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: June 7, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283C
Project: B0003010.0006

TCLP LEAD
EPA 1311/6010D

Matrix: TCLP Extract
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-06-4-1.0-1.5**					
Laboratory ID:	03-283-76					
Lead	**0.71**	0.20	EPA 6010D	5-31-19	5-31-19	
Client ID:	**ISM-12-3-0-0.5**					
Laboratory ID:	03-283-140					
Lead	**ND**	0.20	EPA 6010D	5-31-19	5-31-19	

Date of Report: June 7, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283C
Project: B0003010.0006

TCLP LEAD
EPA 1311/6010D
QUALITY CONTROL

Matrix: TCLP Extract
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0531TM1					
Lead	**ND**	0.20	EPA 6010D	5-31-19	5-31-19	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	05-118-01										
	ORIG	DUP									
Lead	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	05-118-01										
	MS	MSD	MS	MSD		MS	MSD				
Lead	**8.77**	**8.67**	10.0	10.0	ND	**88**	**87**	75-125	1	20	

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

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Chain of Custody

Page 1 of 17

Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
1	ISM-01-A-0-0.5	3/25/19	1401	Soil	1	X			X
2	ISM-01-1-0-0.5	↓	1402	↓	1	X		On Hold	
3	ISM-01-2-0-0.5	↓	1403	↓	1	X		On Hold	
4	ISM-01-3-0-0.5	↓	1404	↓	1	X		On Hold	
5	ISM-01-4-0-0.5	↓	1405	↓	1	X		On Hold	
6	ISM-01-A-0.5-1.0	3/26/19	1428	↓	1	X			X
7	ISM-01-1-0.5-1.0	↓	1429	↓	1	X		On Hold	
8	ISM-01-2-0.5-1.0	↓	1430	↓	1	X		On Hold	
9	ISM-01-3-0.5-1.0	↓	1431	↓	1	X		On Hold	
10	ISM-01-4-0.5-1.0	↓	1432	↓	1	X		On Hold	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received	Kelly Lissell	OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

(X) Added 4/9/19 STA

○ Added 5/14/19 STA
Total Lead

● Added 5-29 KL (STA)

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

Page 2 of 17

Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓ 11	~~ISM-01-A~~ ISM-01-A-1.0-1.5	3/27/19	1525	Soil	1	X			X
✓ 12	ISM-01-1-1.0-1.5		1526		1	X		On Hold	
✓ 13	ISM-01-2-1.0-1.5		1527		1	X		On Hold	
✓ 14	ISM-01-3-1.0-1.5		1528		1	X		On Hold	
✓ 15	ISM-01-4-1.0-1.5		1529		1	X		On Hold	
✓ 16	ISM-02-A-0-0.5	3/25/19	1622		1	X			X
✓ 17	ISM-02-1-0-0.5		1623		1	X		On Hold	
✓ 18	ISM-02-2-0-0.5		1624		1	X		On Hold	
✓ 19	ISM-02-3-0-0.5		1625		1	X		On Hold	
	~~ISM-02-4-0-0.5~~		~~1626~~		~~1~~	~~X~~		~~On Hold~~	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ______ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	20	ISM-02-A-0.5-1.0	3/26/19	1041	Soil	1	X			X
✓	21	ISM-02-1-0.5-1.0		1042		1	X		On Hold	
✓	22	ISM-02-2-0.5-1.0		1043		1	X		On Hold	
✓	23	ISM-02-3-0.5-1.0		1044		1	X		On Hold	
✓	24	ISM-02-B-0-0.5	3/27/19	916		1	X			X
✓	25	ISM-02-C-0-0.5	3/27/19	916		1	X			X
✓	26	ISM-03-A-0-0.5	3/25/19	1258		1	X			X
✓	27	ISM-03-1-0-0.5	3/25/19	1259		1	X		On Hold	
✓	28	ISM-03-2-0-0.5	3/25/19	1300		1	X		On Hold	
✓	29	ISM-03-3-0-0.5	3/25/19	1301		1	X		On Hold	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓ 30	Ism-03-4-0-0.5	3/25/19	1302	Soil	1	X		On Hold	
✓ 31	Ism-03-A-0.5-1.0	3/25/19	1538	↓	1	X			X
✓ 32	Ism-03-1-0.5-1.0	↓	1539	↓	1	X		On Hold	
✓ 33	Ism-03-2-0.5-1.0	↓	1540	↓	1	X		On Hold	
✓ 34	Ism-03-3-0.5-1.0	↓	1541	↓	1	X		On Hold	
✓ 35	Ism-03-4-0.5-1.0	↓	1542	↓	1	X		On Hold	
✓ 36	Ism-04-A-0-0.5	3/27/19	~~1603~~ 1503	↓	1	X	⊗		X
✓ 37	Ism-04-1-0-0.5	↓	~~1626~~ 1526	↓	1	⊗		~~On Hold~~	⊗
✓ 38	Ism-04-2-0-0.5	↓	~~1627~~ 1527	↓	1	⊗		~~On Hold~~	⊗
✓ 39	Ism-04-3-0-0.5	↓	~~1628~~ 1528	↓	1	⊗		~~On Hold~~	⊗

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)			% moisture
✓ 40	ISM-04-4-0-0.5	3/27/19	1529	Soil	1	ⓧ		~~On Hold~~		ⓧ
✓ 41	ISM-04-A-0.5-1.0	3/27/19	1718	↓	1	X				X
✓ 42	ISM-04-1-0.5-1.0	↓	1719		1	X		On Hold		
✓ 43	ISM-04-2-0.5-1.0		1720		1	X		On Hold		
✓ 44	ISM-04-3-0.5-1.0		1721		1	X		On Hold		
✓ 45	ISM-04-4-0.5-1.0		1722		1	X		On Hold		
	~~ISM-05-A-0-0.5~~	~~3/28/19~~	~~1106~~		~~1~~	~~X~~			mu	
	~~ISM-05-1-0-0.5~~	↓	~~1107~~		~~1~~	~~X~~		~~On Hold~~		
	~~ISM-05-2-0-0.5~~		~~1108~~		~~1~~	~~X~~		~~On H~~		
	~~ISM-05-3-0-0.5~~		~~1109~~		~~1~~	~~X~~				

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ____________ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)	% moisture
✓	50	ISM-05-A-0-0.5	03/28/19	11:06	Soil	1	X		X
✓	51	ISM-05-1-0-0.5	03/28/19	11:07			X	ON HOLD	
✓	52	ISM-05-2-0-0.5	03/28/19	11:08			X	ON HOLD	
✓	53	ISM-05-3-0-0.5	03/28/19	11:09			X	ON HOLD	
✓	54	ISM-05-4-0-0.5	03/28/19	11:10			X	ON HOLD	
✓	55	ISM-05-A-0.5-1.0	03/28/19	12:28			X		X
✓	56	ISM-05-1-0.5-1.0	03/28/19	12:29			X	ON HOLD	
✓	57	ISM-05-2-0.5-1.0	03/28/19	12:30			X	ON HOLD	
✓	58	ISM-05-3-0.5-1.0	03/28/19	12:31			X	ON HOLD	
✓	59	ISM-05-4-0.5-1.0	03/28/19	12:32			X	ON HOLD	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ______ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	60	ISM-06-A-0-0.5	03/25/19	1713 ~~0513~~	Soil	1	X	⊗		X
✓	61	ISM-06-1-0-0.5		1714					ON HOLD	
✓	62	ISM-06-2-0-0.5		1715					ON HOLD	
✓	63	ISM-06-3-0-0.5		1716					ON HOLD	
✓	64	ISM-06-4-0-0.5		1717					ON HOLD	
✓	65	ISM-06-B-0-0.5	03/27/19	1805				⊗		X
✓	66	ISM-06-C-0-0.5	03/27/19	1840				⊗		X
✓	67	ISM-06-A-0.5-1.0	03/26/19	1146				⊗		X
✓	68	ISM-06-1-0.5-1.0		1147					ON Hold	
✓	69	ISM-06-2-0.5-1.0		1148					ON Hold	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	70	ISM-06-3-0.5-1.0	03/26/19	1149	Soil	1	x		ON HOLD	
✓	71	ISM-06-4-0.5-1.0	03/26/19	1150	↓	↓	↓		ON HOLD	
✓	72	ISM-06-A-1.0-1.5	03/27/19	1056				⊗		X
✓	73	ISM-06-1-1.0-1.5	↓	1115			⊗		~~ON HOLD~~	⊗
✓	74	ISM-06-2-1.0-1.5		1116			⊗		~~ON HOLD~~	⊗
✓	75	ISM-06-3-1.0-1.5		1117			⊗		~~ON HOLD~~	⊗
✓	76	ISM-06-4-1.0-1.5		1118			⊗	●	~~ON HOLD~~	⊗
✓	77	ISM-06-A-1.5-2.0		1146				⊗		X
✓	78	ISM-06-1-1.5-2.0		1153			⊗		~~ON HOLD~~	⊗
✓	79	ISM-06-2-1.5-2.0	↓	1154	↓	↓	⊗		~~ON HOLD~~	⊗

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).
● Added 5-29 KL (STA)

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)	Cancel	% moisture
✓	80	ISM-06-3-1.5-2.0	03/27/19	1155	Soil	1	(X)		~~ON HOLD~~	(x)
✓	81	ISM-06-4-1.5-2.0	03/27/19	1156		1	(X)	●	~~ON HOLD~~	(x)
		~~ISM-06-A-2.0-2.5~~ EB								
		~~SB-06-A~~ EB								
✓	82	ISM-07-A-0-0.5	03/26/19	1238		1	X	(X)		X
✓	83	ISM-07-1-0-0.5		1239		1	X		ON HOLD	
✓	84	ISM-07-2-0-0.5		1240		1	X		ON HOLD	
✓	85	ISM-07-3-0-0.5		1241		1	X		ON HOLD	
✓	86	ISM-07-A-0.5-1.0		1348		1	X			X
✓	87	ISM-07-1-0.5-1.0		1349		1	X		ON HOLD	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

Laboratory Number: 03-283

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	88	ISM-07-2-0.5-1.0	03/26/19	1350	Soil	1	X		ON HOLD	
✓	89	ISM-07-3-0.5-1.0	03/26/19	1351		1	X		ON HOLD	
✓	90	ISM-08-A-0-0.5		1602		1	X	⊗		X
✓	91	ISM-08-1-0-0.5		1616		1	X		ON HOLD	
✓	92	ISM-08-2-0-0.5		1617		1	X		ON HOLD	
✓	93	ISM-08-3-0-0.5		1618		1	X		ON HOLD	
✓	94	ISM-08-4-0-0.5		1619		1	X		ON HOLD	
✓	95	ISM-08-B-0-0.5	03/27/19	1220		1	X	⊗		X
✓	96	ISM-08-C-0-0.5	03/27/19	1502		1	X	⊗		X
✓	97	ISM-08-A-0.5-1.0	03/26/19	1701		1	X			X

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				

Comments/Special Instructions
* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Reviewed/Date
Reviewed/Date

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	98	ISM-08-1-0.5-1.0	03/26/19	1733	Soil	1	X		ON HOLD	
✓	99	ISM-08-2-0.5-1.0		1734		1	X		ON HOLD	
✓	100	ISM-08-3-0.5-1.0		1735		1	X		ON HOLD	
✓	101	ISM-08-4-0.5-1.0		1736		1	X		ON HOLD	
✓	102	ISM-08-A-1.0-1.5	03/27/19	1027		1	X	Ⓧ		X
✓	103	ISM-08-1-1.0-1.5		1046		1	X		ON HOLD	
✓	104	ISM-08-2-1.0-1.5		1047		1	X		ON HOLD	
✓	105	ISM-08-3-1.0-1.5		1048		1	X		ON HOLD	
✓	106	ISM-08-4-1.0-1.5		1049		1	X		ON HOLD	
✓	107	ISM-09-A-0-0.5	03/28/19	0921		1	X			X

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				

Comments/Special Instructions
* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Reviewed/Date
Reviewed/Date
Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

OnSite Environmental Inc.
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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ____ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	108	ISM-09-1-0-0.5	03/28/19	0922	Soil	1	X		ON HOLD	
✓	109	ISM-09-2-0-0.5		0923		1	X		ON HOLD	
✓	110	ISM-09-3-0-0.5		0924		1	X		ON HOLD	
✓	111	ISM-09-4-0-0.5		0925		1	X		ON HOLD	
✓	112	ISM-09-A-0.5-1.0		0944		1	X			X
✓	113	ISM-09-1-0.5-1.0		0945		1	X		ON HOLD	
✓	114	ISM-09-2-0.5-1.0		0946		1	X		ON HOLD	
✓	115	ISM-09-3-0.5-1.0		0947		1	X		ON HOLD	
✓	116	ISM-09-4-0.5-1.0		0948		1	X		ON HOLD	
✓	117	ISM-10-A-0.0-0.5	03/27/19	1613		1	X			X

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				

Reviewed/Date

Reviewed/Date

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	118	ISM-10-1-0-0.5	03/27/19	1614	Soil	1	X		ON HOLD	
✓	119	ISM-10-2-0-0.5		1615					ON HOLD	
✓	120	ISM-10-3-0-0.5		1616					ON HOLD	
✓	121	ISM-10-4-0-0.5		1617					ON HOLD	
✓	122	ISM-10-A-0.5-1.0		1807						X
✓	123	ISM-10-1-0.5-1.0		1808					ON HOLD	
✓	124	ISM-10-2-0.5-1.0		1809					ON HOLD	
✓	125	ISM-10-3-0.5-1.0		1810					ON HOLD	
✓	126	ISM-10-4-0.5-1.0		1811					ON HOLD	
✓	127	ISM-11-A-0-0.5		0948				ⓧ		X

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				

Comments/Special Instructions
* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Reviewed/Date

Reviewed/Date

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Laboratory Number: 03-283

Company: Arcadis

Project Number: B0003010.0006

Project Name: USCG Burrows Island

Project Manager: Josh Gravenmier

Sampled by:

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day

☐ 2 Days ☐ 3 Days

☐ Standard (7 Days)

☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moistore
	~~ISM-11-~~ E3	~~03~~							
✓ 128	ISM-11-1-0-0.5	03/27/19	0949	Soil	1	X		ON HOLD	
✓ 129	ISM-11-2-0-0.5		0950					ON HOLD	
✓ 130	ISM-11-3-0-0.5		0951					ON HOLD	
✓ 131	ISM-11-4-0-0.5		0952					ON HOLD	
✓ 132	ISM-11-~~A~~-0.5-1.0	03/26/19	1808						X
✓ 133	ISM-11-1-0.5-1.0		1809					ON HOLD	
✓ 134	ISM-11-2-0.5-1.0		1810					ON HOLD	
✓ 135	ISM-11-3-0.5-1.0		1811					ON HOLD	
✓ 136	ISM-11-4-0.5-1.0		1812					ON HOLD	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ______ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		%moisture
✓	137	ISM-12-A-0-0.5	03/28/19	1305	Soil	1	X	(X)		X
✓	138	ISM-12-1-0-0.5	03/28/19	1306			(X)		~~ON HOLD~~	(X)
✓	139	ISM-12-2-0-0.5		1307			(X)		~~ON HOLD~~	(X)
✓	140	ISM-12-3-0-0.5		1308			(X)	●	~~ON HOLD~~	(X)
✓	141	ISM-12-4-0-0.5		1309			(X)		~~ON HOLD~~	(X)
✓	142	SB-06-10-2.0-2.5 *	03/27/19	1240						X
✓	143	SB-06-22-3.0-3.5 *	03/27/19	1242						X

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

* Non MI Sample processing.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)	~~% moisture~~
✓ 144	EB-032819	3/28/19	1357	Water	1	X		~~X~~
✓ 145	EB-032719	3/27/19	1838	↓	1	X		~~X~~
✓ 146	EB-032619	3/26/19	1824		1	X		~~X~~
✓ 147	EB-032519	3/25/19	1722		1	X		~~X~~

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Water Samples preserved with HNO_3-

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	148	ISM-12-A-0.5-1.0	03/28/19	1326	Soil	1	X			X
✓	149	ISM-12-1-0.5-1.0		1327					ON HOLD	
✓	150	ISM-12-2-0.5-1.0		1328					ON HOLD	
✓	151	ISM-12-3-0.5-1.0		1329					ON HOLD	
✓	152	ISM-12-4-0.5-1.0		1330					ON HOLD	
✓	153	ISM-13-A-0-0.5		1344						X
✓	154	ISM-13-1-0-0.5		1345					ON HOLD	
✓	155	ISM-13-2-0-0.5		1346					ON HOLD	
✓	156	ISM-13-3-0-0.5		1347					ON HOLD	
		~~ISM-13-4-0-0.5~~ EB		~~134~~					~~ON HOLD~~	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				

Reviewed/Date

Reviewed/Date

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

April 26, 2019

Josh Gravenmier
Arcadis U.S., Inc.
1100 Olive Way, Suite 800
Seattle, WA 98101

Re: Analytical Data for Project B0003010.0006
Laboratory Reference No. 1904-015

Dear Josh:

Enclosed are the analytical results and associated quality control data for samples submitted on April 2, 2019.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

Blair Goodrow
Project Manager

Enclosures

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

Case Narrative

Samples were collected on March 29, 30, 31 and April 1, 2019 and received by the laboratory on April 2, 2019. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Dx (soil) Analysis

Below are the carbon ranges for the specific compounds being reported:

Diesel Fuel #2 – C10-C24
Mineral Oil – C14-C28
Lube Oil – C20-C40

Volatiles EPA 8260C (soil) Analysis

Surrogate Standard 4-Bromofluorobenzene is outside control limits for sample SB-107-3-0-0.5 due to sample matrix effects.

Method 5035A VOA vials were not provided for samples SB-112-6-0-0.5 and SB-107-3-0-0.5. The samples were each therefore extracted from an eight-ounce jar and analyzed. Some loss of volatiles may have occurred.

TCLP Lead EPA 1311/6010D Analysis

Due to a limited amount of sample for ISM-15-4-0.5-1.0 (04-015-19), less than the required 100g was tumbled for TCLP analysis. The amount of sample used was: 50g.

Please note that any other QA/QC issues associated with these extractions and analyses will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-13-A-0.5-1.0**					
Laboratory ID:	04-015-01					
Lead	**62**	5.4	EPA 6010D	4-15-19	4-15-19	
Client ID:	**ISM-13-B-0-0.5**					
Laboratory ID:	04-015-05					
Lead	**130**	5.5	EPA 6010D	4-15-19	4-15-19	
Client ID:	**ISM-13-C-0-0.5**					
Laboratory ID:	04-015-06					
Lead	**200**	5.9	EPA 6010D	4-15-19	4-15-19	
Client ID:	**ISM-14-A-0-0.5**					
Laboratory ID:	04-015-07					
Lead	**350**	6.1	EPA 6010D	4-15-19	4-15-19	
Client ID:	**ISM-14-A-0.5-1.0**					
Laboratory ID:	04-015-11					
Lead	**130**	5.9	EPA 6010D	4-15-19	4-15-19	
Client ID:	**ISM-15-A-0-0.5**					
Laboratory ID:	04-015-14					
Lead	**160**	6.2	EPA 6010D	4-15-19	4-15-19	
Client ID:	**ISM-15-A-0.5-1.0**					
Laboratory ID:	04-015-19					
Lead	**260**	5.4	EPA 6010D	4-15-19	4-15-19	
Client ID:	**ISM-15-A-1.0-1.5**					
Laboratory ID:	04-015-24					
Lead	**72**	5.3	EPA 6010D	4-15-19	4-15-19	

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-16-A-0-0.5**					
Laboratory ID:	04-015-29					
Lead	**18**	5.6	EPA 6010D	4-15-19	4-15-19	
Client ID:	**ISM-16-A-0.5-1.0**					
Laboratory ID:	04-015-32					
Lead	**8.6**	5.7	EPA 6010D	4-15-19	4-15-19	
Client ID:	**ISM-17-A-0-0.5**					
Laboratory ID:	04-015-35					
Lead	**91**	5.9	EPA 6010D	4-15-19	4-15-19	
Client ID:	**ISM-17-A-0.5-1.0**					
Laboratory ID:	04-015-40					
Lead	**41**	5.2	EPA 6010D	4-15-19	4-15-19	
Client ID:	**ISM-18-A-0-0.5**					
Laboratory ID:	04-015-45					
Lead	**220**	5.3	EPA 6010D	4-15-19	4-15-19	
Client ID:	**ISM-18-A-0.5-1.0**					
Laboratory ID:	04-015-50					
Lead	**180**	5.3	EPA 6010D	4-15-19	4-15-19	

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

TOTAL LEAD
EPA 6010D
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0415SM2					
Lead	**ND**	5.0	EPA 6010D	4-15-19	4-15-19	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-043-81										
	ORIG	DUP									
Lead	**11.3**	**15.1**	NA	NA		NA		NA	29	20	C
MATRIX SPIKES											
Laboratory ID:	04-043-81										
	MS	MSD	MS	MSD		MS	MSD				
Lead	**249**	**244**	250	250	11.3	**95**	**93**	75-125	2	20	

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-106-1-0-0.5**					
Laboratory ID:	04-015-55					
Lead	**44**	5.8	EPA 6010D	4-9-19	4-9-19	
Client ID:	**SB-106-1-2-2.3**					
Laboratory ID:	04-015-56					
Lead	**ND**	6.2	EPA 6010D	4-9-19	4-9-19	
Client ID:	**SB-DUP-1**					
Laboratory ID:	04-015-57					
Lead	**9.2**	6.5	EPA 6010D	4-9-19	4-9-19	
Client ID:	**SB-106-2-0-0.5**					
Laboratory ID:	04-015-58					
Lead	**110**	11	EPA 6010D	4-9-19	4-9-19	
Client ID:	**SB-106-2-2.0-2.5**					
Laboratory ID:	04-015-59					
Lead	**13**	6.8	EPA 6010D	4-9-19	4-9-19	
Client ID:	**SB-106-3-0-0.5**					
Laboratory ID:	04-015-60					
Lead	**7.3**	5.6	EPA 6010D	4-9-19	4-9-19	
Client ID:	**SB-106-3-2-2.5**					
Laboratory ID:	04-015-61					
Lead	**ND**	6.0	EPA 6010D	4-9-19	4-9-19	

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

TOTAL LEAD
EPA 6010D
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0409SM3					
Lead	**ND**	5.0	EPA 6010D	4-9-19	4-9-19	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-055-04										
	ORIG	DUP									
Lead	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	04-055-04										
	MS	MSD	MS	MSD		MS	MSD				
Lead	**239**	**241**	250	250	ND	**96**	**96**	75-125	1	20	

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

GASOLINE RANGE ORGANICS
NWTPH-Gx

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-102-1-0-0.5**					
Laboratory ID:	04-015-129					
Gasoline	**ND**	11	NWTPH-Gx	4-4-19	4-4-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***97***	***57-129***				
Client ID:	**SB-102-1-1.5-2.0**					
Laboratory ID:	04-015-130					
Gasoline	**9.7**	9.5	NWTPH-Gx	4-4-19	4-4-19	O
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***120***	***57-129***				
Client ID:	**SB-DUP-7**					
Laboratory ID:	04-015-131					
Gasoline	**ND**	10	NWTPH-Gx	4-4-19	4-4-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***100***	***57-129***				
Client ID:	**SB-102-2-0-0.5**					
Laboratory ID:	04-015-132					
Gasoline	**18**	16	NWTPH-Gx	4-4-19	4-4-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***101***	***57-129***				
Client ID:	**SB-102-3-0-0.5**					
Laboratory ID:	04-015-133					
Gasoline	**ND**	14	NWTPH-Gx	4-4-19	4-4-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***108***	***57-129***				
Client ID:	**SB-102-3-0.5-1.0**					
Laboratory ID:	04-015-134					
Gasoline	**ND**	13	NWTPH-Gx	4-4-19	4-4-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***98***	***57-129***				

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

GASOLINE RANGE ORGANICS
NWTPH-Gx
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0404S1					
Gasoline	**ND**	5.0	NWTPH-Gx	4-4-19	4-4-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***98***	***57-129***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-015-130										
	ORIG	DUP									
Gasoline	**6.98**	**7.05**	NA	NA		NA		NA	1	30	O,O
Surrogate:											
Fluorobenzene						***120***	***117***	***57-129***			

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

GASOLINE RANGE ORGANICS/BTEX
NWTPH-Gx/EPA 8021B

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EB-04012019**					
Laboratory ID:	04-015-169					
Benzene	**ND**	1.0	EPA 8021B	4-4-19	4-4-19	
Toluene	**ND**	1.0	EPA 8021B	4-4-19	4-4-19	
Ethyl Benzene	**ND**	1.0	EPA 8021B	4-4-19	4-4-19	
m,p-Xylene	**ND**	1.0	EPA 8021B	4-4-19	4-4-19	
o-Xylene	**ND**	1.0	EPA 8021B	4-4-19	4-4-19	
Gasoline	**ND**	100	NWTPH-Gx	4-4-19	4-4-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***82***	***66-117***				

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

GASOLINE RANGE ORGANICS/BTEX
NWTPH-Gx/EPA 8021B
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0404W1					
Benzene	**ND**	1.0	EPA 8021B	4-4-19	4-4-19	
Toluene	**ND**	1.0	EPA 8021B	4-4-19	4-4-19	
Ethyl Benzene	**ND**	1.0	EPA 8021B	4-4-19	4-4-19	
m,p-Xylene	**ND**	1.0	EPA 8021B	4-4-19	4-4-19	
o-Xylene	**ND**	1.0	EPA 8021B	4-4-19	4-4-19	
Gasoline	**ND**	100	NWTPH-Gx	4-4-19	4-4-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***72***	***66-117***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-015-169										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						***82***	***75***	***66-117***			
SPIKE BLANKS											
Laboratory ID:	SB0404W1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**46.4**	**45.0**	50.0	50.0		**93**	**90**	82-122	3	11	
Toluene	**48.5**	**47.1**	50.0	50.0		**97**	**94**	83-123	3	12	
Ethyl Benzene	**49.4**	**47.8**	50.0	50.0		**99**	**96**	83-123	3	12	
m,p-Xylene	**48.2**	**46.8**	50.0	50.0		**96**	**94**	83-123	3	12	
o-Xylene	**48.5**	**47.1**	50.0	50.0		**97**	**94**	83-123	3	11	
Surrogate:											
Fluorobenzene						***81***	***80***	***66-117***			

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-112-1-0-0.5**					
Laboratory ID:	04-015-62					
Diesel Range Organics	**100**	37	NWTPH-Dx	4-3-19	4-3-19	N
Lube Oil Range Organics	**910**	75	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***81***	***50-150***				
Client ID:	**SB-112-1-0.5-0.7**					
Laboratory ID:	04-015-63					
Diesel Range Organics	**150**	38	NWTPH-Dx	4-3-19	4-3-19	N
Lube Oil Range Organics	**1000**	76	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***76***	***50-150***				
Client ID:	**SB-112-2-0-0.5**					
Laboratory ID:	04-015-64					
Diesel Range Organics	**36**	32	NWTPH-Dx	4-3-19	4-3-19	N
Lube Oil Range Organics	**280**	64	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***86***	***50-150***				
Client ID:	**SB-112-2-1-1.5**					
Laboratory ID:	04-015-65					
Diesel Range Organics	**230**	33	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**150**	66	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***80***	***50-150***				
Client ID:	**SB-112-3-0-0.5**					
Laboratory ID:	04-015-66					
Diesel Range Organics	**40**	34	NWTPH-Dx	4-3-19	4-3-19	N
Lube Oil Range Organics	**340**	67	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***94***	***50-150***				
Client ID:	**SB-112-3-1-1.3**					
Laboratory ID:	04-015-67					
Diesel Range Organics	**ND**	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**79**	59	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***103***	***50-150***				

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-112-4-0-0.5**					
Laboratory ID:	04-015-68					
Diesel Range Organics	**110**	33	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**340**	67	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***86***	***50-150***				
Client ID:	**SB-DUP-2**					
Laboratory ID:	04-015-69					
Diesel Range Organics	**ND**	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	60	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***84***	***50-150***				
Client ID:	**SB-112-4-0.5-1**					
Laboratory ID:	04-015-70					
Diesel Range Organics	**ND**	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**67**	62	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***86***	***50-150***				
Client ID:	**SB-112-5-0-0.5**					
Laboratory ID:	04-015-71					
Diesel Range Organics	**350**	37	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**850**	75	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***87***	***50-150***				
Client ID:	**SB-112-5-0.5-0.9**					
Laboratory ID:	04-015-72					
Diesel Range Organics	**270**	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**260**	69	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***81***	***50-150***				
Client ID:	**SB-112-6-0-0.5**					
Laboratory ID:	04-015-73					
Diesel Range Organics	**2000**	210	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**2700**	430	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***72***	***50-150***				

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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-112-6-1-1.5**					
Laboratory ID:	04-015-74					
Diesel Range Organics	**240**	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**150**	68	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***78***	***50-150***				
Client ID:	**SB-112-7-0-0.5**					
Laboratory ID:	04-015-75					
Diesel Range Organics	**120**	36	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**520**	72	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***68***	***50-150***				
Client ID:	**SB-112-7-0.5-0.8**					
Laboratory ID:	04-015-76					
Diesel Range Organics	**130**	32	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**130**	64	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***53***	***50-150***				
Client ID:	**SB-112-08-0-0.5**					
Laboratory ID:	04-015-77					
Diesel Range Organics	**280**	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**380**	68	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***75***	***50-150***				
Client ID:	**SB-DUP-3**					
Laboratory ID:	04-015-78					
Diesel Range Organics	**310**	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**460**	68	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***83***	***50-150***				
Client ID:	**SB-112-08-1-1.5**					
Laboratory ID:	04-015-79					
Diesel Range Organics	**64**	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***78***	***50-150***				

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
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Project: B0003010.0006

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-112-9-0-0.5**					
Laboratory ID:	04-015-80					
Diesel Range Organics	**52**	36	NWTPH-Dx	4-3-19	4-3-19	N
Lube Oil Range Organics	**340**	72	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***88***	***50-150***				
Client ID:	**SB-112-9-0.5-1**					
Laboratory ID:	04-015-81					
Diesel Range Organics	**89**	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**190**	68	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***87***	***50-150***				
Client ID:	**SB-112-10-0-0.5**					
Laboratory ID:	04-015-82					
Diesel Range Organics	**81**	32	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**120**	64	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***77***	***50-150***				
Client ID:	**SB-112-10-0.5-1**					
Laboratory ID:	04-015-83					
Diesel Range Organics	**93**	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**390**	69	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***76***	***50-150***				
Client ID:	**SB-112-11-0-0.5**					
Laboratory ID:	04-015-84					
Diesel Range Organics	**390**	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**240**	59	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***66***	***50-150***				
Client ID:	**SB-112-11-1.5-2**					
Laboratory ID:	04-015-85					
Diesel Range Organics	**100**	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**180**	62	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***97***	***50-150***				

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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-112-12-0-0.5**					
Laboratory ID:	04-015-86					
Diesel Range Organics	**170**	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**520**	70	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***82***	***50-150***				
Client ID:	**SB-112-12-1-1.5**					
Laboratory ID:	04-015-87					
Diesel Range Organics	**48**	33	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**83**	65	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***69***	***50-150***				
Client ID:	**SB-PL-1-0-0.5**					
Laboratory ID:	04-015-88					
Diesel Range Organics	**38**	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**87**	68	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***79***	***50-150***				
Client ID:	**SB-PL-2-1-1.5**					
Laboratory ID:	04-015-89					
Diesel Range Organics	**46**	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**120**	58	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***73***	***50-150***				
Client ID:	**SB-PL-3-0-0.5**					
Laboratory ID:	04-015-90					
Diesel Range Organics	**32**	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**170**	62	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***81***	***50-150***				
Client ID:	**SB-PL-4-1-1.5**					
Laboratory ID:	04-015-91					
Diesel Range Organics	**ND**	32	NWTPH-Dx	4-3-19	4-5-19	
Lube Oil Range Organics	**210**	64	NWTPH-Dx	4-3-19	4-5-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***89***	***50-150***				

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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-PL-5-0-0.5**					
Laboratory ID:	04-015-92					
Diesel Range Organics	**56**	32	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**210**	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***74***	***50-150***				
Client ID:	**SB-PL-6-1-1.5**					
Laboratory ID:	04-015-93					
Diesel Range Organics	**33**	32	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**120**	64	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***82***	***50-150***				
Client ID:	**SB-DUP-4**					
Laboratory ID:	04-015-94					
Diesel Range Organics	**ND**	33	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**120**	67	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***91***	***50-150***				
Client ID:	**SB-PL-7-0-0.5**					
Laboratory ID:	04-015-95					
Diesel Range Organics	**71**	42	NWTPH-Dx	4-3-19	4-3-19	N
Lube Oil Range Organics	**360**	83	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***79***	***50-150***				
Client ID:	**SB-PL-8-1-1.5**					
Laboratory ID:	04-015-96					
Diesel Range Organics	**30**	28	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	57	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***84***	***50-150***				
Client ID:	**SB-PL-9-0-0.5**					
Laboratory ID:	04-015-97					
Diesel Range Organics	**ND**	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**290**	69	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***79***	***50-150***				

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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-PL-10-2-2.5**					
Laboratory ID:	04-015-98					
Diesel Range Organics	**ND**	28	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**70**	56	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***97***	***50-150***				
Client ID:	**SB-PL-11-0.5-1**					
Laboratory ID:	04-015-99					
Diesel Range Organics	**ND**	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	60	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***87***	***50-150***				
Client ID:	**SB-PL-12-1-1.5**					
Laboratory ID:	04-015-100					
Diesel Range Organics	**ND**	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	59	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***87***	***50-150***				
Client ID:	**SB-PL-13-1-1.5**					
Laboratory ID:	04-015-101					
Diesel Range Organics	**ND**	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	58	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***90***	***50-150***				
Client ID:	**SB-PL-14-1-1.5**					
Laboratory ID:	04-015-102					
Diesel Range Organics	**46**	28	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***91***	***50-150***				
Client ID:	**SB-101-1-0-0.5**					
Laboratory ID:	04-015-103					
Diesel Range Organics	**160**	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**620**	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***95***	***50-150***				

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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-101-1-2-2.5**					
Laboratory ID:	04-015-104					
Diesel Range Organics	**650**	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**220**	59	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***81***	***50-150***				
Client ID:	**SB-101-2-0-0.5**					
Laboratory ID:	04-015-105					
Diesel Range Organics	**79**	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**220**	61	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***86***	***50-150***				
Client ID:	**SB-DUP-5**					
Laboratory ID:	04-015-106					
Diesel Range Organics	**87**	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**210**	61	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***81***	***50-150***				
Client ID:	**SB-101-2-2-2.5**					
Laboratory ID:	04-015-107					
Diesel Range Organics	**260**	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**110**	58	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***88***	***50-150***				
Client ID:	**SB-101-3-0-0.5**					
Laboratory ID:	04-015-108					
Diesel Range Organics	**57**	31	NWTPH-Dx	4-3-19	4-3-19	N
Lube Oil Range Organics	**360**	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***82***	***50-150***				
Client ID:	**SB-101-3-2-2.5**					
Laboratory ID:	04-015-109					
Diesel Range Organics	**73**	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**91**	58	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***90***	***50-150***				

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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-107-1-0-0.5**					
Laboratory ID:	04-015-110					
Diesel Range Organics	**530**	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**760**	60	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***83***	***50-150***				
Client ID:	**SB-107-1-1-1.5**					
Laboratory ID:	04-015-111					
Diesel Range Organics	**710**	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**720**	60	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***87***	***50-150***				
Client ID:	**SB-107-2-0-0.5**					
Laboratory ID:	04-015-112					
Diesel Range Organics	**420**	38	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**890**	75	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***79***	***50-150***				
Client ID:	**SB-107-2-0.5-1**					
Laboratory ID:	04-015-113					
Diesel Range Organics	**270**	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**500**	69	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***87***	***50-150***				
Client ID:	**SB-107-3-0-0.5**					
Laboratory ID:	04-015-114					
Diesel Range Organics	**2700**	170	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**2900**	340	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***91***	***50-150***				
Client ID:	**SB-107-3-0.5-1**					
Laboratory ID:	04-015-115					
Diesel Range Organics	**1600**	160	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**2300**	320	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***89***	***50-150***				

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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-107-4-0-0.5**					
Laboratory ID:	04-015-116					
Diesel Range Organics	**1300**	170	NWTPH-Dx	4-3-19	4-5-19	
Lube Oil Range Organics	**1300**	340	NWTPH-Dx	4-3-19	4-5-19	N1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***102***	***50-150***				
Client ID:	**SB-DUP-6**					
Laboratory ID:	04-015-117					
Diesel Range Organics	**1000**	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**1100**	68	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***104***	***50-150***				
Client ID:	**SB-107-4-0.5-1**					
Laboratory ID:	04-015-118					
Diesel Range Organics	**370**	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**350**	57	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***98***	***50-150***				
Client ID:	**SB-107-5-0-0.5**					
Laboratory ID:	04-015-119					
Diesel Range Organics	**140**	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**400**	67	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***95***	***50-150***				
Client ID:	**SB-107-5-0.5-1**					
Laboratory ID:	04-015-120					
Diesel Range Organics	**130**	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**300**	70	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***94***	***50-150***				
Client ID:	**SB-107-6-0-0.5**					
Laboratory ID:	04-015-121					
Diesel Range Organics	**920**	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**1200**	69	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***101***	***50-150***				

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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-107-6-0.5-1**					
Laboratory ID:	04-015-122					
Diesel Range Organics	**580**	36	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**810**	72	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***101***	***50-150***				
Client ID:	**SB-104-1-0-0.5**					
Laboratory ID:	04-015-123					
Diesel Range Organics	**56**	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**400**	70	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***96***	***50-150***				
Client ID:	**SB-104-1-2.5-3**					
Laboratory ID:	04-015-124					
Diesel Range Organics	**ND**	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**100**	60	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***96***	***50-150***				
Client ID:	**SB-104-2-0-0.5**					
Laboratory ID:	04-015-125					
Diesel Range Organics	**120**	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**290**	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***97***	***50-150***				
Client ID:	**SB-104-2-4-4.5**					
Laboratory ID:	04-015-126					
Diesel Range Organics	**74**	28	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**96**	56	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***97***	***50-150***				
Client ID:	**SB-104-3-0-0.5**					
Laboratory ID:	04-015-127					
Diesel Range Organics	**36**	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**190**	60	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***98***	***50-150***				

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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-104-3-2.5-3**					
Laboratory ID:	04-015-128					
Diesel Range Organics	**ND**	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**69**	58	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***83***	***50-150***				
Client ID:	**SB-102-1-0-0.5**					
Laboratory ID:	04-015-129					
Diesel Range Organics	**36**	35	NWTPH-Dx	4-3-19	4-3-19	N
Lube Oil Range Organics	**330**	69	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***93***	***50-150***				
Client ID:	**SB-102-1-1.5-2.0**					
Laboratory ID:	04-015-130					
Diesel Range Organics	**ND**	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**100**	69	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***88***	***50-150***				
Client ID:	**SB-DUP-7**					
Laboratory ID:	04-015-131					
Diesel Range Organics	**88**	34	NWTPH-Dx	4-3-19	4-3-19	N
Lube Oil Range Organics	**440**	68	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***86***	***50-150***				
Client ID:	**SB-102-2-0-0.5**					
Laboratory ID:	04-015-132					
Diesel Range Organics	**140**	40	NWTPH-Dx	4-3-19	4-3-19	N
Lube Oil Range Organics	**690**	80	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***86***	***50-150***				
Client ID:	**SB-102-3-0-0.5**					
Laboratory ID:	04-015-133					
Diesel Range Organics	**150**	44	NWTPH-Dx	4-3-19	4-3-19	N
Lube Oil Range Organics	**860**	89	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***87***	***50-150***				

Date of Report: April 26, 2019
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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-102-3-0.5-1.0**					
Laboratory ID:	04-015-134					
Diesel Range Organics	**ND**	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**220**	70	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***102***	***50-150***				
Client ID:	**SB-101-4-0-0.5**					
Laboratory ID:	04-015-135					
Diesel Range Organics	**ND**	100	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	**110**	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**330**	61	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***82***	***50-150***				
Client ID:	**SB-101-4-2.0-2.5**					
Laboratory ID:	04-015-136					
Diesel Range Organics	**ND**	440	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	**460**	32	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**270**	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***89***	***50-150***				
Client ID:	**SB-DUP-8**					
Laboratory ID:	04-015-137					
Diesel Range Organics	**ND**	370	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	**380**	32	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**240**	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***95***	***50-150***				
Client ID:	**SB-101-5-0-0.5**					
Laboratory ID:	04-015-138					
Diesel Range Organics	**ND**	94	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	**110**	32	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**360**	64	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***75***	***50-150***				

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-101-5-0.5-1.0**					
Laboratory ID:	04-015-139					
Diesel Range Organics	**ND**	68	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	**77**	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**140**	59	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***91***	***50-150***				
Client ID:	**SB-101-6-0-0.5**					
Laboratory ID:	04-015-140					
Diesel Range Organics	**ND**	32	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	32	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**190**	65	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***92***	***50-150***				
Client ID:	**SB-101-6-0.5-1.0**					
Laboratory ID:	04-015-141					
Diesel Range Organics	**ND**	83	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	**78**	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	60	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***86***	***50-150***				
Client ID:	**SB-101-7-0.5-1.0**					
Laboratory ID:	04-015-142					
Diesel Range Organics	**48**	45	NWTPH-Dx	4-3-19	4-3-19	N
Mineral Oil	**ND**	47	NWTPH-Dx	4-3-19	4-3-19	U1
Lube Oil Range Organics	**290**	90	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***79***	***50-150***				
Client ID:	**SB-101-7-1.5-2.0**					
Laboratory ID:	04-015-143					
Diesel Range Organics	**ND**	34	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	**44**	33	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	65	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***77***	***50-150***				

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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**SB-101-8-0-0.5**					
Laboratory ID:	04-015-144					
Diesel Range Organics	**ND**	860	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	**930**	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**900**	68	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***90***	***50-150***				
Client ID:	**SB-101-8-1.0-1.5**					
Laboratory ID:	04-015-145					
Diesel Range Organics	**ND**	140	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	**140**	32	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**150**	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***74***	***50-150***				
Client ID:	**SB-101-9-0-0.5**					
Laboratory ID:	04-015-146					
Diesel Range Organics	**ND**	200	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	**190**	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**180**	60	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***103***	***50-150***				
Client ID:	**SB-DUP-9**					
Laboratory ID:	04-015-147					
Diesel Range Organics	**ND**	62	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	**65**	34	NWTPH-Dx	4-3-19	4-3-19	N
Lube Oil Range Organics	**240**	68	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***80***	***50-150***				
Client ID:	**SB-101-9-1.5-2.0**					
Laboratory ID:	04-015-148					
Diesel Range Organics	**ND**	160	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	**170**	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**66**	59	NWTPH-Dx	4-3-19	4-3-19	N1
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***85***	***50-150***				

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-101-10-0-0.5**					
Laboratory ID:	04-015-149					
Diesel Range Organics	**ND**	88	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	**94**	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**240**	60	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***94***	***50-150***				
Client ID:	**SB-101-10-0.5-1.0**					
Laboratory ID:	04-015-150					
Diesel Range Organics	**ND**	48	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	**56**	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	57	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***96***	***50-150***				
Client ID:	**SB-101-11-0-0.5**					
Laboratory ID:	04-015-151					
Diesel Range Organics	**ND**	35	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**210**	70	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***85***	***50-150***				
Client ID:	**SB-101-11-0.5-1.0**					
Laboratory ID:	04-015-152					
Diesel Range Organics	**ND**	31	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**150**	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***85***	***50-150***				
Client ID:	**SB-101-12-0-0.5**					
Laboratory ID:	04-015-153					
Diesel Range Organics	**ND**	39	NWTPH-Dx	4-3-19	4-3-19	U1
Mineral Oil	**47**	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**220**	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***95***	***50-150***				

Date of Report: April 26, 2019
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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-101-12-1.0-1.5**					
Laboratory ID:	04-015-154					
Diesel Range Organics	**ND**	29	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**120**	57	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***92***	***50-150***				
Client ID:	**SB-101-13-0-0.5**					
Laboratory ID:	04-015-155					
Diesel Range Organics	**37**	34	NWTPH-Dx	4-3-19	4-3-19	N
Mineral Oil	**ND**	39	NWTPH-Dx	4-3-19	4-3-19	U1
Lube Oil Range Organics	**290**	67	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***87***	***50-150***				
Client ID:	**SB-101-13-1.0-1.5**					
Laboratory ID:	04-015-156					
Diesel Range Organics	**ND**	30	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**160**	61	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***85***	***50-150***				
Client ID:	**SB-DUP-10**					
Laboratory ID:	04-015-157					
Diesel Range Organics	**37**	33	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	33	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**120**	66	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***98***	***50-150***				
Client ID:	**SB-101-14-0-0.5**					
Laboratory ID:	04-015-158					
Diesel Range Organics	**ND**	35	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**130**	70	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***96***	***50-150***				

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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-101-14-1.0-1.5**					
Laboratory ID:	04-015-159					
Diesel Range Organics	**ND**	31	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***82***	***50-150***				
Client ID:	**SB-101-15-0-0.5**					
Laboratory ID:	04-015-160					
Diesel Range Organics	**ND**	36	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	36	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**140**	72	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***81***	***50-150***				
Client ID:	**SB-101-15-0.5-1.0**					
Laboratory ID:	04-015-161					
Diesel Range Organics	**ND**	35	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**140**	70	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***89***	***50-150***				
Client ID:	**SB-101-16-0-0.5**					
Laboratory ID:	04-015-162					
Diesel Range Organics	**ND**	34	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**87**	68	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***109***	***50-150***				
Client ID:	**SB-101-16-2.0-2.5**					
Laboratory ID:	04-015-163					
Diesel Range Organics	**ND**	28	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	28	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	56	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***95***	***50-150***				

Date of Report: April 26, 2019
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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-DUP-11**					
Laboratory ID:	04-015-164					
Diesel Range Organics	**ND**	33	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	33	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**73**	67	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***93***	***50-150***				

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
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Project: B0003010.0006

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB0403S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***95***	***50-150***				
Laboratory ID:	MB0403S2					
Diesel Range Organics	**ND**	25	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***80***	***50-150***				
Laboratory ID:	MB0403S3					
Diesel Range Organics	**ND**	25	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***92***	***50-150***				
Laboratory ID:	MB0403S4					
Diesel Range Organics	**ND**	25	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	25	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***95***	***50-150***				
Laboratory ID:	MB0403S5					
Diesel Range Organics	**ND**	25	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	25	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***84***	***50-150***				
Laboratory ID:	MB0403S6					
Diesel Range Organics	**ND**	25	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	25	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***105***	***50-150***				

Date of Report: April 26, 2019
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Project: B0003010.0006

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx
DUPLICATE QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**		**Spike Level**		**Source Result**	**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
DUPLICATE											
Laboratory ID:	04-015-62										
	ORIG	DUP									
Diesel Range Organics	**67.7**	**44.1**	NA	NA		NA		NA	42	NA	N
Lube Oil Range Organics	**612**	**344**	NA	NA		NA		NA	56	NA	
Surrogate:											
o-Terphenyl						***81***	***70***	***50-150***			
Laboratory ID:	04-015-71										
	ORIG	DUP									
Diesel Range Organics	**231**	**179**	NA	NA		NA		NA	25	NA	
Lube Oil Range Organics	**568**	**387**	NA	NA		NA		NA	38	NA	
Surrogate:											
o-Terphenyl						***87***	***76***	***50-150***			
Laboratory ID:	04-015-82										
	ORIG	DUP									
Diesel Range Organics	**63.0**	**51.7**	NA	NA		NA		NA	20	NA	
Lube Oil Range Organics	**92.9**	**78.8**	NA	NA		NA		NA	16	NA	
Surrogate:											
o-Terphenyl						***77***	***78***	***50-150***			
Laboratory ID:	04-015-91										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil Range Organics	**163**	**147**	NA	NA		NA		NA	10	NA	
Surrogate:											
o-Terphenyl						***89***	***83***	***50-150***			
Laboratory ID:	04-015-98										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil Range Organics	**62.7**	**56.6**	NA	NA		NA		NA	10	NA	
Surrogate:											
o-Terphenyl						***97***	***96***	***50-150***			

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx
DUPLICATE QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-015-102										
	ORIG	DUP									
Diesel Range Organics	**41.2**	**34.9**	NA	NA		NA		NA	17	NA	
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						***91***	***86***	***50-150***			
Laboratory ID:	04-015-121										
	ORIG	DUP									
Diesel Range Organics	**668**	**545**	NA	NA		NA		NA	20	NA	
Lube Oil Range Organics	**892**	**768**	NA	NA		NA		NA	15	NA	N1
Surrogate:											
o-Terphenyl						***101***	***102***	***50-150***			
Laboratory ID:	04-015-122										
	ORIG	DUP									
Diesel Range Organics	**407**	**349**	NA	NA		NA		NA	15	NA	
Lube Oil Range Organics	**568**	**508**	NA	NA		NA		NA	11	NA	N1
Surrogate:											
o-Terphenyl						***101***	***90***	***50-150***			
Laboratory ID:	04-015-130										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil Range Organics	**73.5**	**55.7**	NA	NA		NA		NA	28	NA	
Surrogate:											
o-Terphenyl						***88***	***88***	***50-150***			
Laboratory ID:	04-015-144										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	U1
Mineral Oil	**680**	**485**	NA	NA		NA		NA	33	NA	
Lube Oil Range Organics	**660**	**531**	NA	NA		NA		NA	22	NA	N1
Surrogate:											
o-Terphenyl						***90***	***84***	***50-150***			

Date of Report: April 26, 2019
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Project: B0003010.0006

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx
DUPLICATE QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-015-151										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Mineral Oil	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil Range Organics	**148**	**135**	NA	NA		NA		NA	9	NA	
Surrogate:											
o-Terphenyl						***85***	***79***	***50-150***			
Laboratory ID:	04-015-163										
	ORIG	DUP									
Diesel Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Mineral Oil	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						***95***	***103***	***50-150***			

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EB-03312019**					
Laboratory ID:	04-015-168					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	4-4-19	4-5-19	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	4-4-19	4-5-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***98***	***50-150***				
Client ID:	**EB-04012019**					
Laboratory ID:	04-015-169					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	4-4-19	4-5-19	
Lube Oil Range Organics	**ND**	0.42	NWTPH-Dx	4-4-19	4-5-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***101***	***50-150***				

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx
QUALITY CONTROL

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0404W1					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	4-4-19	4-5-19	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	4-4-19	4-5-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***99***	***50-150***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	SB0404W1										
	ORIG	DUP									
Diesel Fuel #2	**1.16**	**1.10**	NA	NA		NA		NA	5	NA	
Lube Oil Range	**ND**	**ND**	NA	NA		NA		NA	NA	NA	
Surrogate:											
o-Terphenyl						***111***	***99***	***50-150***			

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

VOLATILE ORGANICS EPA 8260C

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**PW-040119**					
Laboratory ID:	04-015-165					
Benzene	ND	0.20	EPA 8260C	4-3-19	4-3-19	
Toluene	ND	1.0	EPA 8260C	4-3-19	4-3-19	
Ethylbenzene	ND	0.20	EPA 8260C	4-3-19	4-3-19	
m,p-Xylene	ND	0.40	EPA 8260C	4-3-19	4-3-19	
o-Xylene	ND	0.20	EPA 8260C	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***93***	***75-127***				
Toluene-d8	***99***	***80-127***				
4-Bromofluorobenzene	***99***	***78-125***				

VOLATILE ORGANICS EPA 8260C
METHOD BLANK QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Laboratory ID:	MB0403W1					
Benzene	ND	0.20	EPA 8260C	4-3-19	4-3-19	
Toluene	ND	1.0	EPA 8260C	4-3-19	4-3-19	
Ethylbenzene	ND	0.20	EPA 8260C	4-3-19	4-3-19	
m,p-Xylene	ND	0.40	EPA 8260C	4-3-19	4-3-19	
o-Xylene	ND	0.20	EPA 8260C	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***95***	***75-127***				
Toluene-d8	***99***	***80-127***				
4-Bromofluorobenzene	***98***	***78-125***				

Date of Report: April 26, 2019
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Laboratory Reference: 1904-015
Project: B0003010.0006

VOLATILE ORGANICS EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	**Result**		**Spike Level**		**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
SPIKE BLANKS										
Laboratory ID:	SB0403W1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**8.63**	**8.39**	10.0	10.0	86	84	62-129	3	15	
Benzene	**9.07**	**8.73**	10.0	10.0	91	87	77-127	4	15	
Trichloroethene	**10.5**	**10.1**	10.0	10.0	105	101	70-120	4	15	
Toluene	**9.98**	**9.73**	10.0	10.0	100	97	82-123	3	15	
Chlorobenzene	**10.3**	**10.0**	10.0	10.0	103	100	79-120	3	15	
Surrogate:										
Dibromofluoromethane					***94***	***94***	***75-127***			
Toluene-d8					***101***	***101***	***80-127***			
4-Bromofluorobenzene					***100***	***100***	***78-125***			

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

cPAHs EPA 8270D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EB-03312019**					
Laboratory ID:	04-015-168					
Benzo[a]anthracene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Chrysene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo[b]fluoranthene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo(j,k)fluoranthene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo[a]pyrene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Indeno[1,2,3-cd]pyrene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Dibenz[a,h]anthracene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorophenol	***35***	***12 - 80***				
Phenol-d6	***29***	***10 - 82***				
Nitrobenzene-d5	***52***	***30 - 103***				
2-Fluorobiphenyl	***63***	***33 - 103***				
2,4,6-Tribromophenol	***75***	***20 - 121***				
Terphenyl-d14	***78***	***32 - 113***				

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

cPAHs EPA 8270D/SIM

Matrix: Water
Units: ug/L

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**EB-04012019**					
Laboratory ID:	04-015-169					
Benzo[a]anthracene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Chrysene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo[b]fluoranthene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo(j,k)fluoranthene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo[a]pyrene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Indeno[1,2,3-cd]pyrene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Dibenz[a,h]anthracene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorophenol	***45***	***12 - 80***				
Phenol-d6	***37***	***10 - 82***				
Nitrobenzene-d5	***65***	***30 - 103***				
2-Fluorobiphenyl	***73***	***33 - 103***				
2,4,6-Tribromophenol	***87***	***20 - 121***				
Terphenyl-d14	***85***	***32 - 113***				

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

cPAHs EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Laboratory ID:	MB0403W1					
Benzo[a]anthracene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Chrysene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo[b]fluoranthene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo(j,k)fluoranthene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo[a]pyrene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Indeno[1,2,3-cd]pyrene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Dibenz[a,h]anthracene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorophenol	***34***	***12 - 80***				
Phenol-d6	***32***	***10 - 82***				
Nitrobenzene-d5	***56***	***30 - 103***				
2-Fluorobiphenyl	***74***	***33 - 103***				
2,4,6-Tribromophenol	***83***	***20 - 121***				
Terphenyl-d14	***92***	***32 - 113***				

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cPAHs EPA 8270D/SIM
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0403W1									
	SB	SBD	SB	SBD	SB	SBD				
Phenol	**11.5**	**13.3**	40.0	40.0	29	33	24 - 52	15	28	
2-Chlorophenol	**20.6**	**24.0**	40.0	40.0	52	60	44 - 91	15	30	
1,4-Dichlorobenzene	**9.84**	**11.3**	20.0	20.0	49	57	36 - 82	14	33	
n-Nitroso-di-n-propylamine	**11.3**	**12.7**	20.0	20.0	57	64	43 - 93	12	29	
1,2,4-Trichlorobenzene	**10.3**	**11.9**	20.0	20.0	52	60	40 - 86	14	28	
4-Chloro-3-methylphenol	**28.1**	**30.0**	40.0	40.0	70	75	49 - 99	7	25	
Acenaphthene	**12.7**	**13.2**	20.0	20.0	64	66	47 - 90	4	25	
4-Nitrophenol	**12.8**	**17.3**	40.0	40.0	32	43	23 - 61	30	30	
2,4-Dinitrotoluene	**14.2**	**15.2**	20.0	20.0	71	76	42 - 97	7	26	
Pentachlorophenol	**25.5**	**32.8**	40.0	40.0	64	82	39 - 115	25	29	
Pyrene	**15.9**	**15.6**	20.0	20.0	80	78	51 - 100	2	22	
Surrogate:										
2-Fluorophenol					***35***	***43***	***12 - 80***			
Phenol-d6					***29***	***34***	***10 - 82***			
Nitrobenzene-d5					***52***	***60***	***30 - 103***			
2-Fluorobiphenyl					***64***	***69***	***33 - 103***			
2,4,6-Tribromophenol					***73***	***83***	***20 - 121***			
Terphenyl-d14					***80***	***77***	***32 - 113***			

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Project: B0003010.0006

PCBs EPA 8082A

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-101-4-0-0.5**					
Laboratory ID:	04-015-135					
Aroclor 1016	**ND**	0.61	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	**ND**	0.61	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	**ND**	0.61	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	**ND**	0.61	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	**ND**	0.61	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	**ND**	0.61	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	**2.9**	0.61	EPA 8082A	4-9-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***---***	***39-130***				S
Client ID:	**SB-101-4-2.0-2.5**					
Laboratory ID:	04-015-136					
Aroclor 1016	**ND**	0.063	EPA 8082A	4-9-19	4-9-19	
Aroclor 1221	**ND**	0.063	EPA 8082A	4-9-19	4-9-19	
Aroclor 1232	**ND**	0.063	EPA 8082A	4-9-19	4-9-19	
Aroclor 1242	**ND**	0.063	EPA 8082A	4-9-19	4-9-19	
Aroclor 1248	**ND**	0.063	EPA 8082A	4-9-19	4-9-19	
Aroclor 1254	**ND**	0.063	EPA 8082A	4-9-19	4-9-19	
Aroclor 1260	**0.37**	0.063	EPA 8082A	4-9-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***85***	***39-130***				
Client ID:	**SB-DUP-8**					
Laboratory ID:	04-015-137					
Aroclor 1016	**ND**	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	**ND**	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	**ND**	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	**ND**	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	**ND**	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	**ND**	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	**0.52**	0.063	EPA 8082A	4-9-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***81***	***39-130***				

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Project: B0003010.0006

PCBs EPA 8082A

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-101-5-0-0.5**					
Laboratory ID:	04-015-138					
Aroclor 1016	**ND**	6.4	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	**ND**	6.4	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	**ND**	6.4	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	**ND**	6.4	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	**ND**	6.4	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	**ND**	6.4	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	**45**	6.4	EPA 8082A	4-9-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***---***	***39-130***				S
Client ID:	**SB-101-5-0.5-1.0**					
Laboratory ID:	04-015-139					
Aroclor 1016	**ND**	0.059	EPA 8082A	4-9-19	4-9-19	
Aroclor 1221	**ND**	0.059	EPA 8082A	4-9-19	4-9-19	
Aroclor 1232	**ND**	0.059	EPA 8082A	4-9-19	4-9-19	
Aroclor 1242	**ND**	0.059	EPA 8082A	4-9-19	4-9-19	
Aroclor 1248	**ND**	0.059	EPA 8082A	4-9-19	4-9-19	
Aroclor 1254	**ND**	0.059	EPA 8082A	4-9-19	4-9-19	
Aroclor 1260	**0.95**	0.059	EPA 8082A	4-9-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***84***	***39-130***				
Client ID:	**SB-101-6-0-0.5**					
Laboratory ID:	04-015-140					
Aroclor 1016	**ND**	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	**ND**	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	**ND**	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	**ND**	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	**ND**	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	**ND**	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	**0.58**	0.065	EPA 8082A	4-9-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***91***	***39-130***				

