

PHASE II ENVIRONMENTAL SITE ASSESSMENT

FORMER NORTHERN STATE HOSPITAL
SEDRO-WOOLLEY, WASHINGTON



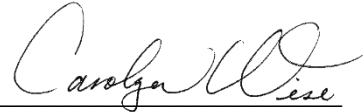
Prepared for
PORT OF SKAGIT
October 29, 2018
Project No. 0624.04.10

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ACRONYMS AND ABBREVIATIONS

AOC	area of concern
Apex	Apex Laboratories, LLC
ARAR	applicable or relevant and appropriate requirement
bgs	below ground surface
cis-1,2-DCE	cis-1,2-dichloroethene
City	City of Sedro-Woolley, Washington
COC	chain of custody
cPAH	carcinogenic polycyclic aromatic hydrocarbon
CSM	conceptual site model
CUL	cleanup level
cVOC	chlorinated volatile organic compound
DES	Washington State Department of Enterprise Services
DRO	diesel-range organics
DU	decision unit
Ecology	Washington State Department of Ecology
ESA	environmental site assessment
ISM	incremental sampling methodology
MFA	Maul Foster & Alongi, Inc.
mg/kg	milligrams per kilogram
MTCA	Model Toxics Control Act
NSRA	Northern State Recreation Area
ORO	heavy-oil-range organics
PCE	tetrachloroethene
pg/g	picograms per gram
PID	photoionization detector
PLIA	Pollution Liability Insurance Agency
POC	point of compliance
Port	Port of Skagit
ppm	parts per million
Property	Former Northern State Hospital property
RI/FS	remedial investigation and feasibility study
SES	Sound Earth Strategies, Inc.
SL	screening level
TCE	trichloroethene
TEE	terrestrial ecological evaluation
TEQ	toxic equivalency quotient
trans-1,2-DCE	trans-1,2-dichloroethene
ug/L	micrograms per liter
USEPA	U.S. Environmental Protection Agency
VC	vinyl chloride
WAC	Washington Administrative Code
XRF	x-ray fluorescence

1 INTRODUCTION

On behalf of the Port of Skagit (Port), Maul Foster & Alongi, Inc. (MFA) has prepared this phase II environmental site assessment (ESA) for the Former Northern State Hospital (also known as the Sedro-Woolley Innovation for Tomorrow Center) property (the Property), located at 2070 Northern State Road in Sedro-Woolley, Washington (Figure 1-1). On July 1, 2018, the Port took title to the Property from the Washington State Department of Enterprise Services (DES). The Property is currently owned and managed by the Port, with buildings leased to multiple tenants, including the Cascade Job Corps, for on-site housing and educational services; the Pioneer Center North, as a drug and alcohol treatment facility with on-site housing; and the Washington Military Department, for a vehicle storage, maintenance, and fueling facility. Historically, the Property was used as a self-sustaining treatment and residence facility for people with mental illness, and included on-site patient and staff housing, a power house, maintenance shops, a laundry, and a fueling station.

1.1 Regulatory Framework

The Port received a U.S. Environmental Protection Agency (USEPA) Brownfields Assessment Grant to support site assessment at the Property. This phase II ESA was conducted to evaluate environmental impacts associated with areas of concern (AOCs) identified during previous investigations, as described in the 2018 phase II ESA work plan (MFA, 2018a). Phase II ESA activities were conducted in general accordance with guidance put forth in the Model Toxics Control Act (MTCA) (Washington Administrative Code [WAC] 173-340) and with the requirements of the American Society for Testing and Materials (ASTM) Standard Practice for ESAs: Phase II ESA Process (ASTM E1903-11).

1.2 Statement of Objectives

The focus of this phase II ESA was to further characterize environmental contamination associated with AOCs to gain information sufficient for developing and evaluating potential cleanup actions. The following were specific project objectives for this investigation:

- Refine the conceptual site model (CSM) previously developed for the Property.
- Investigate hazardous substances in environmental media to identify potential sources of contamination and contaminant concentrations above MTCA cleanup levels (CULs). Assessment of hazardous substances was limited to non-petroleum-related constituents.
- Evaluate potential risks to current and reasonably likely future human and ecological receptors.
- Evaluate potential cleanup options for impacted environmental media on the Property.

1.3 Report Organization

This document is organized as follows:

- **Section 2** summarizes background information, including the Property history, previous investigations, the physical setting, and the AOCs identified during previous investigations.
- **Section 3** defines the field and analytical methods completed during assessment activities.
- **Section 4** presents the analytical results associated with samples collected during this investigation.
- **Section 5** presents the refined CSM.
- **Section 6** defines the applicable CULs specific to the Property.
- **Section 7** evaluates the analytical data relative to applicable CULs for the Property.
- **Section 8** summarizes the recommendations for AOCs following results of the phase II ESA.

2 BACKGROUND AND PHYSICAL SETTING

2.1 Property Description

The Property is in the northeast corner of Sedro-Woolley (see Figure 1-1). The approximately 210-acre Property includes twelve tax parcels based upon the boundary line adjustment completed on June 29, 2018 (see Figure 1-1). The Property was annexed by the City of Sedro-Woolley (City) on September 19, 2015. The Property is bordered on the north, east, and south by the Northern State Recreation Area (NSRA), a public open space owned and managed by Skagit County and historically associated with the Northern State Hospital. The Property is bordered by Fruitdale Road and residential properties to the west.

The Property is in sections 7, 8, 17, and 18 of township 35 north and range 5 east of the Willamette Meridian, on a small plateau with a slight downward topographic slope toward the east, south, and southwest in the direction of Hansen Creek and Brickyard Creek. The Property currently comprises over 80 buildings and structures. Tenants occupy some of the buildings, but many buildings are currently vacant.

In 1998, as part of its comprehensive plan amendments, the City established a land use designation for the Property in anticipation of potential future annexation. The City Comprehensive Plan Land Use Map designates the Property as Public (P). The P zoning designation continues with annexation and allows for a range of potential uses in the public interest, not restricted to only open-space use. The Port, in partnership with the City and Skagit County, is currently leading an effort to transform the Property into a center for innovation and technology that incorporates research, high-tech

manufacturing, education, and recreational uses, in accordance with the Subarea Plan (City, 2015) and the Planned Action Final Environmental Impact Statement (City and Port, 2015).

2.2 Property History

The Property was developed in 1909 and operated as a treatment and residence facility and hospital for people with mental illness until its closure in 1973. After the facility's closure, the 220-acre treatment and residential campus was transferred from the Washington State Department of Social and Health Services to the Washington State General Services Administration, which later became the DES. The adjacent farmland was transferred to the Department of Natural Resources, which later transferred ownership to Skagit County. On July 1, 2018, the Property was transferred from DES to the Port.

The Northern State Hospital was designed to be self-sustaining and included on-site patient and staff housing, dedicated water supply reservoirs and an associated potable water treatment facility, a fueling station for on-site vehicles, maintenance and paint shops, and a laundry facility. During the construction of the hospital, much of the Property was logged, graded, drained, and terraced to provide a suitable ground surface the campus (Artifacts Consulting, 2008).

Several buildings have been demolished and, based on interviews with maintenance staff, the debris from a few of those buildings has been buried and/or disposed of on the Property (MFA, 2014, 2018b). Many of the remaining buildings and structures associated with the former facility, as well as the campus landscape, are listed on the National Registry of Historic Places.

2.3 Physical Setting

The Property is located on a slight topographic plateau to the north of the Skagit Valley and is in the Lower Skagit-Samish watershed. In general, the Property slopes south and southeast toward the Skagit Valley and the Skagit River (Water Resource Inventory Area No. 3).

According to the Geologic Map of the Sedro-Woolley North and Lyman 7.5-minute quadrangles, the Property and vicinity are underlain by Quaternary glaciomarine drift (Dragovich et al., 1999). The glaciomarine deposits typically consist of “poorly sorted, poorly compacted diamicton consisting of silty, sandy, gravelly clay to clayey gravel; moderately well- to well-sorted sandy silt, sandy clay, clayey silt, and clay” (Dragovich et al., 1999). Geologic cross sections developed through interpretation of well log, geotechnical boring, and field information show approximately horizontally oriented, 100- to 130-foot-thick deposits of Quaternary glaciomarine drift in the vicinity of the Property (Dragovich et al., 1999).

Soil observations recorded during this phase II ESA were consistent with those of previous investigations and indicate relatively consistent geology throughout the Property, except at locations near Hansen Creek and north of the Power House (see boring logs in Appendix A) (MFA, 2015; Sound Earth Strategies, Inc. [SES], 2017). Thick units of soft to hard, nonplastic silt and clay with varying amounts of fine sand to depths of approximately 9 to 15 feet below ground surface (bgs) were encountered in most boring locations. Underlying the silt unit, thick deposits of bluish gray silty clay to clay were observed to approximately 25 feet bgs. Silty sand was observed underlying the silt unit to

the maximum depth of 30 feet bgs. Minor lenses of silty sand and silty or sandy gravel were encountered intermittently in silt and clay units between 10 and 30 feet bgs. Soils near Hansen Creek, north of the Power House, consisted of sandy and gravelly soils below the silt at approximately 6 feet bgs. Fill containing brick pieces and woody debris was observed up to 15 feet bgs in the area to the north of the Power House (MFA, 2015; SES, 2017).

Water levels measured on May 1, 2018, from nine monitoring wells on the Property indicated that groundwater was present between approximately 5 and 16 feet bgs, consistent with previous observations (see Table 2-1 and water field sampling data sheets in Appendix B) (MFA, 2014, 2015; SES, 2017). Groundwater across the northern portion of the Property was determined to flow east toward Hansen Creek, consistent with previous observations (see Figure 2-1) (MFA, 2015; SES, 2017). Because of the large size of the Property and the limited area represented by the monitoring wells, it is possible that the groundwater flow direction varies throughout the Property. It is inferred that groundwater in other areas of the Property flows either southeast, because of the gradual topographic slope of the area toward the Skagit River Valley; west toward Brickyard Creek; or east toward Hansen Creek, depending on the location at the Property (see Figure 1-1).

Two creeks, Hansen and Brickyard, intersect the Property (Figure 1-1). Hansen Creek bounds the north, east, and southeast portions of the Property. Brickyard Creek is located along the western perimeter of the Property. Both creeks discharge to the Skagit River, south of the Property.

2.4 Areas of Concern

During previous investigations, several features of environmental concern were identified and assessed (MFA, 2014, 2015; SES, 2017). Confirmed impacts to soil, groundwater, and/or soil vapor were identified in association with the seven AOCs described below. Additional details on each AOC are provided in the phase II ESA work plan (MFA, 2018a).

AOC 1: Former Laundry Building

Chlorinated solvents (chlorinated volatile organic compounds [cVOCs]), including tetrachloroethene (PCE), trichloroethene (TCE), and cis-1,2-dichloroethene (cis-1,2-DCE), were detected in soil, groundwater, and/or soil vapor in the northeast area of the former laundry building (see Figure 1-1) (MFA, 2018a). Historical use of chlorinated solvents in potential dry-cleaning operations was identified as a potential source of cVOC impacts in the former laundry building AOC.

Soil and groundwater cVOC impacts associated with this AOC were further assessed during this phase II ESA, as discussed in Section 3.1.

AOC 2: Power House Building

Concentrations of heavy-oil-range organics (ORO) and carcinogenic polycyclic aromatic hydrocarbons (cPAHs) were detected above the MTCA Method A CULs (for unrestricted land use) in shallow soil (less than 1 foot bgs) north of the Power House (see Figure 1-1) (MFA, 2018a). Historical fill material containing coal/asphalt debris was determined to be a potential source of the ORO and cPAH impacts to shallow soil.

Additional assessment was completed during this phase II ESA to further evaluate the extent of cPAH- and ORO-impacted fill material and to evaluate the potential presence of dioxins and furans, as discussed in Section 3.2.

AOC 3: Lead in Soil

Elevated concentrations of lead were identified in shallow soil immediately adjacent to historical buildings and at one location in the athletic field (MFA, 2018a). This suggests that lead is/was present in the exterior paint of the historical buildings and has impacted the soil at the Property.

Soil lead impacts associated with this AOC were further assessed during this phase II ESA, as discussed in Section 3.3.

AOC 4: Arsenic in Soil

Localized, elevated concentrations of arsenic in soil have been identified at the Property (MFA, 2018a). There are a few potential sources for elevated arsenic concentrations in soil that may be present at the Property, including naturally occurring arsenic, historical pesticide use, and arsenic-containing wood-treatment chemicals associated with wood used in building construction and/or in building demolition debris (MFA, 2018a).

Arsenic-impacted shallow soil (less than 0.5 foot bgs) was assessed as part of the work conducted for the property-wide metals in soil AOC (AOC 5), as discussed below. Further evaluation of potential arsenic impacts below 0.5 foot bgs, and arsenic impacts specifically in the athletic field and former Ward building areas, was not conducted as part of this phase II ESA. Arsenic impacts below 0.5 foot bgs and in the areas with previous MTCA Method A CUL exceedances will be reevaluated based on the findings of this phase II ESA (see Section 8).

AOC 5: Property-Wide Metals in Soil

Aside from arsenic and lead in AOCs 3 and 4, as discussed above, which have been detected at concentrations above MTCA Method A CULs in some cases, other metals, including barium, chromium, copper, selenium, and zinc, have been detected at concentrations in surface and subsurface soil throughout the Property above area-wide background values and criteria protective of ecological receptors (MFA, 2018a). Given the relatively consistent concentration distribution of these metals, they were suspected of being related to an area-wide or natural background condition, but additional assessment was needed to confirm this.

This AOC was assessed during this phase II ESA, as discussed in Section 3.4.

AOC 6: Maintenance Building

Benzene, toluene, ethylbenzene, total xylenes, and gasoline were identified in subsurface soil (between 7 and 9 feet bgs) and groundwater adjacent to the maintenance building (see Figure 1-1) at concentrations above MTCA Method A CULs (SES, 2017).

Additional assessment of this AOC is being conducted by SES via the Washington State Pollution Liability Insurance Agency (PLIA), as investigation of petroleum impacts is not eligible for funding through the USEPA Brownfields Assessment Grant; therefore, this AOC was not further assessed as part of this phase II ESA.

AOC 7: Lead and Arsenic in Groundwater

Total and dissolved arsenic and lead were detected in samples from reconnaissance groundwater borings and monitoring wells, installed across the northeastern portion of the Property, at concentrations above MTCA Method A CULs and surface water applicable or relevant and appropriate requirements (ARARs) (MFA, 2018a). Given the proximity of elevated arsenic and/or lead concentrations to Hansen Creek, there is potential for groundwater with metals concentrations above surface water ARARs to discharge to the creek.

As discussed above in relation to AOC 5, widespread elevated metals concentrations have been identified in soil across the Property. Before characterization of potential metals loading to Hansen Creek, additional assessment of area-wide metals concentrations in soil was conducted to evaluate the potential of an area-wide elevated metals condition at the Property (i.e., AOC 5). Therefore, this AOC was not further assessed during this phase II ESA, but it may be included in future investigations and/or assessments of the Property.

3 FIELD AND ANALYTICAL METHODS

This investigation was conducted, in accordance with the phase II ESA work plan (MFA, 2018a), on April 23 through May 1, 2018, and focused on further assessment of AOCs 1, 2, 3, and 5.

3.1 AOC 1: Former Laundry Building

Three monitoring wells (MW09, MW10, and MW11) were installed on April 23, using a direct-push drill rig operated by a Washington State-certified driller (Holt Services, Inc. of Puyallup, Washington) near the historical PCE exceedance in groundwater (boring GP8) to evaluate a localized groundwater flow direction and to further evaluate the nature and extent of a PCE release in soil and groundwater (see Figure 3-1). Monitoring well screens were installed in a silty sand to sandy silt unit below the silt to clayey silt/clay unit boundary between approximately 20 and 30 feet bgs (see boring logs in Appendix A).

Soil conditions were described, and visual and olfactory observations were recorded during drilling. A photoionization detector (PID) was used to screen soil for olfactory indications of soil contamination (e.g., hydrocarbon-like odors). Soil samples were collected from MW09 and MW10 (immediately adjacent to the former laundry building) at the following three depths: near surface, the capillary fringe, and the saturated zone. Saturated samples were included to assess potential dissolved-phase contamination.

Monitoring well locations were surveyed by Skagit Surveyors & Engineers of Sedro-Woolley, Washington, on April 27, 2018. Water levels were collected from nine of the 11 on-Property monitoring wells to evaluate groundwater flow conditions at the time of groundwater sampling. Well caps on two of the monitoring wells (MW06 and MW08) could not be removed at the time. Groundwater was observed to flow east toward Hansen Creek, consistent with previous observations (see Figure 2-1). Groundwater samples were collected from monitoring wells MW09 through MW11 (see field sampling data sheets in Appendix B).

Under standard chain-of-custody (COC) procedures, soil and groundwater samples were submitted to Apex Laboratories, LLC (Apex) for analysis. The samples were analyzed for cVOCs, including PCE and its breakdown products (i.e., TCE, cis-1,2-DCE, trans-1,2-dichloroethene [trans-1,2-DCE], and vinyl chloride [VC]) (see Table 3-1).

3.2 AOC 2: Power House Building

Soil borings (GP49 through GP54; see Figure 3-2) were advanced by a direct-push drill rig operated by Holt Services, Inc., up to 10 feet bgs in locations immediately outside the edges of the currently paved areas under which cPAH and ORO exceedances were previously detected (see boring logs in Appendix A). Soil conditions were described, and visual and olfactory observations were recorded during drilling. A PID was used to screen soil for olfactory indications of soil contamination (e.g., hydrocarbon-like odors). Fill material containing coal-like fragments and terracotta pieces was observed in each boring up to 2.3 feet bgs, suggesting that fill material does extend outside paved areas north, east, and southeast of the Power House. Geographic coordinates for the boring locations were recorded by a handheld global positioning system.

Soil samples were collected from the near surface, fill material, and/or the underlying silt/sand unit to assess impacts in the fill material, if present, and potential accumulation of airborne particulates discharged from the smokestack. Under standard COC procedures, samples were submitted to Apex for analysis. Soil samples were analyzed for cPAHs, ORO, and/or dioxins and furans (see Table 3-1).

3.3 AOC 3: Lead in Soil

A two-tiered approach was used to evaluate the horizontal and vertical extent of lead impacts around the Trevennen, Coleman, and Denny buildings, as described in the phase II work plan (see Figures 3-3 through 3-5, respectively) (MFA, 2018a). These buildings were selected for use as demonstration pilots because they are scheduled for renovation before other historical buildings on the Property. During both tiers of investigation, soil samples were collected at 0- to 0.5-foot, 0.5- to 1-foot, and/or 1- to 2-foot sample depths, using a thin-walled tube sampler for sample collection and employing x-ray fluorescence (XRF) for taking lead concentration measurements (see field sampling data sheets in Appendix B).

Following the Tier 1 sampling and analysis of soil samples, it was determined that the XRF could be used to screen samples with concentrations below the MTCA A CUL, if the XRF value was below 100 parts per million (ppm). This was determined by comparing the analytical and field screening results of the Tier 1 sampling. Therefore, during the Tier 2 sampling, if the XRF lead measurement

was equal to or above 100 ppm, no sample was collected for laboratory analysis and a second, step-out, sample was screened approximately 1 foot beyond the first. A 1-foot step-out process was used instead of a 5-foot increment because concentrations of lead had been observed to decrease significantly with distance from the demonstration building and depth below the surface. If a soil sample had an XRF lead measurement below 100 ppm, it was submitted to Apex for analysis under standard COC procedures.