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PCBs EPA 8082A

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-101-6-0.5-1.0**					
Laboratory ID:	04-015-141					
Aroclor 1016	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***68***	***39-130***				
Client ID:	**SB-101-7-0.5-1.0**					
Laboratory ID:	04-015-142					
Aroclor 1016	**ND**	0.090	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	**ND**	0.090	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	**ND**	0.090	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	**ND**	0.090	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	**ND**	0.090	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	**ND**	0.090	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	**1.2**	0.090	EPA 8082A	4-9-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***74***	***39-130***				
Client ID:	**SB-101-7-1.5-2.0**					
Laboratory ID:	04-015-143					
Aroclor 1016	**ND**	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	**ND**	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	**ND**	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	**ND**	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	**ND**	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	**ND**	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	**0.11**	0.065	EPA 8082A	4-9-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***79***	***39-130***				

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

PCBs EPA 8082A

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-101-8-0-0.5**					
Laboratory ID:	04-015-144					
Aroclor 1016	**ND**	0.068	EPA 8082A	4-9-19	4-9-19	
Aroclor 1221	**ND**	0.068	EPA 8082A	4-9-19	4-9-19	
Aroclor 1232	**ND**	0.068	EPA 8082A	4-9-19	4-9-19	
Aroclor 1242	**ND**	0.068	EPA 8082A	4-9-19	4-9-19	
Aroclor 1248	**ND**	0.068	EPA 8082A	4-9-19	4-9-19	
Aroclor 1254	**ND**	0.068	EPA 8082A	4-9-19	4-9-19	
Aroclor 1260	**0.28**	0.068	EPA 8082A	4-9-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***62***	***39-130***				
Client ID:	**SB-101-8-1.0-1.5**					
Laboratory ID:	04-015-145					
Aroclor 1016	**ND**	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	**ND**	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	**ND**	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	**ND**	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	**ND**	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	**ND**	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	**0.26**	0.063	EPA 8082A	4-9-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***72***	***39-130***				
Client ID:	**SB-101-9-0-0.5**					
Laboratory ID:	04-015-146					
Aroclor 1016	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	**0.64**	0.060	EPA 8082A	4-9-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***77***	***39-130***				

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

PCBs EPA 8082A

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**SB-DUP-9**					
Laboratory ID:	04-015-147					
Aroclor 1016	**ND**	0.068	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	**ND**	0.068	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	**ND**	0.068	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	**ND**	0.068	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	**ND**	0.068	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	**ND**	0.068	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	**1.3**	0.068	EPA 8082A	4-9-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***76***	***39-130***				
Client ID:	**SB-101-9-1.5-2.0**					
Laboratory ID:	04-015-148					
Aroclor 1016	**ND**	0.059	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	**ND**	0.059	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	**ND**	0.059	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	**ND**	0.059	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	**ND**	0.059	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	**ND**	0.059	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	**ND**	0.059	EPA 8082A	4-9-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***81***	***39-130***				
Client ID:	**SB-101-10-0-0.5**					
Laboratory ID:	04-015-149					
Aroclor 1016	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	**1.4**	0.060	EPA 8082A	4-9-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***87***	***39-130***				

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

PCBs EPA 8082A

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-101-10-0.5-1.0**					
Laboratory ID:	04-015-150					
Aroclor 1016	**ND**	0.057	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	**ND**	0.057	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	**ND**	0.057	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	**ND**	0.057	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	**ND**	0.057	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	**ND**	0.057	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	**0.32**	0.057	EPA 8082A	4-9-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***70***	***39-130***				
Client ID:	**SB-101-11-0-0.5**					
Laboratory ID:	04-015-151					
Aroclor 1016	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	**0.68**	0.070	EPA 8082A	4-8-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***71***	***39-130***				
Client ID:	**SB-101-11-0.5-1.0**					
Laboratory ID:	04-015-152					
Aroclor 1016	**ND**	0.063	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	**ND**	0.063	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	**ND**	0.063	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	**ND**	0.063	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	**ND**	0.063	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	**ND**	0.063	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	**0.28**	0.063	EPA 8082A	4-8-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***77***	***39-130***				

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

PCBs EPA 8082A

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-101-12-0-0.5**					
Laboratory ID:	04-015-153					
Aroclor 1016	**ND**	1.2	EPA 8082A	4-8-19	4-10-19	
Aroclor 1221	**ND**	1.2	EPA 8082A	4-8-19	4-10-19	
Aroclor 1232	**ND**	1.2	EPA 8082A	4-8-19	4-10-19	
Aroclor 1242	**ND**	1.2	EPA 8082A	4-8-19	4-10-19	
Aroclor 1248	**ND**	1.2	EPA 8082A	4-8-19	4-10-19	
Aroclor 1254	**ND**	1.2	EPA 8082A	4-8-19	4-10-19	
Aroclor 1260	**4.3**	1.2	EPA 8082A	4-8-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***---***	***39-130***				S
Client ID:	**SB-101-12-1.0-1.5**					
Laboratory ID:	04-015-154					
Aroclor 1016	**ND**	0.057	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	**ND**	0.057	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	**ND**	0.057	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	**ND**	0.057	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	**ND**	0.057	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	**ND**	0.057	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	**1.2**	0.057	EPA 8082A	4-8-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***79***	***39-130***				
Client ID:	**SB-101-13-0-0.5**					
Laboratory ID:	04-015-155					
Aroclor 1016	**ND**	1.3	EPA 8082A	4-8-19	4-10-19	
Aroclor 1221	**ND**	1.3	EPA 8082A	4-8-19	4-10-19	
Aroclor 1232	**ND**	1.3	EPA 8082A	4-8-19	4-10-19	
Aroclor 1242	**ND**	1.3	EPA 8082A	4-8-19	4-10-19	
Aroclor 1248	**ND**	1.3	EPA 8082A	4-8-19	4-10-19	
Aroclor 1254	**ND**	1.3	EPA 8082A	4-8-19	4-10-19	
Aroclor 1260	**6.4**	1.3	EPA 8082A	4-8-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***---***	***39-130***				S

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

PCBs EPA 8082A

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-101-13-1.0-1.5**					
Laboratory ID:	04-015-156					
Aroclor 1016	**ND**	1.2	EPA 8082A	4-8-19	4-10-19	
Aroclor 1221	**ND**	1.2	EPA 8082A	4-8-19	4-10-19	
Aroclor 1232	**ND**	1.2	EPA 8082A	4-8-19	4-10-19	
Aroclor 1242	**ND**	1.2	EPA 8082A	4-8-19	4-10-19	
Aroclor 1248	**ND**	1.2	EPA 8082A	4-8-19	4-10-19	
Aroclor 1254	**ND**	1.2	EPA 8082A	4-8-19	4-10-19	
Aroclor 1260	**4.9**	1.2	EPA 8082A	4-8-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***---***	***39-130***				S
Client ID:	**SB-DUP-10**					
Laboratory ID:	04-015-157					
Aroclor 1016	**ND**	0.066	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	**ND**	0.066	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	**ND**	0.066	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	**ND**	0.066	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	**ND**	0.066	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	**ND**	0.066	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	**1.2**	0.066	EPA 8082A	4-8-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***74***	***39-130***				
Client ID:	**SB-101-14-0-0.5**					
Laboratory ID:	04-015-158					
Aroclor 1016	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	**1.7**	0.070	EPA 8082A	4-8-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***81***	***39-130***				

PCBs EPA 8082A

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-101-14-1.0-1.5**					
Laboratory ID:	04-015-159					
Aroclor 1016	**ND**	0.061	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	**ND**	0.061	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	**ND**	0.061	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	**ND**	0.061	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	**ND**	0.061	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	**ND**	0.061	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	**1.2**	0.061	EPA 8082A	4-8-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***83***	***39-130***				
Client ID:	**SB-101-15-0-0.5**					
Laboratory ID:	04-015-160					
Aroclor 1016	**ND**	0.072	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	**ND**	0.072	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	**ND**	0.072	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	**ND**	0.072	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	**ND**	0.072	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	**ND**	0.072	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	**0.32**	0.072	EPA 8082A	4-8-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***71***	***39-130***				
Client ID:	**SB-101-15-0.5-1.0**					
Laboratory ID:	04-015-161					
Aroclor 1016	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	**0.28**	0.070	EPA 8082A	4-8-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***74***	***39-130***				

PCBs EPA 8082A

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-101-16-0-0.5**					
Laboratory ID:	04-015-162					
Aroclor 1016	**ND**	0.068	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	**ND**	0.068	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	**ND**	0.068	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	**ND**	0.068	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	**ND**	0.068	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	**ND**	0.068	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	**0.40**	0.068	EPA 8082A	4-8-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***69***	***39-130***				
Client ID:	**SB-101-16-2.0-2.5**					
Laboratory ID:	04-015-163					
Aroclor 1016	**ND**	1.1	EPA 8082A	4-8-19	4-10-19	
Aroclor 1221	**ND**	1.1	EPA 8082A	4-8-19	4-10-19	
Aroclor 1232	**ND**	1.1	EPA 8082A	4-8-19	4-10-19	
Aroclor 1242	**ND**	1.1	EPA 8082A	4-8-19	4-10-19	
Aroclor 1248	**ND**	1.1	EPA 8082A	4-8-19	4-10-19	
Aroclor 1254	**ND**	1.1	EPA 8082A	4-8-19	4-10-19	
Aroclor 1260	**3.8**	1.1	EPA 8082A	4-8-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***---***	***39-130***				S
Client ID:	**SB-DUP-11**					
Laboratory ID:	04-015-164					
Aroclor 1016	**ND**	0.067	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	**ND**	0.067	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	**ND**	0.067	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	**ND**	0.067	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	**ND**	0.067	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	**ND**	0.067	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	**0.51**	0.067	EPA 8082A	4-8-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***77***	***39-130***				

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

PCBs EPA 8082A
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0408S2					
Aroclor 1016	**ND**	0.050	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	**ND**	0.050	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	**ND**	0.050	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	**ND**	0.050	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	**ND**	0.050	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	**ND**	0.050	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	**ND**	0.050	EPA 8082A	4-8-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***83***	***39-130***				
Laboratory ID:	MB0409S1					
Aroclor 1016	**ND**	0.050	EPA 8082A	4-9-19	4-9-19	
Aroclor 1221	**ND**	0.050	EPA 8082A	4-9-19	4-9-19	
Aroclor 1232	**ND**	0.050	EPA 8082A	4-9-19	4-9-19	
Aroclor 1242	**ND**	0.050	EPA 8082A	4-9-19	4-9-19	
Aroclor 1248	**ND**	0.050	EPA 8082A	4-9-19	4-9-19	
Aroclor 1254	**ND**	0.050	EPA 8082A	4-9-19	4-9-19	
Aroclor 1260	**ND**	0.050	EPA 8082A	4-9-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***89***	***39-130***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	04-015-144										
	MS	MSD	MS	MSD		MS	MSD				
Aroclor 1260	**0.644**	**0.645**	0.500	0.500	0.202	**88**	**89**	45-118	0	15	
Surrogate:											
DCB						***89***	***89***	***39-130***			
Laboratory ID:	04-015-163										
	MS	MSD	MS	MSD		MS	MSD				
Aroclor 1260	**NA**	**NA**	0.500	0.500	3.44	**NA**	**NA**	45-118	NA	15	A
Surrogate:											
DCB						***73***	***81***	***39-130***			

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PCBs EPA 8082A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**PW-040119**					
Laboratory ID:	04-015-165					
Aroclor 1016	**ND**	0.51	EPA 8082A	4-5-19	4-10-19	
Aroclor 1221	**ND**	0.51	EPA 8082A	4-5-19	4-10-19	
Aroclor 1232	**ND**	0.51	EPA 8082A	4-5-19	4-10-19	
Aroclor 1242	**ND**	0.51	EPA 8082A	4-5-19	4-10-19	
Aroclor 1248	**ND**	0.51	EPA 8082A	4-5-19	4-10-19	
Aroclor 1254	**ND**	0.51	EPA 8082A	4-5-19	4-10-19	
Aroclor 1260	**2.8**	0.51	EPA 8082A	4-5-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***---***	***44-144***				S
Client ID:	**EB-04012019**					
Laboratory ID:	04-015-169					
Aroclor 1016	**ND**	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1221	**ND**	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1232	**ND**	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1242	**ND**	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1248	**ND**	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1254	**ND**	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1260	**ND**	0.050	EPA 8082A	4-5-19	4-8-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***99***	***44-144***				

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PCBs EPA 8082A
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB0405W1					
Aroclor 1016	**ND**	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1221	**ND**	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1232	**ND**	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1242	**ND**	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1248	**ND**	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1254	**ND**	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1260	**ND**	0.050	EPA 8082A	4-5-19	4-8-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***96***	***44-144***				

Analyte	**Result**		**Spike Level**		**Source Result**	**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
SPIKE BLANKS											
Laboratory ID:	SB0405W1										
	SB	SBD	SB	SBD		SB	SBD				
Aroclor 1260	**0.502**	**0.527**	0.500	0.500	N/A	**100**	**105**	71-131	5	12	
Surrogate:											
DCB						***106***	***104***	***44-144***			

Date of Report: April 26, 2019
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Project: B0003010.0006

TOTAL METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**PW-040119**					
Laboratory ID:	04-015-165					
Arsenic	**280**	6.7	EPA 200.8	4-5-19	4-5-19	
Barium	**870**	56	EPA 200.8	4-5-19	4-5-19	
Cadmium	**ND**	4.4	EPA 200.8	4-5-19	4-5-19	
Chromium	**1000**	22	EPA 200.8	4-5-19	4-5-19	
Lead	**1000**	2.2	EPA 200.8	4-5-19	4-5-19	
Mercury	**ND**	0.50	EPA 7470A	4-8-19	4-8-19	
Selenium	**ND**	5.6	EPA 200.8	4-5-19	4-5-19	
Silver	**ND**	11	EPA 200.8	4-5-19	4-5-19	
Client ID:	**EB-032919**					
Laboratory ID:	04-015-166					
Lead	**ND**	1.1	EPA 200.8	4-5-19	4-5-19	
Client ID:	**EB-033019**					
Laboratory ID:	04-015-167					
Lead	**ND**	1.1	EPA 200.8	4-5-19	4-5-19	
Client ID:	**EB-03312019**					
Laboratory ID:	04-015-168					
Lead	**ND**	1.1	EPA 200.8	4-5-19	4-5-19	

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Project: B0003010.0006

TOTAL METALS
EPA 200.8/7470A
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0405WM1					
Arsenic	**ND**	3.3	EPA 200.8	4-5-19	4-5-19	
Barium	**ND**	28	EPA 200.8	4-5-19	4-5-19	
Cadmium	**ND**	4.4	EPA 200.8	4-5-19	4-5-19	
Chromium	**ND**	11	EPA 200.8	4-5-19	4-5-19	
Lead	**ND**	1.1	EPA 200.8	4-5-19	4-5-19	
Selenium	**ND**	5.6	EPA 200.8	4-5-19	4-5-19	
Silver	**ND**	11	EPA 200.8	4-5-19	4-5-19	
Laboratory ID:	MB0408W1					
Mercury	**ND**	0.50	EPA 7470A	4-8-19	4-8-19	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	03-303-01										
	ORIG	DUP									
Arsenic	**4.78**	**5.09**	NA	NA		NA		NA	6	20	
Barium	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Cadmium	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Chromium	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Lead	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Selenium	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Silver	**ND**	**ND**	NA	NA		NA		NA	NA	20	
Laboratory ID:	03-303-03										
Mercury	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	03-303-01										
	MS	MSD	MS	MSD		MS	MSD				
Arsenic	**119**	**125**	111	111	4.78	**103**	**108**	75-125	5	20	
Barium	**136**	**139**	111	111	23.3	**101**	**104**	75-125	2	20	
Cadmium	**110**	**114**	111	111	ND	**100**	**103**	75-125	4	20	
Chromium	**108**	**114**	111	111	ND	**98**	**103**	75-125	5	20	
Lead	**110**	**114**	111	111	ND	**99**	**103**	75-125	3	20	
Selenium	**126**	**131**	111	111	ND	**114**	**118**	75-125	4	20	
Silver	**118**	**121**	111	111	ND	**107**	**109**	75-125	2	20	
Laboratory ID:	03-303-03										
Mercury	**11.5**	**10.7**	12.5	12.5	ND	**92**	**85**	75-125	7	20	

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VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-112-6-0-0.5**					
Laboratory ID:	04-015-73					
Benzene	ND	0.0018	EPA 8260C	4-10-19	4-10-19	
Toluene	ND	0.0091	EPA 8260C	4-10-19	4-10-19	
Ethylbenzene	ND	0.0018	EPA 8260C	4-10-19	4-10-19	
m,p-Xylene	ND	0.0036	EPA 8260C	4-10-19	4-10-19	
o-Xylene	ND	0.0018	EPA 8260C	4-10-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***107***	***68-139***				
Toluene-d8	***101***	***79-128***				
4-Bromofluorobenzene	***83***	***71-132***				

Date of Report: April 26, 2019
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Laboratory Reference: 1904-015
Project: B0003010.0006

VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-107-3-0-0.5**					
Laboratory ID:	04-015-114					
Benzene	ND	0.0015	EPA 8260C	4-10-19	4-10-19	
Toluene	ND	0.0074	EPA 8260C	4-10-19	4-10-19	
Ethylbenzene	ND	0.0015	EPA 8260C	4-10-19	4-10-19	
m,p-Xylene	ND	0.0030	EPA 8260C	4-10-19	4-10-19	
o-Xylene	ND	0.0015	EPA 8260C	4-10-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***108***	***68-139***				
Toluene-d8	***95***	***79-128***				
4-Bromofluorobenzene	***70***	***71-132***				Q

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

VOLATILE ORGANICS EPA 8260C
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Laboratory ID:	MB0410S2					
Benzene	ND	0.0010	EPA 8260C	4-10-19	4-10-19	
Toluene	ND	0.0050	EPA 8260C	4-10-19	4-10-19	
Ethylbenzene	ND	0.0010	EPA 8260C	4-10-19	4-10-19	
m,p-Xylene	ND	0.0020	EPA 8260C	4-10-19	4-10-19	
o-Xylene	ND	0.0010	EPA 8260C	4-10-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***110***	***68-139***				
Toluene-d8	***102***	***79-128***				
4-Bromofluorobenzene	***105***	***71-132***				

Date of Report: April 26, 2019
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Laboratory Reference: 1904-015
Project: B0003010.0006

VOLATILE ORGANICS EPA 8260C
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0410S2									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**0.0533**	**0.0514**	0.0500	0.0500	107	103	53-141	4	17	
Benzene	**0.0546**	**0.0520**	0.0500	0.0500	109	104	70-130	5	15	
Trichloroethene	**0.0501**	**0.0491**	0.0500	0.0500	100	98	74-122	2	16	
Toluene	**0.0517**	**0.0502**	0.0500	0.0500	103	100	76-130	3	15	
Chlorobenzene	**0.0543**	**0.0511**	0.0500	0.0500	109	102	75-120	6	14	
Surrogate:										
Dibromofluoromethane					***105***	***105***	***68-139***			
Toluene-d8					***101***	***102***	***79-128***			
4-Bromofluorobenzene					***104***	***102***	***71-132***			

PAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-112-6-0-0.5**					
Laboratory ID:	04-015-73					
Benzo[a]anthracene	**ND**	0.014	EPA 8270D/SIM	4-10-19	4-12-19	U1
Chrysene	**ND**	0.023	EPA 8270D/SIM	4-10-19	4-12-19	U1
Benzo[b]fluoranthene	**ND**	0.011	EPA 8270D/SIM	4-10-19	4-12-19	
Benzo(j,k)fluoranthene	**ND**	0.011	EPA 8270D/SIM	4-10-19	4-12-19	
Benzo[a]pyrene	**ND**	0.011	EPA 8270D/SIM	4-10-19	4-12-19	
Indeno(1,2,3-c,d)pyrene	**ND**	0.011	EPA 8270D/SIM	4-10-19	4-12-19	
Dibenz[a,h]anthracene	**ND**	0.011	EPA 8270D/SIM	4-10-19	4-12-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***73***	***40 - 117***				
Pyrene-d10	***88***	***38 - 119***				
Terphenyl-d14	***116***	***47 - 135***				

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PAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-107-3-0-0.5**					
Laboratory ID:	04-015-114					
Benzo[a]anthracene	**ND**	0.0089	EPA 8270D/SIM	4-10-19	4-12-19	
Chrysene	**ND**	0.012	EPA 8270D/SIM	4-10-19	4-12-19	U1
Benzo[b]fluoranthene	**ND**	0.0089	EPA 8270D/SIM	4-10-19	4-12-19	
Benzo(j,k)fluoranthene	**ND**	0.0089	EPA 8270D/SIM	4-10-19	4-12-19	
Benzo[a]pyrene	**ND**	0.0089	EPA 8270D/SIM	4-10-19	4-12-19	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0089	EPA 8270D/SIM	4-10-19	4-12-19	
Dibenz[a,h]anthracene	**ND**	0.0089	EPA 8270D/SIM	4-10-19	4-12-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***61***	***40 - 117***				
Pyrene-d10	***94***	***38 - 119***				
Terphenyl-d14	***109***	***47 - 135***				

PAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-107-3-0.5-1**					
Laboratory ID:	04-015-115					
Benzo[a]anthracene	**ND**	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
Chrysene	**ND**	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
Benzo[b]fluoranthene	**ND**	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
Benzo(j,k)fluoranthene	**ND**	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
Benzo[a]pyrene	**ND**	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
Dibenz[a,h]anthracene	**ND**	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***54***	***40 - 117***				
Pyrene-d10	***78***	***38 - 119***				
Terphenyl-d14	***112***	***47 - 135***				

Date of Report: April 26, 2019
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Project: B0003010.0006

PAHs EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Laboratory ID:	MB0410S2					
Benzo[a]anthracene	**ND**	0.0067	EPA 8270D/SIM	4-10-19	4-11-19	
Chrysene	**ND**	0.0067	EPA 8270D/SIM	4-10-19	4-11-19	
Benzo[b]fluoranthene	**ND**	0.0067	EPA 8270D/SIM	4-10-19	4-11-19	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270D/SIM	4-10-19	4-11-19	
Benzo[a]pyrene	**ND**	0.0067	EPA 8270D/SIM	4-10-19	4-11-19	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0067	EPA 8270D/SIM	4-10-19	4-11-19	
Dibenz[a,h]anthracene	**ND**	0.0067	EPA 8270D/SIM	4-10-19	4-11-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***73***	***40 - 117***				
Pyrene-d10	***78***	***38 - 119***				
Terphenyl-d14	***74***	***47 - 135***				

Date of Report: April 26, 2019
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Project: B0003010.0006

PAHs EPA 8270D/SIM
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0410S2									
	SB	SBD	SB	SBD	SB	SBD				
Benzo[a]anthracene	**0.0717**	**0.0740**	0.0833	0.0833	86	89	64 - 132	3	15	
Chrysene	**0.0613**	**0.0629**	0.0833	0.0833	74	76	64 - 127	3	15	
Benzo[b]fluoranthene	**0.0649**	**0.0681**	0.0833	0.0833	78	82	57 - 128	5	15	
Benzo(j,k)fluoranthene	**0.0573**	**0.0624**	0.0833	0.0833	69	75	62 - 130	9	15	
Benzo[a]pyrene	**0.0653**	**0.0681**	0.0833	0.0833	78	82	62 - 125	4	15	
Indeno(1,2,3-c,d)pyrene	**0.0607**	**0.0645**	0.0833	0.0833	73	77	55 - 130	6	15	
Dibenz[a,h]anthracene	**0.0626**	**0.0656**	0.0833	0.0833	75	79	58 - 129	5	15	
Surrogate:										
2-Fluorobiphenyl					***69***	***72***	***40 - 117***			
Pyrene-d10					***75***	***77***	***38 - 119***			
Terphenyl-d14					***69***	***73***	***47 - 135***			

PCBs EPA 8082A

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-112-6-0-0.5**					
Laboratory ID:	04-015-73					
Aroclor 1016	**ND**	0.085	EPA 8082A	4-10-19	4-10-19	
Aroclor 1221	**ND**	0.085	EPA 8082A	4-10-19	4-10-19	
Aroclor 1232	**ND**	0.085	EPA 8082A	4-10-19	4-10-19	
Aroclor 1242	**ND**	0.085	EPA 8082A	4-10-19	4-10-19	
Aroclor 1248	**ND**	0.085	EPA 8082A	4-10-19	4-10-19	
Aroclor 1254	**0.20**	0.085	EPA 8082A	4-10-19	4-10-19	
Aroclor 1260	**0.15**	0.085	EPA 8082A	4-10-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***60***	***39-130***				
Client ID:	**SB-107-3-0-0.5**					
Laboratory ID:	04-015-114					
Aroclor 1016	**ND**	0.067	EPA 8082A	4-10-19	4-10-19	
Aroclor 1221	**ND**	0.067	EPA 8082A	4-10-19	4-10-19	
Aroclor 1232	**ND**	0.067	EPA 8082A	4-10-19	4-10-19	
Aroclor 1242	**ND**	0.067	EPA 8082A	4-10-19	4-10-19	
Aroclor 1248	**ND**	0.067	EPA 8082A	4-10-19	4-10-19	
Aroclor 1254	**ND**	0.067	EPA 8082A	4-10-19	4-10-19	
Aroclor 1260	**ND**	0.067	EPA 8082A	4-10-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***61***	***39-130***				
Client ID:	**SB-107-3-0.5-1**					
Laboratory ID:	04-015-115					
Aroclor 1016	**ND**	0.065	EPA 8082A	4-10-19	4-10-19	
Aroclor 1221	**ND**	0.065	EPA 8082A	4-10-19	4-10-19	
Aroclor 1232	**ND**	0.065	EPA 8082A	4-10-19	4-10-19	
Aroclor 1242	**ND**	0.065	EPA 8082A	4-10-19	4-10-19	
Aroclor 1248	**ND**	0.065	EPA 8082A	4-10-19	4-10-19	
Aroclor 1254	**ND**	0.065	EPA 8082A	4-10-19	4-10-19	
Aroclor 1260	**ND**	0.065	EPA 8082A	4-10-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***53***	***39-130***				

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

PCBs EPA 8082A
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB0410S1					
Aroclor 1016	**ND**	0.050	EPA 8082A	4-10-19	4-10-19	
Aroclor 1221	**ND**	0.050	EPA 8082A	4-10-19	4-10-19	
Aroclor 1232	**ND**	0.050	EPA 8082A	4-10-19	4-10-19	
Aroclor 1242	**ND**	0.050	EPA 8082A	4-10-19	4-10-19	
Aroclor 1248	**ND**	0.050	EPA 8082A	4-10-19	4-10-19	
Aroclor 1254	**ND**	0.050	EPA 8082A	4-10-19	4-10-19	
Aroclor 1260	**ND**	0.050	EPA 8082A	4-10-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***70***	***39-130***				

Analyte	**Result**		**Spike Level**		**Source Result**	**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
MATRIX SPIKES											
Laboratory ID:	04-015-114										
	MS	MSD	MS	MSD		MS	MSD				
Aroclor 1260	**0.245**	**0.255**	0.500	0.500	ND	**49**	**51**	45-118	4	15	
Surrogate:											
DCB						***65***	***65***	***39-130***			

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

TCLP LEAD
EPA 1311/6010D

Matrix: TCLP Extract
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-14-A-0-0.5**					
Laboratory ID:	04-015-07					
Lead	**ND**	0.20	EPA 6010D	4-24-19	4-24-19	

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-15-A-0.5-1.0**					
Laboratory ID:	04-015-19					
Lead	**ND**	0.20	EPA 6010D	4-24-19	4-24-19	

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

TCLP LEAD
EPA 1311/6010D
QUALITY CONTROL

Matrix: TCLP Extract
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0424TM1					
Lead	**ND**	0.20	EPA 6010D	4-24-19	4-24-19	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-255-01										
	ORIG	DUP									
Lead	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	04-255-01										
	MS	MSD	MS	MSD		MS	MSD				
Lead	**9.89**	**9.80**	10.0	10.0	ND	**99**	**98**	75-125	1	20	

% MOISTURE

Date Analyzed: 4-3,5,12&15-19

Client ID	Lab ID	% Moisture
ISM-13-A-0.5-1.0	04-015-01	8
ISM-13-B-0-0.5	04-015-05	9
ISM-13-C-0-0.5	04-015-06	15
ISM-14-A-0-0.5	04-015-07	18
ISM-14-A-0.5-1.0	04-015-11	16
ISM-15-A-0-0.5	04-015-14	19
ISM-15-A-0.5-1.0	04-015-19	7
ISM-15-A-1.0-1.5	04-015-24	5
ISM-16-A-0-0.5	04-015-29	11
ISM-16-A-0.5-1.0	04-015-32	12
ISM-17-A-0-0.5	04-015-35	15
ISM-17-A-0.5-1.0	04-015-40	4
ISM-18-A-0-0.5	04-015-45	6
ISM-18-A-0.5-1.0	04-015-50	5
SB-106-1-0-0.5	04-015-55	14
SB-106-1-2-2.3	04-015-56	20
SB-DUP-1	04-015-57	23
SB-106-2-0-0.5	04-015-58	53
SB-106-2-2.0-2.5	04-015-59	27
SB-106-3-0-0.5	04-015-60	11
SB-106-3-2-2.5	04-015-61	16
SB-112-1-0-0.5	04-015-62	33
SB-112-1-0.5-0.7	04-015-63	34
SB-112-2-0-0.5	04-015-64	22
SB-112-2-1-1.5	04-015-65	24
SB-112-3-0-0.5	04-015-66	26
SB-112-3-1-1.3	04-015-67	16

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

% MOISTURE

Date Analyzed: 4-3,5,12&15-19

Client ID	Lab ID	% Moisture
SB-112-4-0-0.5	04-015-68	25
SB-DUP-2	04-015-69	17
SB-112-4-0.5-1	04-015-70	19
SB-112-5-0-0.5	04-015-71	33
SB-112-5-0.5-0.9	04-015-72	27
SB-112-6-0-0.5	04-015-73	41
SB-112-6-1-1.5	04-015-74	26
SB-112-7-0-0.5	04-015-75	31
SB-112-7-0.5-0.8	04-015-76	22
SB-112-08-0-0.5	04-015-77	26
SB-DUP-3	04-015-78	26
SB-112-08-1-1.5	04-015-79	18
SB-112-9-0-0.5	04-015-80	31
SB-112-9-0.5-1	04-015-81	26
SB-112-10-0-0.5	04-015-82	22
SB-112-10-0.5-1	04-015-83	27
SB-112-11-0-0.5	04-015-84	15
SB-112-11-1.5-2	04-015-85	19
SB-112-12-0-0.5	04-015-86	28
SB-112-12-1-1.5	04-015-87	23
SB-PL-1-0-0.5	04-015-88	27
SB-PL-2-1-1.5	04-015-89	13
SB-PL-3-0-0.5	04-015-90	20
SB-PL-4-1-1.5	04-015-91	22
SB-PL-5-0-0.5	04-015-92	21
SB-PL-6-1-1.5	04-015-93	22
SB-DUP-4	04-015-94	25

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

% MOISTURE

Date Analyzed: 4-3,5,12&15-19

Client ID	Lab ID	% Moisture
SB-PL-7-0-0.5	04-015-95	40
SB-PL-8-1-1.5	04-015-96	12
SB-PL-9-0-0.5	04-015-97	27
SB-PL-10-2-2.5	04-015-98	10
SB-PL-11-0.5-1	04-015-99	17
SB-PL-12-1-1.5	04-015-100	15
SB-PL-13-1-1.5	04-015-101	14
SB-PL-14-1-1.5	04-015-102	9
SB-101-1-0-0.5	04-015-103	20
SB-101-1-2-2.5	04-015-104	15
SB-101-2-0-0.5	04-015-105	18
SB-DUP-5	04-015-106	19
SB-101-2-2-2.5	04-015-107	13
SB-101-3-0-0.5	04-015-108	20
SB-101-3-2-2.5	04-015-109	14
SB-107-1-0-0.5	04-015-110	16
SB-107-1-1-1.5	04-015-111	17
SB-107-2-0-0.5	04-015-112	34
SB-107-2-0.5-1	04-015-113	27
SB-107-3-0-0.5	04-015-114	25
SB-107-3-0.5-1	04-015-115	23
SB-107-4-0-0.5	04-015-116	26
SB-DUP-6	04-015-117	26
SB-107-4-0.5-1	04-015-118	13
SB-107-5-0-0.5	04-015-119	26
SB-107-5-0.5-1	04-015-120	28
SB-107-6-0-0.5	04-015-121	28

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

% MOISTURE

Date Analyzed: 4-3,5,12&15-19

Client ID	Lab ID	% Moisture
SB-107-6-0.5-1	04-015-122	30
SB-104-1-0-0.5	04-015-123	29
SB-104-1-2.5-3	04-015-124	16
SB-104-2-0-0.5	04-015-125	20
SB-104-2-4-4.5	04-015-126	10
SB-104-3-0-0.5	04-015-127	17
SB-104-3-2.5-3	04-015-128	14
SB-102-1-0-0.5	04-015-129	28
SB-102-1-1.5-2.0	04-015-130	28
SB-DUP-7	04-015-131	26
SB-102-2-0-0.5	04-015-132	37
SB-102-3-0-0.5	04-015-133	44
SB-102-3-0.5-1.0	04-015-134	28
SB-101-4-0-0.5	04-015-135	18
SB-101-4-2.0-2.5	04-015-136	21
SB-DUP-8	04-015-137	21
SB-101-5-0-0.5	04-015-138	22
SB-101-5-0.5-1.0	04-015-139	15
SB-101-6-0-0.5	04-015-140	23
SB-101-6-0.5-1.0	04-015-141	17
SB-101-7-0.5-1.0	04-015-142	44
SB-101-7-1.5-2.0	04-015-143	23
SB-101-8-0-0.5	04-015-144	27
SB-101-8-1.0-1.5	04-015-145	21
SB-101-9-0-0.5	04-015-146	17
SB-DUP-9	04-015-147	26
SB-101-9-1.5-2.0	04-015-148	15

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

% MOISTURE

Date Analyzed: 4-3,5,12&15-19

Client ID	Lab ID	% Moisture
SB-101-10-0-0.5	04-015-149	17
SB-101-10-0.5-1.0	04-015-150	13
SB-101-11-0-0.5	04-015-151	28
SB-101-11-0.5-1.0	04-015-152	20
SB-101-12-0-0.5	04-015-153	20
SB-101-12-1.0-1.5	04-015-154	13
SB-101-13-0-0.5	04-015-155	26
SB-101-13-1.0-1.5	04-015-156	18
SB-DUP-10	04-015-157	24
SB-101-14-0-0.5	04-015-158	29
SB-101-14-1.0-1.5	04-015-159	18
SB-101-15-0-0.5	04-015-160	30
SB-101-15-0.5-1.0	04-015-161	29
SB-101-16-0-0.5	04-015-162	26
SB-101-16-2.0-2.5	04-015-163	10
SB-DUP-11	04-015-164	25

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

April 18, 2019

Mr. David Baumeister
OnSite Environmental, Inc.
14648 NE 95th Street
Redmond, WA 98052

Dear Mr. Baumeister,

On April 10th, 3 samples were received by our laboratory and assigned our laboratory project number EV19040073. The project was identified as your Lab Ref 04-015 Proj B0003010.0006. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Rick Bagan
Laboratory Director

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental, Inc. 14648 NE 95th Street Redmond, WA 98052	DATE: ALS JOB#: ALS SAMPLE#:	4/18/2019 EV19040073 EV19040073-01
CLIENT CONTACT:	David Baumeister	DATE RECEIVED:	04/10/2019
CLIENT PROJECT:	Lab Ref 04-015 Proj B0003010.0006	COLLECTION DATE:	3/31/2019 11:31:00 AM
CLIENT SAMPLE ID	SB-112-6-0-0.5	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C10-C12 Aliphatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C12-C16 Aliphatics	NWEPH	**14**	5.0	1	MG/KG	04/12/2019	EBS
>C16-C21 Aliphatics	NWEPH	**190**	5.0	1	MG/KG	04/12/2019	EBS
>C21-C34 Aliphatics	NWEPH	**79**	5.0	1	MG/KG	04/12/2019	EBS
>C8-C10 Aromatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C10-C12 Aromatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C12-C16 Aromatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C16-C21 Aromatics	NWEPH	**20**	5.0	1	MG/KG	04/12/2019	EBS
>C21-C34 Aromatics	NWEPH	**20**	5.0	1	MG/KG	04/12/2019	EBS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
C25	NWEPH	**116**	04/12/2019	EBS
p-Terphenyl	NWEPH	**106**	04/12/2019	EBS

U - Analyte analyzed for but not detected at level above reporting limit.

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental, Inc. 14648 NE 95th Street Redmond, WA 98052	DATE: ALS JOB#: ALS SAMPLE#:	4/18/2019 EV19040073 EV19040073-02
CLIENT CONTACT:	David Baumeister	DATE RECEIVED:	04/10/2019
CLIENT PROJECT:	Lab Ref 04-015 Proj B0003010.0006	COLLECTION DATE:	3/31/2019 3:48:00 PM
CLIENT SAMPLE ID	SB-107-3-0-0.5	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	**280**	5.0	1	MG/KG	04/12/2019	EBS
>C10-C12 Aliphatics	NWEPH	**8.0**	5.0	1	MG/KG	04/12/2019	EBS
>C12-C16 Aliphatics	NWEPH	**89**	5.0	1	MG/KG	04/12/2019	EBS
>C16-C21 Aliphatics	NWEPH	**740**	5.0	1	MG/KG	04/12/2019	EBS
>C21-C34 Aliphatics	NWEPH	**310**	5.0	1	MG/KG	04/12/2019	EBS
>C8-C10 Aromatics	NWEPH	**33**	5.0	1	MG/KG	04/12/2019	EBS
>C10-C12 Aromatics	NWEPH	**9.2**	5.0	1	MG/KG	04/12/2019	EBS
>C12-C16 Aromatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C16-C21 Aromatics	NWEPH	**93**	5.0	1	MG/KG	04/12/2019	EBS
>C21-C34 Aromatics	NWEPH	**93**	5.0	1	MG/KG	04/12/2019	EBS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
C25	NWEPH	**123**	04/12/2019	EBS
p-Terphenyl	NWEPH	**104**	04/12/2019	EBS

U - Analyte analyzed for but not detected at level above reporting limit.

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental, Inc. 14648 NE 95th Street Redmond, WA 98052	DATE:	4/18/2019
		ALS JOB#:	EV19040073
		ALS SAMPLE#:	EV19040073-03
CLIENT CONTACT:	David Baumeister	DATE RECEIVED:	04/10/2019
CLIENT PROJECT:	Lab Ref 04-015 Proj B0003010.0006	COLLECTION DATE:	3/31/2019 3:52:00 PM
CLIENT SAMPLE ID	SB-107-3-0.5-1	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	**51**	5.0	1	MG/KG	04/12/2019	EBS
>C10-C12 Aliphatics	NWEPH	**6.6**	5.0	1	MG/KG	04/12/2019	EBS
>C12-C16 Aliphatics	NWEPH	**100**	5.0	1	MG/KG	04/12/2019	EBS
>C16-C21 Aliphatics	NWEPH	**500**	5.0	1	MG/KG	04/12/2019	EBS
>C21-C34 Aliphatics	NWEPH	**200**	5.0	1	MG/KG	04/12/2019	EBS
>C8-C10 Aromatics	NWEPH	**6.1**	5.0	1	MG/KG	04/12/2019	EBS
>C10-C12 Aromatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C12-C16 Aromatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C16-C21 Aromatics	NWEPH	**52**	5.0	1	MG/KG	04/12/2019	EBS
>C21-C34 Aromatics	NWEPH	**59**	5.0	1	MG/KG	04/12/2019	EBS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
C25	NWEPH	**119**	04/12/2019	EBS
p-Terphenyl	NWEPH	**101**	04/12/2019	EBS

U - Analyte analyzed for but not detected at level above reporting limit.

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental, Inc. 14648 NE 95th Street Redmond, WA 98052	DATE: ALS SDG#: WDOE ACCREDITATION:	4/18/2019 EV19040073 C601
CLIENT CONTACT:	David Baumeister		
CLIENT PROJECT:	Lab Ref 04-015 Proj B0003010.0006		

LABORATORY BLANK RESULTS

MB-041019S - Batch 139774 - Soil by NWEPH

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	U	MG/KG	5.0	04/11/2019	EBS
>C10-C12 Aliphatics	NWEPH	U	MG/KG	5.0	04/11/2019	EBS
>C12-C16 Aliphatics	NWEPH	U	MG/KG	5.0	04/11/2019	EBS
>C16-C21 Aliphatics	NWEPH	U	MG/KG	5.0	04/11/2019	EBS
>C21-C34 Aliphatics	NWEPH	U	MG/KG	5.0	04/11/2019	EBS
>C8-C10 Aromatics	NWEPH	U	MG/KG	5.0	04/11/2019	EBS
>C10-C12 Aromatics	NWEPH	U	MG/KG	5.0	04/11/2019	EBS
>C12-C16 Aromatics	NWEPH	U	MG/KG	5.0	04/11/2019	EBS
>C16-C21 Aromatics	NWEPH	U	MG/KG	5.0	04/11/2019	EBS
>C21-C34 Aromatics	NWEPH	U	MG/KG	5.0	04/11/2019	EBS

U - Analyte analyzed for but not detected at level above reporting limit.

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental, Inc. 14648 NE 95th Street Redmond, WA 98052	DATE: ALS SDG#: WDOE ACCREDITATION:	4/18/2019 EV19040073 C601
CLIENT CONTACT:	David Baumeister		
CLIENT PROJECT:	Lab Ref 04-015 Proj B0003010.0006		

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 139774 - Soil by NWEPH

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics - BS	NWEPH	**86.9**			70	130	04/11/2019	EBS
>C8-C10 Aliphatics - BSD	NWEPH	**87.8**	**1**		70	130	04/11/2019	EBS
>C10-C12 Aliphatics - BS	NWEPH	**91.8**			70	130	04/11/2019	EBS
>C10-C12 Aliphatics - BSD	NWEPH	**92.5**	**1**		70	130	04/11/2019	EBS
>C12-C16 Aliphatics - BS	NWEPH	**99.2**			70	130	04/11/2019	EBS
>C12-C16 Aliphatics - BSD	NWEPH	**99.4**	**0**		70	130	04/11/2019	EBS
>C16-C21 Aliphatics - BS	NWEPH	**104**			70	130	04/11/2019	EBS
>C16-C21 Aliphatics - BSD	NWEPH	**103**	**1**		70	130	04/11/2019	EBS
>C21-C34 Aliphatics - BS	NWEPH	**93.9**			70	130	04/11/2019	EBS
>C21-C34 Aliphatics - BSD	NWEPH	**91.7**	**2**		70	130	04/11/2019	EBS
>C8-C10 Aromatics - BS	NWEPH	**82.2**			70	130	04/11/2019	EBS
>C8-C10 Aromatics - BSD	NWEPH	**76.3**	**7**		70	130	04/11/2019	EBS
>C10-C12 Aromatics - BS	NWEPH	**73.5**			70	130	04/11/2019	EBS
>C10-C12 Aromatics - BSD	NWEPH	**85.5**	**15**		70	130	04/11/2019	EBS
>C12-C16 Aromatics - BS	NWEPH	**99.7**			70	130	04/11/2019	EBS
>C12-C16 Aromatics - BSD	NWEPH	**90.7**	**9**		70	130	04/11/2019	EBS
>C16-C21 Aromatics - BS	NWEPH	**105**			70	130	04/11/2019	EBS
>C16-C21 Aromatics - BSD	NWEPH	**98.7**	**6**		70	130	04/11/2019	EBS
>C21-C34 Aromatics - BS	NWEPH	**87.3**			70	130	04/11/2019	EBS
>C21-C34 Aromatics - BSD	NWEPH	**93.5**	**7**		70	130	04/11/2019	EBS

APPROVED BY

Laboratory Director

EV1904 0073

Page 1 of 1

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Laboratory: ALS Environmental

Attention: Rick Bagan

8620 Holly Drive Everett, WA 98208

Phone Number: (425) 356-2600

Turnaround Request

1 Day 2 Day 3 Day

[✓ Standard]

Other: __________

Laboratory Reference #: 04-015

Project Manager: David Baumeister

email: dbaumeister@onsite-env.com

Project Number: B0003010.0006

Project Name: __________

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analyses
1	73	SB-112-6-0-0.5	3/31/19	11:31	S	1	EPH
2	114	SB-107-3-0-0.5	3/31/19	15:48	S	1	EPH
3	115	SB-107-3-0.5-1	3/31/19	15:52	S	1	EPH

Signature	Company	Date	Time	Comments/Special Instructions
Relinquished by:	OSE	4/10/19	1042	
Received by:	ALPHA	4/10/19	10:42	
Relinquished by:	ALPHA	4/10/19	12:00	
Received by: Shawn Robinson	ALS	4/10/19	12:00	
Relinquished by:				
Received by:				

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Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Page 1 of 18

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)	TCLP Lead										%MOISTURE
1	ISM-13-A-0.5-1.0	3/29/19	0728	soil	1	X																					X
2	ISM-13-1-0.5-1.0	│	0729	│	1	X		On Hold																			
3	ISM-13-2-0.5-1.0	│	0730	│	1	X		On Hold																			
4	ISM-13-3-0.5-1.0	│	0731	│	1	X		On Hold																			
5	ISM-13-B-0-0.5	│	1115	│	1	X																					X
6	ISM-13-C-0-0.5	│	1137	│	1	X																					↓
7	ISM-14-A-0-0.5	│	0950	│	1	X											○										↓
8	ISM-14-1-0-0.5	│	0951	│	1	X			On Hold																		
9	ISM-14-2-0-0.5	│	0952	│	1	X			On Hold																		
~~10~~	~~ISM-14-3-0-0.5~~																										

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

⊗ Added 4/9/19 STA

○ Added 4/18/19 STA

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

Page 2 of 18

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)	TCLP Lead										% MOISTURE
11	ISM-14-A-0.5-1.0	3/29/19	1035	soil	1	X																					X
12	ISM-14-1-0.5-1.0		1036		1	X		on Hold																			
13	ISM-14-2-0.5-1.0		1037		1	X		on Hold																			
14	ISM-15-A-0-0.5	3/29/19	1330		1	X																					X
15	ISM-15-1-0-0.5		1331		1	X			on Hold																		
16	ISM-15-2-0-0.5		1332		1	X			on Hold																		
17	ISM-15-3-0-0.5		1333		1	X			on Hold																		
18	ISM-15-4-0-0.5		1334		1	X			on Hold																		
19	ISM-15-A-0.5-1.0		1353		1	X											O										X
20	ISM-15-1-0.5-1.0		1354		1	X			on Hold																		

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
21	ISM-15-2-0.5-1.0	3/29/19	1355	Soil	1	X		on Hold																			
22	ISM-15-3-0.5-1.0		1356		1	X		on Hold																			
23	ISM-15-4-0.5-1.0		1357		1	X		on Hold																			
24	ISM-15-A-1.0-1.5	3/30/19	1325		1	X																					X
25	ISM-15-1-1.0-1.5		1326		1	X		on Hold																			
26	ISM-15-2-1.0-1.5		1327		1	X		on Hold																			
27	ISM-15-3-1.0-1.5		1328		1	X		on Hold																			
28	ISM-15-4-1.0-1.5		1329		1	X		on Hold																			
29	ISM-16-A-0-0.5		1038		1	X																					X
30	ISM-16-1-0-0.5		1039		1	X		on Hold																			

	Signature	Company	Date	Time
Relinquished	alex Reid	Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
31	ISM-16-2-0-0.5	3/30/19	1040	soil	1	X		on Hold																			
32	ISM-16-A-0.5-1.0		1121		1	X																					X
33	ISM-16-1-0.5-1.0		1122		1	X		on Hold																			
34	ISM-16-2-0.5-1.0		1123		1	X			on Hold																		
35	ISM-17-A-0-0.5		1219		1	X																					X
36	ISM-17-1-0-0.5		1220		1	X			on Hold																		
37	ISM-17-2-0-0.5		1221		1	X			on Hold																		
38	ISM-17-3-0-0.5		1222		1	X			on Hold																		
39	ISM-17-4-0-0.5		1223		1	X			on Hold																		
40	ISM-17-A-0.5-1.0		1350		1	X																					X

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

OnSite Environmental Inc.
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Chain of Custody

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)	% MOISTURE
41	ISM-17-1-0.5-1.0	3/30/19	1351	Soil	1	X			OM Hold								
42	ISM-17-2-0.5-1.0		1352		1	X			OM Hold								
43	ISM-17-3-0.5-1.0		1353		1	X			OM Hold								
44	ISM-17-4-0.5-1.0		1354		1	X			OM Hold								
45	ISM-18-A-0-0.5		1553		1	X											X
46	ISM-18-1-0-0.5		1554		1	X				OM Hold							
47	ISM-18-2-0-0.5		1555		1	X				OM Hold							
48	ISM-18-3-0-0.5		1556		1	X				OM Hold							
49	ISM-18-4-0-0.5		1557		1	X				OM Hold							
50	ISM-18-A-0.5-1.0		1559		1	X											X

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

OnSite Environmental Inc.
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Chain of Custody

Page 6 of 18

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
51	ISM-18-1-0.5-1.0	3/30/19	1600	Soil	1	X		On		Hold																	
52	ISM-18-2-0.5-1.0	|	1601	|	1	X		On		Hold																	
53	ISM-18-3-0.5-1.0	|	1602	|	1	X		on		Hold																	
54	ISM-18-4-0.5-1.0	|	1603	|	1	X			on	Hold																	
55	SB-106-1-0-0.5	3/31/19	0855	Soil	1	X																					X
56	SB-106-1-2-2.3	3/31/19	0911	|	1	X																					↓
57	SB-DUP-1	3/31/19	—	|	1	X																					↓
58	SB-106-2-0-0.5	3/31/19	0900	|	1	X																					↓
59	SB-106-2-2.0-2.5	3/31/19	0906	|	1	X																					✓
60	SB-106-3-0-0.5	3/31/19	0901	|	1	X																					

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

* Sample Benzene from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

OnSite Environmental Inc.
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Chain of Custody

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)									5 Days		% MOISTURE
61	SB-106-3-2-2.5	3/31/19	0912	Soil	1	X																					X
62	SB-112-1-0-0.5	3/31/19	1020		3			X		X	X	X													X		
63	SB-112-1-0.5-0.7		1035		3			X		X	X	X															
64	SB-112-2-0-0.5		1038		3			X		X	X	X															
65	SB-112-2-1-1.5		1041		3			X		X	X	X															
66	SB-112-3-0-0.5		1046		3			X		X	X	X															
67	SB-112-3-1-1.3		1050		3			X		X	X	X															
68	SB-112-4-0-0.5		1055		3			X		X	X	X															
69	SB-DUP-2	3/31/19	—		3			X		X	X	X															
70	SB-112-4-0.5-1		1100		3			X		X	X	X													↓		↓

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

* Sample Benzene from jar

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	~~Benzene~~ (USEPA Method 8260)* BTEX	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
71	SB-112-5-0-0.5	3/31/19	1115	Soil	3			X		X	X	X															X
72	SB-112-5-0.5-0.9		1129		3			X		X	X	X															
73	SB-112-6-0-0.5		1131		3			X	ⓧ	ⓧ	ⓧ	ⓧ															
74	SB-112-6-1-1.5		1135		3			X		X	X	X															
75	SB-112-7~~8~~-0-0.5		1140		3			X		X	X	X															
76	SB-112-7-0.5-0.8		1145		3			X		X	X	X															
77	SB-112-08-0-0.5		1200		3			X		X	X	X															
78	SB-[illegible] DUP-3	3/31/19	—		3			X		X	X	X															
79	SB-112-08-1-1.5		1206		3			X		X	X	X															
80	SB-112-9-0-0.5		1210		3			X		X	X	X															

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

*Sample Benzene from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐

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Chain of Custody

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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
81	SB-112-9-0.5-1	3/31/19	1215	Soil	3			X		X	X	X															X
82	SB-112-10-0-0.5		1218		3			X		X	X	X															
83	SB-112-10-0.5-1		1220		3			X		X	X	X															
84	SB-112-11-0-0.5		1225		3			X		X	X	X															
85	SB-112-11-1.5-2		1230		3			X		X	X	X															
86	SB-112-12-0-0.5		1233		3			X		X	X	X															
87	SB-112-12-1-1.5		1238		3			X		X	X	X															
88	SB-PL-1-0-0.5		1310		3			X		X	X	X															
89	SB-PL-2-1-1.5		1313		3			X		X	X	X															
90	SB-PL-3-0-0.5		1315		3			X		X	X	X															

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

* Sample Benzene from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

Page 10 of 18

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
91	SB-PL-4-1-1.5	3/31/19	1319	Soil	3			X		X	X	X															X
92	SB-PL-5-0-0.5		1324		3			X		X	X	X															
93	SB-PL-6-1-1.5		1329		3			X		X	X	X															
94	SB-DUP-4	3/31/19	—		3			X		X	X	X															
95	SB-PL-7-0-0.5		1335		3			X		X	X	X															
96	SB-PL-8-1-1.5		1400		3			X		X	X	X															
97	SB-PL-9-0-0.5		1410		3			X		X	X	X															
98	SB-PL-10-2-2.5		1416		4			X		X	X	X			MS/MSD												
99	SB-PL-11-0.5-1		1423		3			X		X	X	X															
100	SB-PL-12-1-1.5		1427		3			X		X	X	X															↓

	Signature	Company	Date	Time
Relinquished	Alex Pink	Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

*Sample Benzene from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________________

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Chain of Custody

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)										% MOISTURE
101	SB-PL-13-1-1.5	3/31/19	1431	Soil	3			X		X	X	X														X
102	SB-PL-14-1-1.5		1438		4			X		X	X	X					MS/MSD									↓
103	SB-101-1-0-0.5		1449		3			X		X	X	X														
104	SB-101-1-2-2.5		1452		3			X		X	X	X														
105	SB-101-2-0-0.5		1458		3			X		X	X	X														
106	SB-DUP-5	3/31/19	—		3			X		X	X	X														
107	SB-101-2-2-2.5		1504		3			X		X	X	X														
108	SB-101-3-0-0.5		1508		3			X		X	X	X														
109	SB-101-3-2-2.5		1513		3			X		X	X	X														
110	SB-107-1-0-0.5		1525		3			X		X	X	X														

	Signature	Company	Date	Time
Relinquished	Alex Pri	Arcadis	4/1/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

* Sample Benzene from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

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Chain of Custody

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	~~Benzene~~ (USEPA Method 8260)* BTEX	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											%MOISTURE
111	SB-107-1-1-1.5	3/31/19	1531	Soil	3			X		X	X	X															X
112	SB-107-2-0-0.5		1538		3			X		X	X	X															↓
113	SB-107-2-0.5-1		1543		3			X		X	X	X															
114	SB-107-3-0-0.5		1548		3			X	⊗	⊗	⊗	⊗															
115	SB-107-3-0.5-1		1552		3			X	⊗	X	⊗	⊗															
116	SB-107-4-0-0.5		1556		3			X		X	X	X															
117	SB-DUP-6	3/31/19			3			X		X	X	X															
118	SB-107-4-0.5-1		1604		3			X		X	X	X															
119	SB-107-5-0-0.5		1607		3			X		X	X	X															
120	SB-107-5-0.5-1		1610		3			X		X	X	X															

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

* Benzene - sample from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

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Chain of Custody

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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)	% MOIS
121	SB-107-6-0-0.5	3/31/19	1613	Soil	3			X		X	X	X					X
122	SB-107-6-0.5-1		1618		3			X		X	X	X					
123	SB-104-1-0-0.5		1633		3			X		X	X	X					
124	SB-104-1-2.5-3		1639		3			X		X	X	X					
125	SB-104-2-0-0.5		1641		3			X		X	X	X					
126	SB-104-2-4-4.5		1645		3			X		X	X	X					
127	SB-104-3-0-0.5		1647		3			X		X	X	X					
128	SB-104-3-2.5-3		1650		3			X		X	X	X					

	Signature	Company	Date	Time
Relinquished	Alex Pinch	Arcadis	4/1/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

* Take Benzene from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐

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Chain of Custody

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☒ 5 DAYS (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)		% MOISTURE
129	SB-102-1-0-0.5	4/1/19	0937	soil	4		X	X		X	X	X	X					X
130	SB-102-1-1.5-2.0	4/1/19	0950	soil	5		X	X		X	X	X	X				MS/MSD	↓
131	SB-DUP-7	4/1/19	—	soil	4		X	X		X	X	X	X					↓
132	SB-102-2-0-0.5	4/1/19	0959	soil	4		X	X		X	X	X	X					↓
133	SB-102-3-0-0.5	4/1/19	1007	soil	4		X	X		X	X	X	X					↓
134	SB-102-3-0.5-1.0	4/1/19	1048	soil	4		X	X		X	X	X	X					↓
	~~SB-102-1-1.5-2.0~~	~~4/1/19~~	~~0950~~	~~soil~~	~~5~~		~~X~~	~~X~~		~~X~~	~~X~~	~~X~~	~~X~~				~~MS/MSD~~	
135	SB-101-4-0-0.5	4/1/19	1109	soil	1			X	X									X
136	SB-101-4-2.0-2.5	4/1/19	1113	soil	1			X	X									↓
137	SB-DUP-8	4/1/19	—	soil	1			X	X									↓

	Signature	Company	Date	Time
Relinquished	Alex Rich	Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐

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Chain of Custody

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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Marty Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (mineral oil)	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA / MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664							% Moisture
138	~~[illegible]~~ SB-101-5-0-0.5	4/1/19	1119	Soil	1				X					X													X
139	SB-101-5-0.5-1.0		1121		1				X					X													
140	SB-101-6-0-0.5		1123		1				X					X													
141	SB-101-6-0.5-1.0		1126		1				X					X													
142	SB-101-7-0.5-1.0		1129		1				X					X													
143	SB-101-7-1.5-2.0		1136		1				X					X													
144	SB-101-8 ~~[illegible]~~ 0-0.5		1139		1				X					X							(MS/MSD)						
145	SB-101-8-1.0-1.5		1141		1				X					X													
146	SB-101-9-0-0.5		1143		1				X					X													
147	SB-DUP-9		—		1				X					X													

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				

Comments/Special Instructions

Reviewed/Date

Reviewed/Date

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

OnSite Environmental Inc.
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Chain of Custody

Page 16 of 18

Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (mineral oil)	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA / MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664							% Moisture
148	SB-101-9-1.5-2.0	4/1/19	1146	Soil	1				X					X													X
149	SB-101-10-0-0.5		1148		1				X					X													
150	SB-101-10-0.5-1.0		1203		1				X					X													
151	SB-101-11-0-0.5		1151		1				X					X													
152	SB-101-11-0.5-1.0		1206		1				X					X													
153	SB-101-12-0-0.5		1207		1				X					X													
154	SB-101-12-~~0.5~~ MU 1.0-1.5		1215		1				X					X													
155	SB-101-13-0-0.5		1209		1				X					X													
156	SB-101-13-1.0-1.5		1217		1				X					X													
157	SB-DUP-10		—		1				X					X													

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				

Comments/Special Instructions:

Reviewed/Date

Reviewed/Date

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

OnSite Environmental Inc.
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Chain of Custody

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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (w/heavy oil)	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA / MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664							% Moisture
158	SB-101-14-0-0.5	4/1/19	1218	Soil	1				X					X													X
159	SB-101-14-1.0-1.5	↓	1223	↓	↓				X					X													↓
160	SB-101-15-0-0.5	↓	1240	↓	↓				X					X													↓
161	SB-101-15-0.5-1.0	↓	1241	↓	↓				X					X													↓
162	SB-101-16-0-0.5	↓	1235	↓	↓				X					X													↓
163	SB-101-16-2.0-2.5	↓	1308	↓	↓				X					X							(ms/msD)						↓
164	SB-Dup-11	↓	—	↓	↓				X					X													↓

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				

Comments/Special Instructions

Reviewed/Date

Reviewed/Date

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

OnSite Environmental Inc.
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Chain of Custody

Page 18 of 18

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260B (BTEX)	Halogenated Volatiles 8260B	~~Semivolatiles 8270D/SIM (with low-level PAHs)~~ cPAHs only	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA / MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664	~~EPH~~	~~VPH~~	Total Lead				% Moisture
165	PW-040119	4/1/19	1403	Water	6					X				X				X									
166	EB-032919	3/29/19	1700	↓	1																		X				
167	EB-033019	3/30/19	0820		1																		X				
168	EB-03312019	4/1/19	0915		8				X			X											X				
169	~~EB-03~~ EB-04012019	4/1/19	1306		10		X	~~X~~	X			X		X													

	Signature	Company	Date	Time
Relinquished	Alex Rich	Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

OnSite
Environmental Inc.
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Mat 28, 2019

Josh Gravenmier
Arcadis U.S., Inc.
1100 Olive Way, Suite 800
Seattle, WA 98101

Re: Analytical Data for Project B0003010.0006
Laboratory Reference No. 1904-015B

Dear Josh:

Enclosed are the analytical results and associated quality control data for samples submitted on April 2, 2019.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

Blair Goodrow
Project Manager

Enclosures

Date of Report: Mat 28, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015B
Project: B0003010.0006

Case Narrative

Samples were collected on March 29, 30, 31 and April 1, 2019 and received by the laboratory on April 2, 2019. They were maintained at the laboratory at a temperature of 2^{o}C to 6^{o}C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: Mat 28, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015B
Project: B0003010.0006

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-14-1-0-0.5**					
Laboratory ID:	04-015-08					
Lead	**300**	5.3	EPA 6010D	5-23-19	5-23-19	
Client ID:	**ISM-14-2-0-0.5**					
Laboratory ID:	04-015-09					
Lead	**420**	5.3	EPA 6010D	5-23-19	5-23-19	
Client ID:	**ISM-15-1-0.5-1.0**					
Laboratory ID:	04-015-20					
Lead	**24**	5.2	EPA 6010D	5-23-19	5-23-19	
Client ID:	**ISM-15-2-0.5-1.0**					
Laboratory ID:	04-015-21					
Lead	**55**	5.2	EPA 6010D	5-23-19	5-23-19	
Client ID:	**ISM-15-3-0.5-1.0**					
Laboratory ID:	04-015-22					
Lead	**6600**	26	EPA 6010D	5-23-19	5-24-19	
Client ID:	**ISM-15-4-0.5-1.0**					
Laboratory ID:	04-015-23					
Lead	**47**	5.2	EPA 6010D	5-23-19	5-23-19	
Client ID:	**ISM-18-1-0-0.5**					
Laboratory ID:	04-015-46					
Lead	**460**	5.1	EPA 6010D	5-23-19	5-23-19	
Client ID:	**ISM-18-2-0-0.5**					
Laboratory ID:	04-015-47					
Lead	**83**	5.2	EPA 6010D	5-23-19	5-23-19	

Date of Report: Mat 28, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015B
Project: B0003010.0006

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-18-3-0-0.5**					
Laboratory ID:	04-015-48					
Lead	**34**	5.1	EPA 6010D	5-23-19	5-23-19	

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-18-4-0-0.5**					
Laboratory ID:	04-015-49					
Lead	**220**	5.1	EPA 6010D	5-23-19	5-23-19	

Date of Report: Mat 28, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015B
Project: B0003010.0006

TOTAL LEAD
EPA 6010D
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0523SM2					
Lead	**ND**	5.0	EPA 6010D	5-23-19	5-23-19	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-015-47										
	ORIG	DUP									
Lead	**80.7**	**97.6**	NA	NA		NA		NA	19	20	
MATRIX SPIKES											
Laboratory ID:	04-015-47										
	MS	MSD	MS	MSD		MS	MSD				
Lead	**316**	**315**	250	250	80.7	**94**	**94**	75-125	0	20	

Date of Report: Mat 28, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015B
Project: B0003010.0006

% MOISTURE

Client ID	Lab ID	% Moisture
ISM-14-1-0-0.5	04-015-08	6
ISM-14-2-0-0.5	04-015-09	5
ISM-15-1-0.5-1.0	04-015-20	3
ISM-15-2-0.5-1.0	04-015-21	4
ISM-15-3-0.5-1.0	04-015-22	5
ISM-15-4-0.5-1.0	04-015-23	4
ISM-18-1-0-0.5	04-015-46	3
ISM-18-2-0-0.5	04-015-47	3
ISM-18-3-0-0.5	04-015-48	2
ISM-18-4-0-0.5	04-015-49	2

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

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Chain of Custody

Page 1 of 18

Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)	TCLP Lead										% MOISTURE
1	ISM-13-A-0.5-1.0	3/29/19	0728	soil	1	X																					X
2	ISM-13-1-0.5-1.0		0729		1	X		On Hold																			
3	ISM-13-2-0.5-1.0		0730		1	X		On Hold																			
4	ISM-13-3-0.5-1.0		0731		1	X		On Hold																			
5	ISM-13-B-0-0.5		1115		1	X																					X
6	ISM-13-C-0-0.5		1137		1	X																					↓
7	ISM-14-A-0-0.5		0950		1	X											○										↓
8	ISM-14-1-0-0.5		0951		1	⊗		~~On Hold~~																			⊗
9	ISM-14-2-0-0.5		0952		1	⊗		~~On Hold~~																			⊗
10	~~ISM-14-3-0-0.5~~																										

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

⊗ Added 4/9/19 STA
○ Added 4/18/19 STA
⊗ Added 5/14/19 Total Lead

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

Page 2 of 18

Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)	TCLP Lead										% MOISTURE
11	ISM-14-A-0.5-1.0	3/29/19	1035	soil	1	X																					X
12	ISM-14-1-0.5-1.0		1036		1	X		on			Hold																
13	ISM-14-2-0.5-1.0		1037		1	X		on			Hold																
14	ISM-15-A-0-0.5	3/29/19	1330		1	X																					X
15	ISM-15-1-0-0.5		1331		1	X			on		Hold																
16	ISM-15-2-0-0.5		1332		1	X			on		Hold																
17	ISM-15-3-0-0.5		1333		1	X			on		Hold																
18	ISM-15-4-0-0.5		1334		1	X			on		Hold																
19	ISM-15-A-0.5-1.0		1353		1	X											O										X
20	ISM-15-1-0.5-1.0		1354		1	X			~~on~~		~~Hold~~																X

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

Chain of Custody

Page 3 of 18

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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ______ (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)										% MOISTURE
21	ISM-15-2-0.5-1.0	3/29/19	1355	Soil	1	ⓧ		~~on Hold~~																		ⓧ
22	ISM-15-3-0.5-1.0	|	1356	|	1	ⓧ		~~on Hold~~																		ⓧ
23	ISM-15-4-0.5-1.0	|	1357	|	1	ⓧ		~~on Hold~~																		ⓧ
24	ISM-15-A-1.0-1.5	3/30/19	1325	|	1	X																				X
25	ISM-15-1-1.0-1.5	|	1326	|	1	X		on Hold																		
26	ISM-15-2-1.0-1.5	|	1327	|	1	X		on Hold																		
27	ISM-15-3-1.0-1.5	|	1328	|	1	X		on Hold																		
28	ISM-15-4-1.0-1.5	|	1329	|	1	X		on Hold																		
29	ISM-16-A-0-0.5	|	1038	|	1	X																				X
30	ISM-16-1-0-0.5	|	1039	|	1	X		on Hold																		

	Signature	Company	Date	Time
Relinquished	alex Reis	Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
31	ISM-16-2-0-0.5	3/30/19	1040	soil	1	X		on Hold																			
32	ISM-16-A-0.5-1.0		1121		1	X																					X
33	ISM-16-1-0.5-1.0		1122		1	X		on Hold																			
34	ISM-16-2-0.5-1.0		1123		1	X		on Hold																			
35	ISM-17-A-0-0.5		1219		1	X																					X
36	ISM-17-1-0-0.5		1220		1	X		on Hold																			
37	ISM-17-2-0-0.5		1221		1	X		on Hold																			
38	ISM-17-3-0-0.5		1222		1	X		on Hold																			
39	ISM-17-4-0-0.5		1223		1	X		on Hold																			
40	ISM-17-A-0.5-1.0		1350		1	X																					X

	Signature	Company	Date	Time
Relinquished	Alex Pick	Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
41	ISM-17-1-0.5-1.0	3/30/19	1351	Soil	1	X			on		Hold																
42	ISM-17-2-0.5-1.0		1352		1	X			On		Hold																
43	ISM-17-3-0.5-1.0		1353		1	X			on		Hold																
44	ISM-17-4-0.5-1.0		1354		1	X			on		Hold																
45	ISM-18-A-0-0.5		1553		1	X																					X
46	ISM-18-1-0-0.5		1554		1	X				~~on~~		~~Hold~~															X
47	ISM-18-2-0-0.5		1555		1	X				~~on~~		~~Hold~~															X
48	ISM-18-3-0-0.5		1556		1	X				~~on~~		~~Hold~~															X
49	ISM-18-4-0-0.5		1557		1	X				~~on~~		~~Hold~~															X
50	ISM-18-A-0.5-1.0		1559		1	X																					X

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ____________ (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
51	ISM-18-1-0.5-1.0	3/30/19	1600	Soil	1	X		on		Hold																	
52	ISM-18-2-0.5-1.0	|	1601	|	1	X		on		Hold																	
53	ISM-18-3-0.5-1.0	|	1602	|	1	X		on		Hold																	
54	ISM-18-4-0.5-1.0	|	1603	|	1	X		on		Hold																	
55	SB-106-1-0-0.5	3/31/19	0855	Soil	1	X																					X
56	SB-106-1-2-2.3	3/31/19	0911	|	1	X																					|
57	SB-DUP-1	3/31/19	—	|	1	X																					|
58	SB-106-2-0-0.5	3/31/19	0900	|	1	X																					|
59	SB-106-2-2.0-2.5	3/31/19	0906	|	1	X																					|
60	SB-106-3-0-0.5	3/31/19	0901	|	1	X																					✓

	Signature	Company	Date	Time
Relinquished	Alex [illegible]	Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

* Sample Benzene from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

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Chain of Custody

Page 7 of 18

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ______ (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)									5 Days		% MOISTURE
61	SB-106-3-2-2.5	3/31/19	0912	Soil	1	X																					X
62	SB-112-1-0-0.5	3/31/19	1020		3			X		X	X	X													X		
63	SB-112-1-0.5-0.7		1035		3			X		X	X	X															
64	SB-112-2-0-0.5		1038		3			X		X	X	X															
65	SB-112-2-1-1.5		1041		3			X		X	X	X															
66	SB-112-3-0-0.5		1046		3			X		X	X	X															
67	SB-112-~~3~~3-1-1.3		1050		3			X		X	X	X															
68	SB-112-4-0-0.5		1055		3			X		X	X	X															
69	SB-DUP-2	3/31/19	—		3			X		X	X	X															
70	SB-112-4-0.5-1		1100		3			X		X	X	X															

	Signature	Company	Date	Time
Relinquished	Alex Plait	Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

* Sample Benzene from jar

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

Page 8 of 18

Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	~~Benzene~~ (USEPA Method 8260)* BTEX	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
71	SB-112-5-0-0.5	3/31/19	1115	Soil	3			X		X	X	X															X
72	SB-112-5-0.5-0.9		1129		3			X		X	X	X															
73	SB-112-6-0-0.5		1131		3			X	X	X	X	X															
74	SB-112-6-1-1.5		1135		3			X		X	X	X															
75	SB-112-7~~6~~-0-0.5		1140		3			X		X	X	X															
76	SB-112-7-0.5-0.8		1145		3			X		X	X	X															
77	SB-112-08-0-0.5		1200		3			X		X	X	X															
78	SB-~~[illegible]~~ DUP-3	3/31/19	—		3			X		X	X	X															
79	SB-112-08-1-1.5		1206		3			X		X	X	X															
80	SB-112-9-0-0.5		1210		3			X		X	X	X															

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				

Reviewed/Date

Reviewed/Date

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

* Sample Benzene from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

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Chain of Custody

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
81	SB-112-9-0.5-1	3/31/19	1215	Soil	3			X		X	X	X															X
82	SB-112-10-0-0.5		1218		3			X		X	X	X															
83	SB-112-10-0.5-1		1220		3			X		X	X	X															
84	SB-112-11-0-0.5		1225		3			X		X	X	X															
85	SB-112-11-1.5-2		1230		3			X		X	X	X															
86	SB-112-12-0-0.5		1233		3			X		X	X	X															
87	SB-112-12-1-1.5		1238		3			X		X	X	X															
88	SB-PL-1-0-0.5		1310		3			X		X	X	X															
89	SB-PL-2-1-1.5		1313		3			X		X	X	X															
90	SB-PL-3-0-0.5		1315		3			X		X	X	X															

	Signature	Company	Date	Time
Relinquished	Alex Rial	Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

* Sample Benzene from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

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Chain of Custody

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
91	SB-PL-4-1-1.5	3/31/19	1319	Soil	3			X		X	X	X															X
92	SB-PL-5-0-0.5		1324		3			X		X	X	X															
93	SB-PL-6-1-1.5		1329		3			X		X	X	X															
94	SB-DUP-4	3/31/19	—		3			X		X	X	X															
95	SB-PL-7-0-0.5		1335		3			X		X	X	X															
96	SB-PL-8-1-1.5		1400		3			X		X	X	X															
97	SB-PL-9-0-0.5		1410		3			X		X	X	X															
98	SB-PL-10-2-2.5		1416		4			X		X	X	X			MS/MSD												
99	SB-PL-11-0.5-1		1423		3			X		X	X	X															
100	SB-PL-12-1-1.5		1427		3			X		X	X	X															

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

*Sample Benzene from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

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Chain of Custody

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
101	SB-PL-13-1-1.5	3/31/19	1431	Soil	3			X		X	X	X															X
102	SB-PL-14-1-1.5		1438		4			X		X	X	X					MS/MSD										↓
103	SB-101-1-0-0.5		1449		3			X		X	X	X															↓
104	SB-101-1-2-2.5		1452		3			X		X	X	X															↓
105	SB-101-2-0-0.5		1458		3			X		X	X	X															↓
106	SB-DUP-5	3/31/19	—		3			X		X	X	X															↓
107	SB-101-2-2-2.5		1504		3			X		X	X	X															↓
108	SB-101-3-0-0.5		1508		3			X		X	X	X															↓
109	SB-101-3-2-2.5		1513		3			X		X	X	X															↓
110	SB-107-1-0-0.5		1525		3			X		X	X	X															↓

	Signature	Company	Date	Time
Relinquished		Arcadis	4/1/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

* Sample Benzene from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	~~Benzene~~ (USEPA Method 8260)* BTEX	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
111	SB-107-1-1-1.5	3/31/19	1531	Soil	3			X		X	X	X															X
112	SB-107-2-0-0.5		1538		3			X		X	X	X															↓
113	SB-107-2-0.5-1		1543		3			X		X	X	X															↓
114	SB-107-3-0-0.5		1548		3			X	⊗	⊗	⊗	⊗															↓
115	SB-107-3-0.5-1		1552		3			X	⊗	X	⊗	⊗															↓
116	SB-107-4-0-0.5		1556		3			X		X	X	X															↓
117	SB-DUP-6	3/31/19			3			X		X	X	X															↓
118	SB-107-4-0.5-1		1604		3			X		X	X	X															↓
119	SB-107-5-0-0.5		1607		3			X		X	X	X															↓
120	SB-107-5-0.5-1		1610		3			X		X	X	X															↓

	Signature	Company	Date	Time
Relinquished	Alex Reid	Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

* Benzene - sample from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOIS
121	SB-107-6-0-0.5	3/31/19	1613	Soil	3			X		X	X	X															X
122	SB-107-6-0.5-1		1618		3			X		X	X	X															
123	SB-104-1-0-0.5		1633		3			X		X	X	X															
124	SB-104-1-2.5-3		1639		3			X		X	X	X															
125	SB-104-2-0-0.5		1641		3			X		X	X	X															
126	SB-104-2-4-4.5		1645		3			X		X	X	X															
127	SB-104-3-0-0.5		1647		3			X		X	X	X															
128	SB-104-3-2.5-3		1650		3			X		X	X	X															↓

	Signature	Company	Date	Time
Relinquished	Alex Pinch	Arcadis	4/1/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

* Take Benzene from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐

OnSite Environmental Inc.
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Chain of Custody

Page 14 of 18

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☒ 5 DAYS (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% moisture
129	SB-102-1-0-0.5	4/1/19	0937	soil	4		X	X		X	X	X	X														X
130	SB-102-1-1.5-2.0	4/1/19	0950	soil	5		X	X		X	X	X	X				MS/MSD										
131	SB-DUP-7	4/1/19	—	soil	4		X	X		X	X	X	X														
132	SB-102-2-0-0.5	4/1/19	0959	soil	4		X	X		X	X	X	X														
133	SB-102-3-0-0.5	4/1/19	1007	soil	4		X	X		X	X	X	X														
134	SB-102-3-0.5-1.0	4/1/19	1048	soil	4		X	X		X	X	X	X														↓
	~~SB-102-1-1.5-2.0~~	~~4/1/19~~	~~0950~~	~~soil~~	~~5~~		~~X~~	~~X~~		~~X~~	~~X~~	~~X~~	~~X~~				~~MS/MSD~~										
135	SB-101-4-0-0.5	4/1/19	1109	soil	1			X	X																		X
136	SB-101-4-2.0-2.5	4/1/19	1113	soil	1			X	X																		
137	SB-DUP-8	4/1/19	—	soil	1			X	X																		↓

	Signature	Company	Date	Time
Relinquished	Alex Ruiz	Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

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Chain of Custody

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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Marty Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (mineral oil)	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA / MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664							% Moisture
138	SB-101-5-0-0.5	4/1/19	1119	Soil	1				X					X													X
139	SB-101-5-0.5-1.0		1121		1				X					X													
140	SB-101-6-0-0.5		1123		1				X					X													
141	SB-101-6-0.5-1.0		1126		1				X					X													
142	SB-101-7-0.5-1.0		1129		1				X					X													
143	SB-101-7-1.5-2.0		1136		1				X					X													
144	SB-101-8 0-0.5		1139		1				X					X							(MS/MSD)						
145	SB-101-8-1.0-1.5		1141		1				X					X													
146	SB-101-9-0-0.5		1143		1				X					X													
147	SB-DUP-9		—		1				X					X													

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

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Chain of Custody

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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (mineral oil)	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA / MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664							% Moisture
148	SB-101-9-1.5-2.0	4/1/19	1146	Soil	1				X					X													X
149	SB-101-10-0-0.5		1148		1				X					X													
150	SB-101-10-0.5-1.0		1203		1				X					X													
151	SB-101-11-0-0.5		1151		1				X					X													
152	SB-101-11-0.5-1.0		1206		1				X					X													
153	SB-101-12-0-0.5		1207		1				X					X													
154	SB-101-12-1.0-1.5 MU		1215		1				X					X													
155	SB-101-13-0-0.5		1209		1				X					X													
156	SB-101-13-1.0-1.5		1217		1				X					X													
157	SB-DUP-10		—		1				X					X													

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (w/heavy oil)	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA / MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664							% Moisture
158	SB-101-14-0-0.5	4/1/19	1218	Soil	1				X					X													X
159	SB-101-14-1.0-1.5	↓	1223	↓	↓				X					X													↓
160	SB-101-15-0-0.5		1240						X					X													
161	SB-101-15-0.5-1.0		1241						X					X													
162	SB-101-16-0-0.5		1235						X					X													
163	SB-101-16-2.0-2.5		1308						X					X							(ms/msD)						
164	SB-Dup-11		—						X					X													

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐

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Chain of Custody

Page 18 of 18

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260B (BTEX)	Halogenated Volatiles 8260B	~~Semivolatiles 8270D/SIM (with low-level PAHs)~~ cPAHs only	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	[✓ Total RCRA] MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664	~~EPH~~	~~VPH~~	Total Lead				% Moisture
165	PW-040119	4/1/19	1403	Water	6					X				X				X									
166	EB-032919	3/29/19	1700	↓	1																		X				
167	EB-033019	3/30/19	0820		1																		X				
168	EB-03312019	4/1/19	0915		8				X			X											X				
169	~~EB-03~~ EB-04012019	4/1/19	1306		10		X	~~X~~	X			X		X													

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished	Alex	Arcadis	4/2/19	1150	
Received		OSE	4/2/19	1150	
Relinquished					
Received					
Relinquished					
Received					
Reviewed/Date		Reviewed/Date			Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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June 7, 2019

Josh Gravenmier
Arcadis U.S., Inc.
1100 Olive Way, Suite 800
Seattle, WA 98101

Re:	Analytical Data for Project B0003010.0006
	Laboratory Reference No. 1904-015C

Dear Josh:

Enclosed are the analytical results and associated quality control data for samples submitted on April 2, 2019.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

Blair Goodrow
Project Manager

Enclosures

Date of Report: June 7, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015C
Project: B0003010.0006

Case Narrative

Samples were collected on March 29, 30, 31 and April 1, 2019 and received by the laboratory on April 2, 2019. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

TCLP Metals EPA 1311/6010D/7470A

Due to a limited amount of sample, less than the required 100g was tumbled for TCLP analysis. The amount of sample used for ISM-14-2-0-0.5, (04-015-09) was 25g and the amount of sample used for ISM-18-1-0-0.5, (04-015-46) was 25g.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: June 7, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015C
Project: B0003010.0006

TCLP LEAD
EPA 1311/6010D

Matrix: TCLP Extract
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-14-2-0-0.5**					
Laboratory ID:	04-015-09					
Lead	**ND**	0.20	EPA 6010D	5-31-19	5-31-19	

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-18-1-0-0.5**					
Laboratory ID:	04-015-46					
Lead	**ND**	0.20	EPA 6010D	5-31-19	5-31-19	

Date of Report: June 7, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015C
Project: B0003010.0006

TCLP LEAD
EPA 1311/6010D
QUALITY CONTROL

Matrix: TCLP Extract
Units: mg/L (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
METHOD BLANK						
Laboratory ID:	MB0531TM1					
Lead	**ND**	0.20	EPA 6010D	5-31-19	5-31-19	

Analyte	**Result**		**Spike Level**		**Source Result**	**Percent Recovery**		**Recovery Limits**	**RPD**	**RPD Limit**	**Flags**
DUPLICATE											
Laboratory ID:	05-118-01										
	ORIG	DUP									
Lead	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	05-118-01										
	MS	MSD	MS	MSD		MS	MSD				
Lead	**8.77**	**8.67**	10.0	10.0	ND	**88**	**87**	75-125	1	20	

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

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Chain of Custody

Page 1 of 18

Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)	TCLP Lead										%MOISTURE
1	ISM-13-A-0.5-1.0	3/29/19	0728	soil	1	X																					X
2	ISM-13-1-0.5-1.0		0729		1	X		On Hold																			
3	ISM-13-2-0.5-1.0		0730		1	X		On Hold																			
4	ISM-13-3-0.5-1.0		0731		1	X		On Hold																			
5	ISM-13-B-0-0.5		1115		1	X																					X
6	ISM-13-C-0-0.5		1137		1	X																					
7	ISM-14-A-0-0.5		0950		1	X											○										↓
8	ISM-14-1-0-0.5		0951		1	⊗		~~On Hold~~																			⊗
9	ISM-14-2-0-0.5		0952		1	⊗		~~On Hold~~									●										⊗
~~10~~	~~ISM-14-3-0-0.5~~																										

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

⊗ Added 4/9/19 STA
○ Added 4/18/19 STA
⊗ Added 5/14/19 Total Lead
● Added 5-29-19 KL (STA)

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

Page 2 of 18

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)	TCLP Lead										% MOISTURE
11	ISM-14-A-0.5-1.0	3/29/19	1035	soil	1	X																					X
12	ISM-14-1-0.5-1.0		1036		1	X		on Hold																			
13	ISM-14-2-0.5-1.0		1037		1	X		on Hold																			
14	ISM-15-A-0-0.5	3/29/19	1330		1	X																					X
15	ISM-15-1-0-0.5		1331		1	X		on Hold																			
16	ISM-15-2-0-0.5		1332		1	X		on Hold																			
17	ISM-15-3-0-0.5		1333		1	X		on Hold																			
18	ISM-15-4-0-0.5		1334		1	X		on Hold																			
19	ISM-15-A-0.5-1.0		1353		1	X											O										X
20	ISM-15-1-0.5-1.0		1354		1	X		~~on Hold~~																			X

	Signature	Company	Date	Time
Relinquished	Alex Pitt	Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ____________ (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)	TCLP Lead										% MOISTURE
21	ISM-15-2-0.5-1.0	3/29/19	1355	Soil	1	⊗		~~on Hold~~																			⊗
22	ISM-15-3-0.5-1.0		1356		1	⊗		~~on Hold~~									cancel										⊗
23	ISM-15-4-0.5-1.0		1357		1	⊗		~~on Hold~~																			⊗
24	ISM-15-A-1.0-1.5	3/30/19	1325		1	X																					X
25	ISM-15-1-1.0-1.5		1326		1	X		on Hold																			
26	ISM-15-2-1.0-1.5		1327		1	X		on Hold																			
27	ISM-15-3-1.0-1.5		1328		1	X		on Hold																			
28	ISM-15-4-1.0-1.5		1329		1	X		on Hold																			
29	ISM-16-A-0-0.5		1038		1	X																					X
30	ISM-16-1-0-0.5		1039		1	X		on Hold																			

	Signature	Company	Date	Time
Relinquished	Alex Reik	Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

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Chain of Custody

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
31	ISM-16-2-0-0.5	3/30/19	1040	soil	1	X		On Hold																			
32	ISM-16-A-0.5-1.0		1121		1	X																					X
33	ISM-16-1-0.5-1.0		1122		1	X		On Hold																			
34	ISM-16-2-0.5-1.0		1123		1	X		On Hold																			
35	ISM-17-A-0-0.5		1219		1	X																					X
36	ISM-17-1-0-0.5		1220		1	X		On Hold																			
37	ISM-17-2-0-0.5		1221		1	X		On Hold																			
38	ISM-17-3-0-0.5		1222		1	X		On Hold																			
39	ISM-17-4-0-0.5		1223		1	X		On Hold																			
40	ISM-17-A-0.5-1.0		1350		1	X																					X

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ____________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)	TCLP Lead										% MOISTURE
41	ISM-17-1-0.5-1.0	3/30/19	1351	Soil	1	X			on Hold																		
42	ISM-17-2-0.5-1.0		1352		1	X			on Hold																		
43	ISM-17-3-0.5-1.0		1353		1	X			on Hold																		
44	ISM-17-4-0.5-1.0		1354		1	X			on Hold																		
45	ISM-18-A-0-0.5		1553		1	X																					X
46	ISM-18-1-0-0.5		1554		1	X			~~on Hold~~								●										X
47	ISM-18-2-0-0.5		1555		1	X			~~on Hold~~																		X
48	ISM-18-3-0-0.5		1556		1	X			~~on Hold~~																		X
49	ISM-18-4-0-0.5		1557		1	X			~~on Hold~~																		X
50	ISM-18-A-0.5-1.0		1559		1	X																					X

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

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Chain of Custody

Page 6 of 18

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ______ (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
51	ISM-18-1-0.5-1.0	3/30/19	1600	Soil	1	X		on Hold																			
52	ISM-18-2-0.5-1.0	|	1601	|	1	X		on Hold																			
53	ISM-18-3-0.5-1.0	|	1602	|	1	X		on Hold																			
54	ISM-18-4-0.5-1.0	|	1603	|	1	X		on Hold																			
55	SB-106-1-0-0.5	3/31/19	0855	Soil	1	X																					X
56	SB-106-1-2-2.3	3/31/19	0911	|	1	X																					|
57	SB-DUP-1	3/31/19	—	|	1	X																					|
58	SB-106-2-0-0.5	3/31/19	0900	|	1	X																					|
59	SB-106-2-2.0-2.5	3/31/19	0906	|	1	X																					|
60	SB-106-3-0-0.5	3/31/19	0901	|	1	X																					↓

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

* Sample Benzene from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

OnSite Environmental Inc.
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Chain of Custody

Page 7 of 18

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ______ (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)									5 Days		% MOISTURE
61	SB-106-3-2-2.5	3/31/19	0912	Soil	1	X																					X
62	SB-112-1-0-0.5	3/31/19	1020		3			X		X	X	X													X		
63	SB-112-1-0.5-0.7		1035		3			X		X	X	X															
64	SB-112-2-0-0.5		1038		3			X		X	X	X															
65	SB-112-2-1-1.5		1041		3			X		X	X	X															
66	SB-112-3-0-0.5		1046		3			X		X	X	X															
67	SB-112-3-1-1.3		1050		3			X		X	X	X															
68	SB-112-4-0-0.5		1055		3			X		X	X	X															
69	SB-DUP-2	3/31/19	—		3			X		X	X	X															
70	SB-112-4-0.5-1		1100		3			X		X	X	X															

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

* Sample Benzene from jar

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	~~Benzene~~ (USEPA Method 8260)* BTEX	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
71	SB-112-5-0-0.5	3/31/19	1115	Soil	3			X		X	X	X															X
72	SB-112-5-0.5-0.9		1129		3			X		X	X	X															
73	SB-112-6-0-0.5		1131		3			X	⊗	⊗	⊗	⊗															
74	SB-112-6-1-1.5		1135		3			X		X	X	X															
75	SB-112-7-0-0.5		1140		3			X		X	X	X															
76	SB-112-7-0.5-0.8		1145		3			X		X	X	X															
77	SB-112-08-0-0.5		1200		3			X		X	X	X															
78	SB-DUP-3	3/31/19	—		3			X		X	X	X															
79	SB-112-08-1-1.5		1206		3			X		X	X	X															
80	SB-112-9-0-0.5		1210		3			X		X	X	X															

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

*Sample Benzene from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

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Chain of Custody

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
81	SB-112-9-0.5-1	3/31/19	1215	Soil	3			X		X	X	X															X
82	SB-112-10-0-0.5		1218		3			X		X	X	X															
83	SB-112-10-0.5-1		1220		3			X		X	X	X															
84	SB-112-11-0-0.5		1225		3			X		X	X	X															
85	SB-112-11-1.5-2		1230		3			X		X	X	X															
86	SB-112-12-0-0.5		1233		3			X		X	X	X															
87	SB-112-12-1-1.5		1238		3			X		X	X	X															
88	SB-PL-1-0-0.5		1310		3			X		X	X	X															
89	SB-PL-2-1-1.5		1313		3			X		X	X	X															
90	SB-PL-3-0-0.5		1315		3			X		X	X	X															

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

* Sample Benzene from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

Chain of Custody

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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
91	SB-PL-4-1-1.5	3/31/19	1319	Soil	3			X		X	X	X															X
92	SB-PL-5-0-0.5		1324		3			X		X	X	X															
93	SB-PL-6-1-1.5		1329		3			X		X	X	X															
94	SB-DUP-4	3/31/19	—		3			X		X	X	X															
95	SB-PL-7-0-0.5		1335		3			X		X	X	X															
96	SB-PL-8-1-1.5		1400		3			X		X	X	X															
97	SB-PL-9-0-0.5		1410		3			X		X	X	X															
98	SB-PL-10-2-2.5		1416		4			X		X	X	X					MS/MSD										
99	SB-PL-11-0.5-1		1423		3			X		X	X	X															
100	SB-PL-12-1-1.5		1427		3			X		X	X	X															↓

	Signature	Company	Date	Time
Relinquished	Alex Smith	Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

*Sample Benzene from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)		% MOISTURE
101	SB-PL-13-1-1.5	3/31/19	1431	Soil	3			X		X	X	X						X
102	SB-PL-14-1-1.5		1438		4			X		X	X	X					MS/MSD	
103	SB-101-1-0-0.5		1449		3			X		X	X	X						
104	SB-101-1-2-2.5		1452		3			X		X	X	X						
105	SB-101-2-0-0.5		1458		3			X		X	X	X						
106	SB-DUP-5	3/31/19	—		3			X		X	X	X						
107	SB-101-2-2-2.5		1504		3			X		X	X	X						
108	SB-101-3-0-0.5		1508		3			X		X	X	X						
109	SB-101-3-2-2.5		1513		3			X		X	X	X						
110	SB-107-1-0-0.5		1525		3			X		X	X	X						↓

	Signature	Company	Date	Time
Relinquished	Alex Puig	Arcadis	4/1/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

* Sample Benzene from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	~~Benzene~~ (USEPA Method 8260)* BTEX	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
111	SB-107-1-1-1.5	3/31/19	1531	Soil	3			X		X	X	X															X
112	SB-107-2-0-0.5		1538		3			X		X	X	X															↓
113	SB-107-2-0.5-1		1543		3			X		X	X	X															
114	SB-107-3-0-0.5		1548		3			X	⊗	⊗	⊗	⊗															
115	SB-107-3-0.5-1		1552		3			X	⊗	X	⊗	⊗															
116	SB-107-4-0-0.5		1556		3			X		X	X	X															
117	SB-DUP-6	3/31/19			3			X		X	X	X															
118	SB-107-4-0.5-1		1604		3			X		X	X	X															
119	SB-107-5-0-0.5		1607		3			X		X	X	X															
120	SB-107-5-0.5-1		1610		3			X		X	X	X															

	Signature	Company	Date	Time
Relinquished	Alex Reid	Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

* Benzene - sample from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% mois
121	SB-107-6-0-0.5	3/31/19	1613	Soil	3			X		X	X	X															X
122	SB-107-6-0.5-1		1618		3			X		X	X	X															↓
123	SB-104-1-0-0.5		1633		3			X		X	X	X															
124	SB-104-~~01~~-2.5-3		1639		3			X		X	X	X															
125	SB-104-2-0-0.5		1641		3			X		X	X	X															
126	SB-104-2-4-4.5		1645		3			X		X	X	X															
127	SB-104-3-0-0.5		1647		3			X		X	X	X															
128	SB-104-3-2.5-3		1650		3			X		X	X	X															

	Signature	Company	Date	Time
Relinquished	Alex	Arcadis	4/1/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

* Take Benzene from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
~~☐ Standard (7 Days)~~
☒ 5 DAYS (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
129	SB-102-1-0-0.5	4/1/19	0937	soil	4		X	X		X	X	X	X														X
130	SB-102-1-1.5-2.0	4/1/19	0950	soil	5		X	X		X	X	X	X				MS/MSD										↓
131	SB-DUP-7	4/1/19	—	soil	4		X	X		X	X	X	X														↓
132	SB-102-2-0-0.5	4/1/19	0959	soil	4		X	X		X	X	X	X														↓
133	SB-102-3-0-0.5	4/1/19	1007	soil	4		X	X		X	X	X	X														↓
134	SB-102-3-0.5-1.0	4/1/19	1048	soil	4		X	X		X	X	X	X														↓
	~~SB-102-1-1.5-2.0~~	~~4/1/19~~	~~0950~~	~~soil~~	~~5~~		~~X~~	~~X~~		~~X~~	~~X~~	~~X~~	~~X~~				~~MS/MSD~~										
135	SB-101-4-0-0.5	4/1/19	1109	soil	1			X	X																		X
136	SB-101-4-2.0-2.5	4/1/19	1113	soil	1			X	X																		↓
137	SB-DUP-8	4/1/19	—	soil	1			X	X																		↓

	Signature	Company	Date	Time
Relinquished	Alex Rich	Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

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Chain of Custody

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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Marta Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (mineral oil)	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA / MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664							% Moisture
138	SB-101-5-0-0.5	4/1/19	1119	Soil	1				X					X													X
139	SB-101-5-0.5-1.0		1121		1				X					X													
140	SB-101-6-0-0.5		1123		1				X					X													
141	SB-101-6-0.5-1.0		1126		1				X					X													
142	SB-101-7-0.5-1.0		1129		1				X					X													
143	SB-101-7-1.5-2.0		1136		1				X					X													
144	SB-101-8-0-0.5		1139		1				X					X							(MS/MSD)						
145	SB-101-8-1.0-1.5		1141		1				X					X													
146	SB-101-9-0-0.5		1143		1				X					X													
147	SB-DUP-9		—		1				X					X													

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished		Arcadis	4/2/19	1150	
Received		OSE	4/2/19	1150	
Relinquished					
Received					
Relinquished					
Received					
Reviewed/Date		Reviewed/Date			Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______________

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Chain of Custody

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Laboratory Number: 04-015

Company: Arcadis

Project Number: B0003010.0006

Project Name: USCG Burrows Island

Project Manager: Josh Gravenmier

Sampled by: Mark Ullery

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day

☐ 2 Days ☐ 3 Days

☐ Standard (7 Days)

☒ 5 DAYS (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (mineral oil)	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA / MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664							% Moisture
148	SB-101-9-1.5-2.0	4/1/19	1146	Soil	1				X					X													X
149	SB-101-10-0-0.5		1148		1				X					X													
150	SB-101-10-0.5-1.0		1203		1				X					X													
151	SB-101-11-0-0.5		1151		1				X					X													
152	SB-101-11-0.5-1.0		1206		1				X					X													
153	SB-101-12-0-0.5		1207		1				X					X													
154	SB-101-12-1.0-1.5		1215		1				X					X													
155	SB-101-13-0-0.5		1209		1				X					X													
156	SB-101-13-1.0-1.5		1217		1				X					X													
157	SB-DUP-10		—		1				X					X													

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished		Arcadis	4/2/19	1150	
Received		OSE	4/2/19	1150	
Relinquished					
Received					
Relinquished					
Received					
Reviewed/Date		Reviewed/Date			Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

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Chain of Custody

Page 17 of 18

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (w/heavy oil)	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA / MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664							% Moisture
158	SB-101-14-0-0.5	4/1/19	1218	Soil	1				X					X													X
159	SB-101-14-1.0-1.5		1223						X					X													
160	SB-101-15-0-0.5		1240						X					X													
161	SB-101-15-0.5-1.0		1241						X					X													
162	SB-101-16-0-0.5		1235						X					X													
163	SB-101-16-2.0-2.5		1308						X					X							(ms/msD)						
164	SB-Dup-11	↓	—	↓					X					X													↓

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐

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Page 18 of 18

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ulleny

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260B (BTEX)	Halogenated Volatiles 8260B	~~Semivolatiles 8270D/SIM (with low-level PAHs)~~ cPAHs only	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	[✓ Total RCRA] / MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664	EPH	VPH	Total Lead				% Moisture
165	PW-040119	4/1/19	1403	Water	6					X				X				X									
166	EB-032919	3/29/19	1700		1																		X				
167	EB-033019	3/30/19	0820		1																		X				
168	EB-03312019	4/1/19	0915		8				X			X											X				
169	~~EB-03~~ EB-04012019	4/1/19	1306		10		X	~~X~~	X			X		X													

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

OnSite
Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

June 14, 2019

Josh Gravenmier
Arcadis U.S., Inc.
1100 Olive Way, Suite 800
Seattle, WA 98101

Re: Analytical Data for Project B0003010-0006
Laboratory Reference No. 1906-059

Dear Josh:

Enclosed are the analytical results and associated quality control data for samples submitted on June 6, 2019.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

Blair Goodrow
Project Manager

Enclosures

Date of Report: June 14, 2019
Samples Submitted: June 6, 2019
Laboratory Reference: 1906-059
Project: B0003010-0006

Case Narrative

Samples were collected on April 1, 2019 and received by the laboratory on June 6, 2019. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: June 14, 2019
Samples Submitted: June 6, 2019
Laboratory Reference: 1906-059
Project: B0003010-0006

TOTAL LEAD
EPA 6010D

Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SED-1**					
Laboratory ID:	06-059-01					
Lead	**ND**	5.3	EPA 6010D	6-10-19	6-10-19	
Client ID:	**SED-2**					
Laboratory ID:	06-059-02					
Lead	**ND**	5.9	EPA 6010D	6-10-19	6-10-19	

Date of Report: June 14, 2019
Samples Submitted: June 6, 2019
Laboratory Reference: 1906-059
Project: B0003010-0006

TOTAL LEAD
EPA 6010D
QUALITY CONTROL

Matrix: Solid
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0610SM1					
Lead	**ND**	5.0	EPA 6010D	6-10-19	6-10-19	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	06-013-03										
	ORIG	DUP									
Lead	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	06-013-03										
	MS	MSD	MS	MSD		MS	MSD				
Lead	**235**	**238**	250	250	ND	**94**	**95**	75-125	1	20	

Date of Report: June 14, 2019
Samples Submitted: June 6, 2019
Laboratory Reference: 1906-059
Project: B0003010-0006

% MOISTURE

Client ID	Lab ID	% Moisture	Date Analyzed
SED-1	06-059-01	**5**	6-12-19
SED-2	06-059-02	**15**	6-12-19

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical ____________.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

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Chain of Custody

Page 1 of 1

Company: Arcalis
Project Number: B0003010-0006
Project Name: USCG Barrows Island
Project Manager: Josh Gauthier
Sampled by: MW

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Laboratory Number: 06-059

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals (Pb only)	TCLP Metals	HEM (oil and grease) 1664A					% Moisture
1	SED-1	4/1/19	1400	Sed																X							X
2	SED-2	4/1/19	1405	Sed																X							X

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished		ANA	6/6/19	1010	
Received	J. Isaacson	ALPHA	6/6/19	10:10	
Relinquished	J. Isaacson	ALPHA	6/6/19	11:23	
Received		OSE	6/6/19	1113	
Relinquished					
Received					Data Package: Standard ☐ Level III ☐ Level IV ☐
Reviewed/Date		Reviewed/Date			Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

APPENDIX E

Data Validation Reports

United States Coast Guard

DATA REVIEW

Burrows Island Light Station
Skagit County, Washington

Metal (Lead) Analysis

SDG # 1903-283

Analyses Performed By:
Onsite Environmental Inc.
Redmond, Washington

Report #: 32567R
Review Level: Tier II
Project: B0003010.0006

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDG) # 1903-283 for samples collected in association with the United States Coast Guard, Burrows Island Light Station, Skagit County, Washington. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data as reported by the laboratory were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					Lead	TCLP Lead
EB-032519	03-283-147	Water	3-25-2019		X	
EB-032619	03-283-146	Water	3-26-2019		X	
EB-032719	03-283-145	Water	3-27-2019		X	
EB-032819	03-283-144	Water	3-28-2019		X	
ISM-01-A-0.5-1.0	03-283-06	Soil	3-26-2019		X	
ISM-01-A-0-0.5	03-283-01	Soil	3-25-2019		X	
ISM-01-A-1.0-1.5	03-283-11	Soil	3-27-2019		X	
ISM-02-A-0.5-1.0	03-283-20	Soil	3-26-2019		X	
ISM-02-A-0-0.5	03-283-16	Soil	3-25-2019		X	
ISM-02-B-0-0.5	03-283-24	Soil	3-27-2019		X	
ISM-02-C-0-0.5	03-283-25	Soil	3-27-2019		X	
ISM-03-A-0.5-1.0	03-283-31	Soil	3-25-2019		X	
ISM-03-A-0-0.5	03-283-26	Soil	3-27-2019		X	
ISM-04-A-0.5-1.0	03-283-41	Soil	3-27-2019		X	
ISM-04-A-0-0.5	03-283-36	Soil	3-27-2019		X	X
ISM-05-A-0.5-1.0	03-283-55	Soil	3-28-2019		X	
ISM-05-A-0-0.5	03-283-50	Soil	3-28-2019		X	
ISM-06-A-0.5-1.0	03-283-67	Soil	3-26-2019		X	X
ISM-06-A-0-0.5	03-283-60	Soil	3-25-2019		X	X
ISM-06-A-1.0-1.5	03-283-72	Soil	3-27-2019		X	X
ISM-06-A-1.5-2.0	03-283-77	Soil	3-27-2019		X	X
ISM-06-B-0-0.5	03-283-65	Soil	3-27-2019		X	X
ISM-06-C-0-0.5	03-283-66	Soil	3-27-2019		X	X
ISM-07-A-0.5-1.0	03-283-86	Soil	3-26-2019		X	
ISM-07-A-0-0.5	03-283-82	Soil	3-26-2019		X	X
ISM-08-A-0.5-1.0	03-283-97	Soil	3-26-2019		X	
ISM-08-A-0-0.5	03-283-90	Soil	3-26-2019		X	X
ISM-08-A-1.0-1.5	03-283-102	Soil	3-27-2019		X	X
ISM-08-B-0-0.5	03-283-95	Soil	3-27-2019		X	X

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					Lead	TCLP Lead
ISM-08-C-0-0.5	03-283-96	Soil	3-27-2019		X	X
ISM-09-A-0.5-1.0	03-283-112	Soil	3-28-2019		X	
ISM-09-A-0-0.5	03-283-107	Soil	3-28-2019		X	
ISM-10-A-0.5-1.0	03-283-122	Soil	3-27-2019		X	
ISM-10-A-0-0.5	03-283-117	Soil	3-27-2019		X	
ISM-11-A-0.5-1.0	03-283-132	Soil	3-26-2019		X	
ISM-11-A-0-0.5	03-283-127	Soil	3-27-2019		X	X
ISM-12-A-0.5-1.0	03-283-148	Soil	3-28-2019		X	
ISM-12-A-0-0.5	03-283-137	Soil	3-28-2019		X	X
ISM-13-A-0-0.5	03-283-153	Soil	3-28-2019		X	
SB-06-10-2.0-2.5	03-283-142	Soil	3-27-2019		X	
SB-06-22-3.0-3.5	03-283-143	Soil	3-27-2019		X	

Note:

TCLP – Toxicity Characteristic Leaching Procedure

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance (QA) or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 6010D and EPA 200.8. Data were reviewed in accordance with the *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Inorganic Methods Data Review* (EPA 540-R-2017-001, January 2017) and *Quality Assurance Project Plan, United States Coast Guard, Burrows Island Light Station, Skagit County, Washington (*March 2019*).*

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

U	The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
J	The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).

- Quantitation (Q) Qualifiers

E	The reported value is estimated due to the presence of interference.
N	Spiked sample recovery is not within the control limits.
*	Duplicate analysis is not within the control limits.

- Validation Qualifiers

J	The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
UJ	The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
UB	Analyte considered non-detect at the listed value due to associated blank contamination.
R	The sample results are rejected.

Two facts should be noted by all data users. First, the “R” flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. “R” values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010D	Soil	180 days from collection to analysis	Cool to < 6°C
EPA 200.8	Water	180 days from collection to analysis	Cool to < 6 °C; pH < 2 with HNO_3

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks and equipment rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the practical quantitation limit (PQL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the RL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The relative percent difference (RPD) between the MS and MSD results must be no greater than the established acceptance limit of 20%. The MS/MSD recovery control limits do not apply for MS performed on samples where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD analysis performed for lead on samples ISM-01-A-0-0.5, ISM-07-A-0.5-1.0 and for TCLP lead on sample ISM-06-A-0.5-1.0 exhibited recoveries and RPDs within the control limits.

3.2 Laboratory Duplicate Sample Analysis

The laboratory duplicate sample relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to five times the RL. A control limit of 20% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the RL, a control limit of two times the RL for soil matrices.

MS/MSD analysis was performed in addition to the laboratory duplicate analysis on samples ISM-01-A-0-0.5, ISM-07-A-0.5-1.0 and ISM-06-A-0.5-1.0. The MS/MSD recoveries and laboratory duplicate analysis exhibited acceptable RPDs.

4. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit recoveries between the control limits of 80% and 120%.

The LCS analysis was not performed and reported by the laboratory within this SDG.

5. Field Duplicate Sample Analysis

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. The control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate sample results. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the reporting limit (RL), a control limit of three times the RL for soil matrices is applied to the difference between the results.

A field duplicate sample was not collected within this SDG.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METALS

METALS: SW-846 6010D and EPA 200.8	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma - Atomic Emission Spectrometry (ICP-AES) **Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)**					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method Blanks		X		X	
B. Equipment/Field Blanks		X		X	
Laboratory Control Sample (LCS) %R	X				X
Laboratory Control Sample Duplicate (LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Laboratory Duplicate Sample (RPD)		X		X	
Field Duplicate Sample (RPD)	X				X
ICP Serial Dilution %D	X				X
Reporting Limit Verification		X		X	

Notes:

%R = Percent recovery
RPD = Relative percent difference
%D = Percent difference

Validation Performed By: Suresh PR

Signature:

Date: April 23, 2019

Peer Review: Dennis Dyke

Date: May 10, 2019

CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS

OnSite Environmental Inc.
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Chain of Custody

Page 1 of 17

Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
1	ISM-01-A-0-0.5	3/25/19	1401	Soil	1	X			X
2	ISM-01-1-0-0.5		1402		1	X		On Hold	
3	ISM-01-2-0-0.5		1403		1	X		On Hold	
4	ISM-01-3-0-0.5		1404		1	X		On Hold	
5	ISM-01-4-0-0.5	↓	1405		1	X		On Hold	
6	ISM-01-A-0.5-1.0	3/26/19	1428		1	X			X
7	ISM-01-1-0.5-1.0		1429		1	X		On Hold	
8	ISM-01-2-0.5-1.0		1430		1	X		On Hold	
9	ISM-01-3-0.5-1.0		1431		1	X		On Hold	
10	ISM-01-4-0.5-1.0	↓	1432	↓	1	X		On Hold	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

(X) Added 4/9/19 STA

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ____ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
11	ISM-01-A-1.0-1.5	3/27/19	1525	Soil	1	X			X
12	ISM-01-1-1.0-1.5		1526		1	X		On Hold	
13	ISM-01-2-1.0-1.5		1527		1	X		On Hold	
14	ISM-01-3-1.0-1.5		1528		1	X		On Hold	
15	ISM-01-4-1.0-1.5		1529		1	X		On Hold	
16	ISM-02-A-0-0.5	3/25/19	1622		1	X			X
17	ISM-02-1-0-0.5		1623		1	X		On Hold	
18	ISM-02-2-0-0.5		1624		1	X		On Hold	
19	ISM-02-3-0-0.5		1625		1	X		On Hold	
	~~ISM-02-4-0-0.5~~		~~1626~~		~~1~~	~~X~~		~~On Hold~~	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ______ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	20	ISM-02-A-0.5-1.0	3/26/19	1041	Soil	1	X			X
✓	21	ISM-02-1-0.5-1.0	↓	1042	↓	1	X		On Hold	
✓	22	ISM-02-2-0.5-1.0	↓	1043	↓	1	X		On Hold	
✓	23	ISM-02-3-0.5-1.0	↓	1044	↓	1	X		On Hold	
✓	24	ISM-02-B-0-0.5	3/27/19	910	↓	1	X			X
✓	25	ISM-02-C-0-0.5	3/27/19	916	↓	1	X			X
✓	26	ISM-03-A-0-0.5	3/25/19	1258	↓	1	X			X
✓	27	ISM-03-1-0-0.5	3/25/19	1259	↓	1	X		On Hold	
✓	28	ISM-03-2-0-0.5	3/25/19	1300	↓	1	X		On Hold	
✓	29	ISM-03-3-0-0.5	3/25/19	1301	↓	1	X		On Hold	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ______ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	30	Ism-03-4-0-0.5	3/25/19	1302	Soil	1	X		On Hold	
✓	31	Ism-03-A-0.5-1.0	3/25/19	1538		1	X			X
✓	32	Ism-03-1-0.5-1.0		1539		1	X		On Hold	
✓	33	Ism-03-2-0.5-1.0		1540		1	X		On Hold	
✓	34	Ism-03-3-0.5-1.0		1541		1	X		On Hold	
✓	35	Ism-03-4-0.5-1.0		1542		1	X		On Hold	
✓	36	Ism-04-A-0-0.5	3/27/19	1503 ~~1603~~		1	X	ⓧ		X
✓	37	Ism-04-1-0-0.5		1524 ~~1624~~		1	X		On Hold	
✓	38	Ism-04-2-0-0.5		1527 ~~1627~~		1	X		On Hold	
✓	39	Ism-04-3-0-0.5		1528 ~~1628~~		1	X		On Hold	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)			% moisture
✓ 40	ISM-04-4-0-0.5	3/27/19	~~1122~~ 1529	Soil	1	X		On Hold		/
✓ 41	ISM-04-A-0.5-1.0	3/27/19	1718		1	X				X
✓ 42	ISM-04-1-0.5-1.0		1719		1	X		On Hold		
✓ 43	ISM-04-2-0.5-1.0		1720		1	X		On Hold		
✓ 44	ISM-04-3-0.5-1.0		1721		1	X		On Hold		
✓ 45	ISM-04-4-0.5-1.0	↓	1722		1	X		On Hold		
	~~ISM-05-A-0-0.5~~	~~3/28/19~~	~~1106~~		~~1~~	~~X~~			mu	
	~~ISM-05-1-0-0.5~~		~~1107~~		~~1~~	~~X~~		~~On Hold~~		
	~~ISM-05-2-0-0.5~~		~~1108~~		~~1~~	~~X~~		~~On H~~		
	~~ISM-05-3-0-0.5~~	↓	~~1109~~	↓	~~1~~	~~X~~				

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received	Kellen Lisenin	OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)	% moisture
✓	50	ISM-05-A-0-0.5	03/28/19	11:06	Soil	1	X		X
✓	51	ISM-05-1-0-0.5	03/28/19	11:07			X	ON HOLD	
✓	52	ISM-05-2-0-0.5	03/28/19	11:08			X	ON HOLD	
✓	53	ISM-05-3-0-0.5	03/28/19	11:09			X	ON HOLD	
✓	54	ISM-05-4-0-0.5	03/28/19	11:10			X	ON HOLD	
✓	55	ISM-05-A-0.5-1.0	03/28/19	12:28			X		X
✓	56	ISM-05-1-0.5-1.0	03/28/19	12:29			X	ON HOLD	
✓	57	ISM-05-2-0.5-1.0	03/28/19	12:30			X	ON HOLD	
✓	58	ISM-05-3-0.5-1.0	03/28/19	12:31			X	ON HOLD	
✓	59	ISM-05-4-0.5-1.0	03/28/19	12:32			X	ON HOLD	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓ 60	ISM-06-A-0-0.5	03/25/19	1713 ~~0513~~	Soil	1	X	ⓧ		X
✓ 61	ISM-06-1-0-0.5		1714					ON HOLD	
✓ 62	ISM-06-2-0-0.5		1715					ON HOLD	
✓ 63	ISM-06-3-0-0.5		1716					ON HOLD	
✓ 64	ISM-06-4-0-0.5		1717					ON HOLD	
✓ 65	ISM-06-B-0-0.5	03/27/19	1805				ⓧ		X
✓ 66	ISM-06-C-0-0.5	03/27/19	1840				ⓧ		X
✓ 67	ISM-06-A-0.5-1.0	03/26/19	1146				ⓧ		X
✓ 68	ISM-06-1-0.5-1.0		1147					On Hold	
✓ 69	ISM-06-2-0.5-1.0		1148					ON Hold	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
70	ISM-06-3-0.5-1.0	03/26/19	1149	Soil	1	x		ON HOLD	
71	ISM-06-4-0.5-1.0	03/26/19	1150					ON HOLD	
72	ISM-06-A-1.0-1.5	03/27/19	1056				⊗		X
73	ISM-06-1-1.0-1.5		1115					ON HOLD	
74	ISM-06-2-1.0-1.5		1116					ON HOLD	
75	ISM-06-3-1.0-1.5		1117					ON HOLD	
76	ISM-06-4-1.0-1.5		1118					ON HOLD	
77	ISM-06-A-1.5-2.0		1146				⊗		X
78	ISM-06-1-1.5-2.0		1153					ON HOLD	
79	ISM-06-2-1.5-2.0	↓	1154	↓	↓	↓		ON HOLD	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)																				% moisture
80	ISM-06-3-1.5-2.0	03/27/19	1155	Soil	1	X		ON HOLD																			
81	ISM-06-4-1.5-2.0	03/27/19	1156		1	X		ON HOLD																			
	~~ISM-06-A-2.0-2.5~~ EZ																										
	~~SB-06-A~~ EZ																										
82	ISM-07-A-0-0.5	03/26/19	1238		1	X	X																				X
83	ISM-07-1-0-0.5		1239		1	X		ON HOLD																			
84	ISM-07-2-0-0.5		1240		1	X		ON HOLD																			
85	ISM-07-3-0-0.5		1241		1	X		ON HOLD																			
86	ISM-07-A-0.5-1.0		1348		1	X																					X
87	ISM-07-1-0.5-1.0		1349		1	X		ON HOLD																			

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ______ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	88	ISM-07-2-0.5-1.0	03/26/19	1350	Soil	1	X		ON HOLD	
✓	89	ISM-07-3-0.5-1.0	03/26/19	1351		1	X		ON HOLD	
✓	90	ISM-08-A-0-0.5		1602		1	X	⊗		X
✓	91	ISM-08-1-0-0.5		1616		1	X		ON HOLD	
✓	92	ISM-08-2-0-0.5		1617		1	X		ON HOLD	
✓	93	ISM-08-3-0-0.5		1618		1	X		ON HOLD	
✓	94	ISM-08-4-0-0.5		1619		1	X		ON HOLD	
✓	95	ISM-08-B-0-0.5	03/27/19	1220		1	X	⊗		X
✓	96	ISM-08-C-0-0.5	03/27/19	1502		1	X	⊗		X
✓	97	ISM-08-A-0.5-1.0	03/26/19	1701		1	X			X

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

Laboratory Number: 03-283

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	98	ISM-08-1-0.5-1.0	03/26/19	1733	Soil	1	X		ON HOLD	
✓	99	ISM-08-2-0.5-1.0		1734		1	X		ON HOLD	
✓	100	ISM-08-3-0.5-1.0		1735		1	X		ON HOLD	
✓	101	ISM-08-4-0.5-1.0		1736		1	X		ON HOLD	
✓	102	ISM-08-A-1.0-1.5	03/27/19	1027		1	X	ⓧ		X
✓	103	ISM-08-1-1.0-1.5		1046		1	X		ON HOLD	
✓	104	ISM-08-2-1.0-1.5		1047		1	X		ON HOLD	
✓	105	ISM-08-3-1.0-1.5		1048		1	X		ON HOLD	
✓	106	ISM-08-4-1.0-1.5		1049		1	X		ON HOLD	
✓	107	ISM-09-A-0-0.5	03/28/19	0921		1	X			X

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				

Reviewed/Date
Reviewed/Date

Comments/Special Instructions
* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ______ (other)

Laboratory Number: 03-283

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	108	ISM-09-1-0-0.5	03/28/19	0922	Soil	1	X		ON HOLD	
✓	109	ISM-09-2-0-0.5		0923		1	X		ON HOLD	
✓	110	ISM-09-3-0-0.5		0924		1	X		ON HOLD	
✓	111	ISM-09-4-0-0.5		0925		1	X		ON HOLD	
✓	112	ISM-09-A-0.5-1.0		0944		1	X			X
✓	113	ISM-09-1-0.5-1.0		0945		1	X		ON HOLD	
✓	114	ISM-09-2-0.5-1.0		0946		1	X		ON HOLD	
✓	115	ISM-09-3-0.5-1.0		0947		1	X		ON HOLD	
✓	116	ISM-09-4-0.5-1.0		0948		1	X		ON HOLD	
✓	117	ISM-10-A-0.0-0.5	03/27/19	1613		1	X			X