The one five-point composite soil sample was collected near the Denny building. A portion of this sample was submitted to Apex for lead analysis on a 24-hour turnaround time, and a portion was retained for potential use as a site-specific calibration standard during field screening activities conducted during the second tier of investigation. However, it was determined that there was not enough consistency between the laboratory-reported value of the composite and the XRF-screened values, given the large size of the composite and the variability due to the heterogeneity of the sample. Therefore, the five-point composite was not used as a site-specific calibration standard.

3.4 AOC 5: Property-Wide Metals in Soil

To address property-wide metals in soil, soil samples were collected from the entire Property, using an incremental sampling methodology (ISM) approach. The Property was divided into 18 decision units (DUs) for ISM soil sampling, based on historical, current, and proposed land uses on the Property (see Figure 3-6). DUs 16 and 17 were identified as having minimal known anthropogenic impacts and were therefore chosen as natural background DUs. One ISM sample was collected in each DU, consisting of composited soil from ten sampling locations in that DU, and processed using the ISM sample processing protocol (ITRC, 2012). The ten locations in each DU where samples were collected for DU ISM samples are illustrated in Figure 3-6. After ISM processing, all DU ISM samples were analyzed for arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver, and zinc by USEPA Method 6020A. Additionally, five discrete samples were collected in each DU, at half of the locations where samples were collected for the composited ISM samples. The ten discrete samples collected from the two natural-background DUs were also analyzed for these ten metals by USEPA Method 6020A. The discrete samples from the remaining 16 DUs were initially archived for potential future analysis. A subset of these discrete samples was analyzed as part of an additional sampling effort following initial data screening. This additional analysis is described further in Section 4.4 below. Additional details on the sampling methodology employed for this AOC are described the phase II ESA work plan (MFA, 2018a).

4 ANALYTICAL RESULTS

Laboratory analytical reports are provided in Appendix C. Analytical data and the laboratory's internal quality assurance and quality control data were reviewed to assess whether they meet project-specific data quality objectives. This review was performed consistent with accepted USEPA procedures for evaluating laboratory analytical data (USEPA, 2017a,b) and appropriate laboratory and method-specific guidelines (Apex, 2016). A data validation memorandum summarizing data evaluation

procedures, usability of data, and deviations from specific field and/or laboratory methods is presented as Appendix D. The data are considered acceptable for their intended use, with the appropriate data qualifiers assigned.

The following is a summary of the soil and groundwater analytical results for samples collected during the investigation. The analyses performed are summarized in Table 3-1; analytical results are summarized in Tables 4-1 through 4-5; and sample locations are shown in Figures 3-1 through 3-6.

4.1 AOC 1: Former Laundry Building

Soil samples collected from monitoring wells MW09 and MW10 near the former laundry building were analyzed for cVOCs (see Figure 3-1). PCE and TCE were detected in subsurface saturated soil between 13 and 13.5 feet bgs at MW10 (see Table 4-1 and Figure 3-1). No other cVOCs were detected in the analyzed soil samples.

Groundwater samples collected from monitoring wells MW09 through MW11 were analyzed for cVOCs. PCE and TCE were detected in groundwater collected at MW10 (see Table 4-2 and Figure 3-1). No other cVOCs were detected in the analyzed groundwater samples.

4.2 AOC 2: Power House Building

Soils samples collected from GP49 through GP54 outside the paved area north, east, and southeast of the Power House were analyzed for cPAHs, diesel-range organics (DRO), and ORO (see Figure 3-2). cPAHs were detected in shallow soil (less than 1 foot bgs) at GP49, GP50, GP51, GP52, and GP54 (see Table 4-3). ORO were detected in shallow soil samples (less than 1 foot bgs) at GP50, GP51, GP53, and GP54 (see Table 4-3). DRO were detected in shallow soil (less than 1 foot bgs) at GP49, GP50, and GP51 and in subsurface soil up to 7.8 feet bgs at GP52 (see Table 4-3).

Analysis for dioxin and furans was conducted on shallow soil samples collected near the former incinerator near the Power House building at GP49, GP53, and GP53 (see Figure 3-2). Dioxins and furans were detected in every analyzed sample (see Table 4-3).

4.3 AOC 3: Lead in Soil

Analysis for lead was conducted on samples collected from shallow soil (less than 1.5 feet bgs) adjacent to the Trevennen, Coleman, and Denny buildings (see Figures 3-3 through 3-5). Lead was detected in every sample analyzed (see Table 4-4). Lead concentrations ranged from 7.21 to 421 milligrams per kilogram (mg/kg).

4.4 AOC 5: Property-Wide Metals in Soil

Results of the property-wide soil metals analysis are presented in Table 4-5. Arsenic, barium, cadmium, chromium, copper, lead, and zinc were detected in all 18 DUs. Selenium was detected only in DU04, DU10, DU11, and DU16. Neither mercury nor silver was detected in any of the DUs.

Based upon the results of the initial DU analyses and risk screening described in Section 7 below, discrete soil samples collected in DUs with ecological screening level (SL) exceedances were analyzed for the metals that had ecological exceedances in corresponding DU samples. Discrete soil sampling locations that were included in this additional analysis step are shown in Figure 4-1. Results of this additional metals analysis of discrete soil samples are presented in Table 4-6 and are discussed further in Sections 5.1.4.1 and 7.4.1.

5 CONCEPTUAL SITE MODEL

The CSM describes potential chemical sources, release mechanisms, environmental transport processes, exposure routes, and receptors. The primary purpose of the CSM is to describe pathways by which human and ecological receptors could be exposed to site-related chemicals. A complete exposure pathway consists of four necessary elements: (1) a source and mechanism of chemical release to the environment, (2) an environmental transport medium for a released chemical, (3) a point of potential contact with the impacted medium (referred to as the exposure point), and (4) an exposure route (e.g., soil ingestion) at the exposure point.

The CSM describes potential exposure scenarios based on information collected during the Property investigations. Elements of potentially complete exposure scenarios relevant to human health and ecological receptors are discussed below and are presented in Figure 5-1. Specific ecological receptors that were considered included mammals, birds, soil biota and plants. Results of the property-wide metals in soil investigation were screened against ecological SLs that are based on the toxicity of these metals to wildlife (mammals and birds), soil biota, and plants. The CSM diagram focuses on Property receptors and potential exposure pathways related to historical releases from the Property. Limited data are available for areas outside the Property boundaries, which may be affected by sources unrelated to on-Property historical releases. Potential off-Property sources and potential exposure pathways are therefore not well understood. The CSM may be subject to further modification as additional information becomes available. The CSM and exposure scenarios for a site play a role in selection of cleanup standards.

5.1 Source Characterization

Potential sources of contamination associated with historical operations at the Property were identified during previous environmental investigations at the Property, as described in the phase II ESA work plan (MFA, 2018a).

5.1.1 AOC 1: Former Laundry Building

Concentrations of PCE and TCE were detected in soil and groundwater at MW10, colocated near previous detections of PCE and TCE in soil, groundwater, and/or soil vapor (i.e., GP23 and GP8) (see Figure 3-1). A localized flow direction at the former laundry building was confirmed to be east toward Hansen Creek with a component of flow to the southeast along the southern edge of the

former laundry building, consistent with previous investigations. A monitoring well located to the east of the former laundry building identified PCE and TCE groundwater impacts beneath the northeast corner of the former laundry building. Groundwater impacts appear localized to this area as there were no detections of PCE or TCE identified at the upgradient or downgradient monitoring well or reconnaissance groundwater (i.e., temporary well) locations. However, given the limited number of soil and soil vapor samples, the extent of soil impacts has not yet been fully delineated and may extend below the existing building.

As discussed in previous reports, no records of dry cleaning operations at the former laundry building were located; however, the presence of PCE in groundwater, soil, and soil vapor in this AOC indicates that a solvent containing PCE likely was used at some point during historical operations in the building. During a review of historical building plans, laundry extractor machines were noted in building plans at the north end of the former laundry building, and utility maps identified a potential drainage pipe at the northeast corner of the building (MFA, 2018a). Given the consistent detections of PCE and/or TCE in soil, groundwater, and soil vapor in this portion of the former laundry building, it is likely that the operation of these features is the source of the PCE identified in this area. This is supported by the absence of detections in groundwater west, northwest, southwest, and southeast of the former laundry building.

5.1.2 AOC 2: Power House Building

DRO, ORO and cPAHs were detected in shallow soil outside the paved area north and northeast of the Power House (see Table 4-3 and Figure 3-2). Detections of DRO, ORO, and cPAHs were largely confined to the top foot of soil and to soil containing coal and terracotta fragments, consistent with fill material observed during previous investigations (see Appendix A) (MFA, 2015; SES, 2017). Although fill material was observed to extend outside the paved areas north and northeast of the Power House, the associated cPAH, DRO, and ORO impacts appeared relatively consistent and at low concentrations. Therefore, it appears that the elevated concentrations of cPAH and ORO are confined to an area immediately adjacent and to the north of the Power House, in fill material (extending less than 3 feet bgs) containing more asphalt-like fill debris underlying the existing asphalt, as observed during previous investigations (MFA, 2015; SES, 2017).

Dioxins and furans were detected in shallow soil (less than 1 foot bgs) collected from borings near the former incinerator and in the fill material outside the paved area north and northeast of the Power House (see Table 4-3). These detections likely are associated with the historical operation of the Power House smokestack and the potential historical combustion of materials in the incinerator. However, the detections of dioxins and furans were relatively low and did not suggest a significant source of dioxins and furans associated with the Power House AOC.

5.1.3 AOC 3: Lead in Soil

Elevated concentrations of lead were identified in shallow soil immediately adjacent to historical buildings on the Property (see Figures 3-3 through 3-5). During this investigation, lead concentrations appeared relatively consistent among the three demonstration buildings (i.e., Trevennen, Coleman, and Denny). All three demonstration buildings had been constructed during the operation of the

hospital prior to its closure in 1973; however, the Coleman building has since been renovated and intermittently occupied. Next to the demonstration buildings, a significant number of paint chips were observed on the surface and near surface of the soil during soil sample collection. Elevated detections of lead impacts surrounding historical buildings appear to be localized in both vertical and lateral extent, with concentrations decreasing with depth and distance from the historical buildings.

The cultural resources assessment report for the campus indicated that paint treated with lead and zinc had been used on the campus buildings (Artifacts Consulting, 2008). It appears that lead-containing paint has flaked or peeled off the historical building surfaces and has been deposited in adjacent shallow soil. Therefore, the elevated concentrations of lead identified in these soil samples suggests that lead paint is/was present in the exterior paint of the historical buildings and is the source of elevated lead concentrations in shallow soil at the Property.

Results from the additional discrete soil analyses associated with the decision unit sampling (see Section 4.4), identified a soil sample within DU04 (i.e., SS08-S-0.5) with a detection of lead above the MTCA Method A CUL at 572 mg/kg at 0.5-feet bgs. This elevated lead detection was collected near a previous shallow soil sample (GP16) with a lead detection above the MTCA Method A CUL. Aside from these localized detections, lead concentrations in the soil throughout the Property have been low; as noted in the lead concentrations for the other DUs on the Property (see Table 4-5). Therefore, these isolated detections in the shallow soil of the athletic field are likely the result of lead-based-paint-impacted soil redistributed via wind-based transport or by excavation and replacement of soil.

5.1.4 AOC 5: Property-Wide Metals in Soil

Elevated metal detections were observed mostly in DUs in the northeastern-eastern area of the Property (i.e., DU02, DU04, DU11, and DU14) (see Table 4-5). This is consistent with known and potential sources of metals associated with historical industrial and agricultural use of this area of the Property.

Soil in DU02, immediately north and adjacent to the Power House, contained elevated concentrations of copper and zinc. Operation of the Power House resulted in long-term handling and storage of coal and petroleum products that may have impacted surrounding shallow soil. Other historical activities in this area of the Property included carpentry, paint storage and handling, and general maintenance (MFA, 2018a). The impacts associated with these operations are consistent with the elevated concentrations of copper and zinc observed in DU02.

The concentration of lead in DU04 soil was significantly higher than lead concentrations detected in the remaining DUs on the Property. An athletic field is present within the boundary of DU04 and may have been subject to historical applications of pesticides containing lead arsenate resulting in elevated concentrations of lead in soil. As discussed above in Section 5.1.3, lead paint has resulted in elevated lead detections in soil immediately adjacent to historical buildings on the Property. Although the extent of lead paint impacts in soil appear limited to areas immediately adjacent to building exteriors, there is potential that lead paint chips were sporadically dispersed to other areas of the Property and resulted in slightly elevated concentrations of lead in shallow soil.

Concentrations of chromium in DU11 and DU14 were slightly elevated relative to chromium detections in the remaining DUs on the Property. A historical tree nursery, present in DU11 and portions of DU14, was used during the operation of Northern State Hospital. Historically, chromium was used in chromated arsenical pesticides. This is a group of pesticides made of chromium, copper, and/or arsenic that guard wood against insects and fungi (USEPA, 2016). DU11 also contained the highest arsenic concentration, and one of the highest concentrations of copper, of any of the DUs on the Property. This area of the Property may have received more frequent applications of pesticides containing chromium, resulting in shallow soil impacts.

5.1.4.1 AOC 5: Property-Wide Metals in Soil – Additional Discrete Sample Analysis

Analyses for additional discrete metals were completed for the decision units with at least one ecological screening level exceedance (i.e., DU02, DU04, DU11, and DU14). All metals included in the additional discrete sample analysis were detected (Table 4-6, Figure 4-1). This confirms the initial trends observed in the DUs for the property-wide metals in soil.

The spatial variability of metals concentrations was different in each DU. In DU02, concentrations of both copper and zinc were highest at two of the five discrete locations (SS38-S-0.5 and SS40-S-0.5). These samples were collected immediately adjacent to buildings in the most densely developed area of the Property. It's likely that historical use of these buildings (e.g., paint and equipment storage, operation and use of the filtration and chlorination buildings) may have resulted in slightly elevated concentrations of these metals in the shallow soil.

In DU04, there was one discrete sample (SS08-S-0.5) with a concentration of lead above the MTCA Method A CUL, as discussed in Section 5.1.3. All other lead concentrations within this DU were significantly below ecological screening criteria. Therefore, the elevated detection of lead associated with the initial DU analysis was likely the result of the single elevated detection at SS08 and not an DU-wide elevated lead concentration.

Two decision units, DU11 and DU14 had elevated chromium concentrations in their analyzed discrete samples. Chromium concentrations in DU11 were consistently elevated above ecological screening criteria in all five discrete samples. Elevated concentrations of chromium ranged from 111 to 169 mg/kg, slightly exceeding the site-specific natural background value of 101 mg/kg. DU11 is in an area of well-established vegetation and large trees. A source for the slightly elevated chromium results is not definitive and may be associated with historical pesticide use or fill.

In DU14, the three discrete samples with elevated chromium concentrations (SS68-S-0.5, SS69-S-0.5, and SS70-S-0.5) were collected in the southern half of DU14, adjacent to DU11 (see Figure 4-1). The concentrations of these elevated chromium detections ranged between 149 and 203 mg/kg, relatively consistent with the concentrations observed in DU11. This suggests that the elevated chromium concentrations are homogenous in this area of the Property and may be related to a similar source.

Results of the risk screening of the data from this assessment are discussed further in section 7.4.1.

5.2 Fate and Transport of Contaminants

The primary mechanisms likely to influence the fate and transport of chemicals at the Property include natural biodegradation of organic chemicals, sorption to soil, advection and dispersion in groundwater, volatilization of volatile chemicals from soil or groundwater to air, and leaching of chemicals from soil to groundwater. The relative importance of these processes varies, depending on the chemical and physical properties of the released contaminant. The properties of soil and the dynamics of groundwater flow also affect contaminant fate and transport.

The Property is widely vegetated, with large areas of unpaved ground surface. The soil-to-groundwater migration pathway is potentially complete because of the potential for infiltration of precipitation through the unpaved ground surface at the Property into the vadose-zone soil. Leaching of near-surface soil impacts during precipitation events could result in impacts to shallow groundwater at the Property.

Volatile contaminants may partition to the vapor phase in the source area or downgradient of the source area via groundwater transport of dissolved-phase contamination. Contaminant vapors partitioning from contaminated soil or groundwater could result in impacts to indoor and outdoor air quality.

Shallow groundwater beneath the Property likely discharges to Hansen Creek, north, east, and southeast of the Property. Dissolved-phase contamination migrating downgradient of the source area could potentially discharge to Hansen Creek, resulting in surface water and sediment impacts.

5.3 Potential Receptors and Exposure Pathways

Potential human and ecological receptors and exposure pathways are shown in Figure 5-1.

The Property is currently used for educational, commercial, and residential purposes. Buildings historically used for hospital operations now provide temporary housing for Cascade Job Corps students and Pioneer Center residents. Redevelopment plans for the property include adaptive reuse of existing buildings for residential and commercial uses as well as development of new buildings for education, commercial, and industrial uses. Therefore, based on current and potential future uses of the Property, human receptors may include construction workers, occupational workers, and residents.

Hansen Creek, located north, east, and southeast of the Property, provides salmon habitat that may attract recreational fishers. Therefore, recreational fishers are also potential receptors at the Property.

Ecological receptors could potentially be exposed to chemical impacts at the Property. As discussed in Section 2.3, the Property abuts the NSRA, which includes more than 700 acres of undeveloped forestland, grasslands, and wetlands and likely supports a diverse population of ecological receptors.

The following pathways are potentially complete for human health and ecological receptors (see Figure 5-1).

Occupational Workers and On-Site Residents—Occupational workers and residents currently occupy the Property intermittently for activities related to the operation of the Cascade Job Corps and the Pioneer Center. Future redevelopment may include increased residential use of the Property. The pathways by which current or future residents could potentially be exposed to chemicals at the Property include:

- Direct skin contact with, incidental ingestion of, and inhalation of windborne particulates from chemically impacted shallow soil
- Inhalation of indoor air vapors emanating from soil or groundwater with volatile chemical impacts
- Direct skin contact with, ingestion of, and inhalation of volatilizing chemically impacted potable groundwater
- Direct skin contact with and incidental ingestion of surface water or sediment in Hansen Creek that has been chemically impacted via discharges of chemically impacted groundwater

On-Site Construction Workers—There are currently no construction workers (e.g., excavation workers, trench workers) on the Property. However, construction activities may be performed as part of the Property's redevelopment or future maintenance or improvement activities. Future construction workers could potentially be exposed to chemicals at the Property by the following pathways:

- Direct skin contact with, incidental ingestion of, and inhalation of windborne particulates from chemically impacted soil in excavations
- Inhalation of indoor air vapors emanating from soil or groundwater with volatile chemical impacts
- Dermal contact with, incidental ingestion of, or inhalation of vapors emanating from chemically impacted shallow groundwater encountered in excavations below the water table, or ingestion of groundwater if used for potable purposes
- Direct skin contact with and incidental ingestion of surface water or sediment in Hansen Creek that has been chemically impacted via discharges of chemically impacted groundwater

Recreational Fishers—Hansen Creek, a tributary of the Skagit River, has been identified as a salmon habitat area and may be used by recreational fishers. Recreational fishers could potentially be exposed to chemicals at the Property by the following pathways:

- Direct skin contact with and incidental ingestion of surface water or sediment in Hansen Creek that has been chemically impacted via discharges of chemically impacted groundwater

- Ingestion of chemicals bioaccumulated in the tissue of fish from chemically impacted surface water or sediment in Hansen Creek

Ecological Receptors—Ecological receptors, including mammals, birds, plants and soil biota, may be exposed to chemically impacted shallow soil, surface water, sediment, and/or fish tissue at the Property by the following pathways:

- Direct skin contact with, incidental ingestion of, and inhalation of windborne particulates from chemically impacted shallow soil
- Direct contact with and ingestion of surface water or sediment in Hansen Creek that has been chemically impacted via discharges of chemically impacted groundwater.
- Ingestion of chemicals bioaccumulated in the tissue of fish from chemically impacted surface water or sediment in Hansen Creek.