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	118	ISM-10-1-0-0.5	03/27/19	1614	Soil	1	X		ON HOLD	
✓	119	ISM-10-2-0-0.5		1615					ON HOLD	
✓	120	ISM-10-3-0-0.5		1616					ON HOLD	
✓	121	ISM-10-4-0-0.5		1617					ON HOLD	
✓	122	ISM-10-A-0.5-1.0		1807						X
✓	123	ISM-10-1-0.5-1.0		1808					ON HOLD	
✓	124	ISM-10-2-0.5-1.0		1809					ON HOLD	
✓	125	ISM-10-3-0.5-1.0		1810					ON HOLD	
✓	126	ISM-10-4-0.5-1.0		1811					ON HOLD	
✓	127	ISM-11-A-0-0.5		0948				ⓧ		X

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
	~~ISM-11-1~~ E3	~~03~~							
✓ 128	ISM-11-1-0-0.5	03/27/19	0949	Soil	1	X		ON HOLD	
✓ 129	ISM-11-2-0-0.5		0950					ON HOLD	
✓ 130	ISM-11-3-0-0.5		0951					ON HOLD	
✓ 131	ISM-11-4-0-0.5		0952					ON HOLD	
✓ 132	ISM-11-~~A~~-0.5-1.0	03/26/19	1808						X
✓ 133	ISM-11-1-0.5-1.0		1809					ON HOLD	
✓ 134	ISM-11-2-0.5-1.0		1810					ON HOLD	
✓ 135	ISM-11-3-0.5-1.0		1811					ON HOLD	
✓ 136	ISM-11-4-0.5-1.0		1812					ON HOLD	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ____________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		%moisture
✓ 137	ISM-12-A-0-0.5	03/28/19	1305	Soil	1	X	(X)		X
✓ 138	ISM-12-1-0-0.5	03/28/19	1306					ON HOLD	
✓ 139	ISM-12-2-0-0.5		1307					ON HOLD	
✓ 140	ISM-12-3-0-0.5		1308					ON HOLD	
✓ 141	ISM-12-4-0-0.5		1309					ON HOLD	
✓ 142	SB-06-10-2.0-2.5 *	03/27/19	1240						X
✓ 143	SB-06-22-3.0-3.5 *	03/27/19	1242						X

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

* Non MI Sample Processing.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

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Chain of Custody

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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

Laboratory Number: 03-283

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)																				~~% moisture~~
✓ 144	EB-032819	3/28/19	1357	Water	1	X																					~~X~~
✓ 145	EB-032719	3/27/19	1838	↓	1	X																					~~X~~
✓ 146	EB-032619	3/26/19	1824	↓	1	X																					~~X~~
✓ 147	EB-032519	3/25/19	1722	↓	1	X																					~~X~~

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Water Samples preserved with HNO_3^-

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)	% moisture
✓ 148	ISM-12-A-0.5-1.0	03/28/19	1326	Soil	1	X		X
✓ 149	ISM-12-1-0.5-1.0		1327				ON HOLD	
✓ 150	ISM-12-2-0.5-1.0		1328				ON HOLD	
✓ 151	ISM-12-3-0.5-1.0		1329				ON HOLD	
✓ 152	ISM-12-4-0.5-1.0		1330				ON HOLD	
✓ 153	ISM-13-A-0-0.5		1344					X
✓ 154	ISM-13-1-0-0.5		1345				ON HOLD	
✓ 155	ISM-13-2-0-0.5		1346				ON HOLD	
✓ 156	ISM-13-3-0-0.5		1347				ON HOLD	
	~~ISM-13-4-0-0.5~~ EB		~~134~~				~~ON HOLD~~	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received	Haley L. Dean	OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

Date of Report: April 17, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283
Project: B0003010.0006

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-01-A-0-0.5**					
Laboratory ID:	03-283-01					
Lead	**190**	5.2	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-01-A-0.5-1.0**					
Laboratory ID:	03-283-06					
Lead	**110**	5.2	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-01-A-1.0-1.5**					
Laboratory ID:	03-283-11					
Lead	**43**	5.3	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-02-A-0-0.5**					
Laboratory ID:	03-283-16					
Lead	**61**	5.3	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-02-A-0.5-1.0**					
Laboratory ID:	03-283-20					
Lead	**35**	5.3	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-02-B-0-0.5**					
Laboratory ID:	03-283-24					
Lead	**50**	5.6	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-02-C-0-0.5**					
Laboratory ID:	03-283-25					
Lead	**85**	5.6	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-03-A-0-0.5**					
Laboratory ID:	03-283-26					
Lead	**68**	5.6	EPA 6010D	4-3-19	4-3-19	

Date of Report: April 17, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283
Project: B0003010.0006

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-03-A-0.5-1.0**					
Laboratory ID:	03-283-31					
Lead	**30**	5.4	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-04-A-0-0.5**					
Laboratory ID:	03-283-36					
Lead	**280**	5.7	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-04-A-0.5-1.0**					
Laboratory ID:	03-283-41					
Lead	**74**	5.3	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-05-A-0-0.5**					
Laboratory ID:	03-283-50					
Lead	**64**	5.4	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-05-A-0.5-1.0**					
Laboratory ID:	03-283-55					
Lead	**56**	5.3	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-06-A-0-0.5**					
Laboratory ID:	03-283-60					
Lead	**1300**	5.8	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-06-B-0-0.5**					
Laboratory ID:	03-283-65					
Lead	**2000**	5.7	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-06-C-0-0.5**					
Laboratory ID:	03-283-66					
Lead	**1500**	5.7	EPA 6010D	4-3-19	4-3-19	

Date of Report: April 17, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283
Project: B0003010.0006

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-06-A-0.5-1.0**					
Laboratory ID:	03-283-67					
Lead	**630**	5.4	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-06-A-1.0-1.5**					
Laboratory ID:	03-283-72					
Lead	**390**	5.6	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-06-A-1.5-2.0**					
Laboratory ID:	03-283-77					
Lead	**400**	5.2	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-07-A-0-0.5**					
Laboratory ID:	03-283-82					
Lead	**470**	6.2	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-07-A-0.5-1.0**					
Laboratory ID:	03-283-86					
Lead	**62**	5.4	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-08-A-0-0.5**					
Laboratory ID:	03-283-90					
Lead	**1300**	5.7	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-08-B-0-0.5**					
Laboratory ID:	03-283-95					
Lead	**1100**	5.7	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-08-C-0-0.5**					
Laboratory ID:	03-283-96					
Lead	**1300**	5.6	EPA 6010D	4-3-19	4-3-19	

Date of Report: April 17, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283
Project: B0003010.0006

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-08-A-0.5-1.0**					
Laboratory ID:	03-283-97					
Lead	**160**	5.4	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-08-A-1.0-1.5**					
Laboratory ID:	03-283-102					
Lead	**540**	5.3	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-09-A-0-0.5**					
Laboratory ID:	03-283-107					
Lead	**150**	5.8	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-09-A-0.5-1.0**					
Laboratory ID:	03-283-112					
Lead	**75**	5.1	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-10-A-0-0.5**					
Laboratory ID:	03-283-117					
Lead	**57**	5.3	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-10-A-0.5-1.0**					
Laboratory ID:	03-283-122					
Lead	**19**	5.1	EPA 6010D	4-3-19	4-3-19	
Client ID:	**ISM-11-A-0-0.5**					
Laboratory ID:	03-283-127					
Lead	**450**	5.8	EPA 6010D	4-8-19	4-8-19	
Client ID:	**ISM-11-A-0.5-1.0**					
Laboratory ID:	03-283-132					
Lead	**120**	5.4	EPA 6010D	4-8-19	4-8-19	

Date of Report: April 17, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283
Project: B0003010.0006

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-12-A-0-0.5**					
Laboratory ID:	03-283-137					
Lead	**280**	5.5	EPA 6010D	4-8-19	4-8-19	
Client ID:	**ISM-12-A-0.5-1.0**					
Laboratory ID:	03-283-148					
Lead	**68**	5.4	EPA 6010D	4-8-19	4-8-19	
Client ID:	**ISM-13-A-0-0.5**					
Laboratory ID:	03-283-153					
Lead	**170**	5.7	EPA 6010D	4-8-19	4-8-19	

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-06-10-2.0-2.5**					
Laboratory ID:	03-283-142					
Lead	**1800**	6.4	EPA 6010D	4-2-19	4-2-19	
Client ID:	**SB-06-22-3.0-3.5**					
Laboratory ID:	03-283-143					
Lead	**9.7**	5.9	EPA 6010D	4-2-19	4-2-19	

Date of Report: April 17, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283
Project: B0003010.0006

TOTAL LEAD
EPA 200.8

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EB-032819**					
Laboratory ID:	03-283-144					
Lead	**ND**	1.1	EPA 200.8	4-5-19	4-5-19	
Client ID:	**EB-032719**					
Laboratory ID:	03-283-145					
Lead	**ND**	1.1	EPA 200.8	4-5-19	4-5-19	
Client ID:	**EB-032619**					
Laboratory ID:	03-283-146					
Lead	**ND**	1.1	EPA 200.8	4-5-19	4-5-19	
Client ID:	**EB-032519**					
Laboratory ID:	03-283-147					
Lead	**ND**	1.1	EPA 200.8	4-5-19	4-5-19	

Date of Report: April 17, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283
Project: B0003010.0006

TCLP LEAD
EPA 1311/6010D

Matrix: TCLP Extract
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-04-A-0-0.5**					
Laboratory ID:	03-283-36					
Lead	**ND**	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	**ISM-06-A-0-0.5**					
Laboratory ID:	03-283-60					
Lead	**0.33**	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	**ISM-06-B-0-0.5**					
Laboratory ID:	03-283-65					
Lead	**0.97**	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	**ISM-06-C-0-0.5**					
Laboratory ID:	03-283-66					
Lead	**0.70**	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	**ISM-06-A-0.5-1.0**					
Laboratory ID:	03-283-67					
Lead	**0.26**	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	**ISM-06-A-1.0-1.5**					
Laboratory ID:	03-283-72					
Lead	**0.21**	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	**ISM-06-A-1.5-2.0**					
Laboratory ID:	03-283-77					
Lead	**0.34**	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	**ISM-07-A-0-0.5**					
Laboratory ID:	03-283-82					
Lead	**ND**	0.20	EPA 6010D	4-17-19	4-17-19	

Date of Report: April 17, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283
Project: B0003010.0006

TCLP LEAD
EPA 1311/6010D

Matrix: TCLP Extract
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-08-A-0-0.5**					
Laboratory ID:	03-283-90					
Lead	**0.33**	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	**ISM-08-B-0-0.5**					
Laboratory ID:	03-283-95					
Lead	**ND**	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	**ISM-08-C-0-0.5**					
Laboratory ID:	03-283-96					
Lead	**ND**	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	**ISM-08-A-1.0-1.5**					
Laboratory ID:	03-283-102					
Lead	**ND**	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	**ISM-11-A-0-0.5**					
Laboratory ID:	03-283-127					
Lead	**0.24**	0.20	EPA 6010D	4-17-19	4-17-19	
Client ID:	**ISM-12-A-0-0.5**					
Laboratory ID:	03-283-137					
Lead	**ND**	0.20	EPA 6010D	4-17-19	4-17-19	

United States Coast Guard

DATA REVIEW

Burrows Island Light Station
Skagit County, Washington

Metal (Lead) Analysis

SDG # 1904-015

Analyses Performed By:
Onsite Environmental Inc.
Redmond, Washington

Report #: 32568R
Review Level: Tier II
Project: B0003010.0006

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDG) # 1904-015 for samples collected in association with the United States Coast Guard, Burrows Island Light Station, Skagit County, Washington. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data as reported by the laboratory were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis					
					VOC	PAH	PCB	TPH	TCLP Lead	Metals
EB-032919	04-015-166	Water	3/29/2019							X
EB-033019	04-015-167	Water	3/30/2019							X
EB-03312019	04-015-168	Water	4/01/2019			X		X		X
EB-04012019	04-015-169	Water	4/01/2019			X	X	X		
ISM-13-A-0.5-1.0	04-015-01	Soil	3/29/2019							X
ISM-13-B-0-0.5	04-015-05	Soil	3/29/2019							X
ISM-13-C-0-0.5	04-015-06	Soil	3/29/2019							X
ISM-14-A-0.5-1.0	04-015-11	Soil	3/29/2019							X
ISM-14-A-0-0.5	04-015-07	Soil	3/29/2019						X	X
ISM-15-A-0.5-1.0	04-015-19	Soil	3/29/2019						X	X
ISM-15-A-0-0.5	04-015-14	Soil	3/29/2019							X
ISM-15-A-1.0-1.5	04-015-24	Soil	3/30/2019							X
ISM-16-A-0.5-1.0	04-015-32	Soil	3/30/2019							X
ISM-16-A-0-0.5	04-015-29	Soil	3/30/2019							X
ISM-17-A-0.5-1.0	04-015-40	Soil	3/30/2019							X
ISM-17-A-0-0.5	04-015-35	Soil	3/30/2019							X
ISM-18-A-0.5-1.0	04-015-50	Soil	3/30/2019							X
ISM-18-A-0-0.5	04-015-45	Soil	3/30/2019							X
PW-040119	04-015-165	Water	4/01/2019		X		X			X
SB-101-1-0-0.5	04-015-103	Soil	3/31/2019					X		
SB-101-10-0.5-1.0	04-015-150	Soil	4/01/2019				X	X		
SB-101-10-0-0.5	04-015-149	Soil	3/29/2019				X	X		
SB-101-11-0.5-1.0	04-015-152	Soil	4/01/2019				X	X		
SB-101-11-0-0.5	04-015-151	Soil	4/01/2019				X	X		
SB-101-12-0-0.5	04-015-153	Soil	4/01/2019				X	X		
SB-101-12-1.0-1.5	04-015-154	Soil	4/01/2019				X	X		
SB-101-1-2-2.5	04-015-104	Soil	3/31/2019					X		
SB-101-13-0-0.5	04-015-155	Soil	4/01/2019				X	X		

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis					
					VOC	PAH	PCB	TPH	TCLP Lead	Metals
SB-101-13-1.0-1.5	04-015-156	Soil	4/01/2019				X	X		
SB-101-14-0-0.5	04-015-158	Soil	4/01/2019				X	X		
SB-101-14-1.0-1.5	04-015-159	Soil	4/01/2019				X	X		
SB-101-15-0.5-1.0	04-015-161	Soil	4/01/2019				X	X		
SB-101-15-0-0.5	04-015-160	Soil	4/01/2019				X	X		
SB-101-16-0-0.5	04-015-162	Soil	4/01/2019				X	X		
SB-101-16-2.0-2.5	04-015-163	Soil	4/01/2019				X	X		
SB-101-2-0-0.5	04-015-105	Soil	3/31/2019					X		
SB-101-2-2-2.5	04-015-107	Soil	3/31/2019					X		
SB-101-3-0-0.5	04-015-108	Soil	3/31/2019					X		
SB-101-3-2-2.5	04-015-109	Soil	3/31/2019					X		
SB-101-4-0-0.5	04-015-135	Soil	4/01/2019				X	X		
SB-101-4-2.0-2.5	04-015-136	Soil	4/01/2019				X	X		
SB-101-5-0.5-1.0	04-015-139	Soil	4/01/2019				X	X		
SB-101-5-0-0.5	04-015-138	Soil	4/01/2019				X	X		
SB-101-6-0.5-1.0	04-015-141	Soil	4/01/2019				X	X		
SB-101-6-0-0.5	04-015-140	Soil	4/01/2019				X	X		
SB-101-7-0.5-1.0	04-015-142	Soil	4/01/2019				X	X		
SB-101-7-1.5-2.0	04-015-143	Soil	4/01/2019				X	X		
SB-101-8-0-0.5	04-015-144	Soil	4/01/2019				X	X		
SB-101-8-1.0-1.5	04-015-145	Soil	4/01/2019				X	X		
SB-101-9-0-0.5	04-015-146	Soil	4/01/2019				X	X		
SB-101-9-1.5-2.0	04-015-148	Soil	4/01/2019				X	X		
SB-102-1-0-0.5	04-015-129	Soil	4/01/2019					X		
SB-102-1-1.5-2.0	04-015-130	Soil	4/01/2019					X		
SB-102-2-0-0.5	04-015-132	Soil	4/01/2019					X		
SB-102-3-0.5-1.0	04-015-134	Soil	4/01/2019					X		
SB-102-3-0-0.5	04-015-133	Soil	4/01/2019					X		
SB-104-1-0-0.5	04-015-123	Soil	3/31/2019					X		
SB-104-1-2.5-3	04-015-124	Soil	3/31/2019					X		
SB-104-2-0-0.5	04-015-125	Soil	3/31/2019					X		
SB-104-2-4-4.5	04-015-126	Soil	3/31/2019					X		
SB-104-3-0-0.5	04-015-127	Soil	3/31/2019					X		
SB-104-3-2.5-3	04-015-128	Soil	3/31/2019					X		
SB-106-1-0-0.5	04-015-55	Soil	3/31/2019							X
SB-106-1-2-2.3	04-015-56	Soil	3/31/2019							X
SB-106-2-0-0.5	04-015-58	Soil	3/31/2019							X
SB-106-2-2.0-2.5	04-015-59	Soil	3/31/2019							X

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis					
					VOC	PAH	PCB	TPH	TCLP Lead	Metals
SB-106-3-0-0.5	04-015-60	Soil	3/31/2019							X
SB-106-3-2-2.5	04-015-61	Soil	3/31/2019							X
SB-107-1-0-0.5	04-015-110	Soil	3/31/2019					X		
SB-107-1-1-1.5	04-015-111	Soil	3/31/2019					X		
SB-107-2-0.5-1	04-015-113	Soil	3/31/2019					X		
SB-107-2-0-0.5	04-015-112	Soil	3/31/2019					X		
SB-107-3-0.5-1	04-015-115	Soil	3/31/2019			X	X	X		
SB-107-3-0-0.5	04-015-114	Soil	3/31/2019		X	X	X	X		
SB-107-4-0.5-1	04-015-118	Soil	3/31/2019					X		
SB-107-4-0-0.5	04-015-116	Soil	3/31/2019					X		
SB-107-5-0.5-1	04-015-120	Soil	3/31/2019					X		
SB-107-5-0-0.5	04-015-119	Soil	3/31/2019					X		
SB-107-6-0.5-1	04-015-122	Soil	3/31/2019					X		
SB-107-6-0-0.5	04-015-121	Soil	3/31/2019					X		
SB-112-08-0-0.5	04-015-77	Soil	3/31/2019					X		
SB-112-08-1-1.5	04-015-79	Soil	3/31/2019					X		
SB-112-1-0.5-0.7	04-015-63	Soil	3/31/2019					X		
SB-112-1-0-0.5	04-015-62	Soil	3/31/2019					X		
SB-112-10-0.5-1	04-015-83	Soil	3/31/2019					X		
SB-112-10-0-0.5	04-015-82	Soil	3/31/2019					X		
SB-112-11-0-0.5	04-015-84	Soil	3/31/2019					X		
SB-112-11-1.5-2	04-015-85	Soil	3/31/2019					X		
SB-112-12-0-0.5	04-015-86	Soil	3/31/2019					X		
SB-112-12-1-1.5	04-015-87	Soil	3/31/2019					X		
SB-112-2-0-0.5	04-015-64	Soil	3/31/2019					X		
SB-112-2-1-1.5	04-015-65	Soil	3/31/2019					X		
SB-112-3-0-0.5	04-015-66	Soil	3/31/2019					X		
SB-112-3-1-1.3	04-015-67	Soil	3/31/2019					X		
SB-112-4-0.5-1	04-015-70	Soil	3/31/2019					X		
SB-112-4-0-0.5	04-015-68	Soil	3/31/2019					X		
SB-112-5-0.5-0.9	04-015-72	Soil	3/31/2019					X		
SB-112-5-0-0.5	04-015-71	Soil	3/31/2019					X		
SB-112-6-0-0.5	04-015-73	Soil	3/31/2019		X	X	X	X		
SB-112-6-1-1.5	04-015-74	Soil	3/31/2019					X		
SB-112-7-0.5-0.8	04-015-76	Soil	3/31/2019					X		
SB-112-7-0-0.5	04-015-75	Soil	3/31/2019					X		
SB-112-9-0.5-1	04-015-81	Soil	3/31/2019					X		
SB-112-9-0-0.5	04-015-80	Soil	3/31/2019					X		

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis					
					VOC	PAH	PCB	TPH	TCLP Lead	Metals
SB-DUP-1	04-015-57	Soil	3/31/2019	SB-106-2-2.0-2.5						X
SB-DUP-10	04-015-157	Soil	4/01/2019	SB-101-14-0-0.5			X	X		
SB-DUP-11	04-015-164	Soil	4/01/2019	SB-101-16-0-0.5			X	X		
SB-DUP-2	04-015-69	Soil	3/31/2019	SB-112-4-0.5-1				X		
SB-DUP-3	04-015-78	Soil	3/31/2019	SB-112-08-0-0.5				X		
SB-DUP-4	04-015-94	Soil	3/31/2019	SB-PL-6-1-1.5				X		
SB-DUP-5	04-015-106	Soil	3/31/2019	SB-101-2-0-0.5				X		
SB-DUP-6	04-015-117	Soil	3/31/2019	SB-107-4-0-0.5				X		
SB-DUP-7	04-015-131	Soil	4/01/2019	SB-102-1-0-0.5				X		
SB-DUP-8	04-015-137	Soil	4/01/2019	SB-101-4-2.0-2.5			X	X		
SB-DUP-9	04-015-147	Soil	4/01/2019	SB-101-9-0-0.5			X	X		
SB-PL-1-0-0.5	04-015-89	Soil	3/31/2019					X		
SB-PL-10-2-2.5	04-015-98	Soil	3/31/2019					X		
SB-PL-11-0.5-1	04-015-99	Soil	3/31/2019					X		
SB-PL-12-1-1.5	04-015-100	Soil	3/31/2019					X		
SB-PL-13-1-1.5	04-015-101	Soil	3/31/2019					X		
SB-PL-14-1-1.5	04-015-102	Soil	3/31/2019					X		
SB-PL-2-1-1.5	04-015-89	Soil	3/31/2019					X		
SB-PL-3-0-0.5	04-015-90	Soil	3/31/2019					X		
SB-PL-4-1-1.5	04-015-91	Soil	3/31/2019					X		
SB-PL-5-0-0.5	04-015-92	Soil	3/31/2019					X		
SB-PL-6-1-1.5	04-015-93	Soil	3/31/2019					X		
SB-PL-7-0-0.5	04-015-95	Soil	3/31/2019					X		
SB-PL-8-1-1.5	04-015-96	Soil	3/31/2019					X		
SB-PL-9-0-0.5	04-015-97	Soil	3/31/2019					X		

Notes:

VOC – Volatile Organic Compounds.

PAH – Polycyclic Aromatic Hydrocarbons.

PCB – Polychlorinated Biphenyls.

TPH – Total Petroleum Hydrocarbons.

TCLP- Toxicity Characteristic Leaching Procedure.

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X	X		
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance (QA) or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

Note:

QA – Quality Assurance

9. Samples SB-112-6-0-0.5 and SB-107-3-0-0.5 were not collected in VOA vials. The samples were extracted from an eight-ounce jar and analyzed.

ORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Methods 8260C, 8270D-SIM, 8082A, NWTPH-Gx, and NWTPH-Dx. Data were reviewed in accordance with the *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (EPA 540-R-2017-002, January 2017) and *Quality Assurance Project Plan, United States Coast Guard, Burrows Island Light Station, Skagit County, Washington (*March 2019*).*

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

U	The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
B	The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.

- Quantitation (Q) Qualifiers

E	The compound was quantitated above the calibration range.
D	Concentration is based on a diluted sample analysis.

- Validation Qualifiers

J	The compound was positively identified; however, the associated numerical value is an estimated concentration only.
UJ	The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
JN	The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
UB	Compound considered non-detect at the listed value due to associated blank contamination.
N	The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
R	The sample results are rejected as unusable. The compound may or may not be present in the sample.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

VOLATILE ORGANIC COMPOUND (VOC) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8260C	Water	14 days from collection to analysis (preserved) 7 days from collection to analysis (non-preserved)	Cool to <6 °C; preserved to a pH of less than 2 s.u.
	Soil	14 days from collection to analysis	Cool to <6 °C.

Note:

s.u. Standard units

All samples were analyzed within the specified holding time criteria with exception of samples SB-112-6-0-0.5 and SB-107-3-0-0.5. The samples were extracted from an eight-ounce jar on tenth day from sample collection. The sample results were qualified as estimated.

2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks and field blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field blanks also measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the practical quantitation limit (PQL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Target compounds were not detected at concentrations greater than the PQL in the associated blanks; therefore, detected sample results are not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. VOC analysis requires that all surrogates associated with the analysis exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample ID	Surrogate	Recovery
SB-107-3-0-0.5	4-Bromofluorobenzene	< LL but > 10%

Note:

LL – Lower control limit

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
	Detect	J
< LL but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Surrogates diluted below the calibration curve due to the high concentration of a target compounds	Non-detect	UJ[1]
	Detect	J[1]

Note:

[1] A more concentrated analysis was not performed with surrogate compounds within the calibration range; therefore, no determination of extraction efficiency could be made.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The spiked compounds used in the MS/MSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS and MSD results must be within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSDs performed on samples where the compound concentration detected in the parent sample exceeds the MS/MSD spiking concentration by a factor of four or greater. Sample results associated with MS/MSD exceedances where the parent samples are not site-specific are not qualified.

The MS/MSD analysis was not performed samples associated with this SDG.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The spiked compounds used in the LCS/LCSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The RPD between the LCS and LCSD results must be within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

6. Field Duplicate Sample Analysis

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the reporting limit (RL), a control limit of two times the RL is applied to the difference between the results for soil matrices.

VOC analysis was not designated for the field duplicate samples.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR VOCS

VOCs: SW-846 8260B	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Gas Chromatography/Mass Spectrometry (GC/MS)					
Tier II Validation					
Holding Times		X	X		
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment/Field blanks	X				X
C. Trip blanks	X				X
Surrogates Accuracy (%R)		X	X		
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate (MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate (LCSD) %R		X		X	
LCS/LCSD RPD		X		X	
Laboratory Duplicate Sample RPD	X				X
Field Duplicate Sample RPD	X				X
Dilution Factor	X				X

%R = Percent recovery
RPD = Relative percent difference

POLYCYCLIC AROMATIC HYDROCARBON (PAHs) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8270D SIM	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks and field blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field blanks also measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the practical quantitation limit (PQL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Target compounds were not detected at concentrations greater than the PQL in the associated blanks; therefore, detected sample results are not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. PAH analysis requires that two of the three base/neutral surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within the control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The spiked compounds used in the MS/MSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS and MSD results must be within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSDs performed on samples where the compound concentration detected in the parent sample exceeds the MS/MSD spiking concentration by a factor of four or greater. Sample results associated with MS/MSD exceedances where the parent samples are not site-specific are not qualified.

The MS/MSD analysis was not performed samples associated with this SDG.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The spiked compounds used in the LCS/LCSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The RPD between the LCS and LCSD results must be within the laboratory-established acceptance limits.

All compounds associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

6. Field Duplicate Sample Analysis

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the reporting limit (RL), a control limit of two times the RL is applied to the difference between the results for soil matrices.

PAH analysis was not designated for the field duplicate samples.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR PAHs

VOCs: SW-846 8270D SIM	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Gas Chromatography/Mass Spectrometry (GC/MS)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment/Field blanks		X		X	
C. Trip blanks	X				X
Surrogates Accuracy (%R)		X		X	
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate (MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate (LCSD) %R		X		X	
LCS/LCSD RPD		X		X	
Laboratory Duplicate Sample RPD	X				X
Field Duplicate Sample RPD	X				X
Dilution Factor	X				X

POLYCHLORINATED BIPHENYLS (PCBs) ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 8082A	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks and field blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field blanks also measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the practical quantitation limit (PQL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Target compounds were not detected at concentrations greater than the PQL in the associated blanks; therefore, detected sample results are not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. PCB analysis requires that at least one of the two surrogate compounds exhibit recoveries within the laboratory-established acceptance limits.

Sample locations associated with surrogates exhibiting recoveries outside of the control limits presented in the following table.

Sample ID	Surrogate	Recovery
SB-101-4-0-0.5	Decachlorobiphenyl	< 10%
SB-101-5-0-0.5	Decachlorobiphenyl	< 10%
SB-101-12-0-0.5	Decachlorobiphenyl	< 10%
SB-101-13-0-0.5	Decachlorobiphenyl	< 10%
SB-101-13-1.0-1.5	Decachlorobiphenyl	< 10%
SB-101-16-2.0-2.5	Decachlorobiphenyl	< 10%

Sample ID	Surrogate	Recovery
PW-040119	Decachlorobiphenyl	< 10%

The criteria used to evaluate the surrogate recoveries are presented in the following table. In the case of a surrogate deviation, the sample results associated with the deviant fraction are qualified as documented in the table below.

Control Limit	Sample Result	Qualification
> UL	Non-detect	No Action
	Detect	J
< LL but > 10%	Non-detect	UJ
	Detect	J
< 10%	Non-detect	R
	Detect	J
Surrogates diluted below the calibration curve due to the high concentration of a target compounds	Non-detect	UJ[1]
	Detect	J[1]

Note:

[1] A more concentrated analysis was not performed with surrogate compounds within the calibration range; therefore, no determination of extraction efficiency could be made.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The spiked compounds used in the MS/MSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS and MSD results must be within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSDs performed on samples where the compound concentration detected in the parent sample exceeds the MS/MSD spiking concentration by a factor of four or greater. Sample results associated with MS/MSD exceedances where the parent samples are not site-specific are not qualified.

MS/MSD analysis performed on samples SB-101-16-2.0-2.5, SB-101-8-0-0.5 and SB-107-3-0-0.5 for Aroclor 1260. The MS/MSD recoveries and RPDs within the control limits.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The spiked compounds used in the LCS/LCSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The RPD between the LCS and LCSD results must be within the laboratory-established acceptance limits.

The compound Aroclor 1260 associated with the LCS/LCSD analysis exhibited recoveries within the control limits.

6. Field Duplicate Sample Analysis

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the reporting limit (RL), a control limit of two times the RL is applied to the difference between the results for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
SB-101-4-2.0-2.5 / SB-DUP-8	Aroclor 1260	0.37	0.52	33.7%
SB-101-9-0-0.5 / SB-DUP-9	Aroclor 1260	0.64	1.3	68.0%
SB-101-14-0-0.5 / SB-DUP-10	Aroclor 1260	1.7	1.2	34.5%
SB-101-16-0-0.5 / SB-DUP-11	Aroclor 1260	0.40	0.51	24.1%

The compound Aroclor 1260 associated with sample SB-101-9-0-0.5 / SB-DUP-9 exhibited a field duplicate RPD greater than the control limit. The associated sample results were qualified as estimated.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR PCBs

Pesticides: SW-846 8082A	**Reported**		**Performance Acceptable**		**Not Required**
	No	**Yes**	**No**	**Yes**	
Gas Chromatography/Electron Capture Detector (GC/ECD)					
Tier II Validation					
Holding times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment and/or Field blanks		X		X	
Laboratory Control Sample (LCS) %R		X		X	
Laboratory Control Sample Duplicate (LCSD) %R		X		X	
LCS/LCSD Precision (RPD)		X		X	
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD RPD		X		X	
Field Duplicate Sample RPD		X	X		
Surrogate Spike Recoveries		X	X		
Column %D ≤ 40% (If dual column is performed for reporting - not confirmation)	X				X
Dilution Factor	X				X
Moisture Content	X				X

Notes:

%R = Percent recovery
RPD = Relative percent difference
%D = Percent difference

GASOLINE RANGE ORGANICS AND DIESEL RANGE ORGANICS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
NWTPH-Gx	Water	14 days from collection to analysis	Cool to <6 °C
	Soil	14 days from collection to analysis	Cool to <6 °C
NWTPH-Dx	Water	7 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C
	Soil	14 days from collection to extraction and 40 days from extraction to analysis	Cool to <6 °C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks and field blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field blanks also measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank (common laboratory contaminant compounds are calculated at ten times) is calculated for QA blanks containing concentrations greater than the practical quantitation limit (PQL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Target compounds were not detected at concentrations greater than the PQL in the associated blanks; therefore, detected sample results are not associated with blank contamination.

3. Surrogates/System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. The analysis requires surrogate compounds within exhibit recoveries within the laboratory-established acceptance limits.

All surrogate recoveries were within the control limits.

4. Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis

MS/MSD data are used to assess the precision and accuracy of the analytical method. The spiked compounds used in the MS/MSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The relative percent difference (RPD) between the MS and MSD results must be within the laboratory-established acceptance limits.

Note: The MS/MSD recovery control limits do not apply for MS/MSDs performed on samples where the compound concentration detected in the parent sample exceeds the MS/MSD spiking concentration by a factor of four or greater. Sample results associated with MS/MSD exceedances where the parent samples are not site-specific are not qualified.

The MS/MSD analysis was not performed samples associated with this SDG.

5. Laboratory Duplicate Analysis

The laboratory duplicate relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to 5 times the RL. A control limit of 50% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to 5 times the RL, a control limit of two times the RL for soil matrices.

The laboratory duplicate analysis performed on sample SB-102-1-1.5-2.0 for gasoline range organics and samples SB-112-1-0-0.5, SB-112-5-0-0.5, SB-112-10-0-0.5, SB-PL-4-1-1.5, SB-PL-10-2-2.5, SB-PL-14-1-1.5, SB-107-6-0-0.5, SB-107-6-0.5-1, SB-102-1-1.5-2.0, SB-101-8-0-0.5, SB-101-11-0-0.5 and SB-101-16-2.0-2.5 for diesel range organics.

The detected results between parent and laboratory duplicate samples exhibited RPDs within the control limit.

5. Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analysis is used to assess the precision and accuracy of the analytical method independent of matrix interferences. The spiked compounds used in the LCS/LCSD analysis must exhibit recoveries within the laboratory-established acceptance limits. The RPD between the LCS and LCSD results must be within the laboratory-established acceptance limits.

The LCS/LCSD analysis was not reported by the laboratory in this SDG.

6. Field Duplicate Sample Analysis

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. A control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the reporting limit (RL), a control limit of two times the RL is applied to the difference between the results for soil matrices.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
SB-112-4-0.5-1 / SB-DUP-2	Lube Oil Range Organics	67	60 U	AC
SB-112-08-0-0.5 / SB-DUP-3	Diesel Range Organics	280	310	10.2%
	Lube Oil Range Organics	380	460	19.0%
SB-PL-6-1-1.5 / SB-DUP-4	Diesel Range Organics	33	33 U	AC
	Lube Oil Range Organics	120	120	AC
SB-101-2-0-0.5 / SB-DUP-5	Diesel Range Organics	79	87	AC
	Lube Oil Range Organics	220	210	4.7%
SB-107-4-0-0.5 / SB-DUP-6	Diesel Range Organics	1300	1000	26.1%
	Lube Oil Range Organics	1300	1100	16.7%

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
SB-102-1-0-0.5 / SB-DUP-7	Diesel Range Organics	36	88	AC
	Lube Oil Range Organics	330	440	28.6%
SB-101-4-2.0-2.5 / SB-DUP-8	Mineral Oil	460	380	19.0%
	Lube Oil Range Organics	270	240	11.8%
SB-101-9-0-0.5 / SB-DUP-9	Mineral Oil	190	65	NC
	Lube Oil Range Organics	180	240	28.6%
SB-101-14-0-0.5 / SB-DUP-10	Diesel Range Organics	35 U	37	AC
	Lube Oil Range Organics	130	120	AC
SB-101-16-0-0.5 / SB-DUP-11	Lube Oil Range Organics	87	73	AC

Notes:

AC – Acceptable

NC – Non compliant

The difference in mineral oil result between the parent sample SB-101-9-0-0.5 and field duplicate sample SB-DUP-9 were not in agreement. The associated results were qualified as estimated.

7. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR TPHs

TPHs : NWTPH-Dx, NWTPH-Gx	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Gas Chromatography/Flame Ionization Detector (GC/FID)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method blanks		X		X	
B. Equipment/Field blanks		X		X	
C. Trip blanks	X				X
Surrogates Accuracy (%R)		X		X	
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate (MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Laboratory Control Sample (LCS) %R	X				X
Laboratory Control Sample Duplicate (LCSD) %R	X				X
LCS/LCSD RPD	X				X
Laboratory Duplicate Sample RPD		X		X	
Field Duplicate Sample RPD		X	X		
Dilution Factor	X				X

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 6010D, TCLP Lead, and EPA 200.8. Data were reviewed in accordance with the *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Inorganic Methods Data Review* (EPA 540-R-2017-001, January 2017) and *Quality Assurance Project Plan, United States Coast Guard, Burrows Island Light Station, Skagit County, Washington (*March 2019*).*

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

U	The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
J	The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).

- Quantitation (Q) Qualifiers

E	The reported value is estimated due to the presence of interference.
N	Spiked sample recovery is not within the control limits.
*	Duplicate analysis is not within the control limits.

- Validation Qualifiers

J	The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
UJ	The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
UB	Analyte considered non-detect at the listed value due to associated blank contamination.
R	The sample results are rejected.

Two facts should be noted by all data users. First, the “R” flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. “R” values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
EPA 200.8	Water	180 days from collection to analysis	Cool to < 6 °C; pH < 2 with HNO3
SW-846 6010D	Soil	180 days from collection to analysis	Cool to < 6°C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks and equipment rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the practical quantitation limit (PQL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the PQL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The relative percent difference (RPD) between the MS and MSD results must be no greater than the established acceptance limit of 20%. The MS/MSD recovery control limits do not apply for MS performed on samples where the analyte’s concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD analysis was not performed for samples associated with this SDG.

3.2 Laboratory Duplicate Sample Analysis

The laboratory duplicate sample relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to five times the RL. A control limit of 20% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the RL, a control limit of two times the RL for soil matrices.

A laboratory duplicate analysis was not performed for samples associated with this SDG.

4. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit recoveries between the control limits of 80% and 120%.

The LCS analysis was not performed and reported by the laboratory within this SDG.

5. Field Duplicate Sample Analysis

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. The control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate sample results. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the reporting limit (RL), a control limit of three times the RL for soil matrices is applied to the difference between the results.

Results for duplicate samples are summarized in the following table.

Sample ID/Duplicate ID	Compound	Sample Result	Duplicate Result	RPD
SB-106-2-2.0-2.5 / SB-DUP-1	Lead	13	9.2	34.2%

Note:

AC - Acceptable

The calculated RPDs between the parent sample and field duplicate were acceptable.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METALS

METALS: SW-846 6010D and EPA 200.8	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma - Atomic Emission Spectrometry (ICP-AES) Inductively Coupled Plasma - Mass Spectrometry (ICP-MS)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method Blanks		X		X	
B. Equipment/Field Blanks		X		X	
Laboratory Control Sample (LCS) %R	X				X
Laboratory Control Sample Duplicate (LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate (MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Laboratory Duplicate Sample (RPD)		X		X	
Field Duplicate Sample (RPD)		X		X	
ICP Serial Dilution %D		X		X	
Reporting Limit Verification		X		X	

Notes:
%R = Percent recovery
RPD = Relative percent difference
%D = Percent difference

Validation Performed By: Suresh PR

Signature:

Date: April 26, 2019

Peer Review: Dennis Dyke

Date: May 10, 2019

CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody

Page 1 of 18

Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ____________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											%MOISTURE
1	ISM-13-A-0.5-1.0	3/29/19	0728	soil	1	X																					X
2	ISM-13-1-0.5-1.0		0729		1	X		On Hold																			
3	ISM-13-2-0.5-1.0		0730		1	X		On Hold																			
4	ISM-13-3-0.5-1.0		0731		1	X		On Hold																			
5	ISM-13-B-0-0.5		1115		1	X																					X
6	ISM-13-C-0-0.5		1137		1	X																					↓
7	ISM-14-A-0-0.5		0950		1	X																					
8	ISM-14-1-0-0.5		0951		1	X			On Hold																		
9	ISM-14-2-0-0.5		0952		1	X			On Hold																		
~~10~~	~~ISM-14-3-0-0.5~~																										

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

⊗ Added 4/9/19 STA

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% moisture
11	ISM-14-A-0.5-1.0	3/29/19	1035	soil	1	X																					X
12	ISM-14-1-0.5-1.0		1036		1	X		on Hold																			
13	ISM-14-2-0.5-1.0		1037		1	X		on Hold																			
14	ISM-15-A-0-0.5	3/29/19	1330		1	X																					X
15	ISM-15-1-0-0.5		1331		1	X		on Hold																			
16	ISM-15-2-0-0.5		1332		1	X		on Hold																			
17	ISM-15-3-0-0.5		1333		1	X		on Hold																			
18	ISM-15-4-0-0.5		1334		1	X		on Hold																			
19	ISM-15-A-0.5-1.0		1353		1	X																					X
20	ISM-15-1-0.5-1.0		1354		1	X		on Hold																			

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

Page 3 of 18

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ______ (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)	% MOISTURE
21	ISM-15-2-0.5-1.0	3/29/19	1355	Soil	1	X		on Hold									
22	ISM-15-3-0.5-1.0		1356		1	X		on Hold									
23	ISM-15-4-0.5-1.0		1357		1	X		on Hold									
24	ISM-15-A-1.0-1.5	3/30/19	1325		1	X											X
25	ISM-15-1-1.0-1.5		1326		1	X		on Hold									
26	ISM-15-2-1.0-1.5		1327		1	X			on Hold								
27	ISM-15-3-1.0-1.5		1328		1	X			on Hold								
28	ISM-15-4-1.0-1.5		1329		1	X			on Hold								
29	ISM-16-A-0-0.5		1038		1	X											X
30	ISM-16-1-0-0.5		1039		1	X			on Hold								

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Page 4 of 18

Company: Arcadis
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Project Manager: Josh Gravenmier
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Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)	% MOISTURE
31	ISM-16-2-0-0.5	3/30/19	1040	soil	1	X		on			Hold						
32	ISM-16-A-0.5-1.0		1121		1	X											X
33	ISM-16-1-0.5-1.0		1122		1	X		On			Hold						
34	ISM-16-2-0.5-1.0		1123		1	X			on		Hold						
35	ISM-17-A-0-0.5		1219		1	X											X
36	ISM-17-1-0-0.5		1220		1	X			On			Hold					
37	ISM-17-2-0-0.5		1221		1	X				on		Hold					
38	ISM-17-3-0-0.5		1222		1	X				on		Hold					
39	ISM-17-4-0-0.5		1223		1	X				on		Hold					
40	ISM-17-A-0.5-1.0		1350		1	X											X

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

Page 5 of 18

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ______ (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
41	ISM-17-1-0.5-1.0	3/30/19	1351	Soil	1	X			OM Hold																		
42	ISM-17-2-0.5-1.0		1352		1	X			OM Hold																		
43	ISM-17-3-0.5-1.0		1353		1	X			OM Hold																		
44	ISM-17-4-0.5-1.0		1354		1	X			OM Hold																		
45	ISM-18-A-0-0.5		1553		1	X																					X
46	ISM-18-1-0-0.5		1554		1	X			OM Hold																		
47	ISM-18-2-0-0.5		1555		1	X				OM Hold																	
48	ISM-18-3-0-0.5		1556		1	X				OM Hold																	
49	ISM-18-4-0-0.5		1557		1	X				OM Hold																	
50	ISM-18-A-0.5-1.0		1559		1	X																					X

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)	% MOISTURE
51	ISM-18-1-0.5-1.0	3/30/19	1600	Soil	1	X		on Hold									
52	ISM-18-2-0.5-1.0	|	1601	|	1	X		on Hold									
53	ISM-18-3-0.5-1.0	|	1602	|	1	X		on Hold									
54	ISM-18-4-0.5-1.0	|	1603	|	1	X		on Hold									
55	SB-106-1-0-0.5	3/31/19	0855	Soil	1	X											X
56	SB-106-1-2-2.3	3/31/19	0911	|	1	X											|
57	SB-DUP-1	3/31/19	—	|	1	X											|
58	SB-106-2-0-0.5	3/31/19	0900	|	1	X											|
59	SB-106-2-2.0-2.5	3/31/19	0906	|	1	X											|
60	SB-106-3-0-0.5	3/31/19	0901		1	X											↓

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

* Sample Benzene from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)									5 Days		% MOISTURE
61	SB-106-3-2-2.5	3/31/19	0912	Soil	1	X																					X
62	SB-112-1-0-0.5	3/31/19	1020		3			X		X	X	X													X		
63	SB-112-1-0.5-0.7		1035		3			X		X	X	X															
64	SB-112-2-0-0.5		1038		3			X		X	X	X															
65	SB-112-2-1-1.5		1041		3			X		X	X	X															
66	SB-112-3-0-0.5		1046		3			X		X	X	X															
67	SB-112-3-1-1.3		1050		3			X		X	X	X															
68	SB-112-4-0-0.5		1055		3			X		X	X	X															
69	SB-DUP-2	3/31/19	—		3			X		X	X	X															
70	SB-112-4-0.5-1		1100		3			X		X	X	X													↓		↓

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

* Sample Benzene from jar

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	~~Benzene~~ (USEPA Method 8260)* BTEX	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
71	SB-112-5-0-0.5	3/31/19	1115	Soil	3			X		X	X	X															X
72	SB-112-5-0.5-0.9		1129		3			X		X	X	X															
73	SB-112-6-0-0.5		1131		3			X	⊗	⊗	⊗	⊗															
74	SB-112-6-1-1.5		1135		3			X		X	X	X															
75	SB-112-7~~6~~-0-0.5		1140		3			X		X	X	X															
76	SB-112-7-0.5-0.8		1145		3			X		X	X	X															
77	SB-112-08-0-0.5		1200		3			X		X	X	X															
78	SB-~~[illegible]~~ DUP-3	3/31/19	—		3			X		X	X	X															
79	SB-112-08-1-1.5		1206		3			X		X	X	X															
80	SB-112-9-0-0.5		1210		3			X		X	X	X															

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

*Sample Benzene from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________________

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Chain of Custody

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
81	SB-112-9-0.5-1	3/31/19	1215	Soil	3			X		X	X	X															X
82	SB-112-10-0-0.5		1218		3			X		X	X	X															
83	SB-112-10-0.5-1		1220		3			X		X	X	X															
84	SB-112-11-0-0.5		1225		3			X		X	X	X															
85	SB-112-11-1.5-2		1230		3			X		X	X	X															
86	SB-112-12-0-0.5		1233		3			X		X	X	X															
87	SB-112-12-1-1.5		1238		3			X		X	X	X															
88	SB-PL-1-0-0.5		1310		3			X		X	X	X															
89	SB-PL-2-1-1.5		1313		3			X		X	X	X															
90	SB-PL-3-0-0.5		1315		3			X		X	X	X															

	Signature	Company	Date	Time
Relinquished	Alex [illegible]	Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

* Sample Benzene from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

Page 10 of 18

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
91	SB-PL-4-1-1.5	3/31/19	1319	Soil	3			X		X	X	X															X
92	SB-PL-5-0-0.5		1324		3			X		X	X	X															
93	SB-PL-6-1-1.5		1329		3			X		X	X	X															
94	SB-DUP-4	3/31/19	—		3			X		X	X	X															
95	SB-PL-7-0-0.5		1335		3			X		X	X	X															
96	SB-PL-8-1-1.5		1400		3			X		X	X	X															
97	SB-PL-9-0-0.5		1410		3			X		X	X	X															
98	SB-PL-10-2-2.5		1416		4			X		X	X	X			MS/MSD												
99	SB-PL-11-0.5-1		1423		3			X		X	X	X															
100	SB-PL-12-1-1.5		1427		3			X		X	X	X															↓

	Signature	Company	Date	Time
Relinquished	Alex Pinch	Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

*Sample Benzene from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

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Chain of Custody

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											%o MOISTURE
101	SB-PL-13-1-1.5	3/31/19	1431	Soil	3			X		X	X	X															X
102	SB-PL-14-1-1.5		1438		4			X		X	X	X					MS/MSD										
103	SB-101-1-0-0.5		1449		3			X		X	X	X															
104	SB-101-1-2-2.5		1452		3			X		X	X	X															
105	SB-101-2-0-0.5		1458		3			X		X	X	X															
106	SB-DUP-5	3/31/19	—		3			X		X	X	X															
107	SB-101-2-2-2.5		1504		3			X		X	X	X															
108	SB-101-3-0-0.5		1508		3			X		X	X	X															
109	SB-101-3-2-2.5		1513		3			X		X	X	X															
110	SB-107-1-0-0.5		1525		3			X		X	X	X															↓

	Signature	Company	Date	Time
Relinquished	Alex Paig	Arcadis	4/1/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

* Sample Benzene from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________________

Chain of Custody

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OnSite Environmental Inc.
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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	~~Benzene~~ BTEX (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
111	SB-107-1-1-1.5	3/31/19	1531	Soil	3			X		X	X	X															X
112	SB-107-2-0-0.5		1538		3			X		X	X	X															
113	SB-107-2-0.5-1		1543		3			X		X	X	X															
114	SB-107-3-0-0.5		1548		3			X	⊗	⊗	⊗	⊗															
115	SB-107-3-0.5-1		1552		3			X	⊗	X	⊗	⊗															
116	SB-107-4-0-0.5		1556		3			X		X	X	X															
117	SB-DUP-6	3/31/19			3			X		X	X	X															
118	SB-107-4-0.5-1		1604		3			X		X	X	X															
119	SB-107-5-0-0.5		1607		3			X		X	X	X															
120	SB-107-5-0.5-1		1610		3			X		X	X	X															

	Signature	Company	Date	Time
Relinquished	Alex [illegible]	Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

* Benzene - sample from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% mois
121	SB-107-6-0-0.5	3/31/19	1613	Soil	3			X		X	X	X															X
122	SB-107-6-0.5-1		1618		3			X		X	X	X															
123	SB-104-1-0-0.5		1633		3			X		X	X	X															
124	SB-104-1-2.5-3		1639		3			X		X	X	X															
125	SB-104-2-0-0.5		1641		3			X		X	X	X															
126	SB-104-2-4-4.5		1645		3			X		X	X	X															
127	SB-104-3-0-0.5		1647		3			X		X	X	X															
128	SB-104-3-2.5-3		1650		3			X		X	X	X															

	Signature	Company	Date	Time
Relinquished	Alex Rich	Arcadis	4/1/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

* Take Benzene from jar.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

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Chain of Custody

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Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☒ 5 DAYS (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/~~Mineral Oil~~ (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
129	SB-102-1-0-0.5	4/1/19	0937	soil	4		X	X		X	X	X	X														X
130	SB-102-1-1.5-2.0	4/1/19	0950	soil	5		X	X		X	X	X	X				MS/MSD										↓
131	SB-DUP-7	4/1/19	—	soil	4		X	X		X	X	X	X														
132	SB-102-2-0-0.5	4/1/19	0959	soil	4		X	X		X	X	X	X														
133	SB-102-3-0-0.5	4/1/19	1007	soil	4		X	X		X	X	X	X														
134	SB-102-3-0.5-1.0	4/1/19	1048	soil	4		X	X		X	X	X	X														
	~~SB-102-1-1.5-2.0~~	~~4/1/19~~	~~0950~~	~~soil~~	~~5~~		~~X~~	~~X~~		~~X~~	~~X~~	~~X~~	~~X~~				~~MS/MSD~~										
135	SB-101-4-0-0.5	4/1/19	1109	soil	1			X	X																		X
136	SB-101-4-2.0-2.5	4/1/19	1113	soil	1			X	X																		↓
137	SB-DUP-8	4/1/19	—	soil	1			X	X																		

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Page 15 of 18

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Marty Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (mineral oil)	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA / MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664							% Moisture
138	SB-101-5-0-0.5	4/1/19	1119	Soil	1				X					X													X
139	SB-101-5-0.5-1.0		1121		1				X					X													
140	SB-101-6-0-0.5		1123		1				X					X													
141	SB-101-6-0.5-1.0		1126		1				X					X													
142	SB-101-7-0.5-1.0		1129		1				X					X													
143	SB-101-7-1.5-2.0		1136		1				X					X													
144	SB-101-8 0-0.5		1139		1				X					X							(MS/MSD)						
145	SB-101-8-1.0-1.5		1141		1				X					X													
146	SB-101-9-0-0.5		1143		1				X					X													
147	SB-DUP-9		—		1				X					X													

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished		Arcadis	4/2/19	1150	
Received		OSE	4/2/19	1150	
Relinquished					
Received					
Relinquished					
Received					
Reviewed/Date		Reviewed/Date			Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (mineral oil)	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA / MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664							% Moisture
148	SB-101-9-1.5-2.0	4/1/19	1146	Soil	1				X					X													X
149	SB-101-10-0-0.5		1148		1				X					X													
150	SB-101-10-0.5-1.0		1203		1				X					X													
151	SB-101-11-0-0.5		1151		1				X					X													
152	SB-101-11-0.5-1.0		1206		1				X					X													
153	SB-101-12-0-0.5		1207		1				X					X													
154	SB-101-12-~~[illegible]~~ MU 1.0-1.5		1215		1				X					X													
155	SB-101-13-0-0.5		1209		1				X					X													
156	SB-101-13-1.0-1.5		1217		1				X					X													
157	SB-DUP-10		—		1				X					X													

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished		Arcadis	4/2/19	1150	
Received		OSE	4/2/19	1150	
Relinquished					
Received					
Relinquished					
Received					
Reviewed/Date		Reviewed/Date			Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☒ 5 DAYS (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (w/ heavy oil)	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA / MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664							% Moisture
158	SB-101-14-0-0.5	4/1/19	1218	Soil	1				X					X													X
159	SB-101-14-1.0-1.5		1223						X					X													
160	SB-101-15-0-0.5		1240						X					X													
161	SB-101-15-0.5-1.0		1241						X					X													
162	SB-101-16-0-0.5		1235						X					X													
163	SB-101-16-2.0-2.5		1308						X					X							(ms/msD)						
164	SB-DUP-11	↓	—	↓					X					X													↓

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ____ (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260B (BTEX)	Halogenated Volatiles 8260B	~~Semivolatiles 8270D/SIM (with low-level PAHs)~~ ePAHs only	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA / MTCA Metals (circle one)	TCLP Metals	HEM (oil and grease) 1664	~~EPH~~	~~VPH~~	Total Lead				% Moisture
165	PW-040119	4/1/19	1403	Water	6					X				X				X									
166	EB-032919	3/29/19	1700		1																		X				
167	EB-033019	3/30/19	0820		1																		X				
168	EB-03312019	4/1/19	0915		8				X			X											X				
169	~~EB-03~~ EB-04012019	4/1/19	1306		10		X	~~X~~	X			X		X													

	Signature	Company	Date	Time
Relinquished	Alex	Arcadis	4/1/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____

Date of Report: April 16, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-13-A-0.5-1.0**					
Laboratory ID:	04-015-01					
Lead	**62**	5.4	EPA 6010D	4-15-19	4-15-19	
Client ID:	**ISM-13-B-0-0.5**					
Laboratory ID:	04-015-05					
Lead	**130**	5.5	EPA 6010D	4-15-19	4-15-19	
Client ID:	**ISM-13-C-0-0.5**					
Laboratory ID:	04-015-06					
Lead	**200**	5.9	EPA 6010D	4-15-19	4-15-19	
Client ID:	**ISM-14-A-0-0.5**					
Laboratory ID:	04-015-07					
Lead	**350**	6.1	EPA 6010D	4-15-19	4-15-19	
Client ID:	**ISM-14-A-0.5-1.0**					
Laboratory ID:	04-015-11					
Lead	**130**	5.9	EPA 6010D	4-15-19	4-15-19	
Client ID:	**ISM-15-A-0-0.5**					
Laboratory ID:	04-015-14					
Lead	**160**	6.2	EPA 6010D	4-15-19	4-15-19	
Client ID:	**ISM-15-A-0.5-1.0**					
Laboratory ID:	04-015-19					
Lead	**260**	5.4	EPA 6010D	4-15-19	4-15-19	
Client ID:	**ISM-15-A-1.0-1.5**					
Laboratory ID:	04-015-24					
Lead	**72**	5.3	EPA 6010D	4-15-19	4-15-19	

Date of Report: April 16, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-16-A-0-0.5**					
Laboratory ID:	04-015-29					
Lead	**18**	5.6	EPA 6010D	4-15-19	4-15-19	
Client ID:	**ISM-16-A-0.5-1.0**					
Laboratory ID:	04-015-32					
Lead	**8.6**	5.7	EPA 6010D	4-15-19	4-15-19	
Client ID:	**ISM-17-A-0-0.5**					
Laboratory ID:	04-015-35					
Lead	**91**	5.9	EPA 6010D	4-15-19	4-15-19	
Client ID:	**ISM-17-A-0.5-1.0**					
Laboratory ID:	04-015-40					
Lead	**41**	5.2	EPA 6010D	4-15-19	4-15-19	
Client ID:	**ISM-18-A-0-0.5**					
Laboratory ID:	04-015-45					
Lead	**220**	5.3	EPA 6010D	4-15-19	4-15-19	
Client ID:	**ISM-18-A-0.5-1.0**					
Laboratory ID:	04-015-50					
Lead	**180**	5.3	EPA 6010D	4-15-19	4-15-19	

Date of Report: April 16, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-106-1-0-0.5**					
Laboratory ID:	04-015-55					
Lead	**44**	5.8	EPA 6010D	4-9-19	4-9-19	
Client ID:	**SB-106-1-2-2.3**					
Laboratory ID:	04-015-56					
Lead	**ND**	6.2	EPA 6010D	4-9-19	4-9-19	
Client ID:	**SB-DUP-1**					
Laboratory ID:	04-015-57					
Lead	**9.2**	6.5	EPA 6010D	4-9-19	4-9-19	
Client ID:	**SB-106-2-0-0.5**					
Laboratory ID:	04-015-58					
Lead	**110**	11	EPA 6010D	4-9-19	4-9-19	
Client ID:	**SB-106-2-2.0-2.5**					
Laboratory ID:	04-015-59					
Lead	**13**	6.8	EPA 6010D	4-9-19	4-9-19	
Client ID:	**SB-106-3-0-0.5**					
Laboratory ID:	04-015-60					
Lead	**7.3**	5.6	EPA 6010D	4-9-19	4-9-19	
Client ID:	**SB-106-3-2-2.5**					
Laboratory ID:	04-015-61					
Lead	**ND**	6.0	EPA 6010D	4-9-19	4-9-19	

Date of Report: April 16, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

GASOLINE RANGE ORGANICS
NWTPH-Gx

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-102-1-0-0.5**					
Laboratory ID:	04-015-129					
Gasoline	**ND**	11	NWTPH-Gx	4-4-19	4-4-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***97***	***57-129***				
Client ID:	**SB-102-1-1.5-2.0**					
Laboratory ID:	04-015-130					
Gasoline	**9.7**	9.5	NWTPH-Gx	4-4-19	4-4-19	~~O~~
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***120***	***57-129***				
Client ID:	**SB-DUP-7**					
Laboratory ID:	04-015-131					
Gasoline	**ND**	10	NWTPH-Gx	4-4-19	4-4-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***100***	***57-129***				
Client ID:	**SB-102-2-0-0.5**					
Laboratory ID:	04-015-132					
Gasoline	**18**	16	NWTPH-Gx	4-4-19	4-4-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***101***	***57-129***				
Client ID:	**SB-102-3-0-0.5**					
Laboratory ID:	04-015-133					
Gasoline	**ND**	14	NWTPH-Gx	4-4-19	4-4-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***108***	***57-129***				
Client ID:	**SB-102-3-0.5-1.0**					
Laboratory ID:	04-015-134					
Gasoline	**ND**	13	NWTPH-Gx	4-4-19	4-4-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***98***	***57-129***				

Date of Report: April 16, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

GASOLINE RANGE ORGANICS
NWTPH-Gx
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0404S1					
Gasoline	**ND**	5.0	NWTPH-Gx	4-4-19	4-4-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***98***	***57-129***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-015-130										
	ORIG	DUP									
Gasoline	**6.98**	**7.05**	NA	NA		NA		NA	1	30	~~O,O~~
Surrogate:											
Fluorobenzene						***120***	***117***	***57-129***			

Date of Report: April 16, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

GASOLINE RANGE ORGANICS/BTEX
NWTPH-Gx/EPA 8021B

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EB-04012019**					
Laboratory ID:	04-015-169					
Benzene	**ND**	1.0	EPA 8021B	4-4-19	4-4-19	
Toluene	**ND**	1.0	EPA 8021B	4-4-19	4-4-19	
Ethyl Benzene	**ND**	1.0	EPA 8021B	4-4-19	4-4-19	
m,p-Xylene	**ND**	1.0	EPA 8021B	4-4-19	4-4-19	
o-Xylene	**ND**	1.0	EPA 8021B	4-4-19	4-4-19	
Gasoline	**ND**	100	NWTPH-Gx	4-4-19	4-4-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***82***	***66-117***				

Date of Report: April 16, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-112-1-0-0.5**					
Laboratory ID:	04-015-62					
Diesel Range Organics	**100**	37	NWTPH-Dx	4-3-19	4-3-19	~~N~~
Lube Oil Range Organics	**910**	75	NWTPH-Dx	4-3-19	4-3-19	J
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***81***	***50-150***				
Client ID:	**SB-112-1-0.5-0.7**					
Laboratory ID:	04-015-63					
Diesel Range Organics	**150**	38	NWTPH-Dx	4-3-19	4-3-19	~~N~~
Lube Oil Range Organics	**1000**	76	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***76***	***50-150***				
Client ID:	**SB-112-2-0-0.5**					
Laboratory ID:	04-015-64					
Diesel Range Organics	**36**	32	NWTPH-Dx	4-3-19	4-3-19	~~N~~
Lube Oil Range Organics	**280**	64	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***86***	***50-150***				
Client ID:	**SB-112-2-1-1.5**					
Laboratory ID:	04-015-65					
Diesel Range Organics	**230**	33	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**150**	66	NWTPH-Dx	4-3-19	4-3-19	~~N1~~
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***80***	***50-150***				
Client ID:	**SB-112-3-0-0.5**					
Laboratory ID:	04-015-66					
Diesel Range Organics	**40**	34	NWTPH-Dx	4-3-19	4-3-19	~~N~~
Lube Oil Range Organics	**340**	67	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***94***	***50-150***				
Client ID:	**SB-112-3-1-1.3**					
Laboratory ID:	04-015-67					
Diesel Range Organics	**ND**	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**79**	59	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***103***	***50-150***				

Date of Report: April 16, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-112-4-0-0.5**					
Laboratory ID:	04-015-68					
Diesel Range Organics	**110**	33	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**340**	67	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***86***	***50-150***				
Client ID:	**SB-DUP-2**					
Laboratory ID:	04-015-69					
Diesel Range Organics	**ND**	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	60	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***84***	***50-150***				
Client ID:	**SB-112-4-0.5-1**					
Laboratory ID:	04-015-70					
Diesel Range Organics	**ND**	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**67**	62	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***86***	***50-150***				
Client ID:	**SB-112-5-0-0.5**					
Laboratory ID:	04-015-71					
Diesel Range Organics	**350**	37	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**850**	75	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***87***	***50-150***				
Client ID:	**SB-112-5-0.5-0.9**					
Laboratory ID:	04-015-72					
Diesel Range Organics	**270**	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**260**	69	NWTPH-Dx	4-3-19	4-3-19	~~N1~~
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***81***	***50-150***				
Client ID:	**SB-112-6-0-0.5**					
Laboratory ID:	04-015-73					
Diesel Range Organics	**2000**	210	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**2700**	430	NWTPH-Dx	4-3-19	4-3-19	~~N1~~
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***72***	***50-150***				

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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-112-6-1-1.5**					
Laboratory ID:	04-015-74					
Diesel Range Organics	**240**	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**150**	68	NWTPH-Dx	4-3-19	4-3-19	~~N1~~
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***78***	***50-150***				
Client ID:	**SB-112-7-0-0.5**					
Laboratory ID:	04-015-75					
Diesel Range Organics	**120**	36	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**520**	72	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***68***	***50-150***				
Client ID:	**SB-112-7-0.5-0.8**					
Laboratory ID:	04-015-76					
Diesel Range Organics	**130**	32	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**130**	64	NWTPH-Dx	4-3-19	4-3-19	~~N1~~
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***53***	***50-150***				
Client ID:	**SB-112-08-0-0.5**					
Laboratory ID:	04-015-77					
Diesel Range Organics	**280**	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**380**	68	NWTPH-Dx	4-3-19	4-3-19	~~N1~~
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***75***	***50-150***				
Client ID:	**SB-DUP-3**					
Laboratory ID:	04-015-78					
Diesel Range Organics	**310**	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**460**	68	NWTPH-Dx	4-3-19	4-3-19	~~N1~~
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***83***	***50-150***				
Client ID:	**SB-112-08-1-1.5**					
Laboratory ID:	04-015-79					
Diesel Range Organics	**64**	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***78***	***50-150***				

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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-112-9-0-0.5**					
Laboratory ID:	04-015-80					
Diesel Range Organics	**52**	36	NWTPH-Dx	4-3-19	4-3-19	~~N~~
Lube Oil Range Organics	**340**	72	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***88***	***50-150***				
Client ID:	**SB-112-9-0.5-1**					
Laboratory ID:	04-015-81					
Diesel Range Organics	**89**	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**190**	68	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***87***	***50-150***				
Client ID:	**SB-112-10-0-0.5**					
Laboratory ID:	04-015-82					
Diesel Range Organics	**81**	32	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**120**	64	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***77***	***50-150***				
Client ID:	**SB-112-10-0.5-1**					
Laboratory ID:	04-015-83					
Diesel Range Organics	**93**	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**390**	69	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***76***	***50-150***				
Client ID:	**SB-112-11-0-0.5**					
Laboratory ID:	04-015-84					
Diesel Range Organics	**390**	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**240**	59	NWTPH-Dx	4-3-19	4-3-19	~~N1~~
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***66***	***50-150***				
Client ID:	**SB-112-11-1.5-2**					
Laboratory ID:	04-015-85					
Diesel Range Organics	**100**	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**180**	62	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***97***	***50-150***				

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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-112-12-0-0.5**					
Laboratory ID:	04-015-86					
Diesel Range Organics	**170**	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**520**	70	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***82***	***50-150***				
Client ID:	**SB-112-12-1-1.5**					
Laboratory ID:	04-015-87					
Diesel Range Organics	**48**	33	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**83**	65	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***69***	***50-150***				
Client ID:	**SB-PL-1-0-0.5**					
Laboratory ID:	04-015-88					
Diesel Range Organics	**38**	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**87**	68	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***79***	***50-150***				
Client ID:	**SB-PL-2-1-1.5**					
Laboratory ID:	04-015-89					
Diesel Range Organics	**46**	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**120**	58	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***73***	***50-150***				
Client ID:	**SB-PL-3-0-0.5**					
Laboratory ID:	04-015-90					
Diesel Range Organics	**32**	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**170**	62	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***81***	***50-150***				
Client ID:	**SB-PL-4-1-1.5**					
Laboratory ID:	04-015-91					
Diesel Range Organics	**ND**	32	NWTPH-Dx	4-3-19	4-5-19	
Lube Oil Range Organics	**210**	64	NWTPH-Dx	4-3-19	4-5-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***89***	***50-150***				

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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-PL-5-0-0.5**					
Laboratory ID:	04-015-92					
Diesel Range Organics	**56**	32	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**210**	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***74***	***50-150***				
Client ID:	**SB-PL-6-1-1.5**					
Laboratory ID:	04-015-93					
Diesel Range Organics	**33**	32	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**120**	64	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***82***	***50-150***				
Client ID:	**SB-DUP-4**					
Laboratory ID:	04-015-94					
Diesel Range Organics	**ND**	33	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**120**	67	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***91***	***50-150***				
Client ID:	**SB-PL-7-0-0.5**					
Laboratory ID:	04-015-95					
Diesel Range Organics	**71**	42	NWTPH-Dx	4-3-19	4-3-19	~~N~~
Lube Oil Range Organics	**360**	83	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***79***	***50-150***				
Client ID:	**SB-PL-8-1-1.5**					
Laboratory ID:	04-015-96					
Diesel Range Organics	**30**	28	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	57	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***84***	***50-150***				
Client ID:	**SB-PL-9-0-0.5**					
Laboratory ID:	04-015-97					
Diesel Range Organics	**ND**	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**290**	69	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***79***	***50-150***				

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-PL-10-2-2.5**					
Laboratory ID:	04-015-98					
Diesel Range Organics	**ND**	28	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**70**	56	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***97***	***50-150***				
Client ID:	**SB-PL-11-0.5-1**					
Laboratory ID:	04-015-99					
Diesel Range Organics	**ND**	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	60	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***87***	***50-150***				
Client ID:	**SB-PL-12-1-1.5**					
Laboratory ID:	04-015-100					
Diesel Range Organics	**ND**	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	59	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***87***	***50-150***				
Client ID:	**SB-PL-13-1-1.5**					
Laboratory ID:	04-015-101					
Diesel Range Organics	**ND**	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	58	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***90***	***50-150***				
Client ID:	**SB-PL-14-1-1.5**					
Laboratory ID:	04-015-102					
Diesel Range Organics	**46**	28	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***91***	***50-150***				
Client ID:	**SB-101-1-0-0.5**					
Laboratory ID:	04-015-103					
Diesel Range Organics	**160**	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**620**	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***95***	***50-150***				

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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-101-1-2-2.5**					
Laboratory ID:	04-015-104					
Diesel Range Organics	**650**	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**220**	59	NWTPH-Dx	4-3-19	4-3-19	~~N1~~
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***81***	***50-150***				
Client ID:	**SB-101-2-0-0.5**					
Laboratory ID:	04-015-105					
Diesel Range Organics	**79**	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**220**	61	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***86***	***50-150***				
Client ID:	**SB-DUP-5**					
Laboratory ID:	04-015-106					
Diesel Range Organics	**87**	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**210**	61	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***81***	***50-150***				
Client ID:	**SB-101-2-2-2.5**					
Laboratory ID:	04-015-107					
Diesel Range Organics	**260**	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**110**	58	NWTPH-Dx	4-3-19	4-3-19	~~N1~~
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***88***	***50-150***				
Client ID:	**SB-101-3-0-0.5**					
Laboratory ID:	04-015-108					
Diesel Range Organics	**57**	31	NWTPH-Dx	4-3-19	4-3-19	~~N~~
Lube Oil Range Organics	**360**	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***82***	***50-150***				
Client ID:	**SB-101-3-2-2.5**					
Laboratory ID:	04-015-109					
Diesel Range Organics	**73**	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**91**	58	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***90***	***50-150***				

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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-107-1-0-0.5**					
Laboratory ID:	04-015-110					
Diesel Range Organics	**530**	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**760**	60	NWTPH-Dx	4-3-19	4-3-19	~~N1~~
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***83***	***50-150***				
Client ID:	**SB-107-1-1-1.5**					
Laboratory ID:	04-015-111					
Diesel Range Organics	**710**	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**720**	60	NWTPH-Dx	4-3-19	4-3-19	~~N1~~
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***87***	***50-150***				
Client ID:	**SB-107-2-0-0.5**					
Laboratory ID:	04-015-112					
Diesel Range Organics	**420**	38	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**890**	75	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***79***	***50-150***				
Client ID:	**SB-107-2-0.5-1**					
Laboratory ID:	04-015-113					
Diesel Range Organics	**270**	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**500**	69	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***87***	***50-150***				
Client ID:	**SB-107-3-0-0.5**					
Laboratory ID:	04-015-114					
Diesel Range Organics	**2700**	170	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**2900**	340	NWTPH-Dx	4-3-19	4-3-19	~~N1~~
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***91***	***50-150***				
Client ID:	**SB-107-3-0.5-1**					
Laboratory ID:	04-015-115					
Diesel Range Organics	**1600**	160	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**2300**	320	NWTPH-Dx	4-3-19	4-3-19	~~N1~~
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***89***	***50-150***				

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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-107-4-0-0.5**					
Laboratory ID:	04-015-116					
Diesel Range Organics	**1300**	170	NWTPH-Dx	4-3-19	4-5-19	
Lube Oil Range Organics	**1300**	340	NWTPH-Dx	4-3-19	4-5-19	~~N1~~
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***102***	***50-150***				
Client ID:	**SB-DUP-6**					
Laboratory ID:	04-015-117					
Diesel Range Organics	**1000**	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**1100**	68	NWTPH-Dx	4-3-19	4-3-19	~~N1~~
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***104***	***50-150***				
Client ID:	**SB-107-4-0.5-1**					
Laboratory ID:	04-015-118					
Diesel Range Organics	**370**	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**350**	57	NWTPH-Dx	4-3-19	4-3-19	~~N1~~
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***98***	***50-150***				
Client ID:	**SB-107-5-0-0.5**					
Laboratory ID:	04-015-119					
Diesel Range Organics	**140**	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**400**	67	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***95***	***50-150***				
Client ID:	**SB-107-5-0.5-1**					
Laboratory ID:	04-015-120					
Diesel Range Organics	**130**	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**300**	70	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***94***	***50-150***				
Client ID:	**SB-107-6-0-0.5**					
Laboratory ID:	04-015-121					
Diesel Range Organics	**920**	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**1200**	69	NWTPH-Dx	4-3-19	4-3-19	~~N1~~
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***101***	***50-150***				

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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-107-6-0.5-1**					
Laboratory ID:	04-015-122					
Diesel Range Organics	**580**	36	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**810**	72	NWTPH-Dx	4-3-19	4-3-19	~~N1~~
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***101***	***50-150***				
Client ID:	**SB-104-1-0-0.5**					
Laboratory ID:	04-015-123					
Diesel Range Organics	**56**	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**400**	70	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***96***	***50-150***				
Client ID:	**SB-104-1-2.5-3**					
Laboratory ID:	04-015-124					
Diesel Range Organics	**ND**	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**100**	60	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***96***	***50-150***				
Client ID:	**SB-104-2-0-0.5**					
Laboratory ID:	04-015-125					
Diesel Range Organics	**120**	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**290**	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***97***	***50-150***				
Client ID:	**SB-104-2-4-4.5**					
Laboratory ID:	04-015-126					
Diesel Range Organics	**74**	28	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**96**	56	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***97***	***50-150***				
Client ID:	**SB-104-3-0-0.5**					
Laboratory ID:	04-015-127					
Diesel Range Organics	**36**	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**190**	60	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***98***	***50-150***				

Date of Report: April 16, 2019
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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-104-3-2.5-3**					
Laboratory ID:	04-015-128					
Diesel Range Organics	**ND**	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**69**	58	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***83***	***50-150***				
Client ID:	**SB-102-1-0-0.5**					
Laboratory ID:	04-015-129					
Diesel Range Organics	**36**	35	NWTPH-Dx	4-3-19	4-3-19	~~N~~
Lube Oil Range Organics	**330**	69	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***93***	***50-150***				
Client ID:	**SB-102-1-1.5-2.0**					
Laboratory ID:	04-015-130					
Diesel Range Organics	**ND**	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**100**	69	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***88***	***50-150***				
Client ID:	**SB-DUP-7**					
Laboratory ID:	04-015-131					
Diesel Range Organics	**88**	34	NWTPH-Dx	4-3-19	4-3-19	~~N~~
Lube Oil Range Organics	**440**	68	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***86***	***50-150***				
Client ID:	**SB-102-2-0-0.5**					
Laboratory ID:	04-015-132					
Diesel Range Organics	**140**	40	NWTPH-Dx	4-3-19	4-3-19	~~N~~
Lube Oil Range Organics	**690**	80	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***86***	***50-150***				
Client ID:	**SB-102-3-0-0.5**					
Laboratory ID:	04-015-133					
Diesel Range Organics	**150**	44	NWTPH-Dx	4-3-19	4-3-19	~~N~~
Lube Oil Range Organics	**860**	89	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***87***	***50-150***				

Date of Report: April 16, 2019
Samples Submitted: April 2, 2019
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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-102-3-0.5-1.0**					
Laboratory ID:	04-015-134					
Diesel Range Organics	**ND**	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**220**	70	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***102***	***50-150***				
Client ID:	**SB-101-4-0-0.5**					
Laboratory ID:	04-015-135					
Diesel Range Organics	**ND**	100	NWTPH-Dx	4-3-19	4-3-19	~~U1~~ U
Mineral Oil	**110**	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**330**	61	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***82***	***50-150***				
Client ID:	**SB-101-4-2.0-2.5**					
Laboratory ID:	04-015-136					
Diesel Range Organics	**ND**	440	NWTPH-Dx	4-3-19	4-3-19	~~U1~~ U
Mineral Oil	**460**	32	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**270**	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***89***	***50-150***				
Client ID:	**SB-DUP-8**					
Laboratory ID:	04-015-137					
Diesel Range Organics	**ND**	370	NWTPH-Dx	4-3-19	4-3-19	~~U1~~ U
Mineral Oil	**380**	32	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**240**	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***95***	***50-150***				
Client ID:	**SB-101-5-0-0.5**					
Laboratory ID:	04-015-138					
Diesel Range Organics	**ND**	94	NWTPH-Dx	4-3-19	4-3-19	~~U1~~ U
Mineral Oil	**110**	32	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**360**	64	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***75***	***50-150***				

Date of Report: April 16, 2019
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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-101-5-0.5-1.0**					
Laboratory ID:	04-015-139					
Diesel Range Organics	**ND**	68	NWTPH-Dx	4-3-19	4-3-19	~~U1~~ U
Mineral Oil	**77**	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**140**	59	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***91***	***50-150***				
Client ID:	**SB-101-6-0-0.5**					
Laboratory ID:	04-015-140					
Diesel Range Organics	**ND**	32	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	32	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**190**	65	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***92***	***50-150***				
Client ID:	**SB-101-6-0.5-1.0**					
Laboratory ID:	04-015-141					
Diesel Range Organics	**ND**	83	NWTPH-Dx	4-3-19	4-3-19	~~U1~~ U
Mineral Oil	**78**	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	60	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***86***	***50-150***				
Client ID:	**SB-101-7-0.5-1.0**					
Laboratory ID:	04-015-142					
Diesel Range Organics	**48**	45	NWTPH-Dx	4-3-19	4-3-19	~~N~~
Mineral Oil	**ND**	47	NWTPH-Dx	4-3-19	4-3-19	~~U1~~ U
Lube Oil Range Organics	**290**	90	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***79***	***50-150***				
Client ID:	**SB-101-7-1.5-2.0**					
Laboratory ID:	04-015-143					
Diesel Range Organics	**ND**	34	NWTPH-Dx	4-3-19	4-3-19	~~U1~~ U
Mineral Oil	**44**	33	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	65	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***77***	***50-150***				

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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-101-8-0-0.5**					
Laboratory ID:	04-015-144					
Diesel Range Organics	**ND**	860	NWTPH-Dx	4-3-19	4-3-19	~~U1~~ U
Mineral Oil	**930**	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**900**	68	NWTPH-Dx	4-3-19	4-3-19	~~N1~~
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***90***	***50-150***				
Client ID:	**SB-101-8-1.0-1.5**					
Laboratory ID:	04-015-145					
Diesel Range Organics	**ND**	140	NWTPH-Dx	4-3-19	4-3-19	~~U1~~ U
Mineral Oil	**140**	32	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**150**	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***74***	***50-150***				
Client ID:	**SB-101-9-0-0.5**					
Laboratory ID:	04-015-146					
Diesel Range Organics	**ND**	200	NWTPH-Dx	4-3-19	4-3-19	~~U1~~ U
Mineral Oil	**190** J	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**180**	60	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***103***	***50-150***				
Client ID:	**SB-DUP-9**					
Laboratory ID:	04-015-147					
Diesel Range Organics	**ND**	62	NWTPH-Dx	4-3-19	4-3-19	~~U1~~ U
Mineral Oil	**65** J	34	NWTPH-Dx	4-3-19	4-3-19	~~N~~
Lube Oil Range Organics	**240**	68	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***80***	***50-150***				
Client ID:	**SB-101-9-1.5-2.0**					
Laboratory ID:	04-015-148					
Diesel Range Organics	**ND**	160	NWTPH-Dx	4-3-19	4-3-19	~~U1~~ U
Mineral Oil	**170**	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**66**	59	NWTPH-Dx	4-3-19	4-3-19	~~N1~~
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***85***	***50-150***				

Date of Report: April 16, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-101-10-0-0.5**					
Laboratory ID:	04-015-149					
Diesel Range Organics	**ND**	88	NWTPH-Dx	4-3-19	4-3-19	~~U1~~ U
Mineral Oil	**94**	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**240**	60	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***94***	***50-150***				
Client ID:	**SB-101-10-0.5-1.0**					
Laboratory ID:	04-015-150					
Diesel Range Organics	**ND**	48	NWTPH-Dx	4-3-19	4-3-19	~~U1~~ U
Mineral Oil	**56**	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	57	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***96***	***50-150***				
Client ID:	**SB-101-11-0-0.5**					
Laboratory ID:	04-015-151					
Diesel Range Organics	**ND**	35	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**210**	70	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***85***	***50-150***				
Client ID:	**SB-101-11-0.5-1.0**					
Laboratory ID:	04-015-152					
Diesel Range Organics	**ND**	31	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**150**	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***85***	***50-150***				
Client ID:	**SB-101-12-0-0.5**					
Laboratory ID:	04-015-153					
Diesel Range Organics	**ND**	39	NWTPH-Dx	4-3-19	4-3-19	~~U1~~ U
Mineral Oil	**47**	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**220**	63	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***95***	***50-150***				

Date of Report: April 16, 2019
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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-101-12-1.0-1.5**					
Laboratory ID:	04-015-154					
Diesel Range Organics	**ND**	29	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	29	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**120**	57	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***92***	***50-150***				
Client ID:	**SB-101-13-0-0.5**					
Laboratory ID:	04-015-155					
Diesel Range Organics	**37**	34	NWTPH-Dx	4-3-19	4-3-19	~~N~~
Mineral Oil	**ND**	39	NWTPH-Dx	4-3-19	4-3-19	~~U1~~ U
Lube Oil Range Organics	**290**	67	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***87***	***50-150***				
Client ID:	**SB-101-13-1.0-1.5**					
Laboratory ID:	04-015-156					
Diesel Range Organics	**ND**	30	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	30	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**160**	61	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***85***	***50-150***				
Client ID:	**SB-DUP-10**					
Laboratory ID:	04-015-157					
Diesel Range Organics	**37**	33	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	33	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**120**	66	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***98***	***50-150***				
Client ID:	**SB-101-14-0-0.5**					
Laboratory ID:	04-015-158					
Diesel Range Organics	**ND**	35	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**130**	70	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***96***	***50-150***				

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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-101-14-1.0-1.5**					
Laboratory ID:	04-015-159					
Diesel Range Organics	**ND**	31	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	31	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***82***	***50-150***				
Client ID:	**SB-101-15-0-0.5**					
Laboratory ID:	04-015-160					
Diesel Range Organics	**ND**	36	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	36	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**140**	72	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***81***	***50-150***				
Client ID:	**SB-101-15-0.5-1.0**					
Laboratory ID:	04-015-161					
Diesel Range Organics	**ND**	35	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	35	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**140**	70	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***89***	***50-150***				
Client ID:	**SB-101-16-0-0.5**					
Laboratory ID:	04-015-162					
Diesel Range Organics	**ND**	34	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	34	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**87**	68	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***109***	***50-150***				
Client ID:	**SB-101-16-2.0-2.5**					
Laboratory ID:	04-015-163					
Diesel Range Organics	**ND**	28	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	28	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**ND**	56	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***95***	***50-150***				

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-DUP-11**					
Laboratory ID:	04-015-164					
Diesel Range Organics	**ND**	33	NWTPH-Dx	4-3-19	4-3-19	
Mineral Oil	**ND**	33	NWTPH-Dx	4-3-19	4-3-19	
Lube Oil Range Organics	**73**	67	NWTPH-Dx	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***93***	***50-150***				

Date of Report: April 16, 2019
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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EB-03312019**					
Laboratory ID:	04-015-168					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	4-4-19	4-5-19	
Lube Oil Range Organics	**ND**	0.41	NWTPH-Dx	4-4-19	4-5-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***98***	***50-150***				
Client ID:	**EB-04012019**					
Laboratory ID:	04-015-169					
Diesel Range Organics	**ND**	0.26	NWTPH-Dx	4-4-19	4-5-19	
Lube Oil Range Organics	**ND**	0.42	NWTPH-Dx	4-4-19	4-5-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***101***	***50-150***				

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VOLATILE ORGANICS EPA 8260C

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**PW-040119**					
Laboratory ID:	04-015-165					
Benzene	ND	0.20	EPA 8260C	4-3-19	4-3-19	
Toluene	ND	1.0	EPA 8260C	4-3-19	4-3-19	
Ethylbenzene	ND	0.20	EPA 8260C	4-3-19	4-3-19	
m,p-Xylene	ND	0.40	EPA 8260C	4-3-19	4-3-19	
o-Xylene	ND	0.20	EPA 8260C	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***93***	***75-127***				
Toluene-d8	***99***	***80-127***				
4-Bromofluorobenzene	***99***	***78-125***				

cPAHs EPA 8270D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EB-03312019**					
Laboratory ID:	04-015-168					
Benzo[a]anthracene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Chrysene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo[b]fluoranthene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo(j,k)fluoranthene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo[a]pyrene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Indeno[1,2,3-cd]pyrene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Dibenz[a,h]anthracene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorophenol	***35***	***12 - 80***				
Phenol-d6	***29***	***10 - 82***				
Nitrobenzene-d5	***52***	***30 - 103***				
2-Fluorobiphenyl	***63***	***33 - 103***				
2,4,6-Tribromophenol	***75***	***20 - 121***				
Terphenyl-d14	***78***	***32 - 113***				

Date of Report: April 16, 2019
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Project: B0003010.0006

cPAHs EPA 8270D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EB-04012019**					
Laboratory ID:	04-015-169					
Benzo[a]anthracene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Chrysene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo[b]fluoranthene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo(j,k)fluoranthene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Benzo[a]pyrene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Indeno[1,2,3-cd]pyrene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Dibenz[a,h]anthracene	**ND**	0.010	EPA 8270D/SIM	4-3-19	4-3-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorophenol	***45***	***12 - 80***				
Phenol-d6	***37***	***10 - 82***				
Nitrobenzene-d5	***65***	***30 - 103***				
2-Fluorobiphenyl	***73***	***33 - 103***				
2,4,6-Tribromophenol	***87***	***20 - 121***				
Terphenyl-d14	***85***	***32 - 113***				

Date of Report: April 16, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

PCBs EPA 8082A

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-101-4-0-0.5**					
Laboratory ID:	04-015-135					
Aroclor 1016	**ND**	0.61 UJ	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	**ND**	0.61 UJ	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	**ND**	0.61 UJ	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	**ND**	0.61 UJ	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	**ND**	0.61 UJ	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	**ND**	0.61 UJ	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	**2.9** J	0.61	EPA 8082A	4-9-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***---***	***39-130***				S
Client ID:	**SB-101-4-2.0-2.5**					
Laboratory ID:	04-015-136					
Aroclor 1016	**ND**	0.063	EPA 8082A	4-9-19	4-9-19	
Aroclor 1221	**ND**	0.063	EPA 8082A	4-9-19	4-9-19	
Aroclor 1232	**ND**	0.063	EPA 8082A	4-9-19	4-9-19	
Aroclor 1242	**ND**	0.063	EPA 8082A	4-9-19	4-9-19	
Aroclor 1248	**ND**	0.063	EPA 8082A	4-9-19	4-9-19	
Aroclor 1254	**ND**	0.063	EPA 8082A	4-9-19	4-9-19	
Aroclor 1260	**0.37**	0.063	EPA 8082A	4-9-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***85***	***39-130***				
Client ID:	**SB-DUP-8**					
Laboratory ID:	04-015-137					
Aroclor 1016	**ND**	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	**ND**	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	**ND**	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	**ND**	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	**ND**	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	**ND**	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	**0.52**	0.063	EPA 8082A	4-9-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***81***	***39-130***				

Date of Report: April 16, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

PCBs EPA 8082A

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**SB-101-5-0-0.5**					
Laboratory ID:	04-015-138					
Aroclor 1016	**ND**	6.4 UJ	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	**ND**	6.4 UJ	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	**ND**	6.4 UJ	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	**ND**	6.4 UJ	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	**ND**	6.4 UJ	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	**ND**	6.4 UJ	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	**45** J	6.4	EPA 8082A	4-9-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***---***	***39-130***				S
Client ID:	**SB-101-5-0.5-1.0**					
Laboratory ID:	04-015-139					
Aroclor 1016	**ND**	0.059	EPA 8082A	4-9-19	4-9-19	
Aroclor 1221	**ND**	0.059	EPA 8082A	4-9-19	4-9-19	
Aroclor 1232	**ND**	0.059	EPA 8082A	4-9-19	4-9-19	
Aroclor 1242	**ND**	0.059	EPA 8082A	4-9-19	4-9-19	
Aroclor 1248	**ND**	0.059	EPA 8082A	4-9-19	4-9-19	
Aroclor 1254	**ND**	0.059	EPA 8082A	4-9-19	4-9-19	
Aroclor 1260	**0.95**	0.059	EPA 8082A	4-9-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***84***	***39-130***				
Client ID:	**SB-101-6-0-0.5**					
Laboratory ID:	04-015-140					
Aroclor 1016	**ND**	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	**ND**	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	**ND**	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	**ND**	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	**ND**	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	**ND**	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	**0.58**	0.065	EPA 8082A	4-9-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***91***	***39-130***				

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Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

PCBs EPA 8082A

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-101-6-0.5-1.0**					
Laboratory ID:	04-015-141					
Aroclor 1016	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***68***	***39-130***				
Client ID:	**SB-101-7-0.5-1.0**					
Laboratory ID:	04-015-142					
Aroclor 1016	**ND**	0.090	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	**ND**	0.090	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	**ND**	0.090	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	**ND**	0.090	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	**ND**	0.090	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	**ND**	0.090	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	**1.2**	0.090	EPA 8082A	4-9-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***74***	***39-130***				
Client ID:	**SB-101-7-1.5-2.0**					
Laboratory ID:	04-015-143					
Aroclor 1016	**ND**	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	**ND**	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	**ND**	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	**ND**	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	**ND**	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	**ND**	0.065	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	**0.11**	0.065	EPA 8082A	4-9-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***79***	***39-130***				

Date of Report: April 16, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

PCBs EPA 8082A

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**SB-101-8-0-0.5**					
Laboratory ID:	04-015-144					
Aroclor 1016	**ND**	0.068	EPA 8082A	4-9-19	4-9-19	
Aroclor 1221	**ND**	0.068	EPA 8082A	4-9-19	4-9-19	
Aroclor 1232	**ND**	0.068	EPA 8082A	4-9-19	4-9-19	
Aroclor 1242	**ND**	0.068	EPA 8082A	4-9-19	4-9-19	
Aroclor 1248	**ND**	0.068	EPA 8082A	4-9-19	4-9-19	
Aroclor 1254	**ND**	0.068	EPA 8082A	4-9-19	4-9-19	
Aroclor 1260	**0.28**	0.068	EPA 8082A	4-9-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***62***	***39-130***				
Client ID:	**SB-101-8-1.0-1.5**					
Laboratory ID:	04-015-145					
Aroclor 1016	**ND**	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	**ND**	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	**ND**	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	**ND**	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	**ND**	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	**ND**	0.063	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	**0.26**	0.063	EPA 8082A	4-9-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***72***	***39-130***				
Client ID:	**SB-101-9-0-0.5**					
Laboratory ID:	04-015-146					
Aroclor 1016	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	**0.64** J	0.060	EPA 8082A	4-9-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***77***	***39-130***				

Date of Report: April 16, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

PCBs EPA 8082A

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-DUP-9**					
Laboratory ID:	04-015-147					
Aroclor 1016	**ND**	0.068	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	**ND**	0.068	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	**ND**	0.068	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	**ND**	0.068	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	**ND**	0.068	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	**ND**	0.068	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	**1.3** J	0.068	EPA 8082A	4-9-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***76***	***39-130***				
Client ID:	**SB-101-9-1.5-2.0**					
Laboratory ID:	04-015-148					
Aroclor 1016	**ND**	0.059	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	**ND**	0.059	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	**ND**	0.059	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	**ND**	0.059	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	**ND**	0.059	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	**ND**	0.059	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	**ND**	0.059	EPA 8082A	4-9-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***81***	***39-130***				
Client ID:	**SB-101-10-0-0.5**					
Laboratory ID:	04-015-149					
Aroclor 1016	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	**ND**	0.060	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	**1.4**	0.060	EPA 8082A	4-9-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***87***	***39-130***				

Date of Report: April 16, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

PCBs EPA 8082A

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-101-10-0.5-1.0**					
Laboratory ID:	04-015-150					
Aroclor 1016	**ND**	0.057	EPA 8082A	4-9-19	4-10-19	
Aroclor 1221	**ND**	0.057	EPA 8082A	4-9-19	4-10-19	
Aroclor 1232	**ND**	0.057	EPA 8082A	4-9-19	4-10-19	
Aroclor 1242	**ND**	0.057	EPA 8082A	4-9-19	4-10-19	
Aroclor 1248	**ND**	0.057	EPA 8082A	4-9-19	4-10-19	
Aroclor 1254	**ND**	0.057	EPA 8082A	4-9-19	4-10-19	
Aroclor 1260	**0.32**	0.057	EPA 8082A	4-9-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***70***	***39-130***				
Client ID:	**SB-101-11-0-0.5**					
Laboratory ID:	04-015-151					
Aroclor 1016	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	**0.68**	0.070	EPA 8082A	4-8-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***71***	***39-130***				
Client ID:	**SB-101-11-0.5-1.0**					
Laboratory ID:	04-015-152					
Aroclor 1016	**ND**	0.063	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	**ND**	0.063	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	**ND**	0.063	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	**ND**	0.063	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	**ND**	0.063	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	**ND**	0.063	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	**0.28**	0.063	EPA 8082A	4-8-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***77***	***39-130***				

Date of Report: April 16, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

PCBs EPA 8082A

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-101-12-0-0.5**					
Laboratory ID:	04-015-153					
Aroclor 1016	**ND**	1.2 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1221	**ND**	1.2 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1232	**ND**	1.2 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1242	**ND**	1.2 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1248	**ND**	1.2 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1254	**ND**	1.2 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1260	**4.3** J	1.2	EPA 8082A	4-8-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***---***	***39-130***				S
Client ID:	**SB-101-12-1.0-1.5**					
Laboratory ID:	04-015-154					
Aroclor 1016	**ND**	0.057	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	**ND**	0.057	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	**ND**	0.057	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	**ND**	0.057	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	**ND**	0.057	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	**ND**	0.057	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	**1.2**	0.057	EPA 8082A	4-8-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***79***	***39-130***				
Client ID:	**SB-101-13-0-0.5**					
Laboratory ID:	04-015-155					
Aroclor 1016	**ND**	1.3 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1221	**ND**	1.3 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1232	**ND**	1.3 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1242	**ND**	1.3 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1248	**ND**	1.3 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1254	**ND**	1.3 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1260	**6.4** J	1.3	EPA 8082A	4-8-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***---***	***39-130***				S

Date of Report: April 16, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

PCBs EPA 8082A

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-101-13-1.0-1.5**					
Laboratory ID:	04-015-156					
Aroclor 1016	**ND**	1.2 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1221	**ND**	1.2 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1232	**ND**	1.2 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1242	**ND**	1.2 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1248	**ND**	1.2 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1254	**ND**	1.2 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1260	**4.9** J	1.2	EPA 8082A	4-8-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***---***	***39-130***				S
Client ID:	**SB-DUP-10**					
Laboratory ID:	04-015-157					
Aroclor 1016	**ND**	0.066	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	**ND**	0.066	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	**ND**	0.066	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	**ND**	0.066	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	**ND**	0.066	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	**ND**	0.066	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	**1.2**	0.066	EPA 8082A	4-8-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***74***	***39-130***				
Client ID:	**SB-101-14-0-0.5**					
Laboratory ID:	04-015-158					
Aroclor 1016	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	**1.7**	0.070	EPA 8082A	4-8-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***81***	***39-130***				

PCBs EPA 8082A

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**SB-101-14-1.0-1.5**					
Laboratory ID:	04-015-159					
Aroclor 1016	**ND**	0.061	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	**ND**	0.061	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	**ND**	0.061	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	**ND**	0.061	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	**ND**	0.061	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	**ND**	0.061	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	**1.2**	0.061	EPA 8082A	4-8-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***83***	***39-130***				
Client ID:	**SB-101-15-0-0.5**					
Laboratory ID:	04-015-160					
Aroclor 1016	**ND**	0.072	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	**ND**	0.072	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	**ND**	0.072	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	**ND**	0.072	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	**ND**	0.072	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	**ND**	0.072	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	**0.32**	0.072	EPA 8082A	4-8-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***71***	***39-130***				
Client ID:	**SB-101-15-0.5-1.0**					
Laboratory ID:	04-015-161					
Aroclor 1016	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	**ND**	0.070	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	**0.28**	0.070	EPA 8082A	4-8-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***74***	***39-130***				

Date of Report: April 16, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

PCBs EPA 8082A

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**SB-101-16-0-0.5**					
Laboratory ID:	04-015-162					
Aroclor 1016	**ND**	0.068	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	**ND**	0.068	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	**ND**	0.068	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	**ND**	0.068	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	**ND**	0.068	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	**ND**	0.068	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	**0.40**	0.068	EPA 8082A	4-8-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***69***	***39-130***				
Client ID:	**SB-101-16-2.0-2.5**					
Laboratory ID:	04-015-163					
Aroclor 1016	**ND**	1.1 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1221	**ND**	1.1 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1232	**ND**	1.1 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1242	**ND**	1.1 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1248	**ND**	1.1 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1254	**ND**	1.1 UJ	EPA 8082A	4-8-19	4-10-19	
Aroclor 1260	**3.8** J	1.1	EPA 8082A	4-8-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***---***	***39-130***				S
Client ID:	**SB-DUP-11**					
Laboratory ID:	04-015-164					
Aroclor 1016	**ND**	0.067	EPA 8082A	4-8-19	4-9-19	
Aroclor 1221	**ND**	0.067	EPA 8082A	4-8-19	4-9-19	
Aroclor 1232	**ND**	0.067	EPA 8082A	4-8-19	4-9-19	
Aroclor 1242	**ND**	0.067	EPA 8082A	4-8-19	4-9-19	
Aroclor 1248	**ND**	0.067	EPA 8082A	4-8-19	4-9-19	
Aroclor 1254	**ND**	0.067	EPA 8082A	4-8-19	4-9-19	
Aroclor 1260	**0.51**	0.067	EPA 8082A	4-8-19	4-9-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***77***	***39-130***				

Date of Report: April 16, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

PCBs EPA 8082A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**PW-040119**					
Laboratory ID:	04-015-165					
Aroclor 1016	**ND**	0.51 UJ	EPA 8082A	4-5-19	4-10-19	
Aroclor 1221	**ND**	0.51 UJ	EPA 8082A	4-5-19	4-10-19	
Aroclor 1232	**ND**	0.51 UJ	EPA 8082A	4-5-19	4-10-19	
Aroclor 1242	**ND**	0.51 UJ	EPA 8082A	4-5-19	4-10-19	
Aroclor 1248	**ND**	0.51 UJ	EPA 8082A	4-5-19	4-10-19	
Aroclor 1254	**ND**	0.51 UJ	EPA 8082A	4-5-19	4-10-19	
Aroclor 1260	**2.8** J	0.51	EPA 8082A	4-5-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***---***	***44-144***				S

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**EB-04012019**					
Laboratory ID:	04-015-169					
Aroclor 1016	**ND**	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1221	**ND**	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1232	**ND**	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1242	**ND**	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1248	**ND**	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1254	**ND**	0.050	EPA 8082A	4-5-19	4-8-19	
Aroclor 1260	**ND**	0.050	EPA 8082A	4-5-19	4-8-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***99***	***44-144***				

Date of Report: April 16, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

TOTAL METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**PW-040119**					
Laboratory ID:	04-015-165					
Arsenic	**280**	6.7	EPA 200.8	4-5-19	4-5-19	
Barium	**870**	56	EPA 200.8	4-5-19	4-5-19	
Cadmium	**ND**	4.4	EPA 200.8	4-5-19	4-5-19	
Chromium	**1000**	22	EPA 200.8	4-5-19	4-5-19	
Lead	**1000**	2.2	EPA 200.8	4-5-19	4-5-19	
Mercury	**ND**	0.50	EPA 7470A	4-8-19	4-8-19	
Selenium	**ND**	5.6	EPA 200.8	4-5-19	4-5-19	
Silver	**ND**	11	EPA 200.8	4-5-19	4-5-19	
Client ID:	**EB-032919**					
Laboratory ID:	04-015-166					
Lead	**ND**	1.1	EPA 200.8	4-5-19	4-5-19	
Client ID:	**EB-033019**					
Laboratory ID:	04-015-167					
Lead	**ND**	1.1	EPA 200.8	4-5-19	4-5-19	
Client ID:	**EB-03312019**					
Laboratory ID:	04-015-168					
Lead	**ND**	1.1	EPA 200.8	4-5-19	4-5-19	

Date of Report: April 16, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL		Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-112-6-0-0.5**						
Laboratory ID:	04-015-73						
Benzene	ND	0.0018	UJ	EPA 8260C	4-10-19	4-10-19	
Toluene	ND	0.0091	UJ	EPA 8260C	4-10-19	4-10-19	
Ethylbenzene	ND	0.0018	UJ	EPA 8260C	4-10-19	4-10-19	
m,p-Xylene	ND	0.0036	UJ	EPA 8260C	4-10-19	4-10-19	
o-Xylene	ND	0.0018	UJ	EPA 8260C	4-10-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***					
Dibromofluoromethane	***107***	***68-139***					
Toluene-d8	***101***	***79-128***					
4-Bromofluorobenzene	***83***	***71-132***					

Date of Report: April 16, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

VOLATILE ORGANICS EPA 8260C

Matrix: Soil
Units: mg/kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**SB-107-3-0-0.5**					
Laboratory ID:	04-015-114					
Benzene	ND	0.0015 UJ	EPA 8260C	4-10-19	4-10-19	
Toluene	ND	0.0074 UJ	EPA 8260C	4-10-19	4-10-19	
Ethylbenzene	ND	0.0015 UJ	EPA 8260C	4-10-19	4-10-19	
m,p-Xylene	ND	0.0030 UJ	EPA 8260C	4-10-19	4-10-19	
o-Xylene	ND	0.0015 UJ	EPA 8260C	4-10-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
Dibromofluoromethane	***108***	***68-139***				
Toluene-d8	***95***	***79-128***				
4-Bromofluorobenzene	***70***	***71-132***				Q

Date of Report: April 16, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

PAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-112-6-0-0.5**					
Laboratory ID:	04-015-73					
Benzo[a]anthracene	**ND**	0.014	EPA 8270D/SIM	4-10-19	4-12-19	U1
Chrysene	**ND**	0.023	EPA 8270D/SIM	4-10-19	4-12-19	U1
Benzo[b]fluoranthene	**ND**	0.011	EPA 8270D/SIM	4-10-19	4-12-19	
Benzo(j,k)fluoranthene	**ND**	0.011	EPA 8270D/SIM	4-10-19	4-12-19	
Benzo[a]pyrene	**ND**	0.011	EPA 8270D/SIM	4-10-19	4-12-19	
Indeno(1,2,3-c,d)pyrene	**ND**	0.011	EPA 8270D/SIM	4-10-19	4-12-19	
Dibenz[a,h]anthracene	**ND**	0.011	EPA 8270D/SIM	4-10-19	4-12-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***73***	***40 - 117***				
Pyrene-d10	***88***	***38 - 119***				
Terphenyl-d14	***116***	***47 - 135***				

Date of Report: April 16, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

PAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**SB-107-3-0-0.5**					
Laboratory ID:	04-015-114					
Benzo[a]anthracene	**ND**	0.0089	EPA 8270D/SIM	4-10-19	4-12-19	
Chrysene	**ND**	0.012	EPA 8270D/SIM	4-10-19	4-12-19	~~U1~~ U
Benzo[b]fluoranthene	**ND**	0.0089	EPA 8270D/SIM	4-10-19	4-12-19	
Benzo(j,k)fluoranthene	**ND**	0.0089	EPA 8270D/SIM	4-10-19	4-12-19	
Benzo[a]pyrene	**ND**	0.0089	EPA 8270D/SIM	4-10-19	4-12-19	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0089	EPA 8270D/SIM	4-10-19	4-12-19	
Dibenz[a,h]anthracene	**ND**	0.0089	EPA 8270D/SIM	4-10-19	4-12-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***61***	***40 - 117***				
Pyrene-d10	***94***	***38 - 119***				
Terphenyl-d14	***109***	***47 - 135***				

Date of Report: April 16, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

PAHs EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-107-3-0.5-1**					
Laboratory ID:	04-015-115					
Benzo[a]anthracene	**ND**	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
Chrysene	**ND**	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
Benzo[b]fluoranthene	**ND**	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
Benzo(j,k)fluoranthene	**ND**	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
Benzo[a]pyrene	**ND**	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
Indeno(1,2,3-c,d)pyrene	**ND**	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
Dibenz[a,h]anthracene	**ND**	0.0087	EPA 8270D/SIM	4-10-19	4-12-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorobiphenyl	***54***	***40 - 117***				
Pyrene-d10	***78***	***38 - 119***				
Terphenyl-d14	***112***	***47 - 135***				

Date of Report: April 16, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

PCBs EPA 8082A

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SB-112-6-0-0.5**					
Laboratory ID:	04-015-73					
Aroclor 1016	**ND**	0.085	EPA 8082A	4-10-19	4-10-19	
Aroclor 1221	**ND**	0.085	EPA 8082A	4-10-19	4-10-19	
Aroclor 1232	**ND**	0.085	EPA 8082A	4-10-19	4-10-19	
Aroclor 1242	**ND**	0.085	EPA 8082A	4-10-19	4-10-19	
Aroclor 1248	**ND**	0.085	EPA 8082A	4-10-19	4-10-19	
Aroclor 1254	**0.20**	0.085	EPA 8082A	4-10-19	4-10-19	
Aroclor 1260	**0.15**	0.085	EPA 8082A	4-10-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***60***	***39-130***				
Client ID:	**SB-107-3-0-0.5**					
Laboratory ID:	04-015-114					
Aroclor 1016	**ND**	0.067	EPA 8082A	4-10-19	4-10-19	
Aroclor 1221	**ND**	0.067	EPA 8082A	4-10-19	4-10-19	
Aroclor 1232	**ND**	0.067	EPA 8082A	4-10-19	4-10-19	
Aroclor 1242	**ND**	0.067	EPA 8082A	4-10-19	4-10-19	
Aroclor 1248	**ND**	0.067	EPA 8082A	4-10-19	4-10-19	
Aroclor 1254	**ND**	0.067	EPA 8082A	4-10-19	4-10-19	
Aroclor 1260	**ND**	0.067	EPA 8082A	4-10-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***61***	***39-130***				
Client ID:	**SB-107-3-0.5-1**					
Laboratory ID:	04-015-115					
Aroclor 1016	**ND**	0.065	EPA 8082A	4-10-19	4-10-19	
Aroclor 1221	**ND**	0.065	EPA 8082A	4-10-19	4-10-19	
Aroclor 1232	**ND**	0.065	EPA 8082A	4-10-19	4-10-19	
Aroclor 1242	**ND**	0.065	EPA 8082A	4-10-19	4-10-19	
Aroclor 1248	**ND**	0.065	EPA 8082A	4-10-19	4-10-19	
Aroclor 1254	**ND**	0.065	EPA 8082A	4-10-19	4-10-19	
Aroclor 1260	**ND**	0.065	EPA 8082A	4-10-19	4-10-19	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***53***	***39-130***				

Date of Report: April 26, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015
Project: B0003010.0006

TCLP LEAD
EPA 1311/6010D

Matrix: TCLP Extract
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-14-A-0-0.5**					
Laboratory ID:	04-015-07					
Lead	**ND**	0.20	EPA 6010D	4-24-19	4-24-19	

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-15-A-0.5-1.0**					
Laboratory ID:	04-015-19					
Lead	**ND**	0.20	EPA 6010D	4-24-19	4-24-19	

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental, Inc. 14648 NE 95th Street Redmond, WA 98052	DATE: ALS JOB#: ALS SAMPLE#:	4/18/2019 EV19040073 EV19040073-01
CLIENT CONTACT:	David Baumeister	DATE RECEIVED:	04/10/2019
CLIENT PROJECT:	Lab Ref 04-015 Proj B0003010.0006	COLLECTION DATE:	3/31/2019 11:31:00 AM
CLIENT SAMPLE ID	SB-112-6-0-0.5	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C10-C12 Aliphatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C12-C16 Aliphatics	NWEPH	**14**	5.0	1	MG/KG	04/12/2019	EBS
>C16-C21 Aliphatics	NWEPH	**190**	5.0	1	MG/KG	04/12/2019	EBS
>C21-C34 Aliphatics	NWEPH	**79**	5.0	1	MG/KG	04/12/2019	EBS
>C8-C10 Aromatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C10-C12 Aromatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C12-C16 Aromatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C16-C21 Aromatics	NWEPH	**20**	5.0	1	MG/KG	04/12/2019	EBS
>C21-C34 Aromatics	NWEPH	**20**	5.0	1	MG/KG	04/12/2019	EBS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
C25	NWEPH	**116**	04/12/2019	EBS
p-Terphenyl	NWEPH	**106**	04/12/2019	EBS

U - Analyte analyzed for but not detected at level above reporting limit.

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental, Inc. 14648 NE 95th Street Redmond, WA 98052	DATE: ALS JOB#: ALS SAMPLE#:	4/18/2019 EV19040073 EV19040073-02
CLIENT CONTACT:	David Baumeister	DATE RECEIVED:	04/10/2019
CLIENT PROJECT:	Lab Ref 04-015 Proj B0003010.0006	COLLECTION DATE:	3/31/2019 3:48:00 PM
CLIENT SAMPLE ID	SB-107-3-0-0.5	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	**280**	5.0	1	MG/KG	04/12/2019	EBS
>C10-C12 Aliphatics	NWEPH	**8.0**	5.0	1	MG/KG	04/12/2019	EBS
>C12-C16 Aliphatics	NWEPH	**89**	5.0	1	MG/KG	04/12/2019	EBS
>C16-C21 Aliphatics	NWEPH	**740**	5.0	1	MG/KG	04/12/2019	EBS
>C21-C34 Aliphatics	NWEPH	**310**	5.0	1	MG/KG	04/12/2019	EBS
>C8-C10 Aromatics	NWEPH	**33**	5.0	1	MG/KG	04/12/2019	EBS
>C10-C12 Aromatics	NWEPH	**9.2**	5.0	1	MG/KG	04/12/2019	EBS
>C12-C16 Aromatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C16-C21 Aromatics	NWEPH	**93**	5.0	1	MG/KG	04/12/2019	EBS
>C21-C34 Aromatics	NWEPH	**93**	5.0	1	MG/KG	04/12/2019	EBS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
C25	NWEPH	**123**	04/12/2019	EBS
p-Terphenyl	NWEPH	**104**	04/12/2019	EBS

U - Analyte analyzed for but not detected at level above reporting limit.

CERTIFICATE OF ANALYSIS

CLIENT:	OnSite Environmental, Inc. 14648 NE 95th Street Redmond, WA 98052	DATE: ALS JOB#: ALS SAMPLE#:	4/18/2019 EV19040073 EV19040073-03
CLIENT CONTACT:	David Baumeister	DATE RECEIVED:	04/10/2019
CLIENT PROJECT:	Lab Ref 04-015 Proj B0003010.0006	COLLECTION DATE:	3/31/2019 3:52:00 PM
CLIENT SAMPLE ID	SB-107-3-0.5-1	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	**51**	5.0	1	MG/KG	04/12/2019	EBS
>C10-C12 Aliphatics	NWEPH	**6.6**	5.0	1	MG/KG	04/12/2019	EBS
>C12-C16 Aliphatics	NWEPH	**100**	5.0	1	MG/KG	04/12/2019	EBS
>C16-C21 Aliphatics	NWEPH	**500**	5.0	1	MG/KG	04/12/2019	EBS
>C21-C34 Aliphatics	NWEPH	**200**	5.0	1	MG/KG	04/12/2019	EBS
>C8-C10 Aromatics	NWEPH	**6.1**	5.0	1	MG/KG	04/12/2019	EBS
>C10-C12 Aromatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C12-C16 Aromatics	NWEPH	U	5.0	1	MG/KG	04/12/2019	EBS
>C16-C21 Aromatics	NWEPH	**52**	5.0	1	MG/KG	04/12/2019	EBS
>C21-C34 Aromatics	NWEPH	**59**	5.0	1	MG/KG	04/12/2019	EBS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
C25	NWEPH	**119**	04/12/2019	EBS
p-Terphenyl	NWEPH	**101**	04/12/2019	EBS

U - Analyte analyzed for but not detected at level above reporting limit.

United States Coast Guard

DATA REVIEW

Burrows Island Light Station
Skagit County, Washington

Metal (Lead) Analysis

SDGs # 1903-283B and 1903-283C

Analyses Performed By:
Onsite Environmental Inc.
Redmond, Washington

Report #: 32869R
Review Level: Tier II
Project: B0003010.0006

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) # 1903-283B and 1903-283C for samples collected in association with the United States Coast Guard, Burrows Island Light Station, Skagit County, Washington. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data as reported by the laboratory were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					Lead	TCLP Lead
ISM-04-1-0-0.5	03-283-37	Soil	3/27/2019		X	
ISM-04-2-0-0.5	03-283-38	Soil	3/27/2019		X	
ISM-04-3-0-0.5	03-283-39	Soil	3/27/2019		X	
ISM-04-4-0-0.5	03-283-40	Soil	3/27/2019		X	
ISM-06-1-1.0-1.5	03-283-73	Soil	3/27/2019		X	
ISM-06-2-1.0-1.5	03-283-74	Soil	3/27/2019		X	
ISM-06-3-1.0-1.5	03-283-75	Soil	3/27/2019		X	
ISM-06-4-1.0-1.5	03-283-76	Soil	3/27/2019		X	X
ISM-06-1-1.5-2.0	03-283-78	Soil	3/27/2019		X	
ISM-06-2-1.5-2.0	03-283-79	Soil	3/27/2019		X	
ISM-06-3-1.5-2.0	03-283-80	Soil	3/27/2019		X	
ISM-06-4-1.5-2.0	03-283-81	Soil	3/27/2019		X	
ISM-12-1-0-0.5	03-283-138	Soil	3/28/2019		X	
ISM-12-2-0-0.5	03-283-139	Soil	3/28/2019		X	
ISM-12-3-0-0.5	03-283-140	Soil	3/28/2019		X	X
ISM-12-4-0-0.5	03-283-141	Soil	3/28/2019		X	

Note:

TCLP – Toxicity Characteristic Leaching Procedure

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance (QA) or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 6010D and TCLP Lead. Data were reviewed in accordance with the *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Inorganic Methods Data Review* (EPA 540-R-2017-001, January 2017) and *Quality Assurance Project Plan, United States Coast Guard, Burrows Island Light Station, Skagit County, Washington (*March 2019*).*

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

U	The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
J	The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).

- Quantitation (Q) Qualifiers

E	The reported value is estimated due to the presence of interference.
N	Spiked sample recovery is not within the control limits.
*	Duplicate analysis is not within the control limits.

- Validation Qualifiers

J	The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
UJ	The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
UB	Analyte considered non-detect at the listed value due to associated blank contamination.
R	The sample results are rejected.

Two facts should be noted by all data users. First, the “R” flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. “R” values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010D	Soil	180 days from collection to analysis	Cool to < 6°C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks and equipment rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the practical quantitation limit (PQL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the RL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The relative percent difference (RPD) between the MS and MSD results must be no greater than the established acceptance limit of 20%. The MS/MSD recovery control limits do not apply for MS performed on samples where the analyte’s concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD analysis performed for lead on sample ISM-12-4-0-0.5 exhibited recoveries and RPD within the control limits.

3.2 Laboratory Duplicate Sample Analysis

The laboratory duplicate sample relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to five times the RL. A control limit of 20% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the RL, a control limit of two times the RL for soil matrices.

MS/MSD analysis was performed in addition to the laboratory duplicate analysis on sample ISM-12-4-0-0.5. The MS/MSD recoveries and laboratory duplicate analysis exhibited acceptable RPDs.

4. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit recoveries between the control limits of 80% and 120%.

The LCS analysis was not performed and reported by the laboratory within this SDG.

5. Field Duplicate Sample Analysis

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. The control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate sample results. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the reporting limit (RL), a control limit of three times the RL for soil matrices is applied to the difference between the results.