Relatively low concentrations of groundwater contamination were detected approximately 20 feet or more from Hansen Creek. Therefore, exposure pathways that include discharges of chemically impacted groundwater to surface water and sediment in Hansen Creek are potentially insignificant but will be retained as potentially complete pathways pending further investigation and/or cleanup action development.

Scenarios involving exposure to vapors in outdoor air are also considered insignificant, given the attenuation that likely would occur in outdoor air.

5.4 Ecological Screening

Ecological receptors could potentially be exposed to chemical impacts at the Property via the exposure pathways discussed above. Large portions of the Property are vegetated and it abuts the NSRA, which includes more than 700 acres of undeveloped forestland, grasslands, and wetlands. This large area of undeveloped open space is likely to attract wildlife to the Property. To determine potential for adverse effects to ecological receptors, site-specific natural background values and ecological SLs were developed during this investigation (see Appendices E and F). These values were used to screen data from the property-wide metals in soil evaluation against site-specific ecological SLs to determine whether metals concentrations in soil at the site pose risks to ecological receptors. The findings of this evaluation could be used to support a future Terrestrial Ecological Evaluation (TEE).

6 CLEANUP STANDARDS

Cleanup standards for the Property were developed based on the CSM presented in the preliminary RI/FS (MFA, 2015). The CSM and cleanup standards were reevaluated based on additional data collected during this phase II ESA, as discussed below.

According to MTCA, the cleanup standards for a site have two primary components: chemical-specific CULs and points of compliance (POCs). The CUL is the concentration of a chemical in a specific environmental medium that will not pose unacceptable risks to human health or the environment. The POC is the location where the CUL must be met.

6.1 Soil

For human health screening, soil was screened against MTCA Method A CULs for unrestricted land use. The Method A values are for protection of human health via the direct-contact or ingestion pathways and protection of groundwater via the soil-leaching-to-groundwater pathway. For certain constituents, MTCA Method A CULs are not available and Method B CULs were applied. Method B CULs may be used at any site. This is consistent with the approach used in the preliminary RI/FS (MFA, 2015).

As discussed in Section 5.4, an ecological screening of property-wide metals in soil concentrations was conducted to facilitate selection of an appropriate cleanup action that is protective of potential ecological receptors at the Property. Natural background concentrations and site-specific ecological SLs were developed for this ecological screening (see Appendices E and F). This ecological screening was conducted in accordance with TEE guidance presented in WAC 173-340-7493.

Soil CULs for the protection of potable groundwater (leaching-to-groundwater pathway) were evaluated for locations where groundwater data were not available to determine the potential for chemically impacted soil to affect groundwater resources. Potable water for the Property is provided by the Skagit Public Utility District.

6.1.1 Points of Compliance in Soil

The soil POC is the depth at which soil CULs shall be attained. The standard POC in soil for human direct contact and for ecological receptors is from the surface to 15 feet bgs throughout the entire site. This standard POC is applied to soil on the Property.

6.2 Groundwater

Groundwater was screened to MTCA Method A CULs and, where appropriate based on the CSM, ARARs for freshwater surface water. For certain constituents, MTCA Method A CULs are not available and Method B CULs were applied. This is consistent with the approach used in the preliminary RI/FS (MFA, 2015).

Concentrations of cVOCs detected in groundwater were also compared to MTCA Method B groundwater SLs for protection of indoor air, provided in the Washington State Department of Ecology's (Ecology) draft soil vapor intrusion guidance (Ecology, 2016).

Potable water for the Property is provided by the Skagit Public Utility District. There are no known drinking water supply wells on the Property. No human health exceedances were identified in soil during the evaluation of property-wide metals. Therefore, groundwater beneath the Property was not

assessed for potability as part of this investigation but may be included in future investigation or assessments.

6.2.1 Points of Compliance in Groundwater

For groundwater, the POC is the point or points where the groundwater CULs must be attained for a site to comply with the cleanup standards. Groundwater CULs shall be attained in all groundwater from the POC to the outer boundary of the hazardous-substance plume. A conditional POC may be established if it is not practicable to meet the CULs throughout the site within a reasonable restoration time frame (WAC 173-340-720(8)(c)). A conditional POC for groundwater is not proposed at this time.

7 RISK SCREENING

Soil and groundwater sample results were compared to applicable CULs, as discussed in Section 6 (see Tables 4-1 through 4-5). Detected concentrations of some constituents were summed for comparison to applicable CULs as follows:

- A toxic equivalency quotient (TEQ) was calculated for cPAHs for comparison to the benzo(a)pyrene CUL.
- A TEQ was calculated for dioxins and furans.
- TEQs were calculated for dioxins and furans for mammals and birds.

7.1 AOC 1: Former Laundry Building

At 23 micrograms per liter (ug/L), PCE in the groundwater near the northeast corner of the former laundry building (sampling location MW10) exceeded the MTCA Method A CUL of 5 ug/L and the MTCA Method B groundwater screening level for protection of indoor air of 22.9 ug/L (see Figure 3-1). TCE was also detected in the groundwater at this location; however, the detection, at 1.38 ug/L, was below the MTCA Method A CUL of 5 ug/L and the MTCA Method B groundwater SL for protection of indoor air of 1.55 ug/L. No other detections of PCE, TCE, 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, or VC were identified in the groundwater collected from monitoring wells located upgradient and downgradient at MW09 and MW11, respectively (see Figure 3-1). The PCE and TCE detections in MW10 were not screened to surface water screening criteria, as there were no detections of cVOCs in the downgradient well. The location of the PCE and TCE detections in groundwater is consistent with previous investigations (MFA, 2015). Given the lack of cVOCs detected in the monitoring wells located upgradient and downgradient of the PCE and TCE detections in groundwater, it is unlikely that impacts are migrating to nearby surface water in Hansen Creek, and the absence of detections of PCE or any of its daughter products at any other historical sample

location near the former laundry building suggests that the groundwater impacts likely are localized to an area in the direct vicinity of the northeast corner of the laundry building¹.

Soil collected from MW10, where PCE and TCE were found in groundwater, had detections of PCE and TCE above the MTCA Method A CUL in a soil sample collected at 13 to 13.5 feet bgs, but was not detected at the 0.4- to 1.2-foot or the 24- to 25-foot sampling depth in the same location (MW10) (see Figure 3-1). The detections of both PCE and TCE were above MTCA Method A CULs.

7.2 AOC 2: Power House Building

There were no exceedances of cPAHs or ORO in soil above MTCA Method A CULs; however, fill material including coal fragments and terracotta debris was identified in the soil borings advanced outside the paved area north and northeast of the Power House (see Table 4-3 and Figure 3-2).

Concentrations of dioxin/furans were well below the MTCA Method B SL of 12.8 picograms per gram (pg/g) as well as the natural background value of 5.21 pg/g (Ecology, 2010); therefore, it is unlikely that the former incinerator impacted the soil near the Power House with dioxin/furan concentrations (see Table 4-3).

7.3 AOC 3: Lead in Soil

Lead concentrations exceeding the MTCA Method A CUL of 250 mg/kg were observed at locations immediately adjacent to the demonstration buildings (see Figures 3-3 through 3-5). Nine of 44 soil samples (approximately two locations per building) had detections of lead above the MTCA Method A CUL, with concentrations ranging between 256 and 421 mg/kg (see Table 4-4).

Lead impacts above MTCA Method A CULs, found in areas surrounding historical buildings, appear to be localized in both vertical and lateral extent, with concentrations decreasing with depth and distance from these buildings. This suggests that lead exceedances in shallow soil are largely restricted to locations immediately adjacent to historical buildings; however, there remains the potential for small areas on the Property to contain elevated lead concentrations caused by widespread historical lead paint use on campus building exteriors. The elevated lead detection within the athletic field (i.e., SS08 within DU04), illustrates the potential for these isolated exceedances of lead to be present throughout the Property given the long historical use of the Property.

¹ A subsurface vapor sample collected during the 2015 RI/FS identified PCE at 100 micrograms per cubic meter (ug/m³), below the Method B screening level for sub-slab soil gas of 321 ug/m³. This screening level assumes natural attenuation through the existing slab of the building. If renovation actions are performed on the building between the issuance of this report and completion of applicable remedial actions, it is recommended that the renovation design incorporate protections for workers should the foundation be penetrated during renovations, and an appropriate system installed to protect against vapor intrusion for future building inhabitants.

7.4 AOC 5: Property-Wide Metals

No MTCA Method A CULs were exceeded in the property-wide soil metals data (Table 4-5). Metals concentrations in soil were generally below site-specific ecological SLs, with exceedances limited to a few metals at locations in the northeastern corner of the Property:

- DU02: copper, zinc
- DU04: lead
- DU11: chromium
- DU14: chromium

Complete human health and ecological screening of property-wide metals data is presented in Table 4-5. Exceedances of site-specific ecological SLs are shown in Figure 7-1. If a metal detection in a DU exceeded an ecological indicator concentration but was below the site-specific natural background value, it was not considered an exceedance (WAC 173-340-700(6)(d)).

7.4.1 Additional Discrete Sample Analysis

All metals concentrations measured in the additional discrete soil samples analysis were below MTCA Method A CULs, with the exception of lead in discrete sample SS08-S-0.5, collected at the northern end of DU04, as discussed in Sections 5.1.3 and 7.3 (Table 4-6 and Figure 4-1). Of the remaining discrete samples included in the additional sample analysis, ecological SL exceedances were observed in the following samples:

- DU02
 - SS38-S-0.5: copper, zinc
 - SS40-S-0.5: copper, zinc
- DU02
 - SS08-S-0.5: lead
- DU11
 - SS51-S-0.5: chromium
 - SS52-S-0.5: chromium
 - SS53-S-0.5: chromium
 - SS54-S-0.5: chromium
 - SS55-S-0.5: chromium
- DU14
 - SS68-S-0.5: chromium

- SS69-S-0.5: chromium
- SS70-S-0.5: chromium

Human health and ecological screening of additional metals data from discrete sampling locations is presented in Table 4-6, and sampling locations are shown in Figure 4-1. If a metal detection in a DU exceeded an ecological indicator concentration but was below the site-specific natural background value, it was not considered an exceedance (WAC 173-340-700(6)(d)).

The discrete sampling data from DU02 suggest that there are heterogeneous exceedances of ecological SLs of copper and zinc in surface soil in this DU likely related to historical use of this area of the Property. DU02 encompasses the most developed area of the Property with much of the DU covered in buildings, concrete, and/or asphalt. Given the conditions in this DU, it is unlikely to support significant habitat for ecological receptors.

With the exception of the single elevated lead concentration at SS08, all other lead concentrations within discrete samples from DU02 were below ecological SLs. Therefore, it is unlikely that lead detections above ecological SLs are widespread within this DU.

Elevated chromium detections within DU11 and DU14 indicate that there are widespread ecological exceedances of chromium in surface soil in this area of the Property likely related to the same source. However, these chromium exceedances only slightly exceed the site-specific natural background value of 101 mg/kg. This area of the Property is widely vegetated with well-established trees and foliage that currently provide significant habitat for a wide range of ecological receptors.

8 RECOMMENDATIONS

Based on the current understanding of the nature and extent of CUL exceedances, it is recommended that an analysis of brownfields cleanup alternatives (ABCA) be conducted to evaluate potential remediation actions specific to each AOC, as is applicable and appropriate to physical and environmental conditions within each AOC.

AOC 1: Former Laundry Building

As described above in Section 7.1, PCE and TCE were detected in soil and groundwater during this phase II ESA. Previous investigations detected PCE, TCE, and cis-1,2-DCE in soil, groundwater, and/or soil vapor in the northeast area of the former laundry building (MFA, 2015). The extent of impacts is sufficiently characterized to support evaluation of cleanup alternatives.

AOC 2: Power House Building

Based on the results of this phase II ESA, it appears that cPAH and ORO impacts in the shallow (less than 3 feet bgs) fill material containing asphalt debris are localized to a small area underlying the

existing asphalt immediately north of the Power House. The extent of impacts is sufficiently characterized to support evaluation of cleanup alternatives.

AOC 3: Lead in Soil

Lead impacts above MTCA Method A CULs surrounding historical buildings appear to be localized in both vertical and lateral extent, with concentrations decreasing with depth and distance from the buildings. The extent of impacts is sufficiently characterized to support evaluation of cleanup alternatives.

AOC 4: Arsenic in Soil

Previous investigations have identified localized areas of arsenic concentrations above MTCA Method A CULs at depths up to 9 feet bgs (i.e., in the athletic field and an eastern landscaped area of the Property adjacent to the former Ward D, E, F, and G buildings) (MFA, 2015). Additional assessment of this AOC was not completed as part of this phase II ESA, with the exception of shallow soil impacts (less than 0.5-foot bgs) associated with the property-wide metals AOC. No MTCA A CUL exceedances of arsenic were detected during the assessment of property-wide metals; however, additional evaluation of potential arsenic impacts below 0.5-foot bgs is still needed. The extent of impacts is sufficiently characterized to support evaluation of cleanup alternatives.

AOC 5: Property-Wide Metals

As discussed in Section 7.4.1, three DUs (i.e., DU02, DU11, and DU14) had concentrations of at least one metal above ecological SLs.

A net environmental benefit analysis (NEBA) should be performed to further evaluate next steps for these DUs.

AOC 6: Maintenance Building

As discussed in Section 2.4, additional assessment and cleanup of this AOC is being conducted by SES with oversight from PLIA.

AOC 7: Lead and Arsenic in Groundwater

As discussed in Section 2.4, total and dissolved arsenic and lead were detected above MTCA Method A CULs and surface water ARARs in samples from reconnaissance groundwater collected across the northeastern portion of the Property during previous investigations. Given the proximity of elevated arsenic and/or lead concentrations to Hansen Creek, there is potential for groundwater with metals concentrations above surface water ARARs to discharge to the creek.

Additional characterization and evaluation of metals in groundwater at the Property should be conducted to allow for evaluation of cleanup alternatives.

LIMITATIONS

The services undertaken in completing this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this report.

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TABLES



Table 2-1
Water Level Measurements
Former Northern State Hospital Phase II ESA
Port of Skagit
Sedro-Woolley, Washington

Well ID	MP Elevation (feet NGVD29)	Date	Time	DTW (feet)	DTB (feet)	Groundwater Elevation (feet)
MW01	133.81	05/01/2018	9:30 AM	13.41	24.55	120.40
MW02	131.03	05/01/2018	10:15 AM	16.35	19.45	114.68
MW03	125.86	05/01/2018	10:05 AM	9.28	19.00	116.58
MW04	117.39	05/01/2018	10:20 AM	9.32	19.43	108.07
MW05	117.6163	05/01/2018	10:30 AM	6.55	17.10	111.07
MW06	129.7132	05/01/2018	9:45 AM	-- ^a	-- ^a	-- ^a
MW07	127.0996	05/01/2018	9:58 AM	7.75	16.95	119.35
MW08	128.0230	05/01/2018	9:55 AM	-- ^a	-- ^a	-- ^a
MW09	131.1042	05/01/2018	9:25 AM	5.95	28.92	125.15
MW10	130.4096	05/01/2018	9:15 AM	5.20	29.34	125.21
MW11	130.1546	05/01/2018	9:20 AM	6.30	26.55	123.85

NOTES:

DTW and DTB are measured from top of well casing.

DTB = depth to bottom.

DTW = depth to water.

ESA = environmental site assessment.

MP = measuring point (i.e., top of well casing).

NGVD29 = National Geodetic Vertical Datum of 1929.

^aUnable to remove well cap to measure water level.

Table 3-1
Sampling and Analysis Summary
Former Northern State Hospital Phase II ESA
Port of Skagit
Sedro-Woolley, Washington

AOC	Location Type	Sample Type	No. of Locations	Location ID ^a	Sample Matrix	No. Locations by Sample Matrix	Total Depth (ft bgs)	Sample Collection Depth/Screened Interval (ft bgs)	No. Samples per Location	Total No. Samples	Analytical Suite							
											cVOCs	DRO/ORO	cPAHs	Dioxins/Furans	Lead ^b (24-hour TAT)	Lead ^b (Standard TAT)	ISM Metals	
AOC 1: Former Laundry Building	Monitoring Well	Discrete	3	MW09, MW10	Soil	2	30	near surface capillary fringe saturated zone	3	6	X	--	--	--	--	--	--	
		Grab		MW09 to MW11	GW	1		15 to 20	2 ^c	2	X	--	--	--	--	--	--	--
						2			1	2	X	--	--	--	--	--	--	
AOC 2: Power House—fill material	Boring Location	Discrete	3	GP49, GP52, GP53	Soil	3	5 to 10, to top of silt/sand unit underlying fill material	See boring logs in Appendix A	3	9	--	X	X	--	--	--	--	--
AOC 2: Power House—fill material and former incinerator	Boring Location	Discrete	3	GP49 to GP54	Soil	3	5 to 10, to top of silt/sand unit underlying fill material	0 to 0.5	1	3	--	--	--	X	--	--	--	
								See boring logs in Appendix A	3	9	--	X	X	--	--	--	--	--
AOC 3: Lead in Soil	Surface Soil (Thin-walled Tube Sampler)	Five-point composite, site-specific calibration standard	5	HA29	Soil	5	1	0 to 1.0	1	1	--	--	--	--	X	--	--	
		Discrete, initial location	13	HA14 to HA28		13		0 to 0.5 0.5 to 1.0	2	26	--	--	--	--	X	--	--	
		Discrete, step-out location	26	HA30 to HA35		6				52	--	--	--	--	--	X	--	
AOC 5: Property-Wide Metals in Soil	Surface Soil (Thin-walled Tube Sampler)	10-point ISM composite	17	DUs 1 through 9, and 11 through 18	Soil	170	0.5	0 to 0.5	1	17 ^d	--	--	--	--	--	--	X	
			1	DU 10		30 ^e				3 ^{d,e}	--	--	--	--	--	--	X	
		Discrete, natural background DUs	1	DU 16		5				5	--	--	--	--	--	--	X	
			1	DU 17		5				5	--	--	--	--	--	--	X	
		Discrete, other DUs	16	DUs 1 through 15, and 18		80				80	--	--	--	--	--	--	A	

Table 3-1
Sampling and Analysis Summary
Former Northern State Hospital Phase II ESA
Port of Skagit
Sedro-Woolley, Washington

NOTES:

-- = do not analyze.

A = sample will be archived for potential future analysis for specified analytes.

AOC = area of concern.

cPAHs = carcinogenic polycyclic aromatic hydrocarbons; analysis by USEPA Method 8270D.

cVOCs = chlorinated volatile organic compounds, including tetrachloroethene, trichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, and vinyl chloride; analysis by USEPA Method 8260C selective ion monitoring.

dioxins/furans = dioxins and furans; analysis by USEPA Method 1613B.

DRO/ORO = diesel- and heavy-oil-range organics; analysis by Northwest Total Petroleum Hydrocarbons Dx Method.

DU = decision unit.

ESA = environmental site assessment.

ft bgs = feet below ground surface.

GW = groundwater.

ID = identification.

ISM = incremental sampling methodology.

ISM Metals = arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver, and zinc; analysis by USEPA Method 6020A.

No. = number.

TAT = turnaround time.

USEPA = U.S. Environmental Protection Agency.

X = analyze.

^aLocation IDs designated for proposed borings and monitoring wells are temporary; final location IDs will be assigned in field.

^blead analysis by USEPA Method 6020A.

^cIncludes a field duplicate groundwater sample, which will be collected from one of the three monitoring wells.

^dOne 10-point composite sample from each DU will be analyzed.