A field duplicate sample was not collected within this SDG.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METALS

METALS: SW-846 6010D	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma - Atomic Emission Spectrometry (ICP-AES)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method Blanks		X		X	
B. Equipment/Field Blanks		X		X	
Laboratory Control Sample (LCS) %R	X				X
Laboratory Control Sample Duplicate (LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Laboratory Duplicate Sample (RPD)		X		X	
Field Duplicate Sample (RPD)	X				X
ICP Serial Dilution %D	X				X
Reporting Limit Verification		X		X	

Notes:
%R = Percent recovery
RPD = Relative percent difference
%D = Percent difference

Validation Performed By: Suresh PR

Signature:

Date: May 28, 2019

Peer Review: Dennis Dyke

Date: July 14, 2019

CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS

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Chain of Custody

Page 1 of 17

Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
1	ISM-01-A-0-0.5	3/25/19	1401	Soil	1	X			X
2	ISM-01-1-0-0.5	↓	1402	↓	1	X		On Hold	
3	ISM-01-2-0-0.5	↓	1403	↓	1	X		On Hold	
4	ISM-01-3-0-0.5	↓	1404	↓	1	X		On Hold	
5	ISM-01-4-0-0.5	↓	1405	↓	1	X		On Hold	
6	ISM-01-A-0.5-1.0	3/26/19	1428	↓	1	X			X
7	ISM-01-1-0.5-1.0	↓	1429	↓	1	X		On Hold	
8	ISM-01-2-0.5-1.0	↓	1430	↓	1	X		On Hold	
9	ISM-01-3-0.5-1.0	↓	1431	↓	1	X		On Hold	
10	ISM-01-4-0.5-1.0	↓	1432	↓	1	X		On Hold	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

(X) Added 4/9/19 STA

○ Added 5/14/19 STA
Total Lead

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

Page 2 of 17

Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ______ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)			% moisture
✓	11	~~[illegible]~~ ISM-01-A-1.0-1.5	3/27/19	1525	Soil	1	X				X
✓	12	ISM-01-1-1.0-1.5	↓	1526	↓	1	X		On Hold		
✓	13	ISM-01-2-1.0-1.5		1527		1	X		On Hold		
✓	14	ISM-01-3-1.0-1.5		1528		1	X		On Hold		
✓	15	ISM-01-4-1.0-1.5		1529		1	X		On Hold		
✓	16	ISM-02-A-~~[illegible]~~ 0-0.5	3/25/19	1622		1	X				X
✓	17	ISM-02-1-0-0.5	↓	1623		1	X		On Hold		
✓	18	ISM-02-2-0-0.5		1624		1	X		On Hold		
✓	19	ISM-02-3-0-0.5		1625		1	X		On Hold		
		~~ISM-02-4-0-0.5~~		~~1626~~		~~1~~	~~X~~		~~On Hold~~		

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

Page 3 of 17

Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ________ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	20	ISM-02-A-0.5-1.0	3/26/19	1041	Soil	1	X			X
✓	21	ISM-02-1-0.5-1.0	↓	1042	↓	1	X		On Hold	
✓	22	ISM-02-2-0.5-1.0		1043		1	X		On Hold	
✓	23	ISM-02-3-0.5-1.0		1044		1	X		On Hold	
✓	24	ISM-02-B-0-0.5	3/27/19	910		1	X			X
✓	25	ISM-02-C-0-0.5	3/27/19	916		1	X			X
✓	26	ISM-03-A-0-0.5	3/25/19	1258		1	X			X
✓	27	ISM-03-1-0-0.5	3/25/19	1259		1	X		On Hold	
✓	28	ISM-03-2-0-0.5	3/25/19	1300		1	X		On Hold	
✓	29	ISM-03-3-0-0.5	3/25/19	1301		1	X		On Hold	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

Page 4 of 17

Laboratory Number: 03-283

Company: Arcadis
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Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ______ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	30	Ism-03-4-0-0.5	3/25/19	1302	Soil	1	X		On Hold	
✓	31	Ism-03-A-0.5-1.0	3/25/19	1538	↓	1	X			X
✓	32	Ism-03-1-0.5-1.0	↓	1539		1	X		On Hold	
✓	33	Ism-03-2-0.5-1.0		1540		1	X		On Hold	
✓	34	Ism-03-3-0.5-1.0		1541		1	X		On Hold	
✓	35	Ism-03-4-0.5-1.0	↓	1542		1	X		On Hold	
✓	36	Ism-04-A-0-0.5	3/27/19	1503 ~~1603~~		1	X	⊗		X
✓	37	Ism-04-1-0-0.5	↓	1526 ~~1626~~		1	⊗		~~On Hold~~	⊗
✓	38	Ism-04-2-0-0.5		1527 ~~1627~~		1	⊗		~~On Hold~~	⊗
✓	39	Ism-04-3-0-0.5	↓	1528 ~~1628~~	↓	1	⊗		~~On Hold~~	⊗

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

Page 5 of 17

Laboratory Number: 03-283

Company: Arcadis

Project Number: B0003010.0006

Project Name: USCG Burrows Island

Project Manager: Josh Gravenmier

Sampled by:

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day

☐ 2 Days ☐ 3 Days

☐ Standard (7 Days)

☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)			% moisture
✓ 40	ISM-04-4-0-0.5	3/27/19	~~1522~~ 1529	Soil	1	ⓧ		~~On Hold~~		ⓧ
✓ 41	ISM-04-A-0.5-1.0	3/27/19	1718		1	X				X
✓ 42	ISM-04-1-0.5-1.0		1719		1	X		On Hold		
✓ 43	ISM-04-2-0.5-1.0		1720		1	X		On Hold		
✓ 44	ISM-04-3-0.5-1.0		1721		1	X		On Hold		
✓ 45	ISM-04-4-0.5-1.0	↓	1722		1	X		On Hold		
	~~ISM-05-A-0-0.5~~	~~3/28/19~~	~~1106~~		~~1~~	~~X~~			mu	
	~~ISM-05-1-0-0.5~~		~~1107~~		~~1~~	~~X~~		~~On Hold~~		
	~~ISM-05-2-0-0.5~~		~~1108~~		~~1~~	~~X~~		~~On H~~		
	~~ISM-05-3-0-0.5~~	↓	~~1109~~	↓	~~1~~	~~X~~				

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ______ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)	% moisture
✓	50	ISM-05-A-0-0.5	03/28/19	11:06	Soil	1	X		X
✓	51	ISM-05-1-0-0.5	03/28/19	11:07			X	ON HOLD	
✓	52	ISM-05-2-0-0.5	03/28/19	11:08			X	ON HOLD	
✓	53	ISM-05-3-0-0.5	03/28/19	11:09			X	ON HOLD	
✓	54	ISM-05-4-0-0.5	03/28/19	11:10			X	ON HOLD	
✓	55	ISM-05-A-0.5-1.0	03/28/19	12:28			X		X
✓	56	ISM-05-1-0.5-1.0	03/28/19	12:29			X	ON HOLD	
✓	57	ISM-05-2-0.5-1.0	03/28/19	12:30			X	ON HOLD	
✓	58	ISM-05-3-0.5-1.0	03/28/19	12:31			X	ON HOLD	
✓	59	ISM-05-4-0.5-1.0	03/28/19	12:32			X	ON HOLD	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	60	ISM-06-A-0-0.5	03/25/19	1713 ~~051393~~	Soil	1	X	⊗		X
✓	61	ISM-06-1-0-0.5	↓	1714	↓	↓	↓		ON HOLD	
✓	62	ISM-06-2-0-0.5	↓	1715	↓	↓	↓		ON HOLD	
✓	63	ISM-06-3-0-0.5	↓	1716	↓	↓	↓		ON HOLD	
✓	64	ISM-06-4-0-0.5	↓	1717	↓	↓	↓		ON HOLD	
✓	65	ISM-06-B-0-0.5	03/27/19	1805	↓	↓	↓	⊗		X
✓	66	ISM-06-C-0-0.5	03/27/19	1840	↓	↓	↓	⊗		X
✓	67	ISM-06-A-0.5-1.0	03/26/19	1146	↓	↓	↓	⊗		X
✓	68	ISM-06-1-0.5-1.0	↓	1147	↓	↓	↓		ON Hold	
✓	69	ISM-06-2-0.5-1.0	↓	1148	↓	↓	↓		ON Hold	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				

Reviewed/Date

Reviewed/Date

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

Laboratory Number: 03-283

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	70	ISM-06-3-0.5-1.0	03/26/19	1149	Soil	1	x		ON HOLD	
✓	71	ISM-06-4-0.5-1.0	03/26/19	1150					ON HOLD	
✓	72	ISM-06-A-1.0-1.5	03/27/19	1056				⊗		X
✓	73	ISM-06-1-1.0-1.5		1115			⊗		~~ON HOLD~~	⊗
✓	74	ISM-06-2-1.0-1.5		1116			⊗		~~ON HOLD~~	⊗
✓	75	ISM-06-3-1.0-1.5		1117			⊗		~~ON HOLD~~	⊗
✓	76	ISM-06-4-1.0-1.5		1118			⊗		~~ON HOLD~~	⊗
✓	77	ISM-06-A-1.5-2.0		1146				⊗		X
✓	78	ISM-06-1-1.5-2.0		1153			⊗		~~ON HOLD~~	⊗
✓	79	ISM-06-2-1.5-2.0	↓	1154	↓	↓	⊗		~~ON HOLD~~	⊗

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ______ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	80	ISM-06-3-1.5-2.0	03/27/19	1155	Soil	1	⊗		~~ON HOLD~~	⊗
✓	81	ISM-06-4-1.5-2.0	03/27/19	1156		1	⊗		~~ON HOLD~~	⊗
		~~ISM-06-A-2.0-2.5~~ 83								
		~~SB-06-A~~ 82								
✓	82	ISM-07-A-0-0.5	03/26/19	1238		1	X	⊗		X
✓	83	ISM-07-1-0-0.5		1239		1	X		ON HOLD	
✓	84	ISM-07-2-0-0.5		1240		1	X		ON HOLD	
✓	85	ISM-07-3-0-0.5		1241		1	X		ON HOLD	
✓	86	ISM-07-A-0.5-1.0		1348		1	X			X
✓	87	ISM-07-1-0.5-1.0		1349		1	X		ON HOLD	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received	Kristen Lisew	OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ______ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	88	ISM-07-2-0.5-1.0	03/26/19	1350	Soil	1	X		ON HOLD	
✓	89	ISM-07-3-0.5-1.0	03/26/19	1351		1	X		ON HOLD	
✓	90	ISM-08-A-0-0.5		1602		1	X	ⓧ		X
✓	91	ISM-08-1-0-0.5		1616		1	X		ON HOLD	
✓	92	ISM-08-2-0-0.5		1617		1	X		ON HOLD	
✓	93	ISM-08-3-0-0.5		1618		1	X		ON HOLD	
✓	94	ISM-08-4-0-0.5		1619		1	X		ON HOLD	
✓	95	ISM-08-B-0-0.5	03/27/19	1220		1	X	ⓧ		X
✓	96	ISM-08-C-0-0.5	03/27/19	1502		1	X	ⓧ		X
✓	97	ISM-08-A-0.5-1.0	03/26/19	1701		1	X			X

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/26/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ____________ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	98	ISM-08-1-0.5-1.0	03/26/19	1733	Soil	1	X		ON HOLD	
✓	99	ISM-08-2-0.5-1.0		1734		1	X		ON HOLD	
✓	100	ISM-08-3-0.5-1.0		1735		1	X		ON HOLD	
✓	101	ISM-08-4-0.5-1.0		1736		1	X		ON HOLD	
✓	102	ISM-08-A-1.0-1.5	03/27/19	1027		1	X	X		X
✓	103	ISM-08-1-1.0-1.5		1046		1	X		ON HOLD	
✓	104	ISM-08-2-1.0-1.5		1047		1	X		ON HOLD	
✓	105	ISM-08-3-1.0-1.5		1048		1	X		ON HOLD	
✓	106	ISM-08-4-1.0-1.5		1049		1	X		ON HOLD	
✓	107	ISM-09-A-0-0.5	03/28/19	0921		1	X			X

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				

Comments/Special Instructions
* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Reviewed/Date

Reviewed/Date

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	108	ISM-09-1-0-0.5	03/28/19	0922	Soil	1	X		ON HOLD	
✓	109	ISM-09-2-0-0.5		0923		1	X		ON HOLD	
✓	110	ISM-09-3-0-0.5		0924		1	X		ON HOLD	
✓	111	ISM-09-4-0-0.5		0925		1	X		ON HOLD	
✓	112	ISM-09-A-0.5-1.0		0944		1	X			X
✓	113	ISM-09-1-0.5-1.0		0945		1	X		ON HOLD	
✓	114	ISM-09-2-0.5-1.0		0946		1	X		ON HOLD	
✓	115	ISM-09-3-0.5-1.0		0947		1	X		ON HOLD	
✓	116	ISM-09-4-0.5-1.0		0948		1	X		ON HOLD	
✓	117	ISM-10-A-0.0-0.5	03/27/19	1613		1	X			X

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	118	ISM-10-1-0-0.5	03/27/19	1614	Soil	1	X		ON HOLD	
✓	119	ISM-10-2-0-0.5		1615					ON HOLD	
✓	120	ISM-10-3-0-0.5		1616					ON HOLD	
✓	121	ISM-10-4-0-0.5		1617					ON HOLD	
✓	122	ISM-10-A-0.5-1.0		1807						X
✓	123	ISM-10-1-0.5-1.0		1808					ON HOLD	
✓	124	ISM-10-2-0.5-1.0		1809					ON HOLD	
✓	125	ISM-10-3-0.5-1.0		1810					ON HOLD	
✓	126	ISM-10-4-0.5-1.0		1811					ON HOLD	
✓	127	ISM-11-A-0-0.5		0948				Ⓧ		X

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

Chain of Custody

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OnSite Environmental Inc.
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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ________ (other)

Laboratory Number: 03-283

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
	~~ISM-11-1~~ E3	~~03~~							
✓ 128	ISM-11-1-0-0.5	03/27/19	0949	Soil	1	X		ON HOLD	
✓ 129	ISM-11-2-0-0.5		0950					ON HOLD	
✓ 130	ISM-11-3-0-0.5		0951					ON HOLD	
✓ 131	ISM-11-4-0-0.5		0952					ON HOLD	
✓ 132	ISM-11-~~A~~-0.5-1.0	03/26/19	1808						X
✓ 133	ISM-11-1-0.5-1.0		1809					ON HOLD	
✓ 134	ISM-11-2-0.5-1.0		1810					ON HOLD	
✓ 135	ISM-11-3-0.5-1.0		1811					ON HOLD	
✓ 136	ISM-11-4-0.5-1.0		1812					ON HOLD	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received	Kllee LXeew	OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

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Company: Arcadis

Project Number: B0003010.0006

Project Name: USCG Burrows Island

Project Manager: Josh Gravenmier

Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ______ (other)

Laboratory Number: 03-283

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		%moisture
✓	137	ISM-12-A-0-0.5	03/28/19	1305	Soil	1	X	X		X
✓	138	ISM-12-1-0-0.5	03/28/19	1306	|	|	X		~~ON HOLD~~	X
✓	139	ISM-12-2-0-0.5	|	1307	|	|	X		~~ON HOLD~~	X
✓	140	ISM-12-3-0-0.5	|	1308	|	|	X		~~ON HOLD~~	X
✓	141	ISM-12-4-0-0.5	|	1309	|	|	X		~~ON HOLD~~	X
✓	142	SB-06-10-2.0-2.5 *	03/27/19	1240	|	|	|			X
✓	143	SB-06-22-3.0-3.5 *	03/27/19	1242	|	|	|			X

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

* Non MI Sample processing.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

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Laboratory Number: 03-283

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ____ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)	~~% moisture~~
✓ 144	EB-032819	3/28/19	1357	Water	1	X		~~X~~
✓ 145	EB-032719	3/27/19	1838	↓	1	X		~~X~~
✓ 146	EB-032619	3/26/19	1824	↓	1	X		~~X~~
✓ 147	EB-032519	3/25/19	1722	↓	1	X		~~X~~

	Signature	Company	Date	Time
Relinquished	Bryan W Bell	Arcadis	3/28/19	1723
Received	Noelle Lizdow	OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Water Samples preserved with HNO_3^-

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____

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Chain of Custody

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Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☐ Standard (7 Days)
☐ ______ (other)

Laboratory Number: 03-283

	Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	TCLP Lead (USEPA Method 1311/6010*)		% moisture
✓	148	ISM-12-A-0.5-1.0	03/28/19	1326	Soil	1	X			X
✓	149	ISM-12-1-0.5-1.0		1327					ON HOLD	
✓	150	ISM-12-2-0.5-1.0		1328					ON HOLD	
✓	151	ISM-12-3-0.5-1.0		1329					ON HOLD	
✓	152	ISM-12-4-0.5-1.0		1330					ON HOLD	
✓	153	ISM-13-A-0-0.5		1344						X
✓	154	ISM-13-1-0-0.5		1345					ON HOLD	
✓	155	ISM-13-2-0-0.5		1346					ON HOLD	
✓	156	ISM-13-3-0-0.5		1347					ON HOLD	
		~~ISM-13-4-0-0.5~~		~~134~~					~~ON HOLD~~	

	Signature	Company	Date	Time
Relinquished		Arcadis	3/28/19	1723
Received		OSE	3/28/19	1723
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold samples for this analysis; running this compound is contingent on parent sample results (Lead Method 6010).

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

Date of Report: May 24, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283B
Project: B0003010.0006

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-04-1-0-0.5**					
Laboratory ID:	03-283-37					
Lead	**130**	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-04-2-0-0.5**					
Laboratory ID:	03-283-38					
Lead	**160**	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-04-3-0-0.5**					
Laboratory ID:	03-283-39					
Lead	**160**	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-04-4-0-0.5**					
Laboratory ID:	03-283-40					
Lead	**280**	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-06-1-1.0-1.5**					
Laboratory ID:	03-283-73					
Lead	**150**	5.4	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-06-2-1.0-1.5**					
Laboratory ID:	03-283-74					
Lead	**100**	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-06-3-1.0-1.5**					
Laboratory ID:	03-283-75					
Lead	**690**	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-06-4-1.0-1.5**					
Laboratory ID:	03-283-76					
Lead	**1000**	5.1	EPA 6010D	5-21-19	5-21-19	

Date of Report: May 24, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283B
Project: B0003010.0006

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-06-1-1.5-2.0**					
Laboratory ID:	03-283-78					
Lead	**11**	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-06-2-1.5-2.0**					
Laboratory ID:	03-283-79					
Lead	**11**	5.1	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-06-3-1.5-2.0**					
Laboratory ID:	03-283-80					
Lead	**180**	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-06-4-1.5-2.0**					
Laboratory ID:	03-283-81					
Lead	**630**	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-12-1-0-0.5**					
Laboratory ID:	03-283-138					
Lead	**280**	5.1	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-12-2-0-0.5**					
Laboratory ID:	03-283-139					
Lead	**330**	5.1	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-12-3-0-0.5**					
Laboratory ID:	03-283-140					
Lead	**640**	5.2	EPA 6010D	5-21-19	5-21-19	
Client ID:	**ISM-12-4-0-0.5**					
Laboratory ID:	03-283-141					
Lead	**170**	5.1	EPA 6010D	5-21-19	5-21-19	

Date of Report: June 7, 2019
Samples Submitted: March 28, 2019
Laboratory Reference: 1903-283C
Project: B0003010.0006

TCLP LEAD
EPA 1311/6010D

Matrix: TCLP Extract
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-06-4-1.0-1.5**					
Laboratory ID:	03-283-76					
Lead	**0.71**	0.20	EPA 6010D	5-31-19	5-31-19	

Client ID:	**ISM-12-3-0-0.5**					
Laboratory ID:	03-283-140					
Lead	**ND**	0.20	EPA 6010D	5-31-19	5-31-19	

United States Coast Guard

DATA REVIEW

Burrows Island Light Station
Skagit County, Washington

Metal (Lead) Analysis

SDGs # 1904-015B and 1904-015C

Analyses Performed By:
Onsite Environmental Inc.
Redmond, Washington

Report #: 32919R
Review Level: Tier II
Project: B0003010.0006

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Groups (SDGs) # 1904-015B and 1904-015C for samples collected in association with the United States Coast Guard, Burrows Island Light Station, Skagit County, Washington. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data as reported by the laboratory were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					Lead	TCLP Lead
ISM-14-1-0-0.5	04-015-08	Soil	3/29/2019		X	
ISM-14-2-0-0.5	04-015-09	Soil	3/29/2019		X	X
ISM-15-1-0.5-1.0	04-015-20	Soil	3/29/2019		X	
ISM-15-2-0.5-1.0	04-015-21	Soil	3/29/2019		X	
ISM-15-3-0.5-1.0	04-015-22	Soil	3/29/2019		X	
ISM-15-4-0.5-1.0	04-015-23	Soil	3/29/2019		X	
ISM-18-1-0-0.5	04-015-46	Soil	3/30/2019		X	X
ISM-18-2-0-0.5	04-015-47	Soil	3/30/2019		X	
ISM-18-3-0-0.5	04-015-48	Soil	3/30/2019		X	
ISM-18-4-0-0.5	04-015-49	Soil	3/30/2019		X	

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance (QA) or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 6010D and TCLP Lead. Data were reviewed in accordance with the *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Inorganic Methods Data Review* (EPA 540-R-2017-001, January 2017) and *Quality Assurance Project Plan, United States Coast Guard, Burrows Island Light Station, Skagit County, Washington (*March 2019*).*

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

U	The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
J	The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).

- Quantitation (Q) Qualifiers

E	The reported value is estimated due to the presence of interference.
N	Spiked sample recovery is not within the control limits.
*	Duplicate analysis is not within the control limits.

- Validation Qualifiers

J	The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
UJ	The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
UB	Analyte considered non-detect at the listed value due to associated blank contamination.
R	The sample results are rejected.

Two facts should be noted by all data users. First, the “R” flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. “R” values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010D	Soil	180 days from collection to analysis	Cool to < 6°C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks and equipment rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the practical quantitation limit (PQL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the RL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The relative percent difference (RPD) between the MS and MSD results must be no greater than the established acceptance limit of 20%. The MS/MSD recovery control limits do not apply for MS performed on samples where the analyte's concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD analysis performed for lead on sample ISM-18-2-0-0.5 exhibited recoveries and RPD within the control limits.

3.2 Laboratory Duplicate Sample Analysis

The laboratory duplicate sample relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to five times the RL. A control limit of 20% for soil matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the RL, a control limit of two times the RL for soil matrices.

MS/MSD analysis was performed in addition to the laboratory duplicate analysis on sample ISM-18-2-0-0.5. The MS/MSD recoveries and laboratory duplicate analysis exhibited acceptable RPDs.

4. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit recoveries between the control limits of 80% and 120%.

The LCS analysis was not performed and reported by the laboratory within this SDG.

5. Field Duplicate Sample Analysis

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. The control limit of 50% for soil matrices is applied to the RPD between the parent sample and the field duplicate sample results. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the reporting limit (RL), a control limit of three times the RL for soil matrices is applied to the difference between the results.

A field duplicate sample was not collected within this SDG.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METALS

METALS: SW-846 6010D	**Reported**		**Performance Acceptable**		**Not Required**
	No	**Yes**	**No**	**Yes**	
Inductively Coupled Plasma - Atomic Emission Spectrometry (ICP-AES)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method Blanks		X		X	
B. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS) %R	X				X
Laboratory Control Sample Duplicate (LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R		X		X	
Matrix Spike Duplicate (MSD) %R		X		X	
MS/MSD Precision (RPD)		X		X	
Laboratory Duplicate Sample (RPD)		X		X	
Field Duplicate Sample (RPD)	X				X
ICP Serial Dilution %D	X				X
Reporting Limit Verification		X		X	

Notes:
%R = Percent recovery
RPD = Relative percent difference
%D = Percent difference

Validation Performed By: Suresh PR

Signature:

Date: May 31, 2019

Peer Review: Dennis Dyke

Date: July 14, 2019

CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS

OnSite Environmental Inc.
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Page 1 of 18

Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by: Mark Ullery

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ____________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)	TCLP Lead										% MOISTURE
1	ISM-13-A-0.5-1.0	3/29/19	0728	soil	1	X																					X
2	ISM-13-1-0.5-1.0		0729		1	X		On Hold																			
3	ISM-13-2-0.5-1.0		0730		1	X		On Hold																			
4	ISM-13-3-0.5-1.0		0731		1	X		On Hold																			
5	ISM-13-B-0-0.5		1115		1	X																					X
6	ISM-13-C-0-0.5		1137		1	X																					↓
7	ISM-14-A-0-0.5		0950		1	X											○										↓
8	ISM-14-1-0-0.5		0951		1	⊗		~~On Hold~~																			⊗
9	ISM-14-2-0-0.5		0952		1	⊗		~~On Hold~~																			⊗
~~10~~	~~ISM-14-3-0-0.5~~																										

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

⊗ Added 4/9/19 STA
○ Added 4/18/19 STA
⊗ Added 5/14/19 Total Lead

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

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Chain of Custody

Page 2 of 18

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ______ (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)	TCLP Lead										% MOISTURE
11	ISM-14-A-0.5-1.0	3/29/19	1035	soil	1	X																					X
12	ISM-14-1-0.5-1.0		1036		1	X			on		Hold																
13	ISM-14-2-0.5-1.0		1037		1	X			on		Hold																
14	ISM-15-A-0-0.5	3/29/19	1330		1	X																					X
15	ISM-15-1-0-0.5		1331		1	X			on		Hold																
16	ISM-15-2-0-0.5		1332		1	X			on		Hold																
17	ISM-15-3-0-0.5		1333		1	X			on		Hold																
18	ISM-15-4-0-0.5		1334		1	X			on		Hold																
19	ISM-15-A-0.5-1.0		1353		1	X											O										X
20	ISM-15-1-0.5-1.0		1354		1	X			~~on~~		~~Hold~~																X

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

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Chain of Custody

Page 3 of 18

Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ______ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)	% MOISTURE
21	ISM-15-2-0.5-1.0	3/29/19	1355	Soil	1	X		~~on Hold~~									X
22	ISM-15-3-0.5-1.0	|	1356	|	1	X		~~on Hold~~									X
23	ISM-15-4-0.5-1.0	|	1357	|	1	X		~~on Hold~~									X
24	ISM-15-A-1.0-1.5	3/30/19	1325	|	1	X											X
25	ISM-15-1-1.0-1.5	|	1326	|	1	X		on Hold									
26	ISM-15-2-1.0-1.5	|	1327	|	1	X		on Hold									
27	ISM-15-3-1.0-1.5	|	1328	|	1	X		on Hold									
28	ISM-15-4-1.0-1.5	|	1329	|	1	X		on Hold									
29	ISM-16-A-0-0.5	|	1038	|	1	X											X
30	ISM-16-1-0-0.5	|	1039	|	1	X		on Hold									

	Signature	Company	Date	Time
Relinquished	Alex Reis	Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ______

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Chain of Custody

Page 4 of 18

Laboratory Number: 04-015

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ____________ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
31	ISM-16-2-0-0.5	3/30/19	1040	soil	1	X		on Hold																			
32	ISM-16-A-0.5-1.0		1121		1	X																					X
33	ISM-16-1-0.5-1.0		1122		1	X		on Hold																			
34	ISM-16-2-0.5-1.0		1123		1	X		on Hold																			
35	ISM-17-A-0-0.5		1219		1	X																					X
36	ISM-17-1-0-0.5		1220		1	X		on Hold																			
37	ISM-17-2-0-0.5		1221		1	X		on Hold																			
38	ISM-17-3-0-0.5		1222		1	X		on Hold																			
39	ISM-17-4-0-0.5		1223		1	X		on Hold																			
40	ISM-17-A-0.5-1.0		1350		1	X																					X

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ____________

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Chain of Custody

Page 5 of 18

Company: Arcadis
Project Number: B0003010.0006
Project Name: USCG Burrows Island
Project Manager: Josh Gravenmier
Sampled by:

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ______ (other)

Laboratory Number: 04-015

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	Lead (USEPA Method 6010)	GRO (NWTPH-Gx)	DRO/HO/Mineral Oil (NWTPH-Dx)	PCBs (USEPA Method 8082)	Benzene (USEPA Method 8260)*	cPAHs (USEPA Method 8270 SIM)*	EPH (NWTPH-EPH)*	VPH (NWTPH-VPH)*	RCRA 8 Metals (USEPA Method 6010)	PCBs (USEPA Method 8082)	BTEX (USEPA Method 8260)											% MOISTURE
41	ISM-17-1-0.5-1.0	3/30/19	1351	Soil	1	X			On Hold																		
42	ISM-17-2-0.5-1.0		1352		1	X			On Hold																		
43	ISM-17-3-0.5-1.0		1353		1	X			On Hold																		
44	ISM-17-4-0.5-1.0		1354		1	X			On Hold																		
45	ISM-18-A-0-0.5		1553		1	X																					X
46	ISM-18-1-0-0.5		1554		1	X			~~On Hold~~																		X
47	ISM-18-2-0-0.5		1555		1	X			~~On Hold~~																		X
48	ISM-18-3-0-0.5		1556		1	X			~~On Hold~~																		X
49	ISM-18-4-0-0.5		1557		1	X			~~On Hold~~																		X
50	ISM-18-A-0.5-1.0		1559		1	X																					X

	Signature	Company	Date	Time
Relinquished		Arcadis	4/2/19	1150
Received		OSE	4/2/19	1150
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

* Hold for these samples; running these compounds is contingent on parent sample results. Benzene, cPAHs, EPH, and VPH are contingent on the results of the GRO/DRO/HO results.

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ ________

Date of Report: Mat 28, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015B
Project: B0003010.0006

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-14-1-0-0.5**					
Laboratory ID:	04-015-08					
Lead	**300**	5.3	EPA 6010D	5-23-19	5-23-19	
Client ID:	**ISM-14-2-0-0.5**					
Laboratory ID:	04-015-09					
Lead	**420**	5.3	EPA 6010D	5-23-19	5-23-19	
Client ID:	**ISM-15-1-0.5-1.0**					
Laboratory ID:	04-015-20					
Lead	**24**	5.2	EPA 6010D	5-23-19	5-23-19	
Client ID:	**ISM-15-2-0.5-1.0**					
Laboratory ID:	04-015-21					
Lead	**55**	5.2	EPA 6010D	5-23-19	5-23-19	
Client ID:	**ISM-15-3-0.5-1.0**					
Laboratory ID:	04-015-22					
Lead	**6600**	26	EPA 6010D	5-23-19	5-24-19	
Client ID:	**ISM-15-4-0.5-1.0**					
Laboratory ID:	04-015-23					
Lead	**47**	5.2	EPA 6010D	5-23-19	5-23-19	
Client ID:	**ISM-18-1-0-0.5**					
Laboratory ID:	04-015-46					
Lead	**460**	5.1	EPA 6010D	5-23-19	5-23-19	
Client ID:	**ISM-18-2-0-0.5**					
Laboratory ID:	04-015-47					
Lead	**83**	5.2	EPA 6010D	5-23-19	5-23-19	

Date of Report: Mat 28, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015B
Project: B0003010.0006

TOTAL LEAD
EPA 6010D

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	**Result**	**PQL**	**Method**	**Date Prepared**	**Date Analyzed**	**Flags**
Client ID:	**ISM-18-3-0-0.5**					
Laboratory ID:	04-015-48					
Lead	**34**	5.1	EPA 6010D	5-23-19	5-23-19	
Client ID:	**ISM-18-4-0-0.5**					
Laboratory ID:	04-015-49					
Lead	**220**	5.1	EPA 6010D	5-23-19	5-23-19	

Date of Report: June 7, 2019
Samples Submitted: April 2, 2019
Laboratory Reference: 1904-015C
Project: B0003010.0006

TCLP LEAD
EPA 1311/6010D

Matrix: TCLP Extract
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**ISM-14-2-0-0.5**					
Laboratory ID:	04-015-09					
Lead	**ND**	0.20	EPA 6010D	5-31-19	5-31-19	
Client ID:	**ISM-18-1-0-0.5**					
Laboratory ID:	04-015-46					
Lead	**ND**	0.20	EPA 6010D	5-31-19	5-31-19	

United States Coast Guard

DATA REVIEW

Burrows Island Light Station
Skagit County, Washington

Metal (Lead) Analysis

SDGs # 1906-059

Analyses Performed By:
Onsite Environmental Inc.
Redmond, Washington

Report #: 33650R
Review Level: Tier II
Project: 30008877

SUMMARY

This data quality assessment summarizes the review of Sample Delivery Group (SDG) # 1906-059 for samples collected in association with the United States Coast Guard, Burrows Island Light Station, Skagit County, Washington. The review was conducted as a Tier II evaluation and included review of data package completeness. Only analytical data as reported by the laboratory were reviewed for this validation. Field documentation was not included in this review. Included with this assessment are the validation annotated sample result sheets, and chain of custody. Analyses were performed on the following samples:

Sample ID	Lab ID	Matrix	Sample Collection Date	Parent Sample	Analysis	
					Lead	% Moisture
SED-1	06-059-01	Sediment	04/01/2019		X	X
SED-2	06-059-02	Sediment	04/01/2019		X	X

ANALYTICAL DATA PACKAGE DOCUMENTATION

The table below is the evaluation of the data package completeness.

Items Reviewed	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
1. Sample receipt condition		X		X	
2. Requested analyses and sample results		X		X	
3. Master tracking list		X		X	
4. Methods of analysis		X		X	
5. Reporting limits		X		X	
6. Sample collection date		X		X	
7. Laboratory sample received date		X		X	
8. Sample preservation verification (as applicable)		X		X	
9. Sample preparation/extraction/analysis dates		X		X	
10. Fully executed Chain-of-Custody (COC) form		X		X	
11. Narrative summary of Quality Assurance (QA) or sample problems provided		X		X	
12. Data Package Completeness and Compliance		X		X	

INORGANIC ANALYSIS INTRODUCTION

Analyses were performed according to United States Environmental Protection Agency (USEPA) SW-846 Method 6010D. Data were reviewed in accordance with the *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Inorganic Methods Data Review* (EPA 540-R-2017-001, January 2017) and *Quality Assurance Project Plan, United States Coast Guard, Burrows Island Light Station, Skagit County, Washington (*March 2019*).*

The data review process is an evaluation of data on a technical basis rather than a determination of contract compliance. As such, the standards against which the data are being weighed may differ from those specified in the analytical method. It is assumed that the data package represents the best efforts of the laboratory and that it was already subjected to sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with the USEPA National Functional Guidelines:

- Concentration (C) Qualifiers

U	The analyte was analyzed for but not detected. The associated value is the analyte instrument detection limit.
J	The reported value was obtained from a reading less than the reporting limit (RL), but greater than or equal to the method detection limit (MDL).

- Quantitation (Q) Qualifiers

E	The reported value is estimated due to the presence of interference.
N	Spiked sample recovery is not within the control limits.
*	Duplicate analysis is not within the control limits.

- Validation Qualifiers

J	The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
UJ	The analyte was not detected above the reporting limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
UB	Analyte considered non-detect at the listed value due to associated blank contamination.
R	The sample results are rejected.

Two facts should be noted by all data users. First, the “R” flag means that the associated value is unusable. In other words, due to significant quality control (QC) problems, the analysis is invalid and provides no information as to whether the compound is present or not. “R” values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data, but any value potentially contains error.

METALS ANALYSES

1. Holding Times

The specified holding times for the following methods are presented in the following table.

Method	Matrix	Holding Time	Preservation
SW-846 6010D	Sediment	180 days from collection to analysis	Cool to < 6°C

All samples were analyzed within the specified holding time criteria.

2. Blank Contamination

Quality assurance (QA) blanks (i.e. laboratory method blanks and equipment rinse blanks) are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Rinse blanks measure contamination of samples during field operations.

A blank action level (BAL) of five times the concentration of a detected compound in an associated blank is calculated for QA blanks containing concentrations greater than the practical quantitation limit (PQL). The BAL is compared to the associated sample results to determine the appropriate qualification of the sample results, if needed.

Analytes were not detected above the RL in the associated blanks; therefore, detected sample results were not associated with blank contamination.

3. Matrix Spike/Matrix Spike Duplicate (MS/MSD)/Laboratory Duplicate Analysis

MS/MSD and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

3.1 MS/MSD Analysis

All metal analytes must exhibit a percent recovery within the established acceptance limits of 75% to 125%. The relative percent difference (RPD) between the MS and MSD results must be no greater than the established acceptance limit of 20%. The MS/MSD recovery control limits do not apply for MS performed on samples where the analyte’s concentration detected in the parent sample exceeds the MS concentration by a factor of four or greater. In instance where this is true, the data will not be qualified even if the percent recovery does not meet the control limits and the laboratory flag will be removed.

The MS/MSD analysis was not performed on sample associated within this SDG.

3.2 Laboratory Duplicate Sample Analysis

The laboratory duplicate sample relative percent difference (RPD) criterion is applied when parent and duplicate sample concentrations are greater than or equal to five times the RL. A control limit of 20% for soil / sediment matrices is applied when the criteria above is true. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the RL, a control limit of two times the RL for soil / sediment matrices.

Laboratory duplicate analysis was not performed on sample associated within this SDG.

4. Laboratory Control Sample (LCS) Analysis

The LCS analysis is used to assess the accuracy of the analytical method independent of matrix interferences. The analytes associated with the LCS analysis must exhibit recoveries between the control limits of 80% and 120%.

The LCS analysis was not performed and reported by the laboratory within this SDG.

5. Field Duplicate Sample Analysis

The field duplicate sample analysis is used to assess the precision of the field sampling procedures and analytical method. The control limit of 50% for soil / sediment matrices is applied to the RPD between the parent sample and the field duplicate sample results. In the instance when the parent and/or duplicate sample concentrations are less than or equal to five times the reporting limit (RL), a control limit of three times the RL for soil / sediment matrices is applied to the difference between the results.

A field duplicate sample was not collected within this SDG.

6. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

DATA VALIDATION CHECKLIST FOR METALS

METALS: SW-846 6010D	Reported		Performance Acceptable		Not Required
	No	Yes	No	Yes	
Inductively Coupled Plasma - Atomic Emission Spectrometry (ICP-AES)					
Tier II Validation					
Holding Times		X		X	
Reporting limits (units)		X		X	
Blanks					
A. Method Blanks		X		X	
B. Equipment/Field Blanks	X				X
Laboratory Control Sample (LCS) %R	X				X
Laboratory Control Sample Duplicate (LCSD) %R	X				X
LCS/LCSD Precision (RPD)	X				X
Matrix Spike (MS) %R	X				X
Matrix Spike Duplicate (MSD) %R	X				X
MS/MSD Precision (RPD)	X				X
Laboratory Duplicate Sample (RPD)	X				X
Field Duplicate Sample (RPD)	X				X
ICP Serial Dilution %D	X				X
Reporting Limit Verification		X		X	

Notes:
%R = Percent recovery
RPD = Relative percent difference
%D = Percent difference

Validation Performed By: Suresh PR

Signature:

Date: August 01, 2019

CHAIN OF CUSTODY CORRECTED SAMPLE ANALYSIS DATA SHEETS

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Chain of Custody

Page 1 of 1

Company: Arcadis
Project Number: B0003010-0006
Project Name: USCG Barrows Island
Project Manager: Josh Gaudreier
Sampled by: MW

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ ______ (other)

Laboratory Number: 06-059

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (☐ Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals (Pb only)	TCLP Metals	HEM (oil and grease) 1664A					% Moisture
1	SED-1	4/1/19	1400	Sed																X							X
2	SED-2	4/1/19	1405	Sed																X							X

	Signature	Company	Date	Time
Relinquished		ANA	6/6/19	1008
Received	J. Isaacson	AEPHA	6/6/19	10:10
Relinquished	J. Isaacson	AEPHA	6/6/19	11:23
Received		OSE	6/6/19	1113
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Data Package: Standard ☐ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☐

Date of Report: June 14, 2019
Samples Submitted: June 6, 2019
Laboratory Reference: 1906-059
Project: B0003010-0006

TOTAL LEAD
EPA 6010D

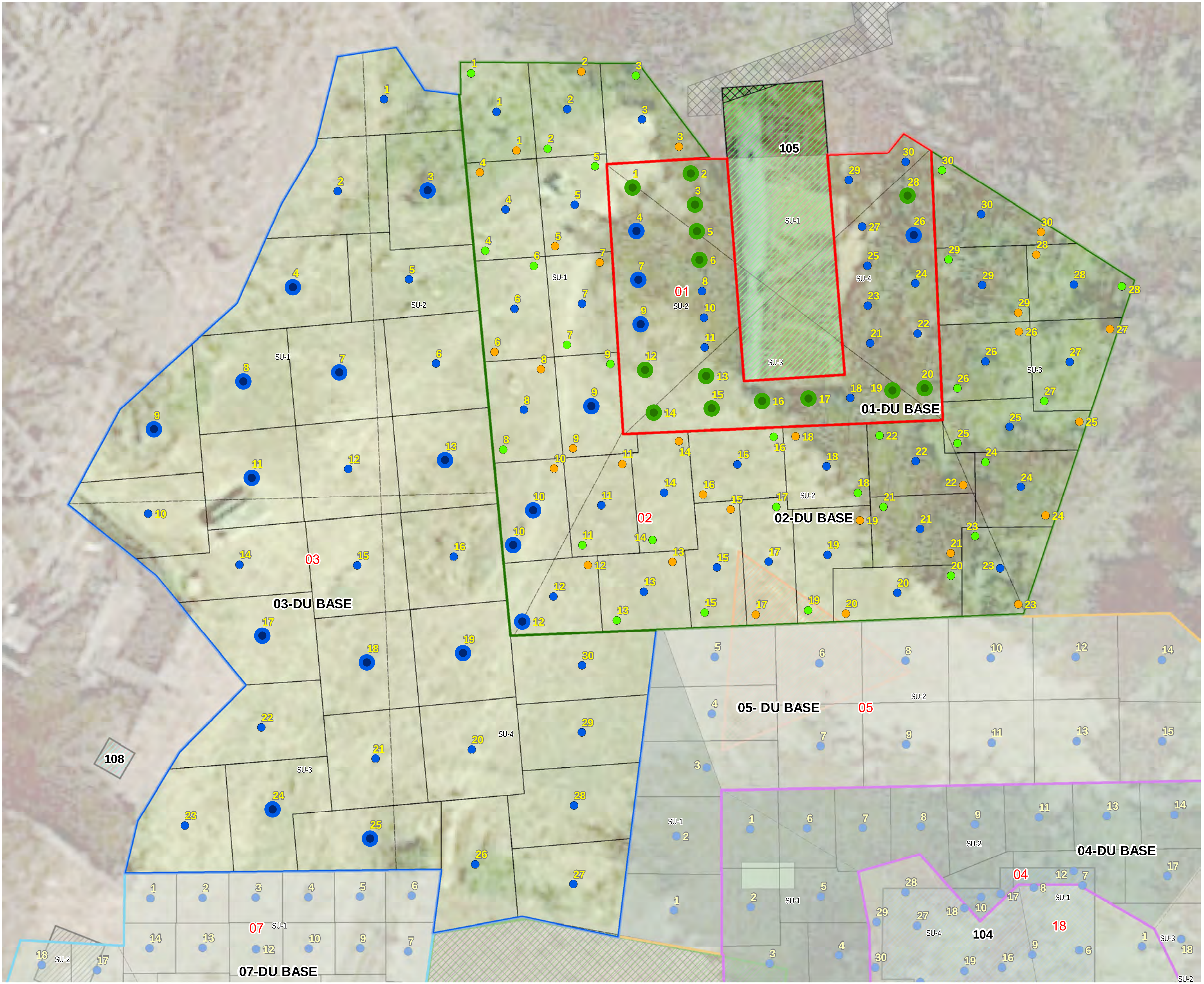
Matrix: Sediment
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**SED-1**					
Laboratory ID:	06-059-01					
Lead	**ND**	5.3	EPA 6010D	6-10-19	6-10-19	
Client ID:	**SED-2**					
Laboratory ID:	06-059-02					
Lead	**ND**	5.9	EPA 6010D	6-10-19	6-10-19	

APPENDIX F

Supporting Remedial Investigation Figures and Table

CITY: SAN FRANCISCO DIV/GROUP: ENV/IM DB: mayyar7350 LD: PIC: PM: TM:
PROJECT: PATH: Z:\GISProjects_ENV\Burrows_Island_Lighthouse_2018\MXD\Refusal_2019\Burrows Island Lighthouse_Figure1-3_ICSMapset.mxd DATE: 7/28/2019 10:26:50 PM



LEGEND

- ● Primary Sample
- ● Replicate B Sample
- ● Replicate C Sample
- ▨ 104, Officer In-Charge Quarters
- ▨ 105, Boathouse
- ▨ 108, Saltwater Flushing Pumphouse
- ▨ Old Helicopter Pad
- ▨ Helicopter Pad
- 🟩 Septic Tank
- ▨ Landing/Dock

Decision Unit Sampling Grid

- ☐ Sampling Area Subunits
- 🟥 01-DU BASE 01
- 🟩 02-DU BASE 02
- 🟦 03-DU BASE 03
- 🟪 04-DU BASE 04
- 🟧 05-DU BASE 05
- 🟦 07-DU BASE 07
- 9 DU Subunit Label (SU-X)
- 9 Sampling Area Subunit Label

Depth of Refusal (feet bgs)

- ● 0.5 to <1 feet
- ● ≥ 1.0 to 1.5 feet

Note:
ICS = incremental composite sampling

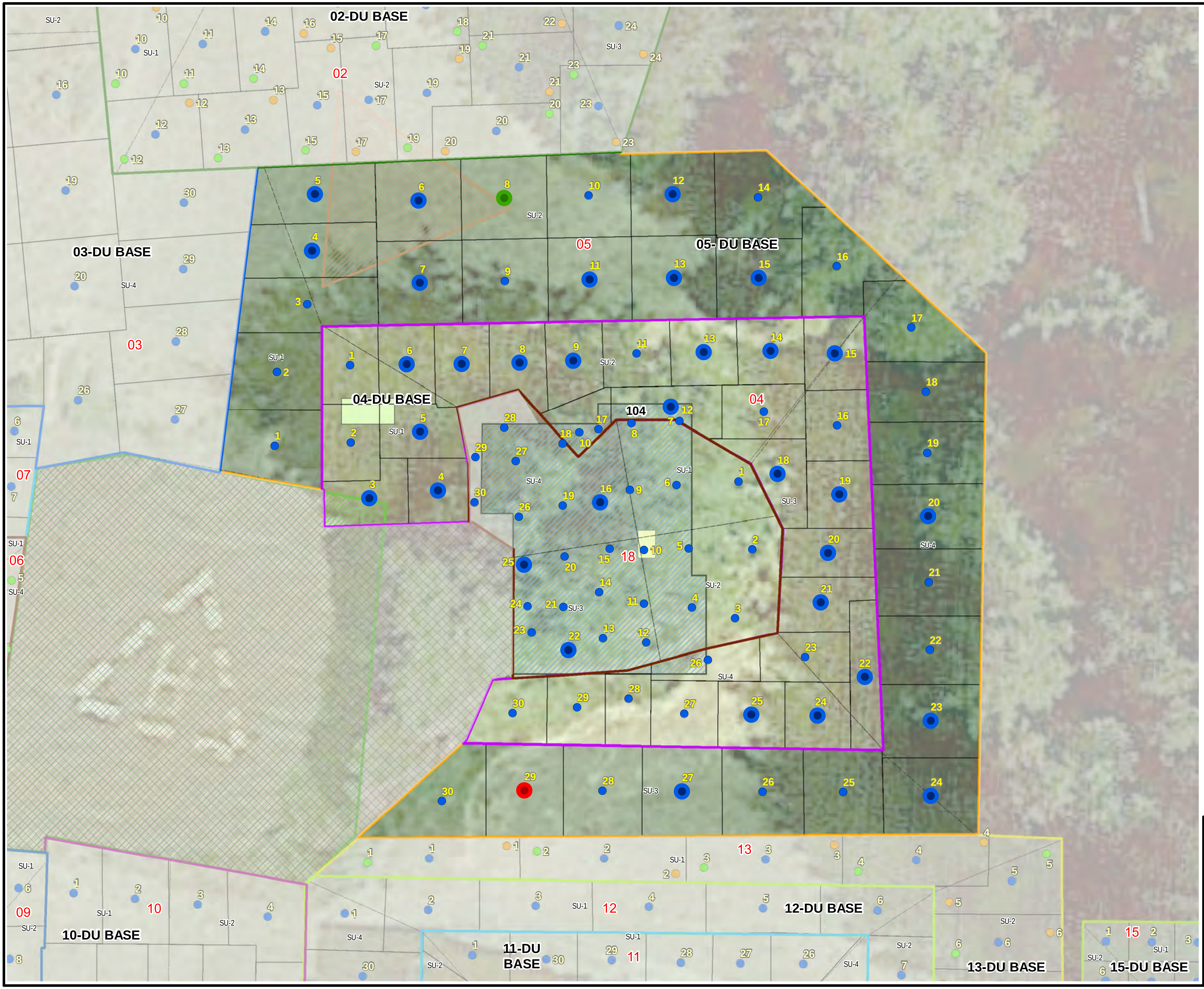
0 15 30
SCALE IN FEET

UNITED STATES COAST GUARD
BURROWS ISLAND LIGHT STATION
SKAGIT COUNTY, WASHINGTON
REMEDIAL INVESTIGATION AND FOCUSED FEASBILITY STUDY

Decision Units 1, 2 and 3 - Boathouse and Northwest Open Area

ARCADIS Design & Consultancy for natural and built assets

FIGURE
F-1



LEGEND

● Primary Sample

▨ 104, Officer In-Charge Quarters

▨ Old Helicopter Pad

▨ Helicopter Pad

🟩 Septic Tank

🟨 Fuel Oil Tank

Decision Unit Sampling Grid

☐ Sampling Area Subunits

☐ 02-DU BASE 02

☐ 03-DU BASE 03

☐ 04-DU BASE 04

☐ 05-DU BASE 05

☐ 06-DU BASE 06

☐ 07-DU BASE 07

☐ 09-DU BASE 09

☐ 10-DU BASE 10

☐ 11-DU BASE 11

☐ 12-DU BASE 12

☐ 13-DU BASE 13

☐ 15-DU BASE 15

☐ 18-DU BASE 18

9 DU Subunit Label (SU-X)

9 Sampling Area Subunit Label

Depth of Refusal (feet bgs)

🔴 0.0 to < 0.5 feet

🔵 ≥ 0.5 to <1.0 feet

🟢 ≥ 1.0 to 1.5 feet

Note:
ICS = incremental composite sampling

0 15 30

SCALE IN FEET

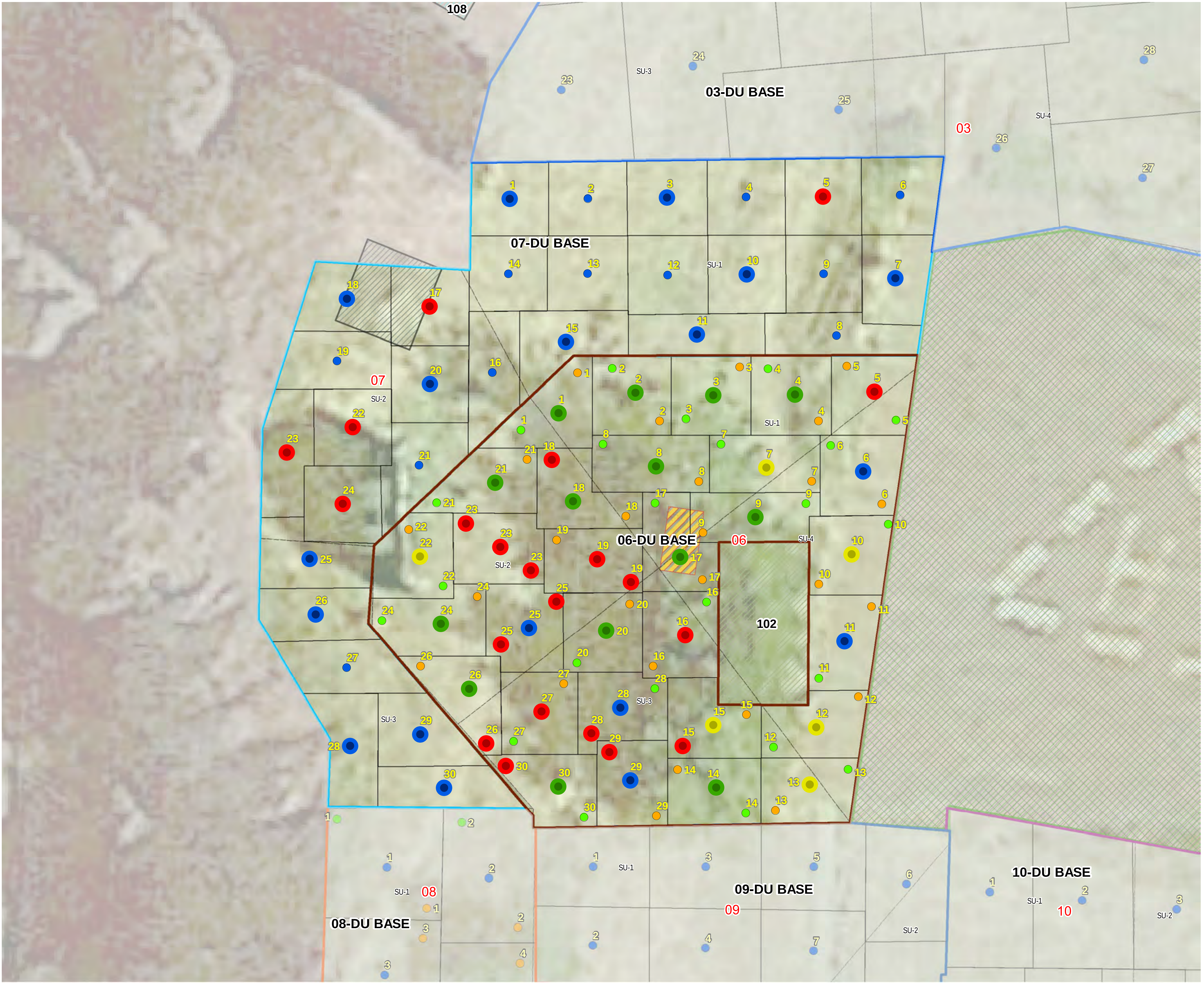
UNITED STATES COAST GUARD
BURROWS ISLAND LIGHT STATION
SKAGIT COUNTY, WASHINGTON
REMEDIAL INVESTIGATION AND FOCUSED FEASBILITY STUDY

Decision Units 4, 5 and 18 - Officer-In-Charge Quarters

ARCADIS Design & Consultancy for natural and built assets

FIGURE
F-2

CITY: SAN FRANCISCO DIV/GROUP: ENV/IM DB: mayyar7350 LD: PIC: PM: TM:
PROJECT: PATH: Z:\GISProjects_ENV\Burrows_Island_Lighthouse_2018\MXD\Refusal_2019\Burrows Island Lighthouse_Figure4 - 8_ICSMapset.mxd DATE: 7/29/2019 4:33:36 AM



LEGEND

● Primary Sample
● Replicate B Sample
● Replicate C Sample
▨ 102, Oil and Paint Storage Building
▨ 108, Saltwater Flushing Pumphouse
▨ Helicopter Pad
▨ Gasoline Storage Tank

Decision Unit Sampling Grid

☐ Sampling Area Subunits
☐ 03-DU BASE 03
☐ 06-DU BASE 06
☐ 07-DU BASE 07
☐ 08-DU BASE 08
☐ 09-DU BASE 09
☐ 10-DU BASE 10
9 DU Subunit Label (SU-X)
9 Sampling Area Subunit Label

Depth of Refusal (feet bgs)

● 0.0 to < 0.5 feet
● ≥ 0.5 to <1.0 feet
● ≥ 1.0 to 1.5 feet
● Greater than 1.5 feet

Note:
ICS = incremental composite sampling

0 15 30
SCALE IN FEET

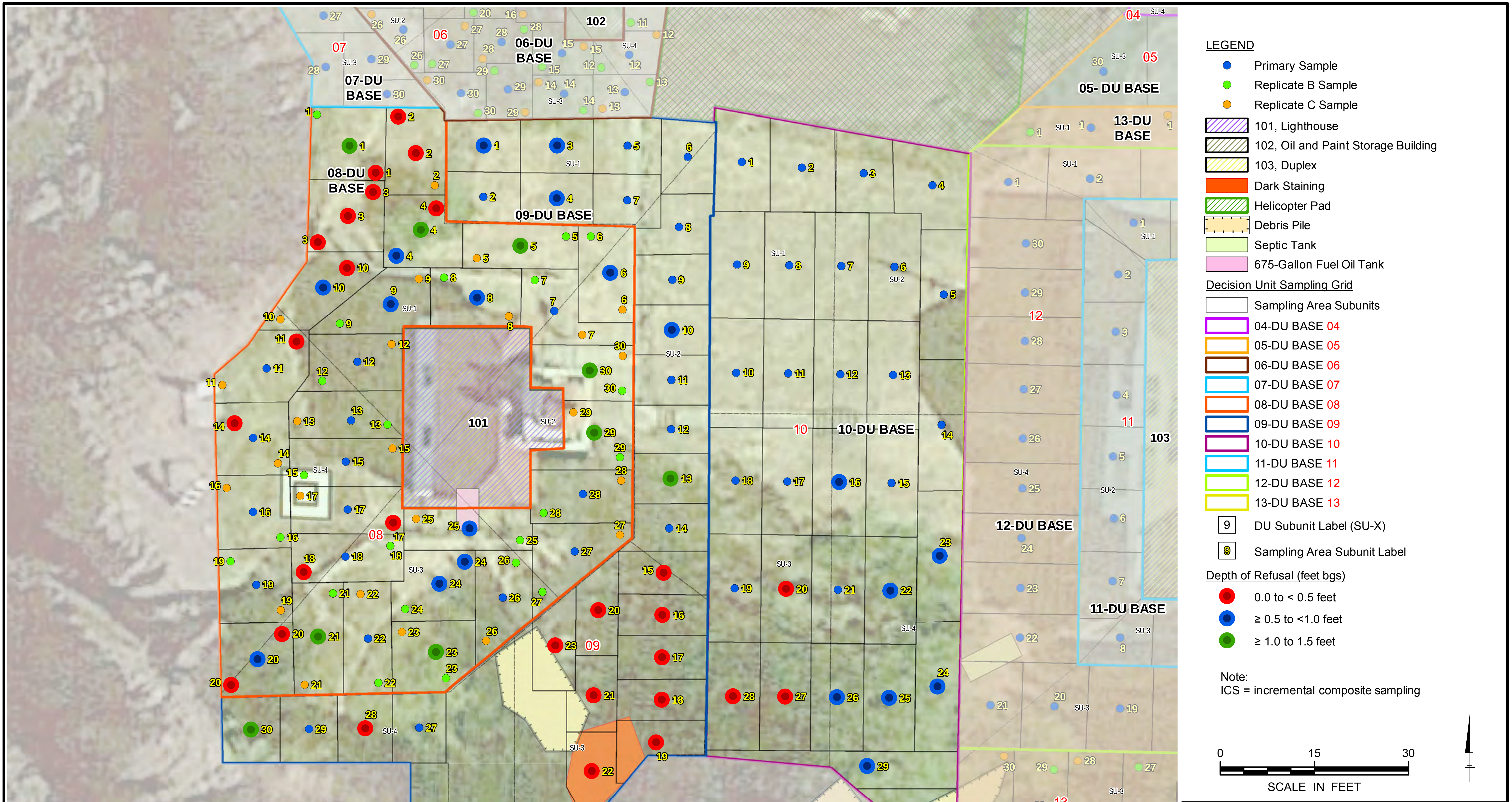
UNITED STATES COAST GUARD
BURROWS ISLAND LIGHT STATION
SKAGIT COUNTY, WASHINGTON
REMEDIAL INVESTIGATION AND FOCUSED FEASBILITY STUDY

Decision Units 6 and 7 - Oil and Paint Storage Building

ARCADIS Design & Consultancy for natural and built assets

FIGURE
F-3

CITY: SAN FRANCISCO DIV/GROUP: ENV/IM DB: mayyar7350 LD: PIC: PM: TM:
PROJECT: PATH: Z:\GISProjects_ENV\Burrows_Island_Lighthouse_2018\MXD\Refusal_2019\Burrows Island Lighthouse_Figure6 - 7_ICSMapset.mxd DATE: 7/29/2019 4:35:15 AM