^eTriPLICATE 10-point ISM composited samples will be collected from this DU and submitted to laboratory for analysis.

Table 4-1
Soil Analytical Results—Former Laundry Building AOC
Former Northern State Hospital Phase II ESA
Port of Skagit
Sedro-Woolley, Washington

Location:	MTCA A	MTCA B	MW09	MW09	MW09	MW10	MW10	MW10
Sample Name:			MW09-S-0.5	MW09-S-6.0	MW09-S-19.0	MW10-S-1.0	MW10-S-13.5	MW10-S-24.5
Collection Date:			04/23/2018	04/23/2018	04/23/2018	04/23/2018	04/23/2018	04/23/2018
Collection Depth (ft bgs):			0.2 - 0.7	5.8 - 6.2	18.7 - 19.3	0.4 - 1.2	13 - 13.5	24 - 25
VOCs (mg/kg)								
1,1-Dichloroethene	NV	4000	0.0153 U	0.016 U	0.0149 U	0.0203 U	0.0168 U	0.0159 U
cis-1,2-Dichloroethene	NV	160	0.0153 U	0.016 U	0.0149 U	0.0203 U	0.0168 U	0.0159 U
Tetrachloroethene	0.05	476	0.0153 U	0.016 U	0.0149 U	0.0203 U	6.7	0.0159 U
trans-1,2-dichloroethene	NV	1600	0.0153 U	0.016 U	0.0149 U	0.0203 U	0.0168 U	0.0159 U
Trichloroethene	0.03	12	0.0153 U	0.016 U	0.0149 U	0.0203 U	0.056	0.0159 U
Vinyl chloride	NV	240	0.0153 U	0.016 U	0.0149 U	0.0203 U	0.0168 U	0.0159 U
<p>NOTES:</p> <p>Detected results are shown in bold font.</p> <p>Results that exceed MTCA A cleanup level, or a MTCA B cleanup level if no MTCA A value is available, are shaded. Non-detect results are not evaluated against cleanup criteria.</p> <p>AOC = area of concern.</p> <p>ESA = environmental site assessment.</p> <p>ft bgs = feet below ground surface.</p> <p>mg/kg = milligrams per kilogram.</p> <p>MTCA = Model Toxics Control Act.</p> <p>MTCA A = MTCA method A, unrestricted land use, for soil.</p> <p>NV = no value.</p> <p>U = result not detected at method detection limit.</p> <p>VOC = volatile organic compound.</p>								

Table 4-2
Groundwater Analytical Results—Former Laundry Building AOC
Former Northern State Hospital Phase II ESA
Port of Skagit
Sedro-Woolley, Washington

Location:	MTCA A	MTCA B	Vapor Intrusion Screening Level Method B	MW09	MW10	MW10	MW11
Sample Name:				MW09-GW-050118	MW10-GW-050118	MWDUP-GW-050118	MW11-GW-050118
Collection Date:				05/01/2018	05/01/2018	05/01/2018	05/01/2018
VOCs (ug/L)							
1,1-Dichloroethene	NV	400	11.2	0.2 U	0.2 U	0.2 U	0.2 U
cis-1,2-Dichloroethene	NV	16	NV	0.2 U	0.2 U	0.2 U	0.2 U
Tetrachloroethene	5	20.8	22.9	0.2 U	22.8	23	0.2 U
trans-1,2-dichloroethene	NV	160	NV	0.2 U	0.2 U	0.2 U	0.2 U
Trichloroethene	5	0.54	1.55	0.2 U	1.34	1.38	0.2 U
Vinyl chloride	0.2	24	0.347	0.2 U	0.2 U	0.2 U	0.2 U
NOTES: Detected results are shown in bold font. Shaded results indicate an exceedance of the MTCA A cleanup level or vapor intrusion screening level. Non-detect results are not evaluated against cleanup criteria. AOC = area of concern. ESA = environmental site assessment. MTCA = Model Toxics Control Act. MTCA A = MTCA method A, for groundwater. Where no value is available, a MTCA method B value is shown. NV = no value. U = Result is not detected at the method detection limit. ug/L = micrograms per liter. VOC = volatile organic compound.							

Table 4-3
Soil Analytical Results—Power House Building AOC
Former Northern State Hospital Phase II ESA
Port of Skagit
Sedro-Woolley, Washington

Location:	MTCA A	MTCA B	MTCA EIC	GP49	GP49	GP49	GP50	GP50	GP51	GP51	GP52
Sample Name:				GP49-S-0.5	GP49-S-10.0	GP49-S-7.0	GP50-S-0.5	GP50-S-1.5	GP51-S-0.5	GP51-S-1.0	GP52-S-0.5
Collection Date:				04/23/2018	04/23/2018	04/23/2018	04/23/2018	04/23/2018	04/23/2018	04/23/2018	04/23/2018
Collection Depth (ft bgs):				0.2-1	10-10.5	6.8-7.4	0.3-0.7	1.1-1.7	0.2-0.9	0.9-1.3	0.3-0.8
Dioxins/Furans (pg/g)											
1,2,3,4,6,7,8-HpCDD	NV	NV	NV	6.09	--	--	--	--	--	--	6.2
1,2,3,4,6,7,8-HpCDF	NV	NV	NV	1.76 J	--	--	--	--	--	--	1.71 J
1,2,3,4,7,8,9-HpCDF	NV	NV	NV	0.149 U	--	--	--	--	--	--	0.23 J
1,2,3,4,7,8-HxCDD	NV	NV	NV	0.212 UJ	--	--	--	--	--	--	0.289 J
1,2,3,4,7,8-HxCDF	NV	NV	NV	0.218 J	--	--	--	--	--	--	0.202 J
1,2,3,6,7,8-HxCDD	NV	NV	NV	0.397 UJ	--	--	--	--	--	--	0.525 J
1,2,3,6,7,8-HxCDF	NV	NV	NV	0.193 UJ	--	--	--	--	--	--	0.166 UJ
1,2,3,7,8,9-HxCDD	NV	161	NV	0.355	--	--	--	--	--	--	0.465 J
1,2,3,7,8,9-HxCDF	NV	NV	NV	0.0931 U	--	--	--	--	--	--	0.112 U
1,2,3,7,8-PeCDD	NV	NV	NV	0.177 J	--	--	--	--	--	--	0.248 J
1,2,3,7,8-PeCDF	NV	NV	NV	0.244 J	--	--	--	--	--	--	0.156 J
2,3,4,6,7,8-HxCDF	NV	NV	NV	0.202 UJ	--	--	--	--	--	--	0.22 UJ
2,3,4,7,8-PeCDF	NV	NV	NV	0.238 UJ	--	--	--	--	--	--	0.333 J
2,3,7,8-TCDD	NV	12.8	NV	0.0994 U	--	--	--	--	--	--	0.11 U
2,3,7,8-TCDF	NV	NV	NV	0.306 UJ	--	--	--	--	--	--	0.232 J
OCDD	NV	NV	NV	36.2	--	--	--	--	--	--	33.4
OCDF	NV	NV	NV	2.58 J	--	--	--	--	--	--	9.58 J
Total HpCDDs	NV	NV	NV	11.6	--	--	--	--	--	--	11.2
Total HpCDFs	NV	NV	NV	3.68 J	--	--	--	--	--	--	8.16
Total HxCDDs	NV	NV	NV	6.32 J	--	--	--	--	--	--	27.5
Total HxCDFs	NV	NV	NV	2.74 J	--	--	--	--	--	--	2.83 J
Total PeCDDs	NV	NV	NV	4.2 J	--	--	--	--	--	--	21.4
Total PeCDFs	NV	NV	NV	3.09 J	--	--	--	--	--	--	4.02 J
Total TCDDs	NV	NV	NV	3.86 U	--	--	--	--	--	--	20.6
Total TCDFs	NV	NV	NV	3.2 U	--	--	--	--	--	--	3.4
Dioxin/Furan TEQ (ND=0)	NV	12.8	NV	0.332 J	--	--	--	--	--	--	0.618 J
Total Dioxins Mammalian TEQ (ND=0) ^a	NV	NV	2	0.284 J	--	--	--	--	--	--	0.448 J
Total Dioxins Avian TEQ (ND=0) ^a	NV	NV	2	0.047 J	--	--	--	--	--	--	0.167 J
Total Furans Mammalian TEQ (ND=0) ^a	NV	NV	2	0.222 J	--	--	--	--	--	--	0.324 J
Total Furans Avian TEQ (ND=0) ^a	NV	NV	2	0.0638 J	--	--	--	--	--	--	0.6202 J
cPAHs (mg/kg)											
Benzo(a)anthracene	NV	1.37	NV	0.023 J	0.00643 U	0.00733 U	0.0252 J	0.00642 U	0.00778 J	0.00624 U	0.00506 U
Benzo(a)pyrene	0.1	0.137	12	0.0181	0.00643 U	0.00733 U	0.0168	0.00642 U	0.00529 U	0.00624 U	0.00506 U
Benzo(b)fluoranthene	NV	1.37	NV	0.0234 J	0.00643 U	0.00733 U	0.0185 J	0.00642 U	0.00715 J	0.00624 U	0.00506 U
Benzo(k)fluoranthene	NV	13.7	NV	0.00934 J	0.00643 U	0.00733 U	0.00653 U	0.00642 U	0.00529 U	0.00624 U	0.00506 U
Chrysene	NV	137	NV	0.0233 J	0.00643 U	0.00733 U	0.0257 J	0.00642 U	0.00682 J	0.00624 U	0.00506 U
Dibenzo(a,h)anthracene	NV	0.137	NV	0.00632 U	0.00643 U	0.00733 U	0.00653 U	0.00642 U	0.00529 U	0.00624 U	0.00506 U
Indeno(1,2,3-cd)pyrene	NV	1.37	NV	0.0131	0.00643 U	0.00733 U	0.0085 J	0.00642 U	0.00529 U	0.00624 U	0.00506 U
cPAH TEQ (ND=0)	0.1	NV	NV	0.0252 J	0.00643 U	0.00733 U	0.0223 J	0.00642 U	0.00156 J	0.00624 U	0.00506 U
TPH (mg/kg)											
Diesel-Range Hydrocarbons	2000	NV	200	16.9 J	12.9 U	13.5 U	38.2	12.7 U	14.5 J	12.3 U	10.5 U
Lube-Oil-Range Hydrocarbons	2000	NV	NV	25 U	25.8 U	27.1 U	35.5 J	25.3 U	22.3 J	24.6 U	21 U

Table 4-3
Soil Analytical Results—Power House Building AOC
Former Northern State Hospital Phase II ESA
Port of Skagit
Sedro-Woolley, Washington

Location:	MTCA A	MTCA B	MTCA EIC	GP52	GP52	GP53	GP53	GP53	GP54	GP54
Sample Name:				GP52-S-6.0	GP52-S-7.5	GP53-S-0.5	GP53-S-1.0	GP53-S-2.0	GP54-S-0.5	GP54-S-5.5
Collection Date:				04/23/2018	04/23/2018	04/24/2018	04/24/2018	04/24/2018	04/24/2018	04/24/2018
Collection Depth (ft bgs):				5.5-6.1	7.2-7.8	0.3-0.8	0.8-1.2	1.5-2.2	0.4-0.9	5.3-6
Dioxins/Furans (pg/g)										
1,2,3,4,6,7,8-HpCDD	NV	NV	NV	--	--	4.36 J	--	--	--	--
1,2,3,4,6,7,8-HpCDF	NV	NV	NV	--	--	3.6 J	--	--	--	--
1,2,3,4,7,8,9-HpCDF	NV	NV	NV	--	--	0.421 J	--	--	--	--
1,2,3,4,7,8-HxCDD	NV	NV	NV	--	--	0.0842 UJ	--	--	--	--
1,2,3,4,7,8-HxCDF	NV	NV	NV	--	--	2.05 J	--	--	--	--
1,2,3,6,7,8-HxCDD	NV	NV	NV	--	--	0.264 J	--	--	--	--
1,2,3,6,7,8-HxCDF	NV	NV	NV	--	--	0.482 J	--	--	--	--
1,2,3,7,8,9-HxCDD	NV	161	NV	--	--	0.131 J	--	--	--	--
1,2,3,7,8,9-HxCDF	NV	NV	NV	--	--	0.19 UJ	--	--	--	--
1,2,3,7,8-PeCDD	NV	NV	NV	--	--	0.21 UJ	--	--	--	--
1,2,3,7,8-PeCDF	NV	NV	NV	--	--	0.578 J	--	--	--	--
2,3,4,6,7,8-HxCDF	NV	NV	NV	--	--	0.354 J	--	--	--	--
2,3,4,7,8-PeCDF	NV	NV	NV	--	--	0.395 J	--	--	--	--
2,3,7,8-TCDD	NV	12.8	NV	--	--	0.115 J	--	--	--	--
2,3,7,8-TCDF	NV	NV	NV	--	--	0.219 J	--	--	--	--
OCDD	NV	NV	NV	--	--	38.7 J	--	--	--	--
OCDF	NV	NV	NV	--	--	2.03 J	--	--	--	--
Total HpCDDs	NV	NV	NV	--	--	7.73 J	--	--	--	--
Total HpCDFs	NV	NV	NV	--	--	7.94 J	--	--	--	--
Total HxCDDs	NV	NV	NV	--	--	2.58 J	--	--	--	--
Total HxCDFs	NV	NV	NV	--	--	7.89 J	--	--	--	--
Total PeCDDs	NV	NV	NV	--	--	1.75 UJ	--	--	--	--
Total PeCDFs	NV	NV	NV	--	--	4.76 J	--	--	--	--
Total TCDDs	NV	NV	NV	--	--	0.836 J	--	--	--	--
Total TCDFs	NV	NV	NV	--	--	1.09 J	--	--	--	--
Dioxin/Furan TEQ (ND=0)	NV	12.8	NV	--	--	0.697 J	--	--	--	--
Total Dioxins Mammalian TEQ (ND=0) ^o	NV	NV	2	--	--	0.210 J	--	--	--	--
Total Dioxins Avian TEQ (ND=0) ^o	NV	NV	2	--	--	0.487 J	--	--	--	--
Total Furans Mammalian TEQ (ND=0) ^o	NV	NV	2	--	--	0.139 J	--	--	--	--
Total Furans Avian TEQ (ND=0) ^o	NV	NV	2	--	--	1.00 J	--	--	--	--
cPAHs (mg/kg)										
Benzo(a)anthracene	NV	1.37	NV	0.00764 U	0.00742 U	0.015 J	0.00543 U	0.0067 U	0.076 J	0.00643 U
Benzo(a)pyrene	0.1	0.137	12	0.00764 U	0.00742 U	0.0148	0.00543 U	0.0067 U	0.0529 J	0.00643 U
Benzo(b)fluoranthene	NV	1.37	NV	0.00764 U	0.00742 U	0.02 J	0.00543 U	0.0067 U	0.0758 J	0.00643 U
Benzo(k)fluoranthene	NV	13.7	NV	0.00764 U	0.00742 U	0.00611 J	0.00543 U	0.0067 U	0.0279 U	0.00643 U
Chrysene	NV	137	NV	0.00764 U	0.00742 U	0.0178 J	0.00543 U	0.0067 U	0.0958 J	0.00643 U
Dibenzo(a,h)anthracene	NV	0.137	NV	0.00764 U	0.00742 U	0.00516 U	0.00543 U	0.0067 U	0.0279 U	0.00643 U
Indeno(1,2,3-cd)pyrene	NV	1.37	NV	0.00764 U	0.00742 U	0.0123	0.00543 U	0.0067 U	0.0347 J	0.00643 U
cPAH TEQ (ND=0)	0.1	NV	NV	0.00764 U	0.00742 U	0.0203 J	0.00543 U	0.0067 U	0.0725 J	0.00643 U
TPH (mg/kg)										
Diesel-Range Hydrocarbons	2000	NV	200	15.2 U	15.9 J	9.79 U	10.3 U	13.6 U	11.2 U	13 U
Lube-Oil-Range Hydrocarbons	2000	NV	NV	30.3 U	27.9 U	82	20.6 U	27.3 U	131	25.9 U

Table 4-3
Soil Analytical Results—Power House Building AOC
Former Northern State Hospital Phase II ESA
Port of Skagit
Sedro-Woolley, Washington

NOTES:

Detected results are shown in **bold** font.

Results that exceed a MTCA A cleanup level, or a MTCA B cleanup level if no MTCA A value is available, are shaded. Non-detect results are not evaluated against cleanup criteria.

Results that exceed a MTCA EIC are shaded. Non-detect results are not evaluated against cleanup criteria.

-- = not analyzed.

AOC = area of concern.

cPAH = carcinogenic polycyclic aromatic hydrocarbon.

dioxin/furan TEQ = dioxin/furan toxicity equivalency quotient.

ESA = environmental site assessment.

ft bgs = feet below ground surface.

J = result is an estimated value.

mg/kg = milligrams per kilogram.

MTCA = Model Toxics Control Act.

MTCA A = MTCA method A, unrestricted land use, for soil.

MTCA EIC = MTCA ecological indicator soil concentration for protection of terrestrial plants and animals (Washington Administrative Code 173-340-900, 173-340-7490).

ND = non-detect.

NV = no value.

pg/g = picograms per gram.

TPH = total petroleum hydrocarbons.

U = result not detected at method detection limit or estimated detection limit.

UJ = result not detected at method detection limit or estimated detection limit, and is an estimated value.

^oTotal dioxin TEQ and total furan TEQ summed using methodology described in Washington State Department of Ecology publication 16-09-044, "Toxics Cleanup Program Implementation Memo #13", June 12, 2016.