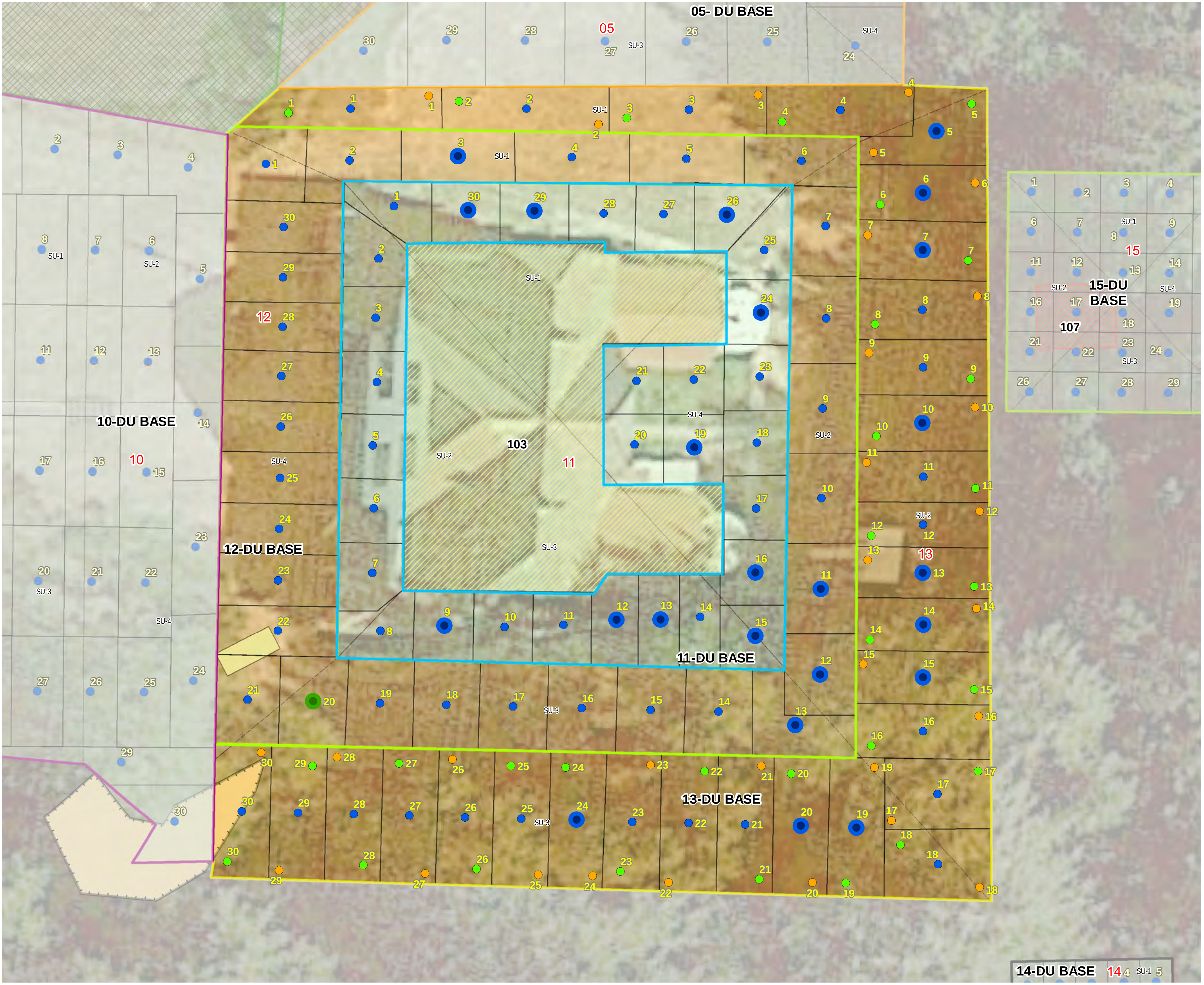
UNITED STATES COAST GUARD
BURROWS ISLAND LIGHT STATION
SKAGIT COUNTY, WASHINGTON
REMEDIAL INVESTIGATION AND FOCUSED FEASBILITY STUDY

Decision Units 8, 9 and 10 - Lighthouse and Fog Signal Building and Southern Open Area

ARCADIS Design & Consultancy for natural and built assets

FIGURE
F-4

CITY: SAN FRANCISCO DIV/GROUP: ENV/IM DB: mayyar7350 LD: PIC: PM: TM:
PROJECT: PATH: Z:\GISProjects_ENV\Burrows_Island_Lighthouse_2018\MXD\Refusal_2019\Burrows Island Lighthouse_Figure8-10_ICSMapset.mxd DATE: 7/28/2019 11:42:13 PM



LEGEND

- ● Primary Sample
- ● Replicate B Sample
- ● Replicate C Sample
- ▨ 103, Duplex
- ▨ 107, Firehouse Pump Building
- ▨ Helicopter Pad
- ▨ Debris Pile
- ☐ Septic Tank

Decision Unit Sampling Grid

- ☐ Sampling Area Subunits
- ☐ 05-DU BASE 05
- ☐ 10-DU BASE 10
- ☐ 11-DU BASE 11
- ☐ 12-DU BASE 12
- ☐ 13-DU BASE 13
- ☐ 14-DU BASE 14
- ☐ 15-DU BASE 15
- 9 DU Subunit Label (SU-X)
- 9 Sampling Area Subunit Label

Depth of Refusal (feet bgs)

- ● 0.5 to <1.0 feet
- ● ≥ 1.0 to 1.5 feet

Note:
ICS = incremental composite sampling

0 15 30
SCALE IN FEET

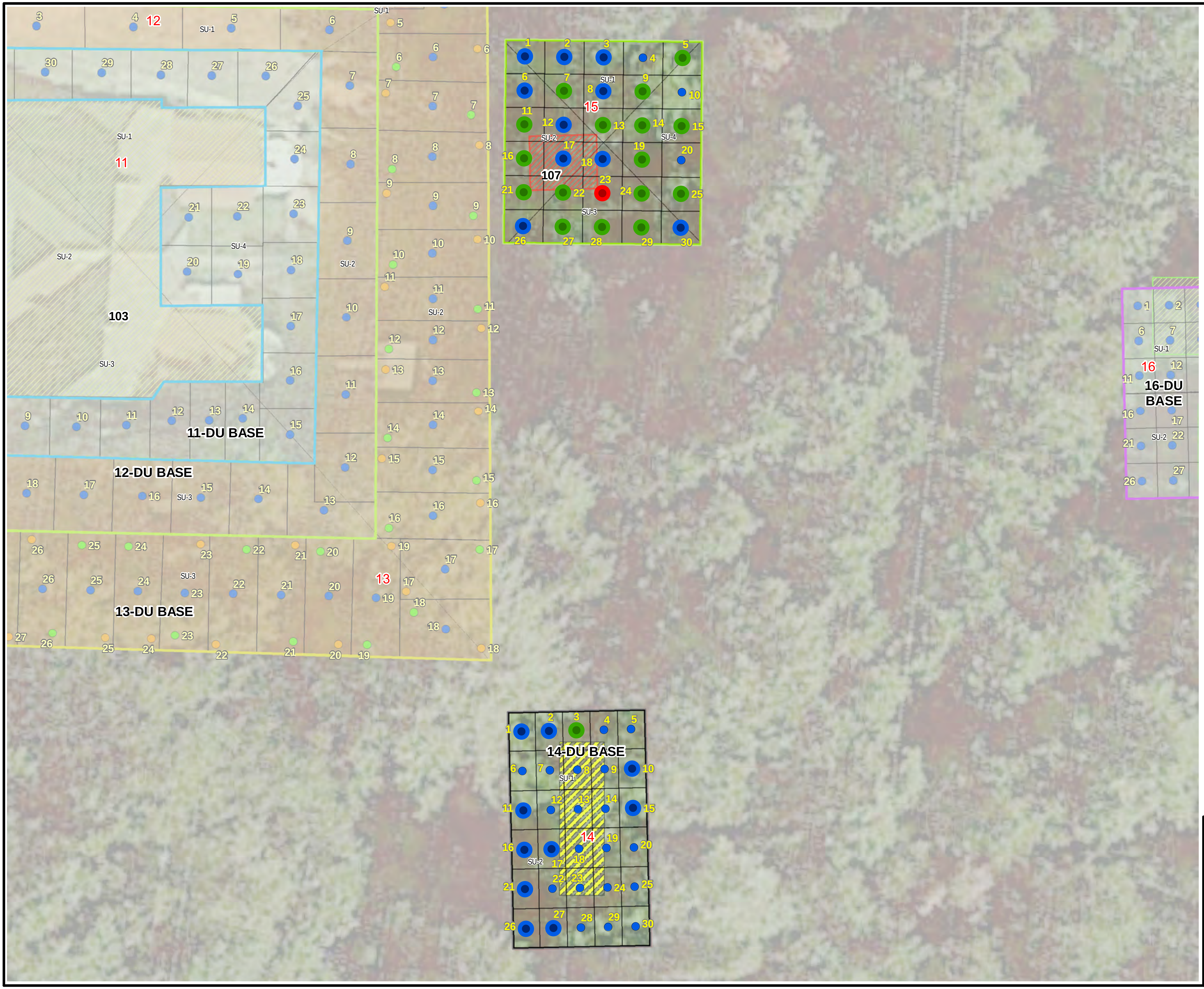
UNITED STATES COAST GUARD
BURROWS ISLAND LIGHT STATION
SKAGIT COUNTY, WASHINGTON
REMEDIAL INVESTIGATION AND FOCUSED FEASBILITY STUDY

Decision Units 11, 12 and 13 - Duplex

ARCADIS Design & Consultancy for natural and built assets

FIGURE
F-5

CITY: SAN FRANCISCO DIV/GROUP: ENV/IM DB: mayyar7350 LD: PIC: PM: TM:
PROJECT: PATH: Z:\GISProjects_ENV\Burrows_Island_Lighthouse_2018\MXD\Refusal_2019\Burrows Island Lighthouse_Figure11 - 13_ICSMapset.mxd DATE: 7/28/2019 11:52:00 PM



LEGEND

- ● Primary Sample
- ▨ 103, Duplex
- ▨ 107, Firehouse Pump Building
- ▨ Tank Platform WT-4A
- ▨ Tank Platform WT-4B
- ▨ Elevated 10,000-Gallon Fuel Oil Tank

Decision Unit Sampling Grid

- ☐ Sampling Area Subunits
- ☐ 11-DU BASE 11
- ☐ 12-DU BASE 12
- ☐ 13-DU BASE 13
- ☐ 14-DU BASE 14
- ☐ 15-DU BASE 15
- ☐ 16-DU BASE 16
- 9 DU Subunit Label (SU-X)
- 9 Sampling Area Subunit Label

Depth of Refusal (feet bgs)

- 🔴 0.0 to < 0.5 feet
- 🔵 ≥ 0.5 to <1.0 feet
- 🟢 ≥ 1.0 to 1.5 feet

Note:
ICS = incremental composite sampling

0 15 30
SCALE IN FEET

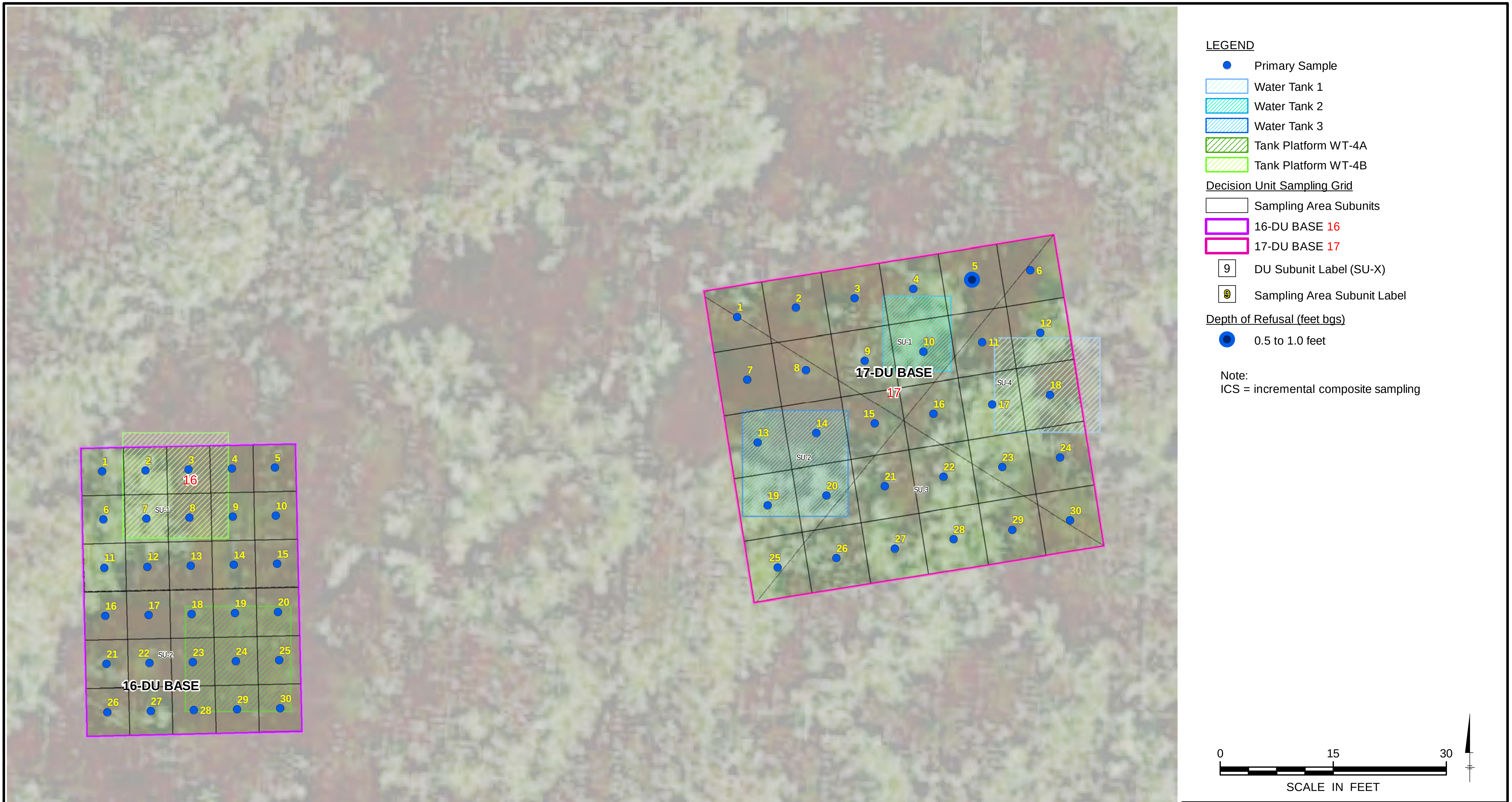
UNITED STATES COAST GUARD
BURROWS ISLAND LIGHT STATION
SKAGIT COUNTY, WASHINGTON
REMEDIAL INVESTIGATION AND FOCUSED FEASBILITY STUDY

Decision Units 14 and 15 - 10,000-Gallon Fuel Oil Aboveground Storage Tank and Firehouse Pumping Building

ARCADIS Design & Consultancy for natural and built assets

FIGURE
F-6

CITY: SAN FRANCISCO DIV/GROUP: ENV/IM DB: mayyar7350 LD: PIC: PM: TM:
PROJECT: PATH: Z:\GISProjects_ENV\Burrows_Island_Lighthouse_2018\MXD\Refusal_2019\Burrows Island Lighthouse_Figure14 - 15_ICSMapset.mxd DATE: 7/28/2019 11:54:18 PM



Note:
ICS = incremental composite sampling

UNITED STATES COAST GUARD
BURROWS ISLAND LIGHT STATION
SKAGIT COUNTY, WASHINGTON
REMEDIAL INVESTIGATION AND FOCUSED FEASBILITY STUDY

Decision Units 16 and 17 - Water Tanks

ARCADIS Design & Consultancy for natural and built assets

FIGURE
F-7

CITY: SAN FRANCISCO DIV/GROUP: ENV/IM DB: mayyar7350 LD: PIC: PM: TM:
PROJECT: PATH: Z:\GISProjects_ENV\Burrows_Island_Lighthouse_2018\MXD\Refusal_2019\Burrows Island Lighthouse_Figure16 - 17_ICSMapset1.mxd DATE: 7/28/2019 11:55:11 PM

APPENDIX G

Lead Encapsulation Assessment

Photograph: 1

Description:
N side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 2

Description:
W side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 3

Description:
S side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 4

Description:
E side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 5

Description:
E side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 6

Description:
Chipped paint on doorframe – E side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 7

Description:
Chipped paint in doorframe – E side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 8

Description:
Chipped paint around doorframe – E side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 9

Description:
Chipped paint in doorframe – E side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

PHOTOGRAPH LOG

United States Coast Guard
Burrows Island Light Station
Skagit County, Washington

Photograph: 10

Description:
Chipped paint in window frame – E side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 11

Description:
Chipped paint in window frame – E side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 12

Description:
Chipped paint along roof line – E side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 13

Description:
Exterior damage to painted tank – E side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 14

Description:
Chipped paint in window frame – E side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 15

Description:
Chipped paint on foundation – N side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 16

Description:
Chipped paint along the foundation line of the porch – W side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 17

Description:
Chipped paint along the foundation line of the porch – W side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 18

Description:
Damaged painted wood panels on the roof of the porch – W side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 10

Description:
Chipped paint in window frame – E side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 11

Description:
Chipped paint in window frame – E side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 12

Description:
Chipped paint along roof line – E side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 13

Description:
Exterior damage to painted tank – E side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

PHOTOGRAPH LOG

United States Coast Guard
Burrows Island Light Station
Skagit County, Washington

Photograph: 14

Description:
Chipped paint in window frame – E side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 15

Description:
Chipped paint on foundation – N side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 16

Description:
Chipped paint along the foundation line of the porch – W side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 17

Description:
Chipped paint along the foundation line of the porch – W side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 18

Description:
Damaged painted wood panels on the roof of the porch – W side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: **1**

Description:
Damaged lattice on porch – W side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: **2**

Description:
Chipping paint on porch floor boards – W side of Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 3

Description:
Chipping paint near the foundation line – S side of the Duplex

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 4

Description:
E side of Light and Fog Signal Building

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 5

Description:
N side of Light and Fog Signal Building

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 6

Description:
W side of Light and Fog Signal Building

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

PHOTOGRAPH LOG

United States Coast Guard
Burrows Island Light Station
Skagit County, Washington

Photograph: 7

Description:
S side of Light and Fog Signal Building

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 8

Description:
Chipping paint near the foundation – E side of Light and Fog Signal Building

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 9

Description:
Chipping window trim – N side of Light and Fog Signal Building

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 1

Description:
Flaking paint on window trim – W side of Light and Fog Signal Building

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 2

Description:
Flaking paint on window trim – W side of Light and Fog Signal Building

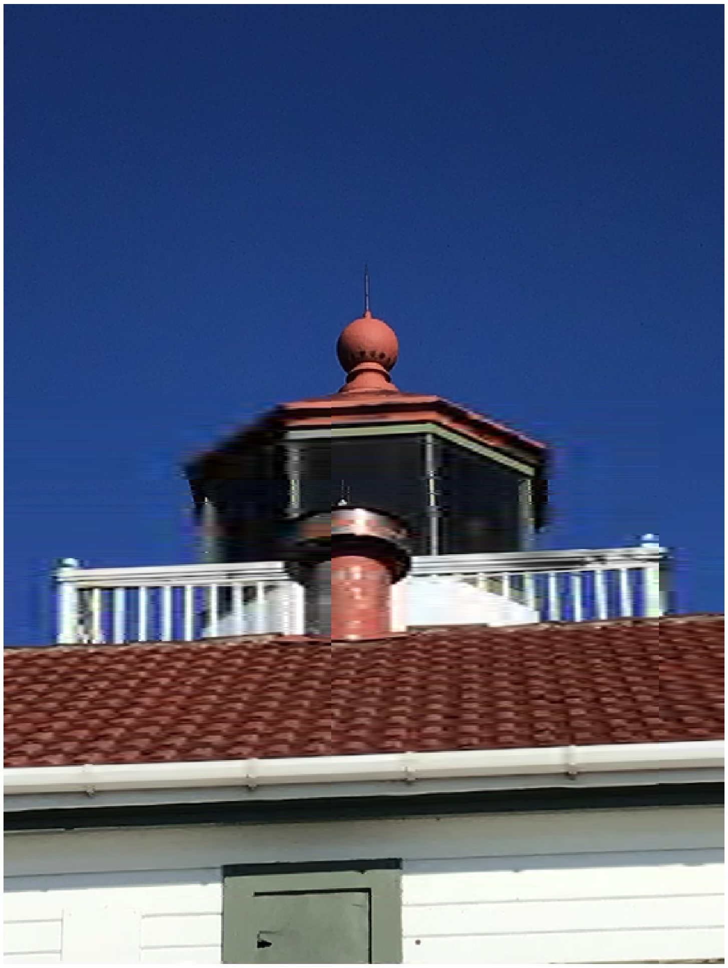
Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

PHOTOGRAPH LOG

United States Coast Guard
Burrows Island Light Station
Skagit County, Washington



Photograph: 3

Description:
Flaking paint on roof vent – W side of Light and Fog Signal Building

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 4

Description:
Chipping paint near foundation – S side of Light and Fog Signal Building

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 5

Description:
Flaking paint on window trim – S side of Light and Fog Signal Building

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 6

Description:
Damaged siding – E side of Light and Fog Signal Building

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 7

Description:
W side of Boathouse

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

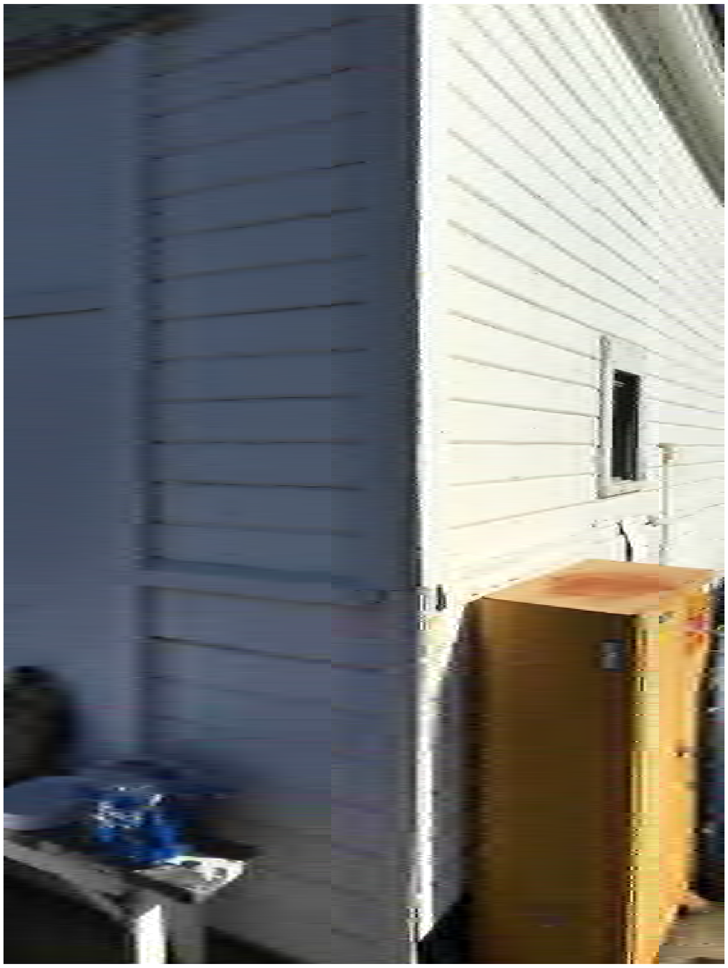
Photograph: 8

Description:
N side of Boathouse

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019



Photograph: 9

Description:
NW corner of Boathouse

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 1

Description:
E side of Boathouse

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 2

Description:
E side of Boathouse

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 3

Description:
Damaged siding – E side of Boathouse

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 4

Description:
S side of Boathouse

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 5

Description:
Salt Water Flushing Pumphouse

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 6

Description:
Salt Water Flushing Pumphouse

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 7

Description:
Concrete structure N of the Light and Fog Signal Building

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 8

Description:
Concrete structure N of the Light and Fog Signal Building

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 9

Description:
Supports for 10,000-gallon fuel oil AST

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

Photograph: 10

Description:
Supports for 10,000-gallon fuel oil AST

Location:
Burrows Island

Photograph taken by:
Alex Pink

Date: 3/26/2019

APPENDIX H

Applicable or Relevant and Appropriate Requirements

Potential Federal and State Chemical-Specific Applicable or Relevant and Appropriate Requirements and To Be Considered Guidance, U.S. Coast Guard Light Station Burrows Island, Skagit County, Washington

Constituent of Concern and Media	Authority	Act	Statute, Regulation, Administrative Code, or Guidance Document	Status	Synopsis of Requirement, Criteria, or Guidance
Soil	Federal Regulatory Requirement and/or Criteria	Toxics Substances Control Act	15 U.S.C. §2601 et seq. 40 CFR 761.61	Applicable	This section provides cleanup and disposal options for PCB remediation waste, including but not limited to notification requirements and disposal requirements for PCB remediation waste.
	Federal Advisories, Guidance, and Training Material	NA	United States Environmental Protection Agency (USEPA) Recommendation of the Technical Review Workgroup for Lead for an Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil. www.epa.gov/superfund/lead/products/adultpb.pdf	To Be Considered	This document is a non-promulgated guidance prepared by USEPA to provide guidance on assessing risks associated with adult exposures to lead in soil.
	State Regulatory Requirement and/or Criteria	MTCA Regulations	WAC 173-340-740(3) and WAC 173-340-355	Relevant and Appropriate	WAC 173-340-740(3) provide requirements for Method B soil cleanup levels for unrestricted landuse. WAC 173-340-355 provide requirements for development of cleanup action alternatives that include remediation levels. Remediation levels are used to identify the concentration (or other methods of identification) of hazardous substances at which different cleanup action components will be used. Remediation levels, by definition, exceed cleanup levels.
	State Advisories, Guidance, and Training Material	Ecology Guidance for Remediation of Petroleum Contaminated Sites	Publication No. 10-09-057, Revised June 2016	To Be Considered*	This document is generally applicable to all types of petroleum contaminated sites and media and may be applicable to sites with mixtures of other hazardous substances.

Notes:

NA Not Applicable

* The U.S. Coast Guard solicited ARARs from Ecology in a letter dated January 28, 2019. A response from Ecology was received on February 14,2019. Potential State of Washington ARARs and To Be Considered guidance provided by Ecology has been incorporated into this table.

Potential Location-Specific Applicable or Relevant and Appropriate Requirements and To Be Considered Guidance, U.S. Coast Guard Light Station Burrows Island, Skagit County, Washington.

Location	Authority	Act	Statute, Regulation, Administrative Code, or Guidance Document	Status	Synopsis of Requirement, Criteria, or Guidance
Federally owned property	Federal Regulatory Requirement and/or Criteria	National Historic Preservation Act of 1966	National Historic Preservation 16 USC 470. http://www.achp.gov/NHPA.pdf USC 16 Section 470	Applicable	These rules require the identification and preservation of historic and archaeological sites. The act created the National Register of Historic Places, the list of National Historic Landmarks, and the State Historic Preservation Offices.
		National Historic Lighthouse Preservation Act of 2000 (NHLPA)	54 USC 305101-305106 (formerly at 16 USC 470w-7)	Applicable	An ammendment to the National Historic Preservation Act of 1966, the NHLPA provides a mechanism for the disposal of Federally-owned historic light stations that have been declared excess to the needs of the responsible agency.
		Endangered Species Act of 1973	Endangered Species 16 USC 1531-1543, 50 CFR 402, 50 CFR 17. 16 USC Chapter 35 Endangered and Threatened Wildlife and Plants (50 CFR Part 17) 50 CFR 17 Cooperation of Endangered and Threatened Species of Fish, Wildlife, and plants – Cooperation with the States (50 CFR Part 81) 50 CFR 81 Threatened Marine and Anadromous Species (50 CFR Part 223) 50 CFR 223 Endangered Marine and Anadromous Species (50 CFR Part 224) 50 CFR 224 Designated Critical Habitat (50 CFR 226) 50 CFR 226 Interagency Cooperation Endangered Species Act of 1973 (50 CFR 402) 50 CFR 402	Relevant and Appropriate	These rules require federal agencies to ensure that their actions do not jeopardize the continued existence of any threatened or endangered species or adversely modify the habitat of such species. The rules provide criteria for determining threatened and
	Federal Regulatory Requirement and/or Criteria, Continued	Archaeogical and Historic Preservation Act	16 USC 469	Applicable	It is the purpose of sections 469 to 469c–1 of this title to further the policy set forth in sections 461 to 467 of this title, by specifically providing for the preservation of historical and archeological data (including relics and specimens) which might otherwise be irreparably lost or destroyed as the result of (1) flooding, the building of access roads, the erection of workmen's communities, the relocation of railroads and highways, and other alterations of the terrain caused by the construction of a dam by any agency of the United States, or by any private person or corporation holding a license issued by any such agency or (2) any alteration of the terrain caused as a result of any Federal construction project or federally licensed activity or program.
		Archaeological and Historic Preservation Act	16 USC 470aa, 43 CRF 7		The purpose of this chapter is to secure, for the present and future benefit of the American people, the protection of archaeological resources and sites which are on public lands and Indian lands, and to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals having collections of archaeological resources and data which were obtained before October 31, 1979.
Federally owned property, Continued	Federal Advisories, Guidance, and Training Material	NA	NA	NA	None
	State Regulatory Requirement and/or Criteria	NA	RCW 90.58; WAC 173-27-060; 15 CFR 923-930	Applicable	This section requires that federal agency activities in or affecting Washington's coastal zone shall be consistent to the maximum extent practicable with the enforceable policies of the most recent federally approved Washington state coastal zone management program pursuant to the Federal Coastal Zone Management Act, 16 U.S.C. 1451 et seq. (CZMA) and federal regulations adopted pursuant thereto.
	State Advisories, Guidance, and Training Material	NA	NA	NA	None

Notes:

NA Not Applicable

* The U.S. Coast Guard solicited ARARs from Ecology in a letter dated January 28, 2019. A response from Ecology was received on February 14, 2019. Potential State of Washington ARARs and To Be Considered guidance provided by Ecology has been incorporated into this table.

Potential Action-Specific Applicable or Relevant and Appropriate Requirements and To Be Considered Guidance, U.S. Coast Guard Light Station, Burrows Island, Washington.

Action	Authority	Act or Statute	Regulation, Administrative Code, or Guidance Document	Status	Synopsis
In-Water Work	Federal Regulatory Requirement and/or Criteria	Clean Water Act	Section 404 - Dredge or Fill Requirements Regulations, 33 U.S.C. 1344(a)-(d); 33 CFR Parts 320-330; 40 CFR 230 Section 401, Water Quality Certification, 33 U.S.C. 1340; WAC 173-225-010.	Potentially Applicable	Section 404 of the CWA establishes a program to regulate the discharge of dredged or fill material into waters of the United States, including wetlands Section 401 of the CWA requires an applicant for a federal license or permit provide a certification that any discharges from the facility will comply with the CWA, including state-established water quality standard requirements.
Stormwater	Federal Regulatory Requirement and/or Criteria	Storm water discarges (applicable to State NPDES programs)	40 CFR 122.26		Provide requirements when a storm water permit is required under the NPDES program. See state requirements below.
	State Regulatory Requirement and/or Criteria	Stormwater Permit Program	RCW 90.48.260; Chapter 173-226 WAC		Provides requirements for obtaining construction stormwater permit and stormwater pollution prevention plan. Sites under five acres may be exempt from permit requirements if the site meets the requirements for low erosivitiy waiver: (1) the erosivity factor is less than five; (2) Project disturbs less than five acres; (3) Construction desturbance starts and finishes within the following timeline - June 15 - September 15 of the same year.
Stormwater, Continued	State Advisories, Guidance, and Training Material	Guidance for contaminated water on construction sites	Treatment Systems for Contaminated Construction Runoff (TSCCR) https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Contaminated-water-on-construction-sites	TBC	This spreadsheet shows treament systems that may be effective in treating specific contaminants.
Remedy Implementation and Waste Management	Federal Regulatory Requirement and/or Criteria	Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended by the 1986 Superfund Amendments and Reauthorization Act (SARA)	Reporting Hazardous Substance Activity When Selling or Transferring Federal Real Property (Title 40 Code of Federal Regulations [CFR] 373) National Contingency Plan (42 USC 9605). Executive Order 12580- Superfund Implementation	Applicable	These rules require notifications related to hazardous substances prior to the sale or transfer of real property owned by the federal government. This is applicable if a property with residual contamination is transferred. These promulgated rules require performing a Removal Site Evaluation and a Removal Action including preparing certain documents (e.g., Quality Assurance Project Plan [QAPP], Sampling and Analysis Plan (SAP), and Remedial Investigation/Feasibility Study Report (RI/FS). The Executive Order provides federal agencies, including the United States Coast Guard, the authority to carry out their CERLCA responsibilities under the National Contingency Plan as a lead agency.
		Clean Air Act of 1970	National primary and secondary ambient air quality standards 42 USC 7409.	Applicable	Engineering controls may be required to reduce emissions associated with the excavation and off-site transportation and/or encapsulation, as needed, to maintain ambient air quality standards.
		Resource Conservation and Recovery Act of 1976 (RCRA)	42 USC 6921; 40 CFR 261; 40 CFR 268	Applicable	These regulations establish requirements for identifying any hazardous wastes that may be generated in the course of the removal action. Not applicable regarding soil, as no removal action. Potentially applicable with regard to abatement of lead-based paint on Site structures.
		Hazardous Materials Transport Act (HMTA) as Amended by the Hazardous Materials Transport Uniform Safety Act of 1990	49 CFR 51	Applicable	The HMTA regulates the transportation of certain hazardous materials.
		Occupational Safety & Health Administration Act (OSHA) of 1970	Occupational Safety & Health Administration Act (Public Law 91-596 84 STAT. 1590).	Applicable	These regulations specify requirements for health and safety protection for workers potentially exposed to contaminants during hazardous waste site remediation.

Potential Action-Specific Applicable or Relevant and Appropriate Requirements and To Be Considered Guidance, U.S. Coast Guard Light Station, Burrows Island, Washington.

Action	Authority	Act or Statute	Regulation, Administrative Code, or Guidance Document	Status	Synopsis
Remedy Implementation and Waste Management, Continued	Federal Regulatory Requirement and/or Criteria	Toxics Substances Control Act	15 U.S.C. §2601 et seq. 40 CFR 761.61	Applicable	This section provides cleanup and disposal options for PCB remediation waste, including but not limited to notification requirements and disposal requirements for PCB remediation waste.
	State Regulatory Requirement and/or Criteria	Dangerous Waste Act and Regulations	RCW 70.105, Chapter 173-303 WAC	Relevant and Appropriate	Provide requirements for classification and disposal of Washington State Dangerous wastes.
		Regulation and Licensing of Well Contractors and Operators	Chapter 18.104 RCW; WAC 173-162-020-030	Potentially Applicable	This section provides regulations that apply to well contractors and operators who are contracting for well construction or constructing wells in the state of Washington.
		Washington Clean Air Act, General Regulations of Air Contaminant Source	Chapter 70.94 RCW	Applicable	Provides requirements to protect air from harmful levels of pollution.
		Puget Sound Clean Air Agency Regulations, Fugitive Dust Control Measures	Regulation 1, Section 9.15	Applicable	This rule prohibits visisible emissions of fugitie dust unless reasonable precautions are employed to minimize the emissions.
		Shoreline Master Program (SMP)	RCW 90.58; WAC 173-27-060	Applicable	This section requires federal agency activities in or affecting Washington's coast zone to be consistent to the maximum extent practicable with the enforceable policies of the most recent federally approved Washington state coastal zone management program pursuant to the Federal Coastal Zone Management Act, 16 U.S.C. 1451 et seq. (CZMA) and federal regulations adopted pursuant thereto.
		The State Environmental Policy Act (SEPA)	Chapter 43.21C RCW; Chapter 197-11 WAC and the SEPA procedures (Chapter 173-802 WAC)	Applicable	SEPA is a process (not a permit decision) indended to ensure that environmental values are considered during decision-making by state and local agencies. Substanstative requirements of SEPA will be achieved by public participation as part of the CERCLA process.
	State Advisories, Guidance, and Training Material	Ecology Guidance for Remediation of Petroleum Contaminated Sites	Publication No. 10-09-057, Revised June 2016	To Be Considered*	This document is generally applicable to all types of petroleum contaminated sites and media and may be applicable to sites with mixtures of other hazardous substances.

Notes:

NA	Not Applicable

* The U.S. Coast Guard solicited ARARs from Ecology in a letter dated January 28, 2019. A response from Ecology was received on February 14, 2019. Potential State of Washington ARARs and To Be Considered guidance provided by Ecology has been incorporated into this table.

APPENDIX I

Supporting Cost Information

Table I-1
Appendix I Supporting Cost Information
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington

Alternative 2 - Capping

Capital Costs					
Description	**Quantity**	**Unit**	**Unit Cost**	**Total Cost**	**Notes/Source**
Preparation					
Work Plan, Agency Correspondence, and Design	1	LS	$30,000	$30,000	Professional judgement and previous project experience.
Insurance, Bonding, Mobilization/Demobilization	1	LS	15%	$27,000	Percentage of total costs, excluding transport and disposal, reporting, and testing.
Clearing/Grubbing/Tree Trimming	1	LS	$7,800	$7,800	Assumes up to 1 acre of clearing required to access soil treatment areas.
Repair to Dock Staircase	1	LS	$50,000	$50,000	Costs based on contractor information. Assume no armoring of the beach or permits are necessary.
Stormwater BMPs	1	LS	$3,900	$3,900	Silt fencing around perimeter of work area and other BMPs as needed for material handling and staging.
Marine Equipment					
Mobilization/Demobilization of Marine Equipment	1	LS	$20,000	$20,000	Contractor quote, assuming initial mobilization of crane and barge to facilitate soil removal.
Crane, Barge, and Tug Boats	10	DAY	$6,000	$60,000	Contractor quotes, average daily rate assumes tug boats and crew are not required for duration of project. Assumes equipment will be on standby and crew demobilizes during capping.
Soil and Debris Removal					
Debris Removal and Handling	4,000	SF	$5	$20,000	RSMeans and supplier quotes, adjusted for local conditions. Includes concrete sidewalks and helicopter pad materials.
Excavate and Handle for Offsite Disposal (PCB impacted soil)	410	CY	$29	$12,087	Supplier quotes and previous project experience. Actual volume of concrete to be confirmed during construction.
Disposal					
Transportation from Anacortes to Chemical Waste Management	700	TON	$90	$63,000	Supplier quote, assuming over-the-road transport.
Disposal of Soil at Chemical Waste Management	660	TON	$120	$79,200	Supplier quote, including taxes.
Transportation and Disposal of Construction Debris	40	TON	$100	$4,000	Supplier quote, including taxes.
Cap Installation					
Separation Geotextile and Installation	26,000	SF	$0.23	$5,922	RSMeans rate and supplier quotes, adjusted for local conditions
Backfill, Grading, and Vegetation					
Backfill Mobilized to Site	2,200	CY	$27	$58,740	Supplier quotes, adjusted for local conditions
Placement & Compaction for Backfill	2,200	CY	$20	$44,704	RSMeans rate and supplier quotes, adjusted for local conditions
Grading	4,400	SF	$0.68	$3,005	RSMeans rate and supplier quotes, adjusted for local conditions
Topsoil Placement and Seeding	30,400	SF	$0.10	$3,040	RSMeans rate and supplier quotes, adjusted for local conditions, Includes seeding cap cover
Building Encapsulation Repair/Restoration	800	SF	$20	$16,000	Scrape and stabilize trim and failing areas, prime, and re-paint.
Asbestos Roofing Replacement	4,000	SF	$30	$120,000	Scrape and stabilize trim and failing areas, prime, and re-paint.
Testing, Reporting, and Oversight					
Construction Oversight	27	DAY	$1,500	$40,500	Assumes 15 days for soil cap installation and backfill, 8 days for excavation, 2 days for encapsulation repair, and 2 days for mobilization/demobilization
CQA Testing and Laboratory	1	LS	$5,000	$5,000	Includes CQA confirmation soil testing and laboratory costs.
Construction Completion Report	1	LS	$30,000	$30,000	
Administrative Controls	1	LS	$20,000	$20,000	Includes survey and other coordination of administrative controls.
		Subtotal Capital Cost		$723,898	
		Contingency	20%	$144,780	
		Total Capital Cost (Rounded up)		**$869,000**	

Capital Cost Notes:

LS = lump sum	CQA = construction quality assurance
CY = cubic yards	SY = square yard
SF = square feet	

1. The level of accuracy of these estimated costs is “Order of Magnitude,” as defined by the American Association of Cost Engineers. The accuracy of an Order of Magnitude estimate is plus 50 percent and minus 30 percent. Cost estimates at this level may be used to compare alternatives, but should not be used to plan, finance, or develop projects. Changes in the cost elements are likely to occur during the engineering design of the remedial alternative. The cost estimate was prepared in general accordance with regulatory guidance for cost estimating (USEPA 2000). Unit costs were selected based on previous remediation and project experience and based on budgetary quotes for some materials and services.
2. The unit weight of soil is assumed to be 1.6 tons/CY and concrete materials are assumed to be 2 tons/CY.
3. Soils contaminated with PCBs would be transferred offsite for disposal.
4. Staging area for waste transfer and mobilization of materials and equipment is assumed to be Anacortes, WA.
5. Prevailing wages are assumed to apply. An adjustment factor of 30% is applied to all labor.

Table I-1
Appendix I Supporting Cost Information
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington

Alternative 2 - Capping

Operation, Maintenance, and Monitoring Costs

Annual Costs

Description	Quantity	Unit	Unit Cost	Total
Years 1-30				
Post-Remedial Annual Cap Inspections	1	YEAR	$3,000	$3,000
Minor Repairs (No heavy equipment, materials carried to site)	1	YEAR	$7,000	$7,000
Engineering Design/Support	1	YEAR	$3,000	$3,000
Management and Reporting	1	YEAR	$5,000	$5,000
TOTAL ANNUAL OMM COSTS (Years 1-30)				**$18,000**

Periodic Costs

Description	Year	Quantity	Unit	Unit Cost	Total
Years 5, 10, 15, 20, 25					
Mobilization/Demobilization of Marine Equipment	Every 5 Years	1	YEAR	$20,000	$20,000
Cap Repair Materials		1	YEAR	$5,000	$5,000
Maintenance and Repair of Cap		1	YEAR	$10,000	$10,000
Engineering Design/Support		1	YEAR	$15,000	$15,000
Construction Oversight		1	YEAR	$5,000	$5,000
TOTAL PERIODIC OMM COSTS (Years 5, 10, 15, 20, 25, 30)					**$55,000**

PRESENT VALUE ANALYSIS

Year	Capital Cost	Annual Cost	Periodic Cost	Total Cost Per Year	Discount Factor (3.0%)	Present Value
0	$869,000	$0	$0	$869,000	1	$869,000
1	$0	$18,000	$0	$18,000	0.97	$17,476
2	$0	$18,000	$0	$18,000	0.94	$16,967
3	$0	$18,000	$0	$18,000	0.92	$16,473
4	$0	$18,000	$0	$18,000	0.89	$15,993
5	$0	$18,000	$55,000	$73,000	0.86	$62,970
6	$0	$18,000	$0	$18,000	0.84	$15,075
7	$0	$18,000	$0	$18,000	0.81	$14,636
8	$0	$18,000	$0	$18,000	0.79	$14,209
9	$0	$18,000	$0	$18,000	0.77	$13,796
10	$0	$18,000	$55,000	$73,000	0.74	$54,319
11	$0	$18,000	$0	$18,000	0.72	$13,004
12	$0	$18,000	$0	$18,000	0.70	$12,625
13	$0	$18,000	$0	$18,000	0.68	$12,257
14	$0	$18,000	$0	$18,000	0.66	$11,900
15	$0	$18,000	$55,000	$73,000	0.64	$46,856
16	$0	$18,000	$0	$18,000	0.62	$11,217
17	$0	$18,000	$0	$18,000	0.61	$10,890
18	$0	$18,000	$0	$18,000	0.59	$10,573
19	$0	$18,000	$0	$18,000	0.57	$10,265
20	$0	$18,000	$55,000	$73,000	0.55	$40,418
21	$0	$18,000	$0	$18,000	0.54	$9,676
22	$0	$18,000	$0	$18,000	0.52	$9,394
23	$0	$18,000	$0	$18,000	0.51	$9,120
24	$0	$18,000	$0	$18,000	0.49	$8,855
25	$0	$18,000	$55,000	$73,000	0.48	$34,865
26	$0	$18,000	$0	$18,000	0.46	$8,347
27	$0	$18,000	$0	$18,000	0.45	$8,103
28	$0	$18,000	$0	$18,000	0.44	$7,867
29	$0	$18,000	$0	$18,000	0.42	$7,638
30	$0	$18,000	$55,000	$73,000	0.41	$30,075
TOTAL PRESENT VALUE OF ALTERNATIVE 2 (Rounded up to next $10,000)						**$1,430,000**

Table I-2
Appendix I Supporting Cost Information
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington

Alternative 3 - Excavation and Onsite Repository

Capital Costs

Description	Quantity	Unit	Unit Cost	Total Cost	Notes/Source
Preparation					
Work Plan, Agency Correspondence, and Design	1	LS	$50,000	$50,000	Professional judgement and previous project experience.
Insurance, Bonding, Mobilization/Demobilization	1	LS	15%	$36,000	Percentage of total costs, excluding transport and disposal, reporting, and testing.
Clearing/Grubbing/Tree Trimming	1	LS	$7,800	$7,800	Assumes up to 1 acre of clearing required to access excavation areas.
Repair to Dock Staircase	1	LS	$50,000	$50,000	Costs based on contractor quote and include procurement of applicable permits.
Stormwater BMPs	1	LS	$3,900	$3,900	Silt fencing around perimeter of work area and other BMPs as needed for material handling and staging.
Marine Equipment					
Mobilization/Demobilization of Marine Equipment	1	LS	$20,000	$20,000	Contractor quote, assuming initial mobilization of crane and barge to facilitate soil removal.
Crane, Barge, and Tug Boats	14	DAY	$6,000	$84,000	Contractor quotes, average daily rate assumes tug boats and crew not required for duration of project. Assuming equipment on standby and crew demobilizes during repository construction.
Soil Removal					
Excavate and Transfer to Onsite Repository	940	CY	$20	$18,474	Supplier quotes and previous project experience
Debris Removal and Handling	4,000	SF	$5	$20,000	RSMeans and supplier quotes, adjusted for local conditions. Includes concrete sidewalks and helicopter pad materials.
Excavate and Handle for Offsite Disposal	410	CY	$29	$12,087	Supplier quotes and previous project experience
Disposal					
Transportation from Anacortes to Chemical Waste Management	700	TON	$90	$63,000	Supplier quote, assuming over-the-road transport.
Disposal of Soil at Chemical Waste Management	660	TON	$120	$79,200	Supplier quote, including taxes.
Transportation and Disposal of Construction Debris	40	TON	$100	$4,000	Supplier quote, including taxes.
Repository					
Surface Preparation	11,000	SF	$0.47	$5,184	RSMeans rate, adjusted for local conditions
Bottom GCL (material and install)	11,000	SF	$1.30	$14,300	Supplier quotes, adjusted for local conditions.
Waste Placement and Compaction	940	CY	$20	$19,101	Assume the same as placement and compaction for backfill.
Drainage (top and sides) Geocomposite	11,000	SF	$0.40	$4,400	Supplier quotes, adjusted for local conditions.
Cover (top and sides) GCL	11,000	SF	$1.40	$15,400	Supplier quotes, adjusted for local conditions.
Backfill, Grading, and Vegetation					
Backfill Mobilized to Site	920	CY	$31	$28,290	Assumes backfill to 1-foot bgs in excavation areas, 1-foot cover over repository.
Placement & Compaction for Backfill	920	CY	$20	$18,694	RSMeans rate and supplier quotes, adjusted for local conditions
Grading	34,000	SF	$0.60	$20,400	RSMeans rate and supplier quotes, adjusted for local conditions
Seeding/Restoration	45,000	SF	$0.10	$4,500	RSMeans rate and supplier quotes, adjusted for local conditions, Includes seeding cap cover
Fence and Signage	1	LS	$25,000	$25,000	
Building Encapsulation Repair/Restoration	800	SF	$20	$16,000	Scrape and stabilize trim and failing areas, prime, and re-paint.
Asbestos Roofing Replacement	4,000	SF	$30	$120,000	Scrape and stabilize trim and failing areas, prime, and re-paint.
Testing, Reporting, and Oversight					
Construction Oversight	30	DAY	$1,500	$45,000	Assumes 13 days for excavation, 7 days for construction of repository, 6 days of backfill/site restoration, 2 days for encapsulation repair, and 2 days of mobilization/demobilization
CQA Testing and Laboratory	1	LS	$10,000	$10,000	Includes CQA confirmation soil testing and laboratory costs.
Construction Completion Report	1	LS	$30,000	$30,000	
Administrative Controls	1	LS	$20,000	$20,000	Includes survey and other coordination of administrative controls.
		Subtotal Capital Cost		$844,730	
		Contingency	20%	$168,946	
		Total Capital Cost (Rounded up)		**$1,014,000**	

Capital Cost Notes:

LS = lump sum	CQA = construction quality assurance
CY = cubic yards	YR = year
SF = square feet	GCL = geo-composite layer
SY = square yards	

1. The level of accuracy of these estimated costs is “Order of Magnitude,” as defined by the American Association of Cost Engineers. The accuracy of an Order of Magnitude estimate is plus 50 percent and minus 30 percent. Cost estimates at this level may be used to compare alternatives, but should not be used to plan, finance, or develop projects. Changes in the cost elements are likely to occur during the engineering design of the remedial alternative. The cost estimate was prepared in general accordance with regulatory guidance for cost estimating (USEPA 2000). Unit costs were selected based on previous remediation and project experience and based on budgetary quotes for some materials and services.

2. The unit weight of soil is assumed to be 1.6 tons/CY and concrete materials are assumed to be 2 tons/CY.
3. Soils contaminated with PCBs would be transferred offsite for disposal. Lead and petroleum contaminated soils would be transferred to the onsite repository.
4. Staging area for waste transfer and mobilization of materials and equipment is assumed to be Anacortes, WA.
5. Prevailing wages are assumed to apply. An adjustment factor of 30% is applied to all labor.

Table I-2
Appendix I Supporting Cost Information
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington

Alternative 3 - Excavation and Onsite Repository

Operation, Maintenance, and Monitoring Costs				
Annual Costs				
Description	**Quantity**	**Unit**	**Unit Cost**	**Total**
Years 1-30				
Post-Remedial Annual Cap Inspections	1	YEAR	$3,000	$3,000
Minor Repairs (No heavy equipment, materials carried to site)	1	YEAR	$7,000	$7,000
Engineering Design/Support	1	YEAR	$3,000	$3,000
Management and Reporting	1	YEAR	$5,000	$5,000
TOTAL ANNUAL OMM COSTS (Years 1-30)				**$18,000**

Periodic Costs					
Description	**Year**	**Quantity**	**Unit**	**Unit Cost**	**Total**
Years 10, 20, 30					
Mobilization/Demobilization of Marine Equipment	Every 10 Years	1	YEAR	$20,000	$20,000
Cap Repair Materials		1	YEAR	$5,000	$5,000
Maintenance and Repair of Cap		1	YEAR	$10,000	$10,000
Engineering Design/Support		1	YEAR	$15,000	$15,000
Construction Oversight		1	YEAR	$5,000	$5,000
TOTAL PERIODIC OMM COSTS (Years 10, 20, 30)					**$55,000**

PRESENT VALUE ANALYSIS

Year	**Capital Cost**	**Annual Cost**	**Periodic Cost**	**Total Cost Per Year**	**Discount Factor (3.0%)**	**Present Value**
0	$1,014,000	$0	$0	$1,014,000	1	$1,014,000
1	$0	$18,000	$0	$18,000	0.97	$17,476
2	$0	$18,000	$0	$18,000	0.94	$16,967
3	$0	$18,000	$0	$18,000	0.92	$16,473
4	$0	$18,000	$0	$18,000	0.89	$15,993
5	$0	$18,000	$0	$18,000	0.86	$15,527
6	$0	$18,000	$0	$18,000	0.84	$15,075
7	$0	$18,000	$0	$18,000	0.81	$14,636
8	$0	$18,000	$0	$18,000	0.79	$14,209
9	$0	$18,000	$0	$18,000	0.77	$13,796
10	$0	$18,000	$55,000	$73,000	0.74	$54,319
11	$0	$18,000	$0	$18,000	0.72	$13,004
12	$0	$18,000	$0	$18,000	0.70	$12,625
13	$0	$18,000	$0	$18,000	0.68	$12,257
14	$0	$18,000	$0	$18,000	0.66	$11,900
15	$0	$18,000	$0	$18,000	0.64	$11,554
16	$0	$18,000	$0	$18,000	0.62	$11,217
17	$0	$18,000	$0	$18,000	0.61	$10,890
18	$0	$18,000	$0	$18,000	0.59	$10,573
19	$0	$18,000	$0	$18,000	0.57	$10,265
20	$0	$18,000	$55,000	$73,000	0.55	$40,418
21	$0	$18,000	$0	$18,000	0.54	$9,676
22	$0	$18,000	$0	$18,000	0.52	$9,394
23	$0	$18,000	$0	$18,000	0.51	$9,120
24	$0	$18,000	$0	$18,000	0.49	$8,855
25	$0	$18,000	$0	$18,000	0.48	$8,597
26	$0	$18,000	$0	$18,000	0.46	$8,347
27	$0	$18,000	$0	$18,000	0.45	$8,103
28	$0	$18,000	$0	$18,000	0.44	$7,867
29	$0	$18,000	$0	$18,000	0.42	$7,638
30	$0	$18,000	$55,000	$73,000	0.41	$30,075
TOTAL PRESENT VALUE OF ALTERNATIVE 3 (Rounded up to next $10,000)						**$1,470,000**

Table I-3
Appendix I Supporting Cost Information
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington

Alternative 4 - Excavation and Off-site Disposal

Capital Costs

Description	Quantity	Unit	Unit Cost	Total Cost	Notes/Source
Preparation					
Work Plan, Agency Correspondence, and Design	1	LS	$50,000	$50,000	Professional judgement and previous project experience.
Insurance, Bonding, Mobilization/Demobilization	1	LS	15%	$25,500	Percentage of total costs excluding disposal, reporting, and testing.
Clearing/Grubbing/Tree Trimming	1	LS	$7,800	$7,800	Assumes up to 1 acre of clearing required to access excavation areas.
Repair to Dock Staircase	1	LS	$50,000	$50,000	Costs based on contractor quote and include procurement of applicable permits.
Stormwater BMPs	1	LS	$3,900	$3,900	Silt fencing around perimeter of work area and other BMPs as needed for material handling and staging.
Marine Equipment					
Mobilization/Demobilization of Marine Equipment	1	LS	$20,000	$20,000	Contractor quote, assuming initial mobilization of crane and barge to facilitate soil removal.
Crane, Barge, and Tug Boats	18	DAY	$6,000	$108,000	Contractor quotes, average daily rate assumes tug boats and crew not required for duration of project.
Soil/Debris Removal					
Soil Excavation and Handling	1,250	CY	$29	$36,850	RSMeans and supplier quotes, adjusted for local conditions.
Debris Removal and Handling	4,000	SF	$5	$20,000	RSMeans and supplier quotes, adjusted for local conditions. Includes concrete sidewalks and helicopter pad materials.
Disposal					
Transportation from Anacortes to Chemical Waste Management	2,040	TON	$90	$183,600	Supplier quote, assuming over-the-road transport.
Disposal of Soil at Chemical Waste Management	2,000	TON	$120	$240,000	Supplier quote, including taxes.
Transportation and Disposal of Construction Debris	40	TON	$100	$4,000	Supplier quote, including taxes.
Backfill, Grading, and Vegetation					
Backfill	510	CY	$31	$15,683	Supplier quote, assuming delivery to Anacortes area.
Placement & Compaction for Backfill	510	CY	$20	$10,363	RSMeans and supplier quotes, adjusted for local conditions.
Grading	34,000	SF	$0.68	$23,222	RSMeans and supplier quotes, adjusted for local conditions.
Seeding/Restoration	34,000	SF	$1.00	$34,000	RSMeans and supplier quotes, adjusted for local conditions.
Building Encapsulation Repair/Restoration	800	SF	$20	$16,000	Supplier quote, assuming scrape and stabilize trim and failing areas, prime, and re-paint.
Asbestos Roofing Replacement	4,000	SF	$30	$120,000	Scrape and stabilize trim and failing areas, prime, and re-paint.
Testing, Reporting, and Oversight					
Construction Oversight	22	DAY	$1,500	$33,000	Assumes 18 days for soil excavation and backfill, 2 days for encapsulation, and 2 days for mobilization/demobilization.
CQA Testing and Laboratory	1	LS	$2,500	$2,500	Includes CQA confirmation soil testing and laboratory costs.
Construction Completion Report	1	LS	$30,000	$30,000	
		Subtotal Capital Cost		$1,034,418	
		Contingency	20%	$206,884	
		Total Capital Cost (Rounded up)		**$1,242,000**	

Capital Cost Notes:

LS = lump sum
CY = cubic yards
SF = square feet
SY = square yards
CQA = construction quality assurance
YR = year

1. The level of accuracy of these estimated costs is “Order of Magnitude,” as defined by the American Association of Cost Engineers. The accuracy of an Order of Magnitude estimate is plus 50 percent and minus 30 percent. Cost estimates at this level may be used to compare alternatives, but should not be used to plan, finance, or develop projects. Changes in the cost elements are likely to occur during the engineering design of the remedial alternative. The cost estimate was prepared in general accordance with regulatory guidance for cost estimating (USEPA 2000). Unit costs were selected based on previous remediation and project experience and based on budgetary quotes for some materials and services.
2. The unit weight of soil is assumed to be 1.6 tons/CY and concrete materials are assumed to be 2 tons/CY.
3. Staging area for waste transfer and mobilization of materials and equipment is assumed to be Anacortes, WA.
4. Prevailing wages are assumed to apply. An adjustment factor of 30% is applied to all labor.

Table I-3
Appendix I Supporting Cost Information
United States Coast Guard
Burrows Island Light Station
Anacortes, Washington

Soil Alternative 4 - Excavation and Off-Site Disposal

Operation, Maintenance, and Monitoring Costs				
Annual Costs				
Description	**Quantity**	**Unit**	**Unit Cost**	**Total**
Years 1-30				
None	--	--	--	--
TOTAL ANNUAL OMM COSTS (Years 1-30)				**$0**

PRESENT VALUE ANALYSIS

Year	Capital Cost	Annual Cost	Periodic Cost	Total Cost Per Year	Discount Factor (3.0%)	Present Value
0	$1,242,000	$0	$0	$1,242,000	1	$1,242,000
1	$0	$0	$0	$0	0.97	$0
2	$0	$0	$0	$0	0.94	$0
3	$0	$0	$0	$0	0.92	$0
4	$0	$0	$0	$0	0.89	$0
5	$0	$0	$0	$0	0.86	$0
6	$0	$0	$0	$0	0.84	$0
7	$0	$0	$0	$0	0.81	$0
8	$0	$0	$0	$0	0.79	$0
9	$0	$0	$0	$0	0.77	$0
10	$0	$0	$0	$0	0.74	$0
11	$0	$0	$0	$0	0.72	$0
12	$0	$0	$0	$0	0.70	$0
13	$0	$0	$0	$0	0.68	$0
14	$0	$0	$0	$0	0.66	$0
15	$0	$0	$0	$0	0.64	$0
16	$0	$0	$0	$0	0.62	$0
17	$0	$0	$0	$0	0.61	$0
18	$0	$0	$0	$0	0.59	$0
19	$0	$0	$0	$0	0.57	$0
20	$0	$0	$0	$0	0.55	$0
21	$0	$0	$0	$0	0.54	$0
22	$0	$0	$0	$0	0.52	$0
23	$0	$0	$0	$0	0.51	$0
24	$0	$0	$0	$0	0.49	$0
25	$0	$0	$0	$0	0.48	$0
26	$0	$0	$0	$0	0.46	$0
27	$0	$0	$0	$0	0.45	$0
28	$0	$0	$0	$0	0.44	$0
29	$0	$0	$0	$0	0.42	$0
30	$0	$0	$0	$0	0.41	$0
TOTAL PRESENT VALUE OF ALTERNATIVE 4 (Rounded up to next $10,000)						**$1,250,000**

APPENDIX J

Public Meeting Transcript and Summary

Response to the Comments on the Remedial Investigation and Focused Feasibility Study for U.S. Coast Guard Burrows Island Light Station

Public Meeting, Anacortes Public Library, January 10th, 2020

The following table summarizes comments received during the question and answer session of the public meeting for the USCG Burrows Island Light Station Remedial Investigation and Focused Feasibility Study report, conducted on January 10, 2020. The discussion was recorded by a stenographer and have been revised in the summary for clarity and brevity. Additional details have been added as noted based on research following the meeting. Questions that were similar in content have been composited. Questions of clarification on design elements are not included in the table but are provided in the transcript.