Table 4-4
Soil Analytical Results—Lead in Soil AOC
Former Northern State Hospital Phase II ESA
Port of Skagit
Sedro-Woolley, Washington

Location:	MTCA A	MTCA EIC	HA16	HA16	HA17	HA17	HA18	HA18	HA19	HA19	HA20	HA20	HA21	HA21	
Sample Name:			HA16-S-0.5	HA16-S-1.0	HA17-S-0.5	HA17-S-1.0	HA18-S-0.5	HA18-S-1.0	HA19-S-0.5	HA19-S-1.0	HA20-S-0.5	HA20-S-1.0	HA21-S-0.5	HA21-S-1.0	
Collection Date:			04/23/2018	04/23/2018	04/23/2018	04/23/2018	04/23/2018	04/23/2018	04/23/2018	04/23/2018	04/23/2018	04/23/2018	04/23/2018	04/23/2018	04/23/2018
Collection Depth (ft bgs):			0.5	1.0	0.5	1.0	0.5	1.0	0.5	1.0	0.5	1.0	0.5	1.0	
Metals (mg/kg)															
Lead	250	50	342	224	82.8	45.6	327	65.6	126	112	355	84.6	421	256	

Table 4-4
Soil Analytical Results—Lead in Soil AOC
Former Northern State Hospital Phase II ESA
Port of Skagit
Sedro-Woolley, Washington

Location:	MTCA A	MTCA EIC	HA21	HA22	HA22	HA23	HA23	HA24	HA24	HA25	HA25	HA26	HA26	
Sample Name:			HA21-S-1.5	HA22-S-0.5	HA22-S-1.0	HA23-S-0.5	HA23-S-1.0	HA24-S-0.5	HA24-S-1.0	HA25-S-0.5	HA25-S-1.0	HA26-S-0.5	HA26-S-1.0	
Collection Date:			04/30/2018	04/23/2018	04/23/2018	04/23/2018	04/23/2018	04/23/2018	04/23/2018	04/23/2018	04/23/2018	04/23/2018	04/23/2018	04/23/2018
Collection Depth (ft bgs):			1.5	0.5	1.0	0.5	1.0	0.5	1.0	0.5	1.0	0.5	1.0	
Metals (mg/kg)														
Lead	250	50	257	172	111	146	146	120	95.8	45.4	50.4	249	396	

Table 4-4
Soil Analytical Results—Lead in Soil AOC
Former Northern State Hospital Phase II ESA
Port of Skagit
Sedro-Woolley, Washington

Location:	MTCA A	MTCA EIC	HA26	HA27	HA27	HA28	HA28	HA28	HA29	HA30	HA30	HA31	HA31
Sample Name:			HA26-S-1.5	HA27-S-0.5	HA27-S-1.0	HA28-S-0.5	HA28-S-1.0	HA28-S-1.5	HA29-S-1.0-CS	HA30-S-0.5	HA30-S-1.0	HA31-S-0.5	HA31-S-1.0
Collection Date:			04/30/2018	04/23/2018	04/23/2018	04/23/2018	04/23/2018	04/30/2018	04/23/2018	04/30/2018	04/30/2018	04/30/2018	04/30/2018
Collection Depth (ft bgs):			1.5	0.5	1.0	0.5	1.0	1.5	1.0	0.5	1.0	0.5	1.0
Metals (mg/kg)													
Lead	250	50	307	185	120	213	282	159	276	141	50.8	15.8	17.5

Table 4-4
Soil Analytical Results—Lead in Soil AOC
Former Northern State Hospital Phase II ESA
Port of Skagit
Sedro-Woolley, Washington

Location:	MTCA A	MTCA EIC	HA32	HA32	HA33	HA33	HA33	HA34	HA34	HA34	HA35	HA35	HA35	
Sample Name:			HA32-S-0.5	HA32-S-1.0	HA33-S-0.5	HA33-S-1.0	HA33-S-1.5	HA34-S-0.5	HA34-S-1.0	HA34-S-1.5	HA35-S-0.5	HA35-S-1.0	HA35-S-1.5	
Collection Date:			04/30/2018	04/30/2018	04/30/2018	04/30/2018	04/30/2018	04/30/2018	04/30/2018	04/30/2018	04/30/2018	04/30/2018	04/30/2018	04/30/2018
Collection Depth (ft bgs):			0.5	1.0	0.5	1.0	1.5	0.5	1.0	1.5	0.5	1.0	1.5	
Metals (mg/kg)														
Lead	250	50	105	16.9	29.4	10.9	7.21	107	71.7	53.2	112	46.4	42.1	

Table 4-4
Soil Analytical Results—Lead in Soil AOC
Former Northern State Hospital Phase II ESA
Port of Skagit
Sedro-Woolley, Washington

NOTES:

Detected results are shown in **bold** font.

Results that exceed MTCA A cleanup level, or a MTCA B cleanup level if no MTCA A value is available, are shaded. Non-detect results are not evaluated against cleanup criteria.

Results that exceed an ecological indicator concentration are shaded. Non-detect results are not evaluated against cleanup criteria.

Shaded results indicate exceedance of one or more screening levels. Screening levels with exceedances are also shaded.

AOC = area of concern.

ESA = environmental site assessment.

ft bgs = feet below ground surface.

mg/kg = milligrams per kilogram.

MTCA = Model Toxics Control Act.

MTCA EIC = MTCA ecological indicator soil concentration for protection of terrestrial plants and animals. Value shown is the lowest available concentration for plant, soil biota, or wildlife.

WAC = Washington State Administrative Code.

Table 4-5
Soil Analytical Results—Property-Wide Metals in Soil AOC, ISM Decision Units
Former Northern State Hospital Phase II ESA
Port of Skagit
Sedro-Woolley, Washington

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	MTCA CUL	MTCA Source	Site-Specific Natural Background Value	Site-Specific Ecological Screening Level (MTCA EICs unless otherwise noted) ^a			DU01	DU02	DU03	DU04	DU05	DU06	DU07	DU08	DU09
				Plants	Soil Biota	Wildlife	DU01-S-0.5	DU02-S-0.5	DU03-S-0.5	DU04-S-0.5	DU05-S-0.5	DU06-S-0.5	DU07-S-0.5	DU08-S-0.5	DU09-S-0.5
							0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	
Metals (mg/kg)															
Arsenic	20	MTCA A	18.9	10	60	132	8.87	14.7	11.6	10.4	12.3	10.2	9.31	11.9	13.1
Barium	16000	MTCA B	345	500	330 ^c	102	154	193	127	153	134	122	124	122	140 J
Cadmium	2	MTCA A	1.00 ^f	4	20	14	0.358	0.342	0.425	0.282	0.365	0.246	0.243	0.382	0.408
Chromium	2000 ^b	MTCA A	101	42	42	67	59.6	82.7	67.7	80.8	71.2	64.3	61.7	72.9	73
Copper	3200	MTCA B	76.1	100	50	217	60.5	204	48.9	44.1	52.3	45.6	45.6	42.3	49.6
Lead	250	MTCA A	53	120 ^c	500	118	48.9	89	30.2	128	34	27.8	27.1	20.5	26.2
Mercury	2	MTCA A	0.14 ^g	0.3	0.1	5.5	1.8 U	2.46 U	1.54 U	1.25 U	1.16 U	0.594 U	2.12 U	1.17 U	0.473 U
Selenium	400	MTCA B	0.78 ^f	1	70	0.3	0.523 U	0.521 U	0.537 U	0.567 J	0.568 U	0.55 U	0.519 U	0.564 U	0.537 U
Silver	400	MTCA B	0.7	2	50 ^e	14 ^c	0.523 U	0.521 U	0.537 U	0.566 U	0.568 U	0.55 U	0.519 U	0.564 U	0.537 U
Zinc	24000	MTCA B	179	86	200	360	121	221	123	128	127	113	108	100	112 J

Table 4-5
Soil Analytical Results—Property-Wide Metals in Soil AOC, ISM Decision Units
Former Northern State Hospital Phase II ESA
Port of Skagit
Sedro-Woolley, Washington

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	MTCA CUL	MTCA Source	Site-Specific Natural Background Value	Site-Specific Ecological Screening Level (MTCA EICs unless otherwise noted) ^o			DU10			DU11	DU12	DU13	DU14	DU15	DU16 ^d	DU17 ^d	DU18
				Plants	Soil Biota	Wildlife	DU10A-S-0.5	DU10B-S-0.5	DU10C-S-0.5	DU11-S-0.5	DU12-S-0.5	DU13-S-0.5	DU14-S-0.5	DU15-S-0.5	DU16-S-0.5	DU17-S-0.5	DU18-S-0.5
							0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Metals (mg/kg)																	
Arsenic	20	MTCA A	18.9	10	60	132	11	10.4	10.7	16.8	9.69	9.11	12.3	9.9	8.67	10.6	8.12
Barium	16000	MTCA B	345	500	330 ^c	102	147	120	129	107	142	93.7	99.3	100	120	119	93.1
Cadmium	2	MTCA A	1.00 ^f	4	20	14	0.288 J	0.185 J	0.39 J	0.517	0.227	0.249	0.579	0.334	0.182 J	0.216 J	0.188 J
Chromium	2000 ^b	MTCA A	101	42	42	67	68.7	82.7	72	159	74.6	92.4	117	64.3	40.8	52.2	49.7
Copper	3200	MTCA B	76.1	100	50	217	45.5	38.2	41.5	59.5	50.2	40.5	53.3	32.5	26.7	42.7	35.2
Lead	250	MTCA A	53	120 ^c	500	118	41.2 J	15 J	14.7 J	25.3	58.4	14.7	84.1	12.9	16.3	22.5	11.3
Mercury	2	MTCA A	0.14 ^g	0.3	0.1	5.5	0.813 UJ	0.484 UJ	0.402 UJ	2.1 U	1.31 U	1.77 U	1.91 U	1.38 U	1.55 U	0.776 U	2.73 U
Selenium	400	MTCA B	0.78 ^f	1	70	0.3	0.622 J	0.575 J	0.699 J	0.716 J	0.501 U	0.496 U	0.528 U	0.575 U	0.585 J	0.579 U	0.53 U
Silver	400	MTCA B	0.7	2	50 ^e	14 ^c	0.528 U	0.563 U	0.543 U	0.524 U	0.501 U	0.496 U	0.528 U	0.575 U	0.572 U	0.579 U	0.53 U
Zinc	24000	MTCA B	179	86	200	360	144	102	105	111	125	82.4	122	88.4	77.7	90.4	72.2

Table 4-5
Soil Analytical Results—Property-Wide Metals in Soil AOC, ISM Decision Units
Former Northern State Hospital Phase II ESA
Port of Skagit
Sedro-Woolley, Washington

NOTES:

Detected results are shown in **bold** font.

MTCA Method A CULs for unrestricted land use are provided, where available. MTCA Method B CULs are provided when MTCA Method A CULs are not available.

Shading indicates SLV exceedance by results that are also greater than the site-specific natural background.

CUL = cleanup level.

DU = decision unit.

Eco-SSL = USEPA ecological soil screening levels.

ft bgs = feet below ground surface.

J = result is an estimated value.

mg/kg = milligrams per kilogram.

MTCA = Model Toxics Control Act.

MTCA EIC = MTCA ecological indicator soil concentration for protection of terrestrial plants and animals. The value shown is the lowest available plant, soil biota, or wildlife concentration (Washington Administrative Code 173-340-900, Table 749-3).

SLV = screening level value.

U = result not detected at method detection limit.

UJ = result not detected and is an estimated value.

USEPA = U.S. Environmental Protection Agency.

^aEICs were obtained from MTCA Table 749-3.

^bValue is for chromium III.

^cEco-SSLs were obtained from: <https://www.epa.gov/chemical-research/interim-ecological-soil-screening-level-documents>.

^dData from discrete samples collected in DU16 and DU17 were used to develop the site-specific natural background values for this property that are presented in this table and used in the screening process (see Appendix E). Therefore, data from these DUs are not screened and are only presented for completeness.

^eOak Ridge National Laboratory screening benchmark concentration for the toxicity of chemicals to soil microorganisms and microbial processes, presented here: <https://info.ornl.gov/sites/publications/Files/Pub57854.pdf>.

^fStatewide 90th percentile natural background concentration developed by the Washington Department of Ecology, obtained from: <https://fortress.wa.gov/ecy/publications/documents/94115.pdf>.

^gCalculated using normal distribution in MTCA Stat program downloaded from: <https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Contamination-clean-up-tools>.

Table 4-6
Soil Analytical Results—Property-Wide Metals in Soil AOC, Discrete Samples
Former Northern State Hospital Phase II ESA
Port of Skagit
Sedro-Woolley, Washington

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	MTCA CUL	MTCA Source	Site-Specific Natural Background Value	Site-Specific Ecological Screening Level (MTCA EICs unless otherwise noted) ^a			DU02					DU04				
							SS36-S-0.5	SS37-S-0.5	SS38-S-0.5	SS39-S-0.5	SS40-S-0.5	SS06-S-0.5	SS07-S-0.5	SS08-S-0.5	SS09-S-0.5	SS10-S-0.5
				Plants	Soil Biota	Wildlife	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Metals (mg/kg)																
Chromium	2000 ^b	MTCA A	101	42	42	67	--	--	--	--	--	--	--	--	--	
Copper	3200	MTCA B	76.1	100	50	217	63.9	58.6	1050	26.5	120	--	--	--	--	
Lead	250	MTCA A	53	120 ^c	500	118	--	--	--	--	--	27.7	36.7	572	59.3	
Zinc	24000	MTCA B	179	86	200	360	121	175	279	67.4	390	--	--	--	--	

Table 4-6
Soil Analytical Results—Property-Wide Metals in Soil AOC, Discrete Samples
Former Northern State Hospital Phase II ESA
Port of Skagit
Sedro-Woolley, Washington

Location: Sample Name: Collection Date: Collection Depth (ft bgs):	MTCA CUL	MTCA Source	Site-Specific Natural Background Value	Site-Specific Ecological Screening Level (MTCA EICs unless otherwise noted) ^a			DU11					DU14				
							SS51-S-0.5	SS52-S-0.5	SS53-S-0.5	SS54-S-0.5	SS55-S-0.5	SS66-S-0.5	SS67-S-0.5	SS68-S-0.5	SS69-S-0.5	SS70-S-0.5
				Plants	Soil Biota	Wildlife	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5	0-5
Metals (mg/kg)																
Chromium	2000 ^b	MTCA A	101	42	42	67	130	169	124	150	111	85.5	83.7	149	203	198
Copper	3200	MTCA B	76.1	100	50	217	--	--	--	--	--	--	--	--	--	--
Lead	250	MTCA A	53	120 ^c	500	118	--	--	--	--	--	--	--	--	--	--
Zinc	24000	MTCA B	179	86	200	360	--	--	--	--	--	--	--	--	--	--

Table 4-6
Soil Analytical Results—Property-Wide Metals in Soil AOC, Discrete Samples
Former Northern State Hospital Phase II ESA
Port of Skagit
Sedro-Woolley, Washington

NOTES:

Detected results are shown in **bold** font.

MTCA Method A CULs for unrestricted land use are provided, where available. MTCA Method B CULs are provided when MTCA Method A CULs are not available.

Shading indicates SLV exceedance by results that are also greater than the site-specific natural background.

CUL = cleanup level.

DU = decision unit.

Eco-SSL = USEPA ecological soil screening levels.

ft bgs = feet below ground surface.

mg/kg = milligrams per kilogram.

MTCA = Model Toxics Control Act.

MTCA EIC = MTCA ecological indicator soil concentration for protection of terrestrial plants and animals. The value shown is the lowest available plant, soil biota, or wildlife concentration (Washington Administrative Code 173-340-900, Table 749-3).

SLV = screening level value.

USEPA = U.S. Environmental Protection Agency.

^aEICs were obtained from MTCA Table 749-3.

^bValue is for chromium III.

^cEco-SSLs were obtained from: <https://www.epa.gov/chemical-research/interim-ecological-soil-screening-level-documents>.

FIGURES

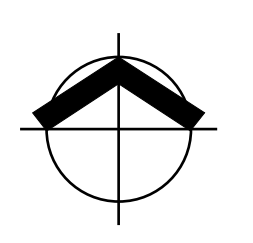
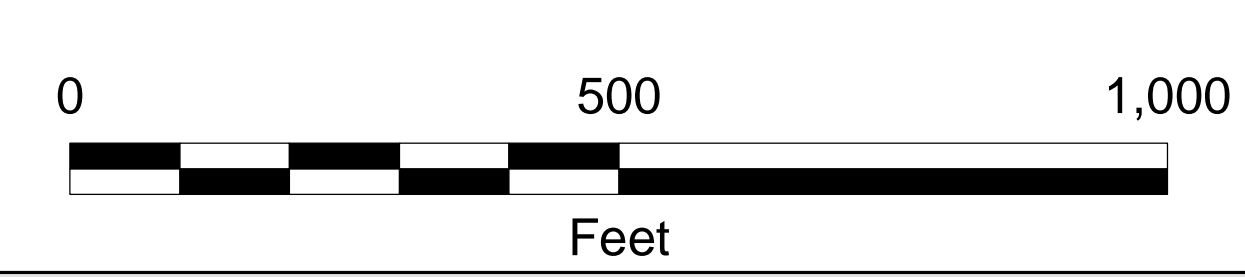




Source: Aerial photograph obtained from Esri ArcGIS Online; parcels and roads and streams datasets obtained from Skagit County; city limits dataset obtained from City of Sedro-Woolley.

- Legend**
- Property Parcel and Parcel Name
 - Parcel Boundary
 - Northern State Recreational Area
 - Sedro-Woolley City Limits (Post Annexation)
 - Stream

Figure 1-1
Property Vicinity
 Former Northern State Hospital
 Port of Skagit
 Sedro-Woolley, Washington



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Project: 0624.01
Produced By: mpsef
Approved By: H. Hirsch
Print Date: 7/31/2018

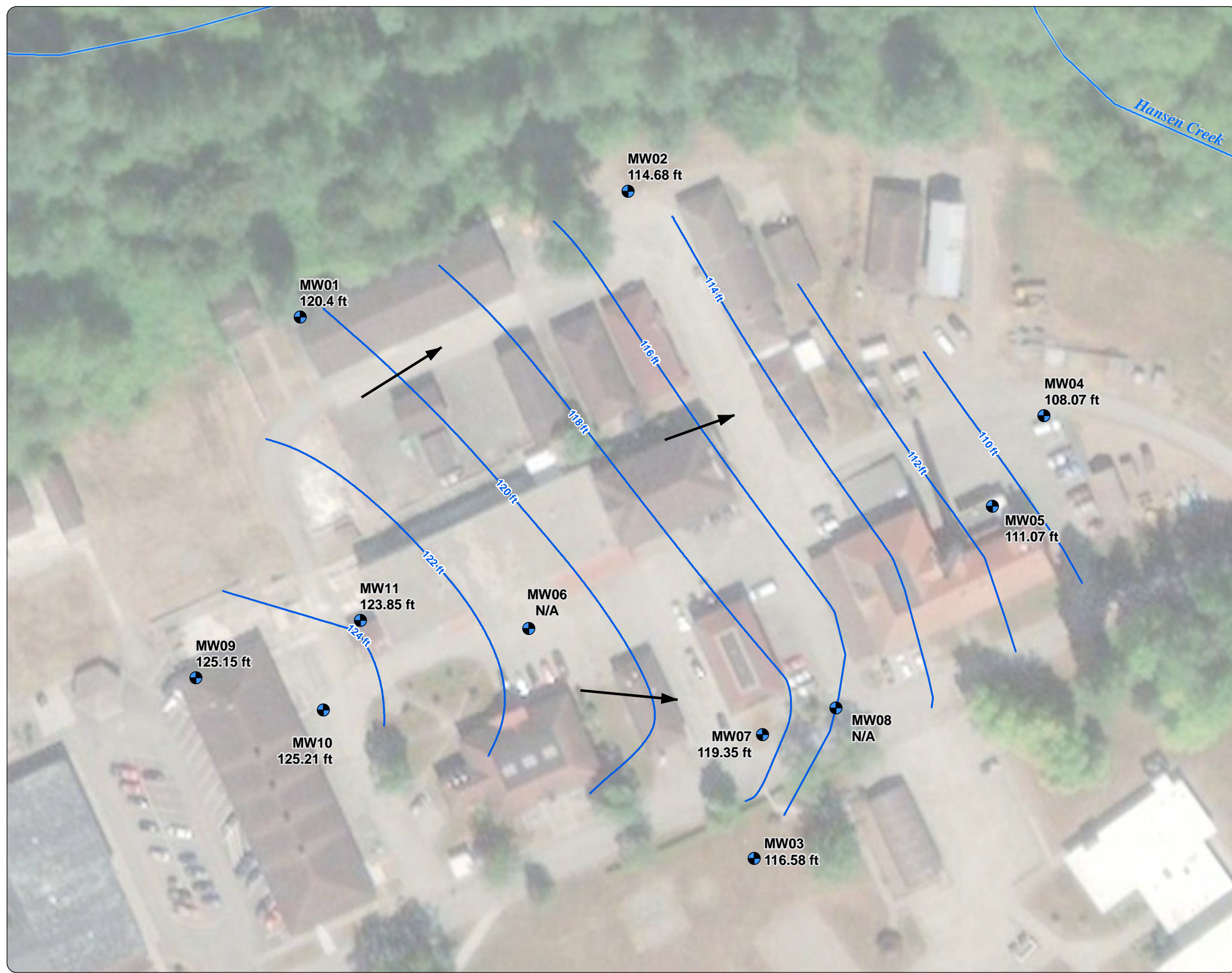
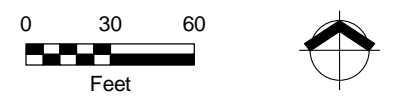


Figure 2-1
Former Northern State Hospital
Groundwater Elevation Contours
Northern State Hospital Property
Port of Skagit
Sedro-Woolley, Washington

- Legend**
- Monitoring Well
 - MW01** Well ID and GW Elevation
119.47 ft
 - Groundwater Elevation Contour
 - Groundwater Flow Direction

Note:
Water levels were collected on May 1, 2018.
N/A = water level could not be collected because of inaccessibility.