Comment Number	Commenter Name (s)	Summarized Comment	USCG Response	Location in Meeting Transcript
1	Dave Savage	Dave expressed interest in the landscaping of the property following soil removal, particularly concerning the difficulty bare rock and steep slopes would pose to vegetation management. Wanting no more bare rock than is there now.	The site will be graded following excavation in order to be compatible with expected future site uses. This will be discussed as part of the remedial design process.	pp. 6 - 8
2	Steve Anderson	Bullwhip kelp grows on the shoreline of the site and it may be a protected species with limited habitat. The kelp may be impacted by plans to anchor a barge for equipment.	As part of the CERCLA process, USCG will consult with state and federal agencies to ensure that the kelp and other species are protected.	pp. 10 - 12
3	Don Meehan	There are many maintenance and repair tasks at the light station that are not directly related to site cleanup but are essential for site safety and restoration. It would be valuable if the United States Coast Guard (USCG) could contribute to these efforts.	The USCG budget is only approved for site cleanup purposes, not restoration. However, some maintenance tasks will be included in the project scope for safety reasons during the cleanup. A review process ultimately determines which tasks are approved.	pp. 14 - 17
4	Max Schneider Dave Savage	Ms. Schneider and Mr. Savage questioned whether access to the site would be restricted during the cleanup process. Regular maintenance and restoration activities are ongoing. There are also up to 60 kayakers a day stopping at the site when the weather is good.	For safety reasons, no access to the site will be possible during the cleanup. USCG will consider hiring security to ensure safety. Site work will likely not coincide with the summer tourist season due to bird nesting season.	pp. 19 - 21
5	Doug Hennick Max Schneider Dan Call	Removal of the asbestos from the roof tiles is not currently planned under USCG's cleanup. The roof is damaged and there is concern that inclement weather could cause asbestos-containing tiles to fall to the ground with a potential for contamination.	Asbestos is not considered a hazardous material as long as the roof is functional. Despite the damage, the roof is still considered to be functional; therefore, USCG's funding will not cover asbestos removal. The NWSS is responsible for	pp. 21 - 29

Comment Number	Commenter Name (s)	Summarized Comment	USCG Response	Location in Meeting Transcript
5 (continued)		There is concern that some areas of the roof have exposed asbestos that has become friable. There are also considerable difficulties for the Northwest Schooner Society (NWSS) to replace the roof given the presence of asbestos and island location.	maintenance of the building, including protection from weather. **POST MEETING UPDATE:** Upon further consideration of this concern, removal and replacement of asbestos tiles will be incorporated into the final remedial design. The RI/FFS report text has been updated to reflect this addition.	
6	Max Schneider	Ms. Schneider questioned whether the sidewalks will be removed from the site?	Sidewalks will be left in place when in good condition and if there is no excavation required. If areas of the sidewalks are considered a safety concern they will be replaced.	pp. 29
7	Max Schneider	Was testing for contamination done around the sidewalks?	Yes, sampling around the sidewalks was performed in the investigation, but not beneath sidewalks. Additional confirmation sampling will be performed after excavation around the sidewalks and other areas to ensure these areas meet the cleanup goals.	pp. 30
8	Max Schneider	Will foundation issues possibly caused by past excavations be fixed?	The cause of the foundation damage is not clear, and the USCG funding will not cover building repairs. Foundation repairs, if necessary, will fall to the NWSS.	pp. 32 - 35
9	Bobby Carson Dave Savage	It would be ideal if the barge for the remedial design activities could also convey roofing material for repairs to be performed by the NWSS. The NWSS has a grant from the state of Washington starting July 1st for two years that is currently on hold. Coordinating roof repairs with remedial design would help make sure the money can be used effectively.	NWSS should discuss the possibility of coordinating roofing materials transport with the future remediation contractor.	pp. 36 - 37

Response to the Comments on the Remedial Investigation and Focused Feasibility Study for U.S. Coast Guard Burrows Island Light Station

Public Meeting, Anacortes Public Library, January 10th, 2020

Comment Number	Commenter Name (s)	Summarized Comment	USCG Response	Location in Meeting Transcript
10	Max Schneider	Will the underground storage tank between the light station and the PCB area be addressed? It is believed to be an oil tank based on smell.	USCG will examine and address the tank if it is an oil tank. **POST MEETING UPDATE:** Upon further consideration of this concern, any remaining liquid in the cistern will be removed and disposed offsite. The cistern will then be plugged and filled with cement fill. This revision has been incorporated into the Remedial Design.	pp. 46 - 47
11	Steve Anderson	Will there be another public meeting after the work is completed?	There may be another public-comment period or action memo after the remedial design is in place, but its not part of the requirements for this site. Based on interest, these actions will be considered.	pp. 52 - 53
12	Max Schneider Dan Call	Helicopters sometimes land on the landing pad at the site but take off before they can be identified.	If this is a problem, USCG may be able to help if the tail number, description, date, and time are reported. USCG will look into the status and necessary markings of the landing pad.	54 – 57

Abbreviations and Acronyms:

CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act
NWSS: Northwest Schooner Society
USCG: United States Coast Guard

PUBLIC MEETING RE
REMEDIAL INVESTIGATION AND FOCUSED FEASIBILITY STUDY AT U.S. COAST GUARD BURROWS ISLAND LIGHT STATION, SKAGIT COUNTY, WASHINGTON

FRIDAY, JANUARY 10, 2020

6:00 p.m.

THE PUBLIC MEETING was held at the Anacortes Public Library, 1220 10th Street, Anacortes, Washington 98221 on the 10th day of January, 2020, beginning at 6:01 p.m., and public comments ran from 6:10 to 8:00 p.m., before Nor Monroe, Certified Court Reporter for the state of Washington.

APPEARANCES

JAMES HALL, U.S. Coast Guard, Project Manager

JEFF ZAPPEN, U.S. Coast Guard, Lighthouse Coordinator for Washington

PAUL MCCULLOUGH, Arcadis, Engineer of Record

JOSH GRAVENMIER, Arcadis, Project Manager

MARK ULLERY, Arcadis, Project Engineer

(ANACORTES, WASHINGTON; FRIDAY, JANUARY 10, 2020)

(After a presentation by James Hall, public comment began at 6:10 p.m.)

JAMES HALL: And at this point, I'll open it up for questions or comments.

Sir.

DAN CALL: The maps didn't indicate where the PCB spill occurred, or --

JAMES HALL: Sure.

DAN CALL: -- if they did, I missed it.

JOSH GRAVENMIER: Can you state your name, please, and spell it for our --

DAN CALL: Dan Call, C-A-L-L.

JAMES HALL: So that is right in this area right here [indicating]. That red . . . [indiscernible] no, no, no. I'm sorry. It's down here [indicating].

(Simultaneous talking.)

JAMES HALL: This is the -- this K section down here, that is the PCB transformer spill. The PCB transformer pad was right in this area [indicating]. When the spill happened, the Coast Guard came in and dug up a lotta soil. I think it was 170 cubic yards at the time. We think they backfilled it with some concrete, based on our sampling effort. That'll be further . . . you know, that'll be further delineated. We -- we found some residual PCBs. Not a lot. Levels are pretty low. The s- -- the concentration that's acceptable in Washington state right now is one part per million, or one milligram per kilogram. We did have exceedances of that, so that soil will need to be -- you know, that soil will go off site.

DAN CALL: And as a follow-on question, if I may, you mentioned that at the time of the original spill, it was done to the then existing standards --

JAMES HALL: Yep.

DAN CALL: -- and now you're proposing to do it to the now existing standards. What are -- can you check your crystal ball and see what might happen in the future in that regard?

JAMES HALL: I cannot. I have no idea what the future standard might be. But I will tell you that one part per million is pretty low, and if we get it down to one part per million, it's prob'ly pretty close to zero.

MAX SCHNEIDER: Max, M-A-X, Schneider, S-C-H-N-E-I-D-E-R.

What you're talking about doing involves some pretty heavy equipment. It also involves being able to move your equipment from the water to the land.

JAMES HALL: Right.

MAX SCHNEIDER: How are you gonna do that?

JAMES HALL: So there's two -- we're -- we're looking at two methods, and it's gonna depend on the -- the size of the equipment that ends up being needed. We can lift hel- -- we can lift equipment in with a helicopter if we have to, and we can also potentially anchor a crane that can reach onto the island.

MAX SCHNEIDER: So I guess my potential question here, with being part of the people that are taking care of this property, is moving that amount of material, even if it's done with a helicopter, is gonna cause considerable damage to how you get on the island; how you get off. Is that written into how -- your proposal for what you're gonna do there?

JAMES HALL: So we don't intend to impact the landing site as it is right now. As a matter of fact, we'll probably end up having to shore up part of that -- that landing, 'cause it looks like it's washed out.

MAX SCHNEIDER: Last year's storm was very severe.

JAMES HALL: Yeah.

MAX SCHNEIDER: I guess that's my question in a nutshell, is will you, you know, restructure that and -- you know, 'cause getting that soil off of there is gonna be interesting.

JAMES HALL: S- -- yeah, so we're still developing -- like, that'll be part of the remedial design, is to how -- how we're actually going to implement that. But most likely we'll end up anchoring a bar- -- or -- yeah. There will be an anchor system with a barge somewhere out -- off the side of this island [indicating] --

MAX SCHNEIDER: Mm-hmm.

JAMES HALL: -- and some way soil will get moved on and off.

But in order to get people on and off the landing up here, which is washed out, will most likely have to be repaired.

MAX SCHNEIDER: And in this repairing, are you planning on bringing people on and off every day or are they staying over?

JAMES HALL: That hasn't been determined yet. That'll be a question for the contractor who's awarded the contract.

MARK ULLERY: We got a historical site plan [indiscernible].

JAMES HALL: Sure.

Sir.

DAVE SAVAGE: Dave Savage, S-A-V-A-G-E. I represent the Northwest Schooner Society --

JAMES HALL: Yes, sir.

DAVE SAVAGE: -- and I'm president of it. And we have a license. We're eight years into ten years' worth of license. And we're delighted you're here.

JAMES HALL: Happy to hear that.

DAVE SAVAGE: I mean, this is -- this is -- we've been waiting. It's great. And I'm really impressed with the sampling on the island. I mean, you really do know what's there.

Okay. So we're all for number four.

JAMES HALL: Okay.

DAVE SAVAGE: Go get 'em.

(Laughter.)

DAVE SAVAGE: And what we'd like to see when you're done is that there's no more bare rock than there is now. Because -- for grass. I mean --

JAMES HALL: Okay.

DAVE SAVAGE: -- so we have -- and that the contours are fairly smooth, for kind of a simple reason: that it's tough to mow steep-side hills, and they're all volunteers.

JAMES HALL: Under- -- understood. So the -- the cut where the helicopter pad is now --

DAVE SAVAGE: Mm-hmm.

JAMES HALL: -- we'll probably try to smooth that out. It's gonna d- -- what the final contouring was gonna look like is gonna depend on the future site uses.

DAVE SAVAGE: Yeah.

JAMES HALL: And we're gonna need to discuss that further when we get to the remedial design. But . . . yeah . . . we -- we understand that, and --

DAVE SAVAGE: Yeah.

JAMES HALL: -- we're gonna work towards that.

DAVE SAVAGE: The . . . the helicopter -- the landing pad with the Marston Mat that's in there now, if -- if it could somewhat resemble what it is, a flat area --

JAMES HALL: We -- we under- --

DAVE SAVAGE: -- when we're done --

JAMES HALL: -- -stand the -- the flat area's important to the future use of the property, and we will work towards -- towards making it stay the same.

DAVE SAVAGE: Just wanted that in the record, yeah.

We're delighted you're here. Thank you.

MAX SCHNEIDER: As you were saying -- sorry -- to finish what I was talking about, where were you planning on putting a barge to offload on?

JAMES HALL: So we're not sure . . . we're not

100 percent sure yet. And some -- and to an extent, that is gonna depend on the company that ends up winning that job.

MAX SCHNEIDER: Right.

JAMES HALL: But our thought is that they will anchor somewhere in here [indicating], using a -- an anchor system.

MAX SCHNEIDER: It's a more feasible spot, because the tides are severe.

JAMES HALL: Yes.

MAX SCHNEIDER: And trying to do it on the stair side would be. . . .

JAMES HALL: I don't think that the stair sides is feasible, based on my experience with it. I -- I don't think that that's gonna happen.

DAN CALL: It'll be too shallow on the stair side.

JAMES HALL: Yeah.

Sir.

STEVE ANDERSON: Steve Anderson, Northwest Schooner Society. So let's see. Arcadis was the testing company that did the site testing. You mentioned going down a half a foot to three feet. Is -- has that -- like, the limitation Arcadis was able to go down with their testing tool, or the half-foot down to three feet is some other. . . .

JAMES HALL: So -- so the --

(Simultaneous talking.)

JAMES HALL: -- so either would have hit bedrock or they would have hit clean soil.

STEVE ANDERSON: Okay. So they dug down as far as they basically could?

JAMES HALL: Yes.

JOSH GRAVENMIER: We dug down; sampled. If it was contaminated or above the level, then we would go down more, unless --

(Simultaneous talking.)

STEVE ANDERSON: Oh, you did it in steps.

JOSH GRAVENMIER: Yes.

STEVE ANDERSON: Ah, okay.

All right. Second, another -- something slightly different. The place that you mentioned maybe the company -- a company that gets a contract anchor off that one site. They've got that bullwhip sea grass. Apparently that is . . .

JAMES HALL: So --

STEVE ANDERSON: . . . kinda delicate stuff. Only coupla places it grows. [Indiscernible] Natural Resources is gonna have a problem with that.

JAMES HALL: So as part of the CERCLA process, we will consult with the -- the different agencies, state and federal, and in part -- as part of that consultation, we'll get either best management practices or -- because it's CERCLA, there are no permits, but we'll essentially have what -- we'll have consultation in place that covers saving or -- or destruction. Yeah.

MAX SCHNEIDER: Is there a time frame involved with this?

JAMES HALL: It. . . .

(Laughter.)

STEVE ANDERSON: Key question.

JAMES HALL: It -- it's a priority. I guess that that's what I would say. I -- I -- I -- it's very hard for me to put times in because there's a lot of factors involved.

MAX SCHNEIDER: Right. [Indiscernible] shot in the wind would be given the current situation that's happening with the government, are we gonna get dinged by that or we --

JAMES HALL: No.

MAX SCHNEIDER: -- well on the roll here?

JAMES HALL: No, so . . . so my job is to -- to clean up properties. The Coast Guard essentially gets the same pot of money every year to do cleanups --

MAX SCHNEIDER: Mm-hmm.

JAMES HALL: -- and this is -- this is prob'ly my highest and -- maybe second highest -- priority cleanup that I -- that I have. So it's -- it's high up on my list of projects to do.

Sir.

DON MEEHAN: Don Meehan, Lighthouse Environmental Programs. So when it's all said and done, you're replacing soil, and you're comin' back to the level that was traditionally there. Is that correct?

JAMES HALL: So I don't know exactly what the grading's gonna look like because -- and I don't have, like -- so I have some historic t- -- topography, but I don't know for sure -- I don't have a hundred percent, you know, what that is. But in the past, when they did a previous remediation project in 2005, they dug out a lot around the buildings.

DON MEEHAN: Yeah.

JAMES HALL: We're gonna replace that. We don't want that negative grade there.

DON MEEHAN: Okay. That's what I w- -- and -- and will you p- -- you know, compact it? 'Cause you're --

JAMES HALL: So --

DON MEEHAN: -- gonna go in there and then you're gonna leave.

JAMES HALL: So we are probably not going to do, like, 95 percent compaction, because if we do that, grass won't grow. We're gonna compact it to a point where you're not gonna see subsidence, but we don't wanna compact it to a point where you can't get vegetation to grow back.

MAX SCHNEIDER: So the other involvement, when you're cleaning up this area, there are quite a few piping systems that are going on out there.

JAMES HALL: There are. And so part of what Arcadis did this year was to trace out where those piping systems are. As we dig, we may find other abandoned utilities that didn't show up. At that point, we will probably remove them, unless there's a need for them on site. Because it's a potential for recontamination if those pipes aren't clean.

DAVE SAVAGE: One of the things we have to do to get this site back functioning, where people can be there, is restore those utilities. So we need at least enough dirt to bury a pipe in and electrical that we -- electrical from generator and -- since there's no on-site electricity anymore. But -- so when they go back and fill it in, we need to be able to have enough dirt to put utility, either water or electrical, in the soil.

JAMES HALL: So I guess what I'm gonna say is that we prob'ly are not going to cover more bedrock than what is already there. We're also not going to -- to, like, take a -- we're not going to change the depth of soil that's there in -- if we need to bring back -- fill in, we would. We're gonna -- we plan to restore the site as much as we can.

MAX SCHNEIDER: My assumption with that restoration is that are you gonna replant grass seed or. . . .

JAMES HALL: So we will probably -- for -- for erosion reasons, we'll prob'ly wanna come in and hydroseed or -- or try -- we'll try to match the grass that's there. We may actually already have that data. We're gonna go back and check our reports. That was one of the things we talked about today. But . . . yeah, we will most likely have to rehydroseed it, because we don't want to have erosion issues during the year that we're [indiscernible].

Sir?

DON MEEHAN: Yeah, so James, on -- on the -- where we come in to the -- to the lighthouse, and the light station, you know, we've got a huge erosion problem there, with that concrete bulkhead that's there --

JAMES HALL: This one right here [indicating]?

DON MEEHAN: Yeah.

JAMES HALL: Yeah.

DON MEEHAN: Yeah. And so are you guys gonna fix that? I mean --

(Simultaneous talking.)

JAMES HALL: So --

DON MEEHAN: Here -- here's the -- why I'm asking this question is that it's one thing to come in and clean up all the nasty chemicals that have fallen off the building through the years, but it's another thing to think about preservation, and the fact that when you guys are said and done, we really, as a community, we want this facility to -- to be a shining example of what a light station was. And we recognize that it takes a hell of a lot of volunteer effort to get there. And so I'm always very interested in, okay, well, what capability are you giving us after you leave that would help us to the next step up, to be able to do these things that -- that need to be done. And as Dave has already pointed out, they've been at it for eight years, and. . . . I -- I can tell you a whole buncha things that could make huge improvements there if -- and would be very easy for the Coast Guard to actually do those kinds of things. They don't have to do with the removal of nasty chemicals that are on site. They have to do with fixing structures there that make things work better for the teams that come in later, years later, literally.

JAMES HALL: So I understand, and I would love to have the money to do that. Unfortunately, my funding stream that I can use to clean this project up is restricted only to cleaning up. Now, if I have to repair something in the process, to make it safe for people to get on and off, then that can be included in the scope. But I cannot use the money just for -- for other restoration. I -- I wish I could. I wish I could go in and clean the entire place up and then restore it all. That funding stream is --

(Simultaneous talking.)

DON MEEHAN: -- recognize you're not gonna do that. But -- but like I say, the -- fixin' -- fixin' that whole staircase would be a huge -- huge asset to everybody.

JEFF ZAPPEN: And -- and depending on the scope of work and which contractor gets, they may get there and realize that this isn't safe for their employees, and that may be added to the scope to at least repair from the landing to the boathouse --

DON MEEHAN: Yeah.

JAMES HALL: Correct.

JEFF ZAPPEN: -- that would meet current OSHA or --

(Simultaneous talking.)

DON MEEHAN: You know what I'm talking about?

JEFF ZAPPEN: I do. I -- absolutely I do. But --

JAMES HALL: And we've -- we've noted it, as well.

JEFF ZAPPEN: Right.

JAMES HALL: That . . . when we write a scope of work for things like this, it goes through a review process, and they look and see, like, is this appropriate or is it not. Things that I put in are sometimes removed, as they say, even though I think that it's appropriate for the use of funds. Like, it goes through a process. So I -- I don't wanna promise anything. I would say that I feel like it's unsafe and I would want that fixed before I put people going in and outta there.

DAVE SAVAGE: Do you think you'll be removing much of the foundation from the officers' quarters?

JAMES HALL: We will be removing at least some of it, because it's in the way of the cleanup.

DAVE SAVAGE: Yeah.

JAMES HALL: I don't know that we'll be rem- -- I don't know how much of it will be removed.

JEFF ZAPPEN: You're talking about the OIC quarters that are no longer there?

JAMES HALL: Yeah.

Sir.

KEN DINSMORE: What's -- what are you gonna do with the helicopter landing pad?

JAMES HALL: We'll be removing that. We need to clean up underneath.

MAX SCHNEIDER: Are you talking about the materials or. . . .

(Indiscernible talking.)

JEFF ZAPPEN: The metal grating will go away, then they'll remediate underneath it. The -- the purpose of landing a helicopter, at least from the federal government standpoint, is no longer needed. But again, to support the needs of the future, it'll more than likely be left flat.

JAMES HALL: Yeah, we're gonna -- we're gonna -- we're gonna leave it flat.

JEFF ZAPPEN: So --

JAMES HALL: We understand that that's a priority.

JEFF ZAPPEN: Tents, camping, other

[indiscernible] pavilions --

(Simultaneous talking.)

JEFF ZAPPEN: -- weddings [indiscernible] still be supported.

DON MEEHAN: So how long is this gonna take from the time you guys let your contractors go to work? Do you have a deadline on when you wanna see this done?

(Laughter.)

DON MEEHAN: I -- I'm sorry. I ask all the hard questions.

JAMES HALL: No, no, it's fine. That's what -- that's why here.

(Simultaneous talking.)

JEFF ZAPPEN: It's not a hard question. It's a flexible answer.

JAMES HALL: Yes. So -- so, I mean, ideally, we wanna see it happen as fast as possible. In realty, I just can't give an answer as to, like, how long it'll -- how long it'll -- how long the work will actually take and how long it'll take to get to the point where the work is -- is . . . you know --

(Simultaneous talking.)

MAX SCHNEIDER: I guess my only other question about it would be: When you're in the midst of doing all this, can we still continue on our projects?

JAMES HALL: No. When we start the work on this, we will have to restrict access to the island. So because of the lead contaminants and the PCBs, and also just because the heavy equipment moving around, it just isn't safe.

DAVE SAVAGE: Currently we work, with good weather, year-round, but really from May to September is the active work season. Also during that time we can have up to 60 kayaks show up on a day.

(Simultaneous talking.)

DAVE SAVAGE: On the weekends in the summer. So there's a lot -- actually a lotta traffic for this place.

MAX SCHNEIDER: There's a ton of traffic, and we started installing game cameras to make sure that people are on and off and not living there and things like that. And there is a ton of traffic. So in getting certain entities to cooperate with you in the sense that they shouldn't go on the island. . . .

JAMES HALL: It -- it may come to the point where we have to hire security. We've had -- I've had to do that at other sites. Hopefully it doesn't come to that. And it may be that the -- our -- really our work window for this is outs- -- is -- is in -- outside of nesting season, so I think it'll likely begin in August is the earliest that we can start work. So it may be that we -- that the work window -- the way the work window lines up is that we avoid, you know, that -- that time of year.

(Simultaneous talking.)

UNIDENTIFIED MAN: Nesting of what?

JAMES HALL: Eagles.

JEFF ZAPPEN: And so even though it's a CERCLA process, we're still worried about the Migratory Bird Act; the Marine Mammal Protection Act; the murrelet; the puffin.

JAMES HALL: Yeah. It's a cleanup project, and we don't get permits, but we still follow all of the same regulations and laws and rules. It's just a slightly different process.

JEFF ZAPPEN: The world of work for most of our ATON and lighthouse work is August to October. Every year.

DOUG HENNICK: I'm Doug Hennick, H-E-N-N-I-C-K. Can you explain why Coast Guard doesn't have to handle the asbestos problem out there?

JAMES HALL: So the asbestos problem is because it's inside the building. And so for my projects, I am not allowed to -- using of the funding stream that I have available, I'm not allowed to clean up anything that is inside the building.

(Simultaneous talking.)

DAVE SAVAGE: The tiles on the roof are asbestos.

JAMES HALL: So the tiles on the roof are asbestos. That becomes a little trickier. So --

DAVE SAVAGE: Asbestos; reinforced concrete.

JAMES HALL: Right. And so that asbestos, because it's encased, and as long as it's on the roof, it's preserving its function. If it falls off the roof, then we can clean it up.

MAX SCHNEIDER: So I guess the question at this point about the roofing would be that there's been considerable damage because of the weather.

JAMES HALL: Okay.

MAX SCHNEIDER: So . . . you know . . . if it's not removed, it's gonna contaminate again.

JEFF ZAPPEN: James.

JAMES HALL: Yes.

JEFF ZAPPEN: So just -- just carefully review your license. License states that the Northwest Schooner Society is gonna ensure that the weather envelope is there. So if we were to go in and remove, let's say, hap- -- we slip, we fell, a hundred asbestos tiles slipped, and now you don't have a roof, that's gonna fall on you to fix.

So what James is saying is currently . . . 70 percent of the tiles are in place; 80 percent; 90. I -- I know there's pieces on the ground. But you have a fairly intact roof on that one side. We're not gonna remove, because it's doing its job. And our money -- you said the current government budget. We're actually doing pretty good, but as James pointed out, it's very strict and very -- the protocols are ridiculous on what we can spend our money on.

MAX SCHNEIDER: I understand what you're saying, but to be very clear about it, that we have done repairs on that roof in order for it to s- -- be working --

JEFF ZAPPEN: Right.

MAX SCHNEIDER: -- and a roof --

(Simultaneous talking.)

JEFF ZAPPEN: And that's part of your license, though . . .

MAX SCHNEIDER: I understand that.

JEFF ZAPPEN: . . . to do that.

MAX SCHNEIDER: But we're talking about tarping and putting boards up and that sort of thing instead of building a roof.

JEFF ZAPPEN: And at some point, I imagine, like Mukilteo, Patos, Dungeness, you're prob'ly gonna end up replacing those roofs.

MAX SCHNEIDER: And I agree with that full-heartily. But no, we're not like any of those lighthouses. Everything we do is on an island. It's very, very hard to get equipment out there.

JEFF ZAPPEN: I agree.

MAX SCHNEIDER: It's very, very hard to get things on and off.

JEFF ZAPPEN: I -- I hear you. Trust me. 14 lighthouses fall under my office.

MAX SCHNEIDER: I understand that --

JEFF ZAPPEN: You are --

MAX SCHNEIDER: -- sir.

JEFF ZAPPEN: -- an island, but so is Patos.

MAX SCHNEIDER: What I'm trying to explain at this particular point is that there have been stop gaps done in order for it to be a roof. It's not a whole and healthy roof --

JEFF ZAPPEN: Agreed.

MAX SCHNEIDER: -- the respect that you're talking about it. And all's it takes is another windstorm, all's it takes is another wind --

JEFF ZAPPEN: Mm-hmm.

MAX SCHNEIDER: -- to blow all those onto the ground. And I -- at this particular point, as far as I understand, we're prepared to put a new roof on that.

JEFF ZAPPEN: Right.

MAX SCHNEIDER: We're not prepared to take every single piece off that's contaminated, because we're not really allowed to do that. So we're kinda in a sticky wicket.

JEFF ZAPPEN: It's a unique site. Absolutely. It is a unique site.

MAX SCHNEIDER: And, you know, if we keep that sort of thing in mind, that would be great. And considering that you're considering helicopters, a lotta that roof's gonna not exist.

JAMES HALL: Okay. Well, I mean, we can keep that in mind and -- yeah.

MAX SCHNEIDER: Thank you.

DON MEEHAN: James? Did anybody mention how much we appreciate you doin' this?

(Laughter.)

JAMES HALL: Well, I'm happy to be doing it.

MAX SCHNEIDER: Can it look like that when we're done?

(Indiscernible talking.)

DON MEEHAN: -- we have some of that on the island?

JEFF ZAPPEN: Unfortunately, that's not indigenous to the island, so we can't bring that in.

(Simultaneous talking.)

JEFF ZAPPEN: The State won't allow that.

Woops. Go ahead, sir.

DAN CALL: So I think I understood the discussion that just went on about the roof, but that means that you are abandoning in place hazardous materials. Is that --

JAMES HALL: So --

DAN CALL: -- correct?

JAMES HALL: -- asbestos is an interesting substance in that it isn't a hazardous material as long as it's performing the job that it's supposed to do. So if the tile falls off the roof, at that point it's a waste and I can dispose of it. As long as it's on the roof, I cannot touch it.

DAN CALL: But . . . but isn't that material being weathered, and isn't it being exposed by continuing to be on the building? Or are you saying that if you walked away from it and nobody touched it, ten years from now there wouldn't be any free asbestos anywhere?

JAMES HALL: I'm not saying that.

(Laughter.)

DAN CALL: I didn't think you were. I'm just trying to get you to. . . .

JAMES HALL: I -- I can only clean up hazardous materials that are -- that have been released to the environment. I guess that's -- I -- I know -- I know that is not the answer everybody wants, and I wish I could give you the answer that I would like to give you, but I -- I just can't. I mean, that's -- my funding source will not cover me removing anything from the roof or disposing of the tiles. I -- I -- they'll -- I can -- we will clean up the tiles that are on the ground, because that's been released to the environment at that point, but I cannot clean up the tiles that are on the roof.

DAN CALL: So if by some mysterious process a bunch of those tiles ended up on the ground, you'd haul 'em away?

MAX SCHNEIDER: No. No.

(Laughter.)

(Simultaneous talking.)

BOBBY CARLSON: Don't put that in the transcript.

(Indiscernible talking.)

DAN CALL: And let me clear: I'm not a member of this society or. . . .

(Laughter.)

MAX SCHNEIDER: Oh, this is --

(Simultaneous talking.)

DAN CALL: I'm an Anacortes resident, not a --

DON MEEHAN: James, do you -- do you have a ballpark figure on what estimate this is gonna cost?

JAMES HALL: A million dollars.

DON MEEHAN: A million? That's all?

JAMES HALL: As a nice, round number.

DON MEEHAN: Yeah. Thank you.

DAN CALL: For sure.

DON MEEHAN: Thank you, taxpayer.

JAMES HALL: Is that. . . .

JOSH GRAVENMIER: I -- I think the only thing I would mention is that asbestos, when it was installed, and now that it's been there, gets kinda grandfathered in. It's still encapsulated. It's only when it becomes friable when -- when it becomes a hazardous waste. So if you're gonna remove a piping that has asbestos on it, you have to treat it as hazardous waste. But the piping itself that has asbestos insulation on it can remain in place and be fine. It's only when it becomes friable that it is actually a waste or hazard.

JAMES HALL: When it -- when it gets disturbed or when the fibers go into the soil, if, you know, you the soil and there's fibers in there, that -- that becomes a waste. But, yeah, as long as it's encased in the concrete, it's -- it's not --

MAX SCHNEIDER: This is --

JAMES HALL: -- friable.

MAX SCHNEIDER: This is the point [indiscernible]. I guess it's the point that everybody's driving home time and time again is the fact that it is.

JAMES HALL: Asbestos.

MAX SCHNEIDER: It's been flying in the breeze.

JAMES HALL: Oh. Okay.

MAX SCHNEIDER: So it's not encapsulated in what -- any way, shape, or form. I have a HAZWOPER myself, and I know exactly what to do with the stuff and exactly what not to do with it, and it's at that point.

JAMES HALL: Okay.

DOUG HENNICK: Doug Hennick again. Are you gonna pour a new concrete sidewalk around that building out there?

JAMES HALL: So no, we're not going to pour a new concrete sidewalk around the building. I know the sidewalk's been brought up. And the portions of the sidewalk that are in poor condition, we'll -- we'll remove that. There's a lotta sidewalk out there that seems to be in -- in relatively decent condition --

DAVE SAVAGE: Yes.

JAMES HALL: -- and we wouldn't want to remove that. As a matter of fact, I think that it might be historical, and so that would become kind of a problem for us to remove. And it's unlikely to be contaminated underneath. You know, it's prob'ly been there, frankly, since the contamination started. Same with some of the other foundations around. We'll likely clean up around them, but we don't wanna remove, you know, other foundations that are in good shape. If -- if it's shattered and broken and it's in the way and it's -- you know, there's contamination underneath it, we're gonna clean that up.

DOUG HENNICK: Okay. And then so you'll just leave grass in its place if you take it away?

JAMES HALL: Yeah.

MAX SCHNEIDER: That would be a curious question. When you were testing, did you test around the cracks in the sidewalks or . . . pieces that were missing or. . . .

JOSH GRAVENMIER: You were the one collecting most of the samples.

MARK ULLERY: We collected samples close --

within the concrete, both inside and outside, around the duplex specifically, and we collected composite samples that were representative of that area around the duplex, and included the sidewalk.

JAMES HALL: When we -- when we do the remediation, there's gonna be confirmation sampling that's done, and so when they dig down, they'll, you know -- they'll sample along that sidewalk.

MAX SCHNEIDER: Thank you [indiscernible].

DAVE SAVAGE: A detail. The 102 up here that's the coal-oil storage shed for the lighthouse at one time, and there's contamination around it, are you likely to remove that foundation or not? Be the same answer as it's been there for so long that . . . that it's in terrible shape, but I'm not sure it'd be reusable, but. . . .

JAMES HALL: So if it's in terrible shape, you know, if it's cracked and crumbling and there's contamination underneath of it, it'll be removed. If it's -- you know. If there's a good reason to leave it, we -- we can certainly discuss it.

DAVE SAVAGE: Well, at some point that structure will be replaced.

JAMES HALL: Okay.

DAVE SAVAGE: And if the foundation is usable or repairable, we should keep what's there.

JAMES HALL: And we feel the same way. I mean, if there's a repairable in -- if in -- if there's a repairable foundation that's in good condition and it can be reused, we're open to leaving than in place.

DAVE SAVAGE: And then on the foundation of the main quarters building, there's a lotta paint peeling off of it, especially at the interface where the soil was at one time.

JAMES HALL: Right.

DAVE SAVAGE: And so do you peel off that -- the loose stuff and then repaint that? Or what's --

JAMES HALL: So the areas on the -- the areas on the -- the buildings that have peeling paint that the -- either the encapsulation has failed or it wasn't encapsulated in the previous project, those will be re-encapsulated, and in some cases it'll have to be scraped off. But we're not going to leave the site in a manner where it's gonna be recontaminated with flaking lead paint.

DAN CALL: I've only been around -- I just moved here a couple years ago, so what went on historically I'm clueless about. But I notice that some of the areas that I now understand you removed soil at some point, there are cracks in the foundation of the structure that I don't know if those resulted from the removal of the lateral support to the structure or if it was something else. Where does that fit into your plans?

JAMES HALL: So I can't repair it. I wish that they hadn't done that.

(Laughter.)

JAMES HALL: I'm going to put the soil back so that it doesn't -- you know, so it has the lateral support there and so that we don't have water, you know, washing into the building.

MAX SCHNEIDER: So we don't really have anywhere to go with that, do we?

JAMES HALL: With. . . .

MAX SCHNEIDER: The damage that was caused because of that remedial.

JAMES HALL: No. I -- not that -- there's nothing -- I -- I can't -- I can't do anything about that. 'Cause I can't even -- I can't even be sure that that is the cause of that. So. . . .

MAX SCHNEIDER: Is there anywhere to go with that or no?

JEFF ZAPPEN: Again, if you've read the license, there's other -- I know you're unique. I know you're an island. But this is the responsibility of the -- of the licensee, to -- to assume the responsibility of this. The Lighthouse Society -- U.S. Lighthouse Society [indiscernible] Point Wilson, which includes the riprap and sea wall. The last time the Coast Guard fixed that was $1.8 million. And I realize accessibility's a lot easier, and the U.S. Lighthouse Society's a much bigger organization, but that's a huge take for a licensee to -- to assume. So there's a lot of the stuff falls on the -- the individuals or the agency that takes responsibility of the structure within that government contract.

(Simultaneous talking.)

MAX SCHNEIDER: I have no confusion about the responsibility, and I have no confusion about the expense of it and the damage that's been done. What I do have confusion about is that it was done by another company, another agency, that was supposedly cleaning up this site. So. . . .

(Simultaneous talking.)

JEFF ZAPPEN: -- I don't know we actually know for a fact that that was a cause of the cracked foundation. Do we?

MAX SCHNEIDER: Oh, it's structural. You can look at it and you know right off that that's what happened. I retired from construction.

You retired from house building.

There's more than one person that's been out there inspecting it, and it's very apparent that that's what happened.

JEFF ZAPPEN: Well, it's -- that'd be another funding stream outside of what James has with this project.

MAX SCHNEIDER: Okay, James. It's all right.

(Laughter.)

JAMES HALL: Again, you know, I mean, I wish I could. I just -- that -- that -- I just --

MAX SCHNEIDER: It's just to make it clear at this point because, as you know, we've waited a long time. You're our favorite son right now.

(Laughter.)

JAMES HALL: Sir.

STEVE ANDERSON: Steve Anderson. So 106 that was on there, that's the old pump house. But is there any plans of some involvement or work being done on that? Was that -- is. . . .

(Simultaneous talking.)

JAMES HALL: 106 way up there? No. That was clean, and so we don't -- we're not touching that.

STEVE ANDERSON: Okay.

DON MEEHAN: Fixing the old crane there would really be a help to the new contractor coming in.

(Laughter.)

(Simultaneous talking.)

DON MEEHAN: I'm pretty sure.

JAMES HALL: So I'm gonna tell you, we -- we actually did consider it.

DON MEEHAN: Did you?

JAMES HALL: Mark looked into it. But it is not a viable solution for us to use to remove soil on and off the island.

DON MEEHAN: Oh. Well. But there's other things you're [indiscernible]. . . .

(Laughter.)

MAX SCHNEIDER: [Indiscernible.]

DON MEEHAN: You should think about it.

BOBBY CARLSON: Your contractor is bringing out a barge of some sort?

JAMES HALL: So we don't know yet. But yes. It -- we suspect that that's how --

(Simultaneous talking.)

BOBBY CARLSON: Some kind of conveyance.

JAMES HALL: Yeah.

BOBBY CARLSON: All right. Is there any way that . . . we can hitch a ride on it? And what I'm getting at is at some point we're gonna need to redo the roof on the dwelling. We need to be able to take a lot of roofing material out to the island.

JAMES HALL: I can't speak to that at this point. It's I guess what I'm gonna say.

DAVE SAVAGE: We would talk to the contractor at the time.

JAMES HALL: Yeah.

DAVE SAVAGE: We have a grant from the State for -- I think it nets out about 79,000, a two-to-one matching grant, that is on -- was supposed to start the 1st of July for two years, and is currently on hold, and we'd love you -- to have you get right to this so that we can capture that money.

JAMES HALL: Understood.

DAVE SAVAGE: First chance you get. You know that, but. . . .

JAMES HALL: I do. I do.

MAX SCHNEIDER: [Indiscernible.]

DAN CALL: My comments have been perhaps a bit critical of what damage has been done by previous work, but let me also say that I hugely appreciate that you're proposing to do what you're proposing to do. I'm just trying to make sure that there's no -- no way to hitchhike some of these other environmental problems on top of what you're trying to do, so that --

JAMES HALL: Understood.

DAN CALL: -- it all gets taken care of.

JAMES HALL: Yes, sir. Understood.

MAX SCHNEIDER: So the -- the pump house, the 106, there was sampling done there or --

JAMES HALL: Yep.

MAX SCHNEIDER: Somebody else has already done it and you did look at it --

(Simultaneous talking.)

JAMES HALL: We sampled it. Yep.

MAX SCHNEIDER: That's interesting that there was nothing found there.

JAMES HALL: Yeah, it was surprising, but yeah. Nothing was found. So . . . we used an ISM technique, which is where we collect a whole bunch of increments, and it kinda gives a good average concentration of the soil across -- lead -- I -- I mean, you might -- might know, but lead is -- metals in soil tend to be really heterogeneous. I mean, it's -- you can take a sample here and it can be a thousand and you can take one here and it can be zero. So this gives us a better understanding of what the contaminants actually are around instead of, you know, it being luck.

MAX SCHNEIDER: I guess my only tangent that I would be that there's a -- a well next to it.

JAMES HALL: Right.

MAX SCHNEIDER: Was that tested, also?

JOSH GRAVENMIER: There were three sample points around there. So --

(Simultaneous talking.)

JOSH GRAVENMIER: -- in addition to the composites, we also had individual readings, and so the results that were shown on both [indiscernible] the composites, which can average things out, but also individual points, which the remediation footprint was based on the worst case of all those situations.

JAMES HALL: Yeah, so -- so we -- we took a lot of XRF points before we -- to -- to develop the decision units for the ISM sampling.

MAX SCHNEIDER: [Indiscernible.]

JAMES HALL: Yeah. And -- and so that was how -- and when we looked at what the remediation footprint is, we took into account the discrete XRF samples, as well.

DON MEEHAN: Where can we find this -- these documents that you've been showing?

(Simultaneous talking.)

JAMES HALL: In the library.

DON MEEHAN: Do you have 'em on the Web or any -- anyplace?

JOSH GRAVENMIER: Didn't we send them to Kitty?

DAVE SAVAGE: Kitty has a copy. I have a copy of it.

(Simultaneous talking.)

DAVE SAVAGE: I- -- I've forgotten. It's, like, 486 pages. It's -- it's huge. But a lot -- the last bit is -- are field notes s- -- which b- -- the initial part, the summary of it, based on this mass of field notes. So it -- it's actually about 150 pages of reading. It's --

(Simultaneous talking.)

PAUL MCCULLOUGH: Yeah, it's -- if you were to print it out, it's yea thick [indicating].

(Simultaneous talking.)

PAUL MCCULLOUGH: Like they were saying, most of it is -- you know, there's a lot of appendices, lab reports, stuff like that --

JAMES HALL: You're welcome to email me and I can send -- I can arrange to have it sent to you electronically.

DON MEEHAN: Okay. As a PDF.

JAMES HALL: Yeah, yeah.

DON MEEHAN: Excellent.

PAUL MCCULLOUGH: Too big to email sometimes, so you gotta have a --

(Simultaneous talking.)

JAMES HALL: It may be too big to email, and if it is, then I have a file-share program that I can use. It's called DoD Safe. It looks strange when I send it, but it -- it works.

MAX SCHNEIDER: Do you have any questions the other way, James, or no?

JAMES HALL: I don't right now, not at -- not for this meeting. But we will, you know, obviously be talking to the Schooner Society and -- yeah, as we move forward.

JOSH GRAVENMIER: Maybe --

MAX SCHNEIDER: We have had divers down there, so if there's any question about sea life and what critters live there, we can tell you. We actually have photographs, also.

JAMES HALL: That information would be helpful.

JOSH GRAVENMIER: Probably good to mention the schedule of this project as we transition to the next project that they're asking about.

JAMES HALL: Sure. So -- so why don't you actually speak to that.

JOSH GRAVENMIER: Okay. So this is just the remedial investigation focused feasibility study. We're getting your comments. We're gonna incorporate them into the document as an additional appendix. And then from that we're going to take our preferred alternative, option four -- which everyone is in agreement with; right? -- and then develop the remedial design. So basically the footprint of how that -- that's going to happen. And that will be the basis of how Coast Guard takes and creates their request for proposal for contractor to then get the contractor on board. Right. And so each one of these has steps and processes.

So when you're asking about how long is it gonna take, we're not even at that point yet of talking about the contractor. Right. We're still -- here's what we proposed, then we're gonna get to the next step with the design, then we're gonna get to the contract, then we're gonna let [ph] the contract, and however long it gets through that process. Right. Take a little while.

DON MEEHAN: Which is to say if the work period is August through October, we could be talkin' 2021.

JAMES HALL: We could be.

DON MEEHAN: Yeah. Yeah. This is federal.

JAMES HALL: It's federal.

DON MEEHAN: Maybe '23.

(Laughter.)

JAMES HALL: Hopefully before that.

MAX SCHNEIDER: You said that out loud. Uh.

DON MEEHAN: Well, this is really important, because they have a lotta work to do on that building, to keep it from deteriorating, and so being able to -- having to shut down this year . . .

JAMES HALL: Yeah.

DON MEEHAN: . . . you know, I mean, that's problematic. They should be fixin' the roof, you know, if they possibly can.

JAMES HALL: Understood. And -- and we're happy to -- to engage. You know, we wanna engage with you guys. We're -- we're happy to answer questions; phone calls. Yeah. And as we move forward with the schedule, we'll g- -- we'll -- we'll provide updates.

What Josh described is -- is essentially the process. Once I have the remedial design, it's delivered to me, and it goes through, you know, all the comments, everything, then I'll write a scope of work for that. Prob'ly actually end up having to write two scopes of work because the way the contracting's gonna work, I think. And then from there I'll have to get funding for it. And then once I have the funding in place, we can put it out to bid. And I don't get to decide how that goes, so whatever contract mechanism the contracting officer decides to use will determine the amount of time that that takes.

MAX SCHNEIDER: There's a lot of things pushing us along that we're all overachievers. Very good points were made about the roof and everything else. But we also need to consider the weather cycle that we have, 'cause we're starting to get into that bad part of it. So.

JAMES HALL: Yeah.

MAX SCHNEIDER: It's gonna be hard.

DAVE SAVAGE: You would not wanna be out there tonight.

MAX SCHNEIDER: [Indiscernible.]

DAVE SAVAGE: Or have a barge tied up there.

MAX SCHNEIDER: It could go bad really quickly.

JAMES HALL: Yeah. I mean, and that is something that we do understand. W- -- when the work is awarded, I mean, that'll be one of the things we have to look at, is what -- what is the time frame we're gonna work -- work in. And the other part of it is that there's also agency consultations that have to happen, and so they may -- we already know, based on -- we already know that to do the work on the land, we have to do it between a certain time frame. But when we start talking about putting barges in the water, then it's possible we'll have another time window that we have to meet. They may not overlap, which then we have to work through how -- how is that gonna play out.

MAX SCHNEIDER: [Indiscernible] quite a bit because they changed the traffic speeds there, but you'd be shocked at how much wave action you get just from traffic that goes through there.

JAMES HALL: Yeah.

MAX SCHNEIDER: And it's large. It's not small.

JAMES HALL: Yep. We -- so I -- I have done a lotta work in the Bay Area. And actually, Josh does a ton of work in the Bay Area, doing dredging. And so yeah, we --

MAX SCHNEIDER: [Indiscernible.]

JAMES HALL: Yeah. Yep. We get a big tanker that goes by and. . . .

DON MEEHAN: Do you guys interact with U.S. Army Corps Engineers? 'Cause seems to me they do all this shoreline stuff for United States and. . . .

JAMES HALL: So we do. The Army Corps of Engineers does a ton of dredging work. But when it comes to projects like these, they might help us out in some way, like if they happen to have a ship in the area and we need something dropped off, they will sometimes be willing to accommodate us on that, but it's really unpredictable.

DAN CALL: Do you have any sense of the extent or nature of uptake of the contaminants into the vegetation that's grown on the site since the Coast Guard moved onto it? Like, a lotta trees and stuff that aren't in the early pictures that are -- I've seen.

JAMES HALL: So we did not do an actual risk assessment for this site to -- to look at that. Typically lead from paint is not super soluble, so it's probably unlikely that there's a lot of uptake. But that being said, that's kind of a generality. We did not do a study on that for this site. And I don't think that there's any, like, fruit trees growing in the -- the area, so it's not something we're super concerned about.

MAX SCHNEIDER: [Indiscernible.]

DAN CALL: What about the PCBs on the south side of the structure --

(Simultaneous talking.)

JAMES HALL: We'll -- we'll be removing the vegetation that's growing in that area. But yeah, once that's removed, like . . . PCBs, because there's no groundwater, it's not probably super mobile, it's not really a -- it's not really volatile. And as long as -- I mean, we -- we found a pretty good footprint for where it was at, so I don't think it's migrated very far, so it's unlikely that, you know, once it's removed that there would be any further impacts from that.

MAX SCHNEIDER: So there's a tank inside the lighthouse itself, underneath the floor.

JAMES HALL: That we will look at.

DAVE SAVAGE: I think it overlaps outside/inside. It's a cistern.

JAMES HALL: So if it's a cistern, I can't touch it. If it's oil tank or a fuel tank --

MAX SCHNEIDER: It's oil.

JAMES HALL: -- then I can --

It's oil?

MAX SCHNEIDER: You can smell it.

JAMES HALL: Okay.

MAX SCHNEIDER: And there are [indiscernible] plates that came off of it that have since rusted and broken off and --

JAMES HALL: Okay. That -- that we can address.

MAX SCHNEIDER: I'd say it's time for beer, but it should be doughnuts and coffee; right?

JOSH GRAVENMIER: We have two new participants, too. You guys have come in late.

I don't know if you wanna rehash everything.

(Laughter.)

JAMES HALL: Are you gentlemen aware of the project?

LARRY BECKER: I wasn't.

(Simultaneous talking.)

KEN REINEBACH: Curious about what was going on.

JAMES HALL: Sure. So we're doing a remediation project on Burrows Island for the former light station, and this meeting is really just for people that have -- answer questions. It was mostly lead, and some PCBs from a former spill, and some petroleum impacts. And our plan is to remove the -- the impacted soil and clean up the site.

I'm happy to take any questions or comments or. . . .

KEN REINEBACH: You mentioned lead. Is it, like, a lead-based paint?

JAMES HALL: Yeah, it's from lead-based paint.

LARRY BECKER: Who's gonna be payin' for it?

JAMES HALL: The Coast Guard.

JOSH GRAVENMIER: We have a stenographer who's recording our comments. Can you provide her with your names, please?

LARRY BECKER: Sure. Larry Becker.

KEN REINEBACH: Ken Reinebach. So how is the lead paint being remediated?

JAMES HALL: So we intend to dig it up and remove it from the island. Take it to a landfill.

KEN REINEBACH: Okay. So it's just . . . it's just dust from -- from removing it or. . . .

JAMES HALL: So over the years -- the lighthouse was established in 1906, and so over the years it was painted over and over, and the -- as the -- you know, it's -- it's weathered, and as it falls off, the lead flakes off into the soil, it weathers and deteriorates, and it can actually go down into the soil. So our impacts were from half a foot to three feet deep.

KEN REINEBACH: So where is the -- the impact from lead in the soil there? I mean, why couldn't you just put another coat of paint on the existing lead paint?

JAMES HALL: Well, we can't do that because the lead is actually in the soil, all around the buildings.

KEN REINEBACH: Well, unless --

(Simultaneous talking.)

KEN REINEBACH: -- [indiscernible] gardening in the soil or eating the dirt, there's no exposure, so . . . what's the point? Is what I'm saying.

JAMES HALL: Well -- well, the -- the exposure is to the folks that are gonna restore the island, and potentially have caretakers out there for up to six months out of the year. So at that point we need to worry about, you know, people being exposed to the soil. And also for any visitors that visit the site.

KEN REINEBACH: Uh-huh.

JAMES HALL: So we wanna make sure that when we leave it, it's clean.

Also, because we're a federal agency, when we have a property that's contaminated, in order to divest of it, we have to meet certain requirements under CERCLA. And so we have to sign off that it's -- we either have to sign off that it's clean or we have to put in -- institutional controls in place.

DON MEEHAN: James, are you satisfied that you have not had a riot tonight and that your preferred option is -- is good to go?

JAMES HALL: I think I am.

(Simultaneous talking.)

JAMES HALL: The comment period is open for a while longer, so --

DON MEEHAN: Are there questions that we shoulda asked that we weren't smart enough to ask that woulda scared 'ya that you can tell us what those are right now?

JAMES HALL: No, actually, I've been really pleased with the way the investigation went. I feel like we have a really good product and a really thorough analysis.

JOSH GRAVENMIER: If you come up with additional questions after today's meeting, you can submit 'em to James via email up to February 5th. So. There's still plenty of time if other things come to mind.

JAMES HALL: So what I would say, too, you can submit questions to me at any time. Up to February 5th they'll be included in the appendix [indiscernible].

DON MEEHAN: Do we have your contact information anywhere?

JAMES HALL: It is in the public notice, and I can give it to you now if you'd like it.

DON MEEHAN: Sure.

JAMES HALL: So my email address is

james.c.hall, H-A-L-L, 2, the number 2, @uscg.mil, M-I-L.

Yes.

STEVE ANDERSON: Yeah, Steve Anderson. So I don't know if -- would it be standard procedure for you to have another public meeting like this after everything is said and done, even after the sample testing is all finished, to say, "Hey, we've already done all this"? Maybe not as long of a meeting and what's going on now. I'm just curious. I don't know what the procedure is.

JAMES HALL: So we may open another k- -- public-comment period after we have a design in place. We may issue an action memo. At this point I -- I am not certain that we're going to do that. 'Cause this isn't an NPL site, we're not required to do much more beyond this meeting. But if there's interest and -- and -- and everybody feels that it's helpful, then we can consider that.

JEFF ZAPPEN: The other thing we can do within my office and the sector Coast Guard unit is share that media that's positive. So if the project's done, everybody's happy, and the NWSS has these grand plans, it's like, "Coast Guard just did this, and this is the future of the station." So we've got that -- the -- all the media's available to do that, to help the NWSS to maybe kick off another fundraiser round for 'ya. But that would be a good conclusion of this project to maybe the next phase of renovation that the group may be doing.

JAMES HALL: Sir?

LARRY BECKER: How -- sounds to me like this is gonna be open to the public at some point?

JAMES HALL: Yes, aksh- -- I -- I believe so.

LARRY BECKER: How --

(Simultaneous talking.)

LARRY BECKER: -- how will people access it?

DAVE SAVAGE: By boat.

(Simultaneous talking.)

DAVE SAVAGE: We also have work parties pretty regularly. Not right now, but when the season starts opening up a little bit. Send a email to Northwest Schooner Society. Google up Burrows Island Light Station. And come out with us on a -- when we're going out. We'll give you a ride and come on out and see it.

LARRY BECKER: That'd be great.

JAMES HALL: So there's a concrete dock out there right now that -- that . . . pretty open. I mean, I don't think. . . .

DAVE SAVAGE: It's open to the public. And that's part of our -- our agreement, our license, is that it is open to the public. It's not a private . . . and never will be.

LARRY BECKER: Is there helicopter pad out there?

JAMES HALL: It is.

LARRY BECKER: Is that open to the public, too?

(Simultaneous talking. Laughing.)

DAVE SAVAGE: People -- people routinely land a helicopter out there, I think for training purposes.

LARRY BECKER: Okay.

JAMES HALL: They do -- they --

(Simultaneous talking.)

JEFF ZAPPEN: P- -- public lands? We have -- we have public entities, private citizens, landing out there for training?

DAVE SAVAGE: We don't have a chance to talk to 'em. They land and look around and then they leave.

(Simultaneous talking.)

JEFF ZAPPEN: If that's a problem for you, just get us a tail number, and we'll solve that problem.

(Simultaneous talking.)

JEFF ZAPPEN: There's all kinds of safety issues around a helicopter landing on an island, you don't know they're comin'.

MAX SCHNEIDER: It's -- it's happened more than once. And unfortunately, can't get their tail number before they take off. So.

JEFF ZAPPEN: If -- if that's a concern of yours, then you provide me with as much information as you can get. K- -- Kitty has all my numbers. And we -- we have other agencies that we can help follow up on why they were there, what they're doing, and maybe better planning to let you know they're coming in the future. 'Cause you're right, it might be a good venue to have a helicopter come out, you know, but. . . .

MAX SCHNEIDER: As far as stationing a team, it's a great place to have, but there's also the problem of the naval base doing exercises there when you have unnotified flight there.

JEFF ZAPPEN: Yeah, if there's a -- a licensed pilot flying a helicopter anywhere near Whidbey, they're flying within the rules or Whidbey would be doing something about it. We get those notifications all the time.

(Simultaneous talking.)

MAX SCHNEIDER: I totally get what you're saying, but I doubt very, very much that that was in their flight plan. 'Cause you can see it. They're going on their flight plan and then, "Oh, look. That's a landing pad."

JEFF ZAPPEN: Right. Yeah. It was an un- -- yeah, an unannounced landing. Agreed. Yeah. If you have that information, if that's a problem -- I consider that to be a problem, but I'm not there. So. If that's a problem, and you get tail numbers, a description, a date, a time, we -- we do work for the Department of Homeland Security; we can prob'ly track down where the plane took off from and where it landed. Pay a visit and say, "Hey, don't do that again without permission." 'Cause we don't let -- all these other light stations that we have that have landing pads similar to that, they're not allowed to land there, either.

DAN CALL: I believe that that facility is marked as a heliport, and it's not marked as a out-of-service --

MAX SCHNEIDER: It isn't.

DON MEEHAN: It's not. You're absolutely right.

JEFF ZAPPEN: So the current FHA charts have it listed as a viable --

MAX SCHNEIDER: They have it listed as an active pad.

JEFF ZAPPEN: All right.

MAX SCHNEIDER: Which is --

JEFF ZAPPEN: I'll take that -- I'll take that back with me.

DON MEEHAN: But it doesn't have an X on it, which is what it should have --

(Simultaneous talking.)

DON MEEHAN: -- as a decommissioned airstrip. Landing strip.

JAMES HALL: And we can look into that.

DAN CALL: Of course if you disappear the whole thing, that solves part of your problem.

KEN REINEBACH: Question. Where is the off-site disposal for the PCB-contaminated soil?

JAMES HALL: So it'll go to -- well, it's actually below TOSCA limits, so -- but it will go to a licensed RCRA -- you know, RCRA license --

(Simultaneous talking.)

KEN REINEBACH: That doesn't really dispose of it. It just stores it in the landfill until that becomes a problem.

JAMES HALL: Correct. It is taking it from one spot and just moving it someplace else.

KEN REINEBACH: Yeah.

JAMES HALL: But it'll be safer for the public if it's in a landfill that is licensed and monitored and -- and. . . .

KEN REINEBACH: [Indiscernible.]

DON MEEHAN: Thank you.

JAMES HALL: Great.

Thank you. I mean, if nobody has any more questions, I'm -- we are here for a little while longer, but we're happy to, yeah, answer any questions.

(Pause from 7:07 to 7:08 p.m.)

LARRY BECKER: I just would encourage you not to just arbitrarily X out the helipad. It's a great asset. The people that are flying helicopters, they can call if they need -- if they wanna notification of it or something, they can give 'em a number that they can call and let them know that they're coming and that sort of thing. But it's really a -- a nice thing to have. It's great to have. That would be sad.

(No further public comment from 7:08 to 8:00 p.m., at which time the public meeting was adjourned.)

C E R T I F I C A T E

STATE OF WASHINGTON)
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COUNTY OF WHATCOM   )

I, Nor Monroe, Certified Court Reporter in and for the state of Washington, do hereby certify to the following:

That I reported by stenotype all proceedings in the foregoing matter;

That my stenographic notes were reduced to typewriting under my direction;

And that the foregoing transcript, pages 1 through 58, inclusive, constitutes a full, true, and accurate record of all such testimony adduced and oral proceedings had, and of the whole thereof.

Witness my hand this 24th day of January, 2020.

Nor Monroe
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Arcadis U.S., Inc.

2300 Clayton Road

Suite 400

Concord, California 94520

Tel 925 274 1100

Fax 925 726 0121

www.arcadis.com