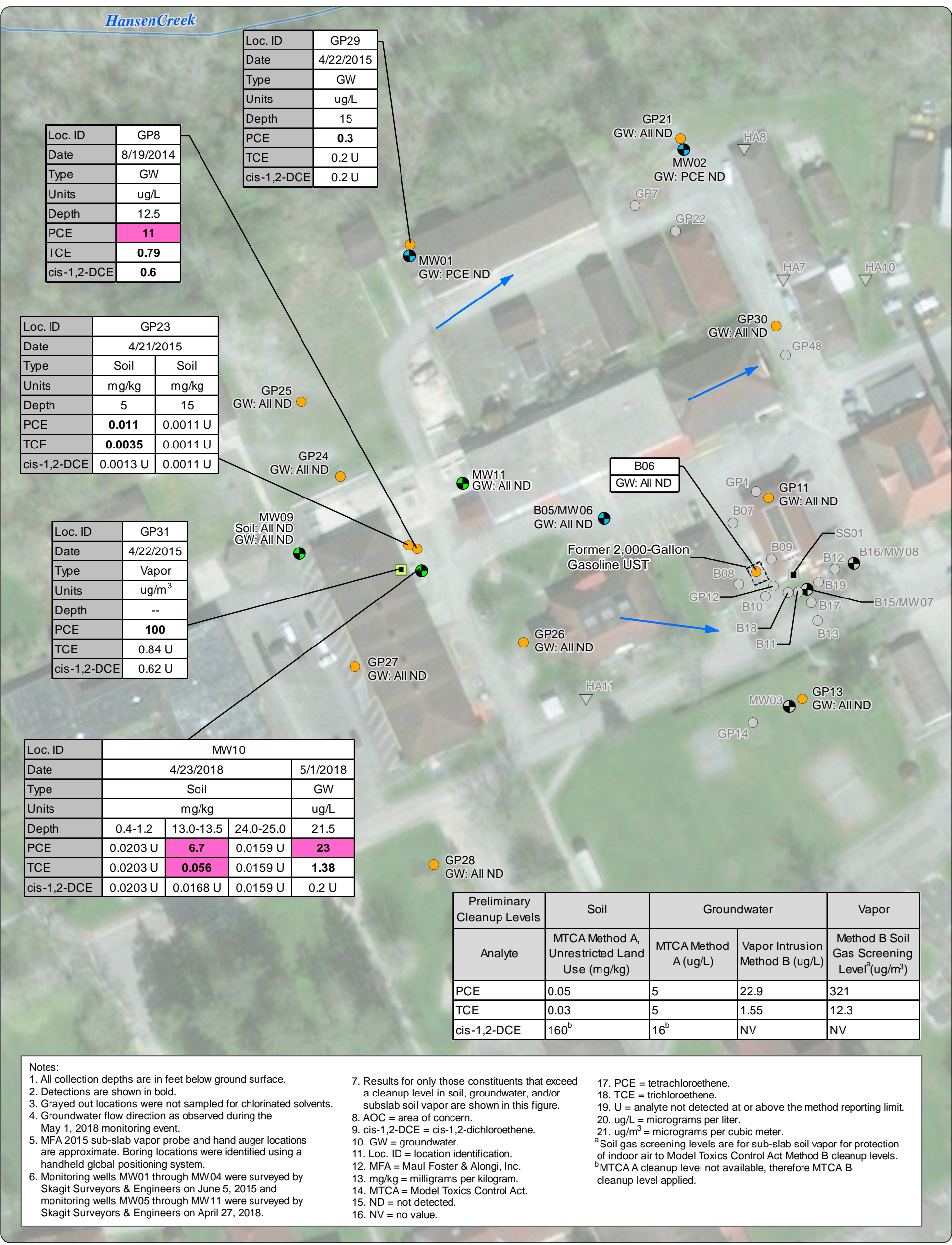


Source: Aerial photograph obtained from Esri ArcGIS Online; streams dataset obtained from Skagit County.



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Path: X:\024.04 Port of Skagit\10 Brownfield_Haz\Project\June 2018\Fig. Former Laundry Building_AOC.mxd
 Print Date: 6/8/2018
 Produced By: mpssef
 Approved By:

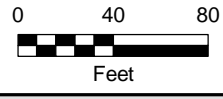


Source: Aerial photograph obtained from Esri ArcGIS Online

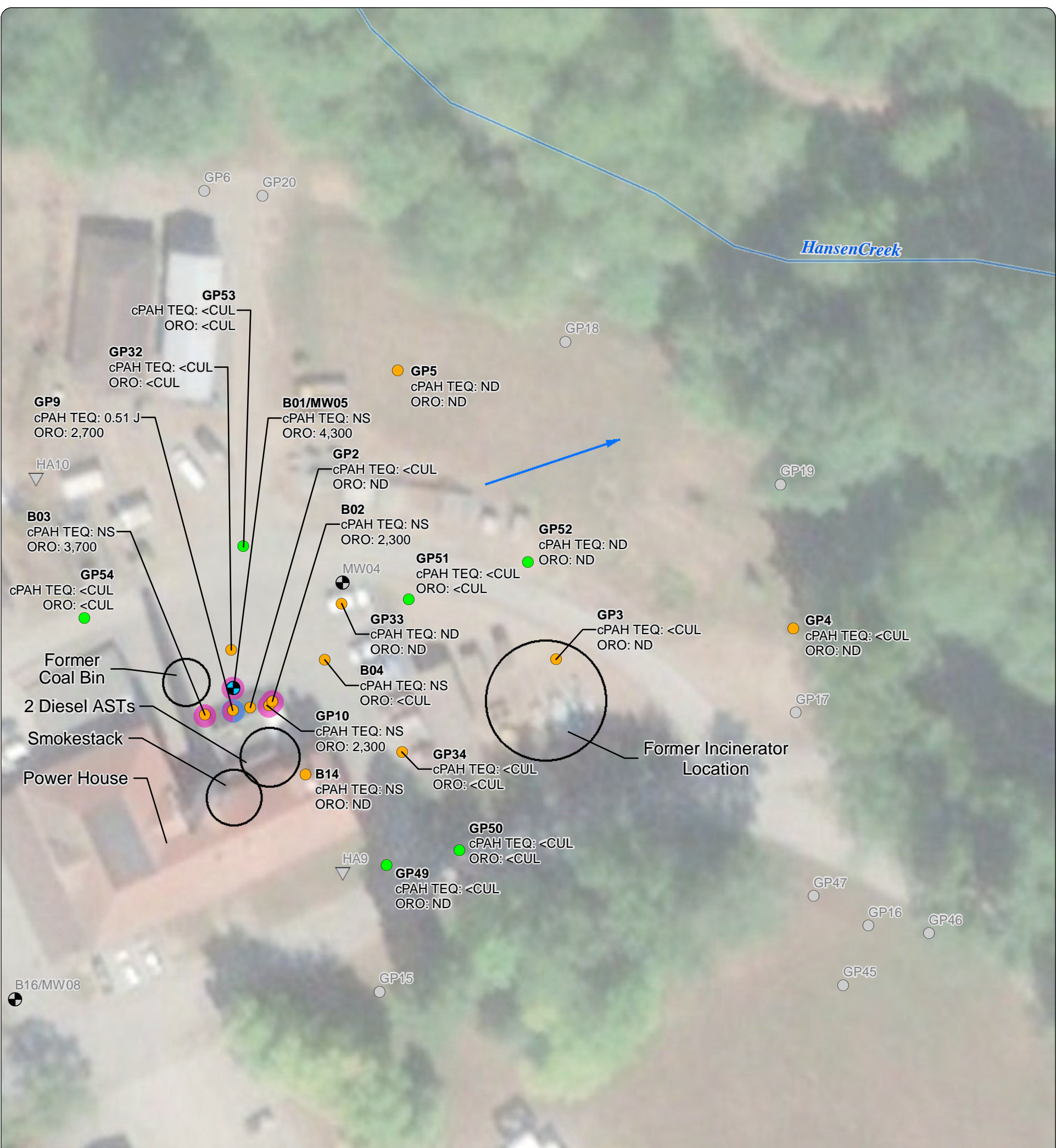
Legend

- New Monitoring Well
- Previous Monitoring Well
- Previous Monitoring Well Not Sampled
- Previous Boring Location
- Previous Boring Location Not Sampled
- Sub-Slab Vapor Probe
- Sub-Slab Vapor Probe Not Sampled
- ▽ Hand Auger Location Not Sampled
- Groundwater Flow Direction

Figure 3-1
Former Laundry Building AOC
 Former Northern State Hospital
 Port of Skagit
 Sedro-Woolley, Washington



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.



Notes:

1. All collection depths are in feet below ground surface.
2. All detections are in mg/kg.
3. Grayed out locations were not sampled for cPAHs or ORO.
4. Groundwater flow direction as observed during May 1, 2018 monitoring event.
5. Only detections of cPAHs and ORO are shown in this figure.
6. Only those constituents that exceed a CUL in soil are shown in this figure.
7. Results presented are based on the highest concentrations detected at all sampling depths.
8. AOC = area of concern.
9. AST = aboveground storage tank.
10. cPAH = carcinogenic polycyclic aromatic hydrocarbon.
11. CUL = cleanup level.
12. < CUL = detected below cleanup level.
13. J = estimated value.
14. mg/kg = milligrams per kilogram.
15. MTCA = Model Toxics Control Act.
16. ND = not detected.
17. NS = not sampled.
18. ORO = oil-range organics.
19. TEQ = toxic equivalency quotient.

Preliminary Cleanup Levels	MTCA Method A (mg/kg)
cPAH TEQ	0.1
ORO	2,000

Source: Aerial photograph obtained from Esri ArcGIS Online

Legend

- Boring Location
- Previous Boring Location
- Previous Boring Location Not Sampled
- Previous Monitoring Well Location
- Previous Monitoring Well Location Not Sampled
- cPAH TEQ Exceeds CUL
- ORO Exceeds CUL
- ➔ Groundwater Flow Direction
- ▽ Hand Auger Location Not Sampled

Figure 3-2
Power Building AOC
 Former Northern State Hospital
 Port of Skagit
 Sedro-Woolley, Washington




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Figure 3-3 Lead in Soil AOC - Trevennen

Former Northern State Hospital
Port of Skagit
Sedro-Woolley, Washington

Legend

 Hand Auger Location

 Exceedance of the MTCA Method A CUL



Notes:

1. Hand auger locations were identified using a handheld global positioning system.
2. The MTCA Method A CUL for lead is 250 mg/kg.
3. AOC = area of concern.
4. CUL = cleanup level.
5. mg/kg = milligram per kilogram.
6. MTCA = Model Toxics Control Act.



Source: Aerial photograph obtained from Esri ArcGIS Online; streams dataset obtained from Skagit County.





This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Figure 3-4 Lead in Soil AOC - Coleman

Former Northern State Hospital
Port of Skagit
Sedro-Woolley, Washington

Legend

-  Hand Auger Location
-  Exceedance of the MTCA Method A CUL

HA23	
0.5 ft	146
1.0 ft	146

HA32	
0.5 ft	105
1.0 ft	16.9

HA22	
0.5 ft	172
1.0 ft	111

HA20	
0.5 ft	355
1.0 ft	84.6

HA21	
0.5 ft	421
1.0 ft	257
1.5 ft	256

HA33	
0.5 ft	29.4
1.0 ft	10.9
1.5 ft	7.21

Notes:

1. Hand auger locations were identified using a handheld global positioning system.
2. The MTCA Method A CUL for lead is 250 mg/kg.
3. AOC = area of concern.
4. CUL = cleanup level.
5. mg/kg = milligram per kilogram.
6. MTCA = Model Toxics Control Act.



Source: Aerial photograph obtained from Esri ArcGIS Online; streams dataset obtained from Skagit County.



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

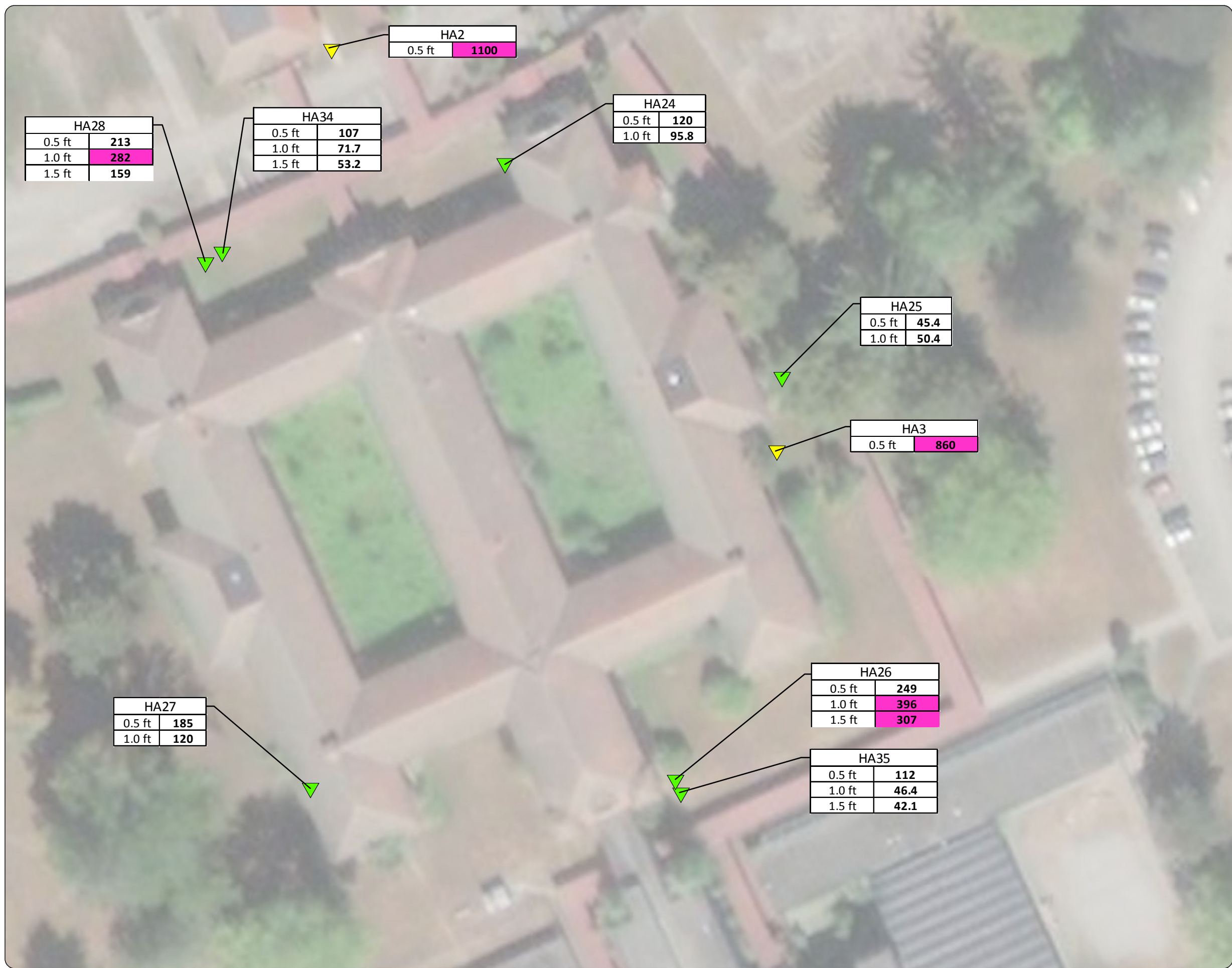





Figure 3-5
Lead in Soil AOC - Denny
 Former Northern State Hospital
 Port of Skagit
 Sedro-Woolley, Washington

Legend

-  Hand Auger Location
-  Previous Hand Auger Location (MFA, 2015)
-  Exceedance of the MTCA Method A CUL

Notes:

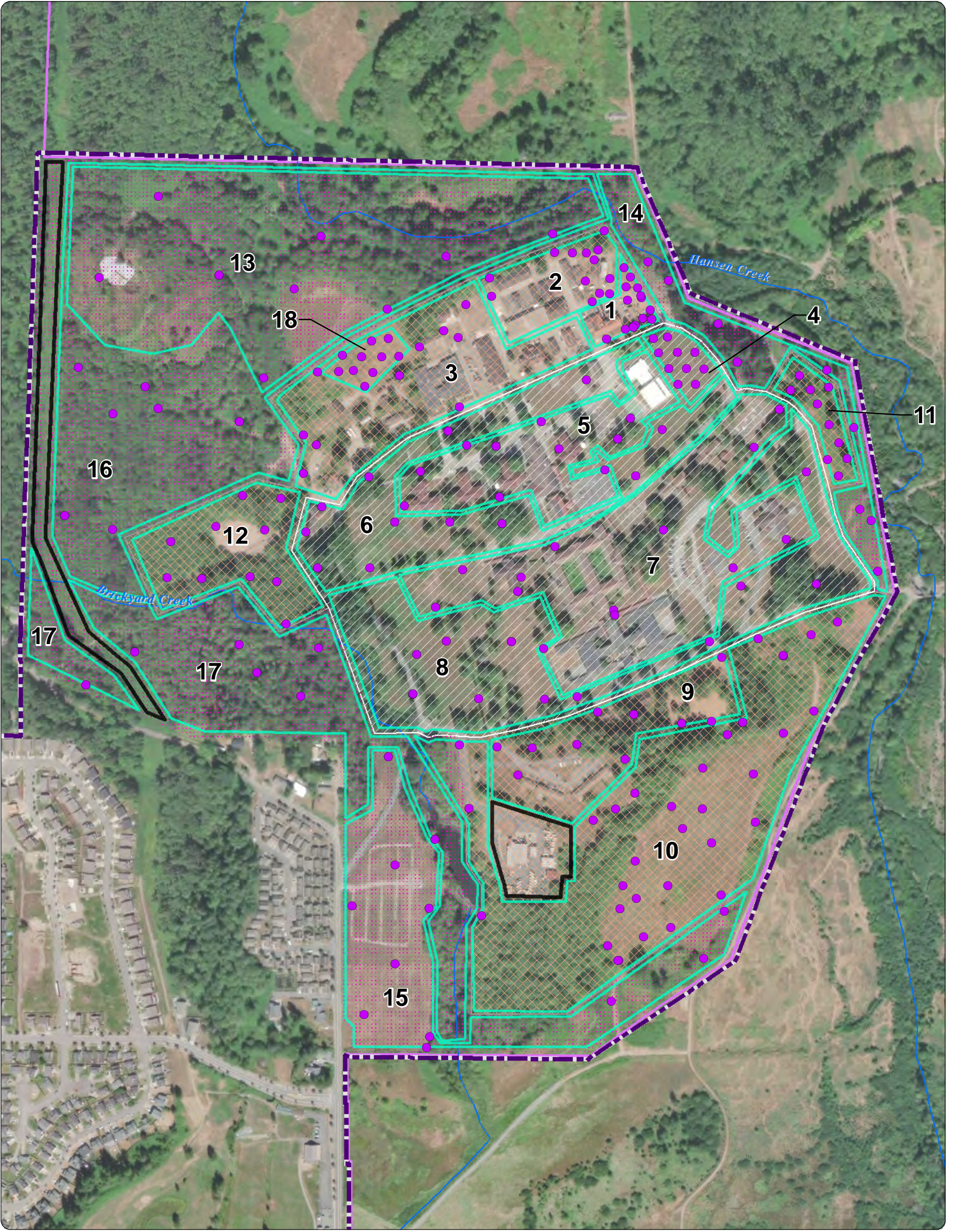
1. Hand auger locations HA24 through HA35 were identified using a handheld global positioning system. All other hand auger locations are approximate.
2. The MTCA Method A CUL for lead is 250 mg/kg.
3. AOC = area of concern.
4. CUL = cleanup level.
5. mg/kg = milligram per kilogram.
6. MTCA = Model Toxics Control Act.



Source: Aerial photograph obtained from Esri ArcGIS Online; streams dataset obtained from Skagit County.



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.



Source: Aerial photograph obtained from Esri ArcGIS Online; parcels and roads and streams datasets obtained from Skagit County; city limits dataset obtained from City of Sedro-Woolley.

Property address:
2070 Northern State Road
Sedro-Woolley, Washington

Note:
ISM = incremental sampling methodology.

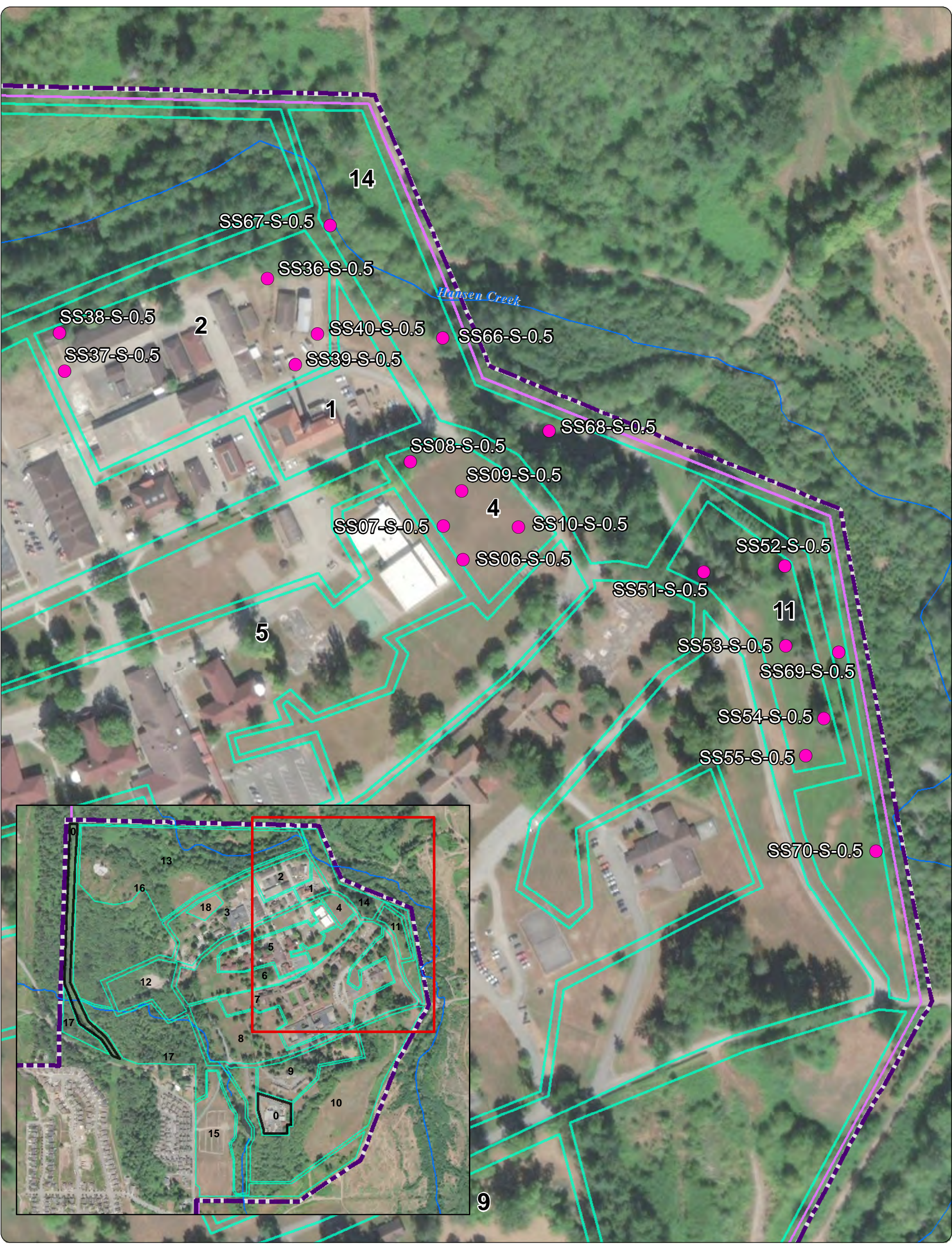
Legend

- GPS Sample Point Location
- Sedro-Woolley City Limits (Post Annexation)
- Northern State Recreational Area
- Decision Unit Boundary with Identification No.
- Area Excluded from Soil Sampling
- Stream

Subarea Plan

- Core Area
- Influence Area
- Open Space

Figure 3-6
Soil ISM Decision Units
Former Northern State Hospital
Port of Skagit
Sedro-Woolley, Washington



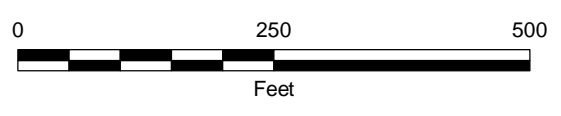
Source: Aerial photograph obtained from Esri ArcGIS Online; parcels and roads and streams datasets obtained from Skagit County; city limits dataset obtained from City of Sedro-Woolley.

Property address:
2070 Northern State Road
Sedro-Woolley, Washington

Note:
ISM = incremental sampling methodology.

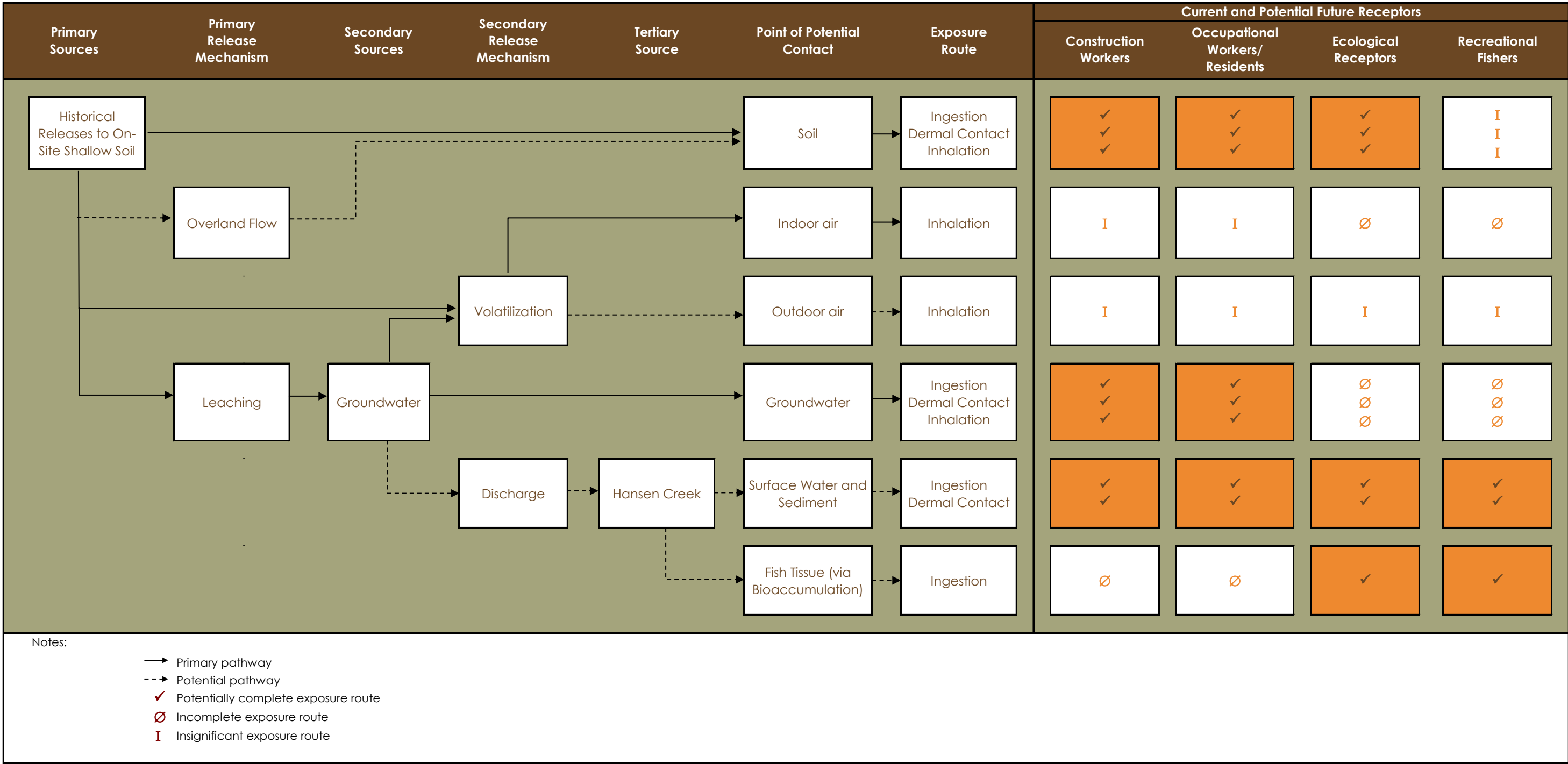
- | | |
|--|---|
| ● Discrete Soil Sample | Sedro-Woolley City Limits (Post Annexation) |
| Area Excluded from Soil Sampling | Northern State Recreational Area |
| Decision Unit Boundary with Identification No. | Stream |

Figure 4-1
Metals in Soil:
Discrete Sample Locations
Former Northern State Hospital
Port of Skagit
Sedro-Woolley, Washington

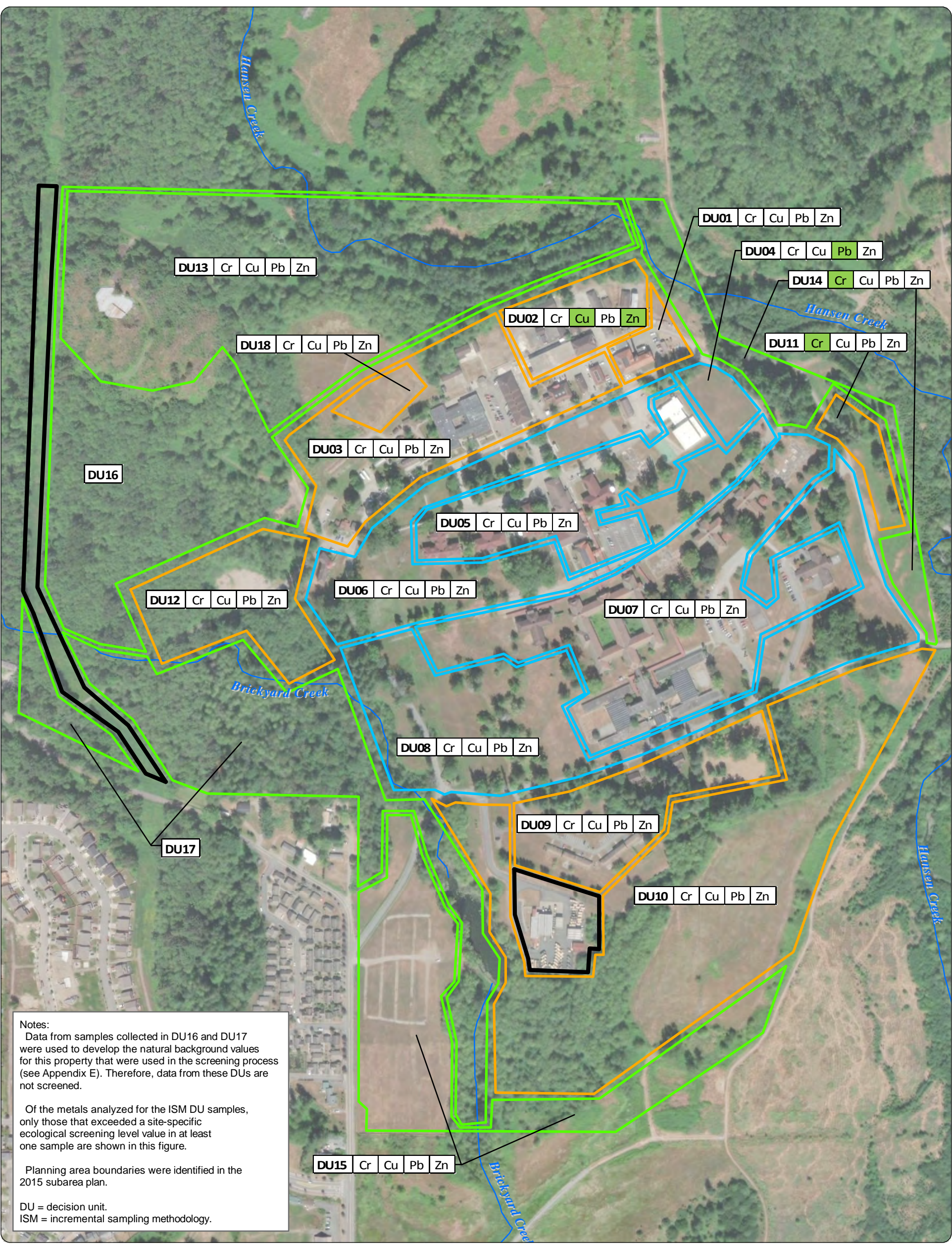


This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Figure 5-1
Conceptual Site Model
Former Northern State Hospital
Port of Skagit
Sedro-Woolley, Washington



Path: X:\0624_04 Port of Skagit\10_Brownfield_Haz/Project\DU Chemical Exceedances\Fig_A1_Chemicals_7162018.mxd
 Print Date: 8/9/2018
 Produced By: estrandhagen Approved By:



Notes:
 Data from samples collected in DU16 and DU17 were used to develop the natural background values for this property that were used in the screening process (see Appendix E). Therefore, data from these DUs are not screened.
 Of the metals analyzed for the ISM DU samples, only those that exceeded a site-specific ecological screening level value in at least one sample are shown in this figure.
 Planning area boundaries were identified in the 2015 subarea plan.
 DU = decision unit.
 ISM = incremental sampling methodology.

Source: Aerial photograph obtained from Esri ArcGIS Online; parcels, roads, and stream datasets obtained from Skagit County; City limit dataset obtained from the City of Sedro-Woolley.

Property address:
 2070 Northern State Road
 Sedro-Woolley, Washington

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This product is for informational purposes and may not have been prepared for, or be suitable for, legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Legend

ISM DU Boundaries by Planning Area

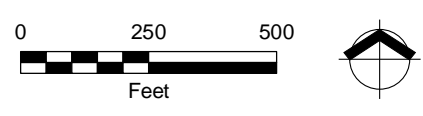
- Core Area DU
- Influence Area DU
- Open Space DU
- Area Excluded from Soil Sampling

Decision Unit Number Chromium Copper Lead Zinc

DU #	Cr	Cu	Pb	Zn

Green shading indicates exceedance of ecological site-specific screening level value

Figure 7-1
Metals in Soil - ISM Decision Units
 Former Northern State Hospital
 Port of Skagit
 Sedro-Woolley, Washington



APPENDIX A

BORING LOGS



Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number
0624.04.10

Well Number
GP49

Sheet
1 of 1

Project Name **Swift Center - EPA Assessment**
 Project Location **2070 Northern State Road, Sedro-Woolley, Washington**
 Start/End Date **4/23/18 to 4/23/18**
 Driller/Equipment **Holt Services, Inc./Geoprobe**
 Geologist/Engineer **C. Wise**
 Sample Method **Direct-Push**

TOC Elevation (feet)
 Surface Elevation (feet)
 Northing
 Easting
 Hole Depth **15.0-feet**
 Outer Hole Diam **2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data				Blows/6"	Lithologic Column	Soil Description
		Interval	Percent Recovery	Collection Method	Name (Type)			
1		32	GP		GP49-S-0.5 PID = 0.2 ppm		0 to 1.6 feet: GRAVELLY SILTY SAND (SW-SM); blackish brown; 30% fines; 40% sand, fine to coarse grained, angular to subangular; 30% gravel, fine size, angular to subangular; loose; trace organics; trace black, white, and terracotta fragments; no odor; dry.	
2							1.6 to 5.0 feet: no recovery.	
3								
4								
5		48	GP		GP49-S-7.0 PID = 0.4 ppm		5.0 to 7.4 feet: GRAVELLY SILTY SAND (SW-SM); brown; 20% fines; 40% sand, fine to medium grained, angular to subangular; 40% gravel, fine size, angular to subangular; dense; black and terracotta fragments; woody debris; no odor; moist.	
6								
7								
8							7.4 to 10.0 feet: no recovery.	
9								
10		100	GP		GP49-S-10.0 PID = 0.0 ppm		10.0 to 15.0 feet: SILT (ML); light brown; 95% fines, low plasticity; 5% sand, very fine grained; very stiff; orange mottling; no odor; dry.	
11								
12								
13								
14								
15								

Total Depth = 15.0 feet bgs.

Borehole Completion Details:
 0 to 15.0 feet: 2.5-inch borehole.
 0 to 15.0 feet: Bentonite chips hydrated with potable water.

NOTES: 1. bgs = below ground surface. 2. Depths are relative to feet bgs. 3. PID = photoionization detector 4. ppm = parts per million.

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Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number
0624.04.10

Well Number
GP50

Sheet
1 of 1

Project Name **Swift Center - EPA Assessment**
 Project Location **2070 Northern State Road, Sedro-Woolley, Washington**
 Start/End Date **4/23/18 to 4/23/18**
 Driller/Equipment **Holt Services, Inc./Geoprobe**
 Geologist/Engineer **C. Wise**
 Sample Method **Direct-Push**

TOC Elevation (feet)
 Surface Elevation (feet)
 Northing
 Easting
 Hole Depth **5.0-feet**
 Outer Hole Diam **2.25-inch**

Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Collection Method	Sample Data			Blows/6"	Lithologic Column	Soil Description
					Number	Name (Type)				
1		46	GP	GP50-S-0.5 PID = 0.0 ppm	GP50-S-1.5 PID = 0.0 ppm				0 to 1.1 feet: GRAVELLY SILTY SAND (SW-SM); blackish brown; 20% fines; 50% sand, fine to medium grained, angular to subangular; 30% gravel, fine size, angular to subangular; trace organics; coal-like material fragments; whitish fragments; no odor; moist. (FILL)	
2									1.1 to 2.3 feet: SILT (ML); light brown; 95% fines, low plasticity; 5% sand, very fine grained; no odor; dry.	
3									2.3 to 5.0 feet: no recovery.	
4										
5										

Total Depth = 5.0 feet bgs.

Borehole Completion Details:
 0 to 5.0 feet: 2.5-inch borehole.
 0 to 5.0 feet: Bentonite chips hydrated with potable water.

NOTES: 1. bgs = below ground surface. 2. Depths are relative to feet bgs. 3. PID = photoionization detector 4. ppm = parts per million.

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number
0624.04.10

Well Number
GP51

Sheet
1 of 1

Project Name **Swift Center - EPA Assessment**
 Project Location **2070 Northern State Road, Sedro-Woolley, Washington**
 Start/End Date **4/23/18 to 4/23/18**
 Driller/Equipment **Holt Services, Inc./Geoprobe**
 Geologist/Engineer **C. Wise**
 Sample Method **Direct-Push**

TOC Elevation (feet)
 Surface Elevation (feet)
 Northing
 Easting
 Hole Depth **5.0-feet**
 Outer Hole Diam **2.25-inch**

Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Collection Method	Sample Data			Blows/6"	Lithologic Column	Soil Description
					Number	Name (Type)				
1			80	GP		PID = 0.0 ppm GP51-S-0.5			0 to 0.2 feet: TOPSOIL; brown; 30% fines; 60% sand, fine to medium grained, angular to subangular; 10% gravel, fine size, angular; loose; lots of organics; no odor; dry.	
2						PID = 0.0 ppm GP51-S-1.0			0.2 to 0.9 feet: SILTY SANDY GRAVEL (GW-GM); black; 30% fines; 30% sand, fine to medium grained, angular; 40% gravel, fine size, angular to subangular; dense; lots of coal-like fragments, woody debris; no odor; dry.	
3						PID = 0.0 ppm			0.9 to 4.0 feet: SILT (ML); light brown; 95% fines, low plasticity; 5% sand, very fine grained; very stiff; orange mottles; no odor; dry.	
4									4.0 to 5.0 feet: no recovery.	
5										

Total Depth = 5.0 feet bgs.

Borehole Completion Details:

0 to 5.0 feet: 2.5-inch borehole.

0 to 5.0 feet: Bentonite chips hydrated with potable water.

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NOTES: 1. bgs = below ground surface. 2. Depths are relative to feet bgs. 3. PID = photoionization detector 4. ppm = parts per million.

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number
0624.04.10

Well Number
GP52

Sheet
1 of 1

Project Name **Swift Center - EPA Assessment**
 Project Location **2070 Northern State Road, Sedro-Woolley, Washington**
 Start/End Date **4/23/18 to 4/23/18**
 Driller/Equipment **Holt Services, Inc./Geoprobe**
 Geologist/Engineer **C. Wise**
 Sample Method **Direct-Push**

TOC Elevation (feet)
 Surface Elevation (feet)
 Northing
 Easting
 Hole Depth **10.0-feet**
 Outer Hole Diam **2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data				Blows/6"	Lithologic Column	Soil Description
		Interval	Percent Recovery	Collection Method	Name (Type)			
1		46	GP	GP52-S-0.5 PID = 0.0 ppm				0 to 2.3 feet: GRAVELLY SAND with SILT (SW-SM); black; 15% fines; 60% sand, fine to coarse grained, angular to subangular; 25% gravel, fine to medium size, angular to subangular; loose; coal-like black fragments; white vesicular fragments; no odor; dry.
2								@ 0.3 to 1.1 feet: ash-colored.
3								2.3 to 5.0 feet: no recovery.
4								
5								
6		56	GP	GP52-S-6.0 PID = 0.0 ppm				5.0 to 5.5 feet: GRAVELLY SAND with SILT (SW-SM); black; 15% fines; 60% sand, fine to coarse grained, angular to subangular; 25% gravel, fine to medium size, angular to subangular; loose; coal-like black fragments; white vesicular fragments; no odor; dry.
7								5.5 to 6.1 feet: SAND with SILT (SW-SM); black; 10% fines; 90% sand, fine to medium grained, angular; loose; brick fragments; no odor; dry.
8								6.1 to 6.5 feet: SILTY SAND (SM); gray; 30% fines; 70% sand, very fine to fine grained; medium dense; orange mottles; no odor; moist.
9								6.5 to 7.2 feet: SAND (poorly graded) (SP); brownish black; 100% sand, medium grained; angular to subangular; micaceous; no odor; moist.
10								7.2 to 7.8 feet: SILTY SAND (SM); gray; 30% fines; 70% sand, very fine to fine grained; dense; trace organics; orange mottles; no odor; moist.
							7.8 to 10.0 feet: no recovery.	

Total Depth = 10.0 feet bgs.

Borehole Completion Details:
 0 to 10.0 feet: 2.5-inch borehole.
 0 to 10.0 feet: Bentonite chips hydrated with potable water.

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NOTES: 1. bgs = below ground surface. 2. Depths are relative to feet bgs. 3. PID = photoionization detector 4. ppm = parts per million.

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number
0624.04.10

Well Number
GP53

Sheet
1 of 1

Project Name **Swift Center - EPA Assessment**
 Project Location **2070 Northern State Road, Sedro-Woolley, Washington**
 Start/End Date **4/24/18 to 4/24/18**
 Driller/Equipment **Holt Services, Inc./Geoprobe**
 Geologist/Engineer **C. Wise**
 Sample Method **Direct-Push**

TOC Elevation (feet)
 Surface Elevation (feet)
 Northing
 Easting
 Hole Depth **5.0-feet**
 Outer Hole Diam **2.25-inch**

Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Collection Method	Sample Data			Blows/6"	Lithologic Column	Soil Description
					Number	Name (Type)				
1			76	GP		GP53-S-0.5 PID = 1.1 ppm			0 to 0.8 feet: GRAVELLY SILTY SAND (SW-SM); light brown to gray; 20% fines; 50% sand, medium to coarse grained, angular to subangular; 30% gravel, fine size, angular to subangular; loose; terracotta and ash-like fragments; no odor; dry.	
2						GP53-S-1.0 PID = 0.6 ppm			0.8 to 1.2 feet: SILTY SAND with GRAVEL (SW-SM); black; 30% fines; 60% sand, fine to coarse grained, angular to subangular; 10% gravel, fine size, angular to subangular; loose; white vesicular and coal-like fragments; no odor; dry.	
3						GP53-S-2.0 PID = 0.5 ppm			1.2 to 3.8 feet: SILT (ML); light brown; 95% fines, low plasticity; 5% sand, very fine grained; very stiff; orange mottles; no odor; dry.	
4									3.8 to 5.0 feet: no recovery.	
5										

Total Depth = 5.0 feet bgs.

Borehole Completion Details:
 0 to 5.0 feet: 2.5-inch borehole.
 0 to 5.0 feet: Bentonite chips hydrated with potable water.

NOTES: 1. bgs = below ground surface. 2. Depths are relative to feet bgs. 3. PID = photoionization detector 4. ppm = parts per million.

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number
0624.04.10

Well Number
GP54

Sheet
1 of 1

Project Name **Swift Center - EPA Assessment**
 Project Location **2070 Northern State Road, Sedro-Woolley, Washington**
 Start/End Date **4/24/18 to 4/24/18**
 Driller/Equipment **Holt Services, Inc./Geoprobe**
 Geologist/Engineer **C. Wise**
 Sample Method **Direct-Push**

TOC Elevation (feet)
 Surface Elevation (feet)
 Northing
 Easting
 Hole Depth **10.0-feet**
 Outer Hole Diam **2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data				Blows/6"	Lithologic Column	Soil Description
		Interval	Percent Recovery	Collection Method	Name (Type)			
1		34	GP	GP54-S-0.5 PID = 0.7 ppm			0 to 1.7 feet: GRAVELLY SAND with SILT (SW-SM); light brown to black; 10% fines; 60% sand, medium to coarse grained, angular to subrounded; 30% gravel, fine size, angular to subangular; loose; terracotta and coal-like fragments; no odor; dry.	
2							1.7 to 5.0 feet: no recovery.	
3		22	GP	GP54-S-5.5 PID = 0.5 ppm			5.0 to 5.3 feet: GRAVELLY SAND with SILT (SW-SM); light brown to black; 10% fines; 60% sand, medium to coarse grained, angular to subrounded; 30% gravel, fine size, angular to subangular; loose; terracotta and coal-like fragments; no odor; dry.	
4							5.3 to 6.1 feet: SILT (ML); light brown; 95% fines, low plasticity; 5% sand, very fine grained; very stiff; orange mottling; no odor; dry.	
5							6.1 to 10.0 feet: no recovery.	
6								
7								
8								
9								
10								

Total Depth = 10.0 feet bgs.

Borehole Completion Details:
 0 to 10.0 feet: 2.5-inch borehole.
 0 to 10.0 feet: Bentonite chips hydrated with potable water.

NOTES: 1. bgs = below ground surface. 2. Depths are relative to feet bgs. 3. PID = photoionization detector 4. ppm = parts per million.

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number
0624.04.10

Well Number
MW09

Sheet
1 of 2

Project Name **Swift Center - EPA Assessment**
 Project Location **2070 Northern State Road, Sedro-Woolley, Washington**
 Start/End Date **4/23/18 to 4/23/18**
 Driller/Equipment **Holt Services, Inc./Geoprobe**
 Geologist/Engineer **C. Wise**
 Sample Method **Direct-Push**

TOC Elevation (feet) **131.1042**
 Surface Elevation (feet)
 Northing
 Easting
 Hole Depth **30.0-feet**
 Outer Hole Diam **2.25-inch**

Depth (feet, BGS)	Well Details	Sample Data			Blows/6"	Lithologic Column	Soil Description
		Interval	Percent Recovery	Collection Method			
1		62	GP	MW09-S-0.5 PID = 0.0 ppm		0 to 0.2 feet: ASPHALT, black, dry.	
2				PID = 0.9 ppm		0.2 to 3.1 feet: SILT (ML); light brown; 95% fines, low plasticity; 5% sand, very fine to fine grained; very stiff; orange mottles; no odor; dry.	
3						3.1 to 5.0 feet: no recovery.	
4							
5		100	GP	MW09-S-6.0 PID = 0.0 ppm		5.0 to 9.4 feet: SILT (ML); light brown; 95% fines, low plasticity; 5% sand, very fine grained; very stiff; orange mottles; no odor; dry to moist.	
6				PID = 0.0 ppm			
7							
8							
9							
10		78	GP	PID = 0.0 ppm		9.4 to 10.0 feet: SILTY SAND (SM); light brown; 30% fines; 70% sand, very fine to fine grained; dense; no odor; moist.	
11				PID = 0.0 ppm		10.0 to 11.6 feet: SILT with GRAVEL (ML); light brown; 90% fines, medium plasticity; trace sand; 10% gravel, fine size, angular to subangular; soft; no odor; wet.	
12						11.6 to 13.3 feet: SILTY SAND (SM); gray; 30% fines; 70% sand, very fine to fine grained; dense; no odor; wet.	
13				PID = 0.0 ppm			
14				PID = 0.0 ppm		13.3 to 13.6 feet: SILT (ML); gray; 100% fines, medium plasticity; soft; no odor; moist.	
15						13.6 to 13.9 feet: SILTY SAND (SM); gray; 30% fines; 70% sand, very fine to fine grained; dense; no odor; wet.	
16		86	GP			13.9 to 15.0 feet: no recovery.	
17				PID = 0.0 ppm		15.0 to 17.7 feet: SILT (MH); gray; 95% fines, high plasticity; 5% sand, very fine grained; soft; no odor; moist.	
18				PID = 0.0 ppm			
19				MW09-S-19.0 PID = 0.0 ppm		17.7 to 18.2 feet: SANDY SILT (ML); gray; 80% fines, medium plasticity; 20% sand, very fine to fine grained; soft; no odor; moist.	
20						18.2 to 19.3 feet: SILT (ML); gray; 95% fines, high plasticity; 5% sand, very fine grained; soft; no odor; moist.	
						19.3 to 20.0 feet: no recovery.	

NOTES: 1. bgs = below ground surface. 2. Depths are relative to feet bgs. 3. GW = temporary polyvinyl chloride screen. 4. PID = photoionization detector 5. ppm = parts per million. 6. WS = reconnaissance groundwater sample.



Water level at time of drilling.



Water level prior to development.

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Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Collection Method	Sample Data			Blows/6"	Lithologic Column	Soil Description
					Number	Name (Type)				
21		100	100	GP					20.0 to 24.6 feet: SILT (MH); gray; 95% fines, high plasticity; 5% sand, very fine grained; soft; no odor; moist to wet.	
22										
23										
24										
25									PID = 0.0 ppm	24.6 to 25.0 feet: SILTY SAND (SM); gray; 30% fines; 70% sand, very fine to fine grained; firm; no odor; moist.
26										25.0 to 30.0 feet: SANDY SILT (ML); gray; 70% fines, medium plasticity; 30% sand, very fine to fine grained; soft; no odor; wet.
27										
28										
29										
30										

Total Depth = 30.0 feet bgs.

Borehole Completion Details:
 0 to 30.0 feet: 3.75-inch borehole.
 0 to 1.0 feet: Concrete.
 1.0 to 18.2 feet: Bentonite chips hydrated with potable water.
 18.2 to 30.0 feet: 10x20 silica sand filter pack.

Monitoring Well Completion Details:
 Washington State Department of Ecology Well Tag Number: BKL-333
 Traffic-grade, flush-mounted, monitoring well vault.
 0 to 19.2 feet: 2-inch diameter, schedule 40, polyvinyl chloride, riser pipe.
 19.2 to 29.2 feet: 2-inch diameter, schedule 40, polyvinyl chloride, 0.010 machine slot, prepacked well screen.
 29.2 to 29.4 feet: 2-inch, schedule 40, polyvinyl chloride pipe end cap.

NOTES: 1. bgs = below ground surface. 2. Depths are relative to feet bgs. 3. GW = temporary polyvinyl chloride screen. 4. PID = photoionization detector 5. ppm = parts per million. 6. WS = reconnaissance groundwater sample.

Water level at time of drilling. Water level prior to development.

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Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number
0624.04.10

Well Number
MW10

Sheet
1 of 2

Project Name **Swift Center - EPA Assessment**
 Project Location **2070 Northern State Road, Sedro-Woolley, Washington**
 Start/End Date **4/23/18 to 4/23/18**
 Driller/Equipment **Holt Services, Inc./Geoprobe**
 Geologist/Engineer **C. Wise**
 Sample Method **Direct-Push**

TOC Elevation (feet) **130.4096**
 Surface Elevation (feet)
 Northing
 Easting
 Hole Depth **30.0-feet**
 Outer Hole Diam **2.25-inch**

Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Collection Method	Sample Data			Blows/6"	Lithologic Column	Soil Description
					Number	Name (Type)				
0										0 to 0.4 feet: CONCRETE; gray; no odor; dry.
1						MW10-S-1.0 PID = 0.4 ppm				0.4 to 1.4 feet: SILT (ML); dark brown; 95% fines, medium plasticity; 5% sand, very fine grained; very stiff; red and black fragments; orange mottles; no odor; dry.
2										1.4 to 5.0 feet: SILT (ML); light brown; 95% fines, medium plasticity; 5% sand, very fine grained; very stiff; no odor; dry.
3										
4						PID = 0.7 ppm				
5										
6						PID = 0.0 ppm				5.0 to 6.2 feet: SILT with GRAVEL (ML); light brown; 90% fines, high plasticity; 10% gravel, fine grained, angular to subangular; stiff; no odor; wet.
7										6.2 to 9.0 feet: SILT (ML); light brown; 100% fines, high plasticity; very stiff; trace fine sand; no odor; moist.
8						PID = 0.0 ppm				
9										9.0 to 10.0 feet: no recovery.
10										
11						PID = 0.1 ppm				10.0 to 11.3 feet: SILT with GRAVEL (ML); light brown; 90% fines, low plasticity; trace sand; 10% gravel, fine size, angular to subangular; soft; no odor; wet.
12										11.3 to 14.0 feet: SILT (MH); light brown; 100% fines, high plasticity; trace fine sand; firm; moist.
13										
14						MW10-S-13.5 PID = 0.8 ppm				@ 13.5 feet: color change to gray.
15						PID = 0.0 ppm				14.0 to 15.0 feet: SILTY SAND; gray; 30% fines; 70% sand, very fine to fine grained; medium dense; no odor; moist.
16						PID = 0.0 ppm				15.0 to 16.8 feet: SANDY SILT (ML); gray; 60% fines, low plasticity; 40% sand, very fine grained; soft; no odor; wet.
17						PID = 0.1 ppm				16.8 to 17.5 feet: SILT (ML); gray; 100% fines, low plasticity; soft; no odor; moist.
18						PID = 0.0 ppm				17.5 to 18.3 feet: SILTY SAND (SM); gray; 30% fines, low plasticity; 70% sand, very fine to fine grained; medium dense; no odor; moist.
19										18.3 to 20.0 feet: SILT with SAND (ML); gray; 90% fines, high plasticity; 10% sand, very fine to fine grained; soft; no odor; moist.
20						PID = 0.1 ppm				

NOTES: 1. bgs = below ground surface. 2. Depths are relative to feet bgs. 3. GW = temporary polyvinyl chloride screen. 4. PID = photoionization detector 5. ppm = parts per million. 6. WS = reconnaissance groundwater sample.



Water level at time of drilling.



Water level prior to development.

GBLWC W:\GINT\GINT\PROJECTS\0624.04.10\MW09 TO MW11_GP49 TO GP54.GPJ 7/19/18

Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Collection Method	Sample Data			Lithologic Column	Soil Description			
					Number	Name (Type)	Blows/6"					
21		100	GP	GP					20.0 to 24.0 feet: SILT (ML); gray; 100% fines, high plasticity; soft; no odor; moist to wet.			
22												
23												
24												
25		100	GP	GP		MW10-S-24.5 PID = 0.0 ppm			24.0 to 25.0 feet: SILTY SAND (SM); gray; 30% fines; 70% sand, very fine to fine; dense; sulfur-like odor; moist.			
26											25.0 to 29.0 feet: SANDY SILT (ML); gray; 70% fines, high plasticity; 30% sand, very fine to fine grained; soft; no odor; wet.	
27												
28						PID = 0.0 ppm						
29												
30						PID = 0.0 ppm			29.0 to 30.0 feet: SILTY SAND (SM); gray; 30% fines; 70% sand, very fine to fine grained; firm; no odor; wet.			

Total Depth = 30.0 feet bgs.

Borehole Completion Details:

0 to 30.0 feet: 3.75-inch borehole.

0 to 1.0 feet: Concrete.

1.0 to 23.0 feet: Bentonite chips hydrated with potable water.

23.0 to 30.0 feet: 10x20 silica sand filter pack.

Monitoring Well Completion Details:

Washington State Department of Ecology Well Tag Number:
BKL-331

Traffic-grade, flush-mounted, monitoring well vault.

0 to 24.4 feet: 2-inch diameter, schedule 40, polyvinyl chloride, riser pipe.

24.4 to 29.4 feet: 2-inch diameter, schedule 40, polyvinyl chloride, 0.010 machine slot, prepacked well screen.

29.4 to 29.6 feet: 2-inch, schedule 40, polyvinyl chloride pipe end cap.

NOTES: 1. bgs = below ground surface. 2. Depths are relative to feet bgs. 3. GW = temporary polyvinyl chloride screen. 4. PID = photoionization detector 5. ppm = parts per million. 6. WS = reconnaissance groundwater sample.



Water level at time of drilling.



Water level prior to development.

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number
0624.04.10

Well Number
MW11

Sheet
1 of 2

Project Name **Swift Center - EPA Assessment**
 Project Location **2070 Northern State Road, Sedro-Woolley, Washington**
 Start/End Date **4/23/18 to 4/23/18**
 Driller/Equipment **Holt Services, Inc./Geoprobe**
 Geologist/Engineer **C. Wise**
 Sample Method **Direct-Push**

TOC Elevation (feet) **130.1546**
 Surface Elevation (feet)
 Northing
 Easting
 Hole Depth **30.0-feet**
 Outer Hole Diam **2.25-inch**

Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Collection Method	Sample Data			Blows/6"	Lithologic Column	Soil Description
					Number	Name (Type)				
0										0 to 0.4 feet: CONCRETE; gray; dry.
1										0.4 to 5.0 feet: SILT (ML); light brown; 95% fines, low plasticity; 5% sand, very fine to fine grained; very stiff; orange mottles; expanding silt; no odor; dry.
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

NOTES: 1. bgs = below ground surface. 2. Depths are relative to feet bgs. 3. GW = temporary polyvinyl chloride screen. 4. PID = photoionization detector 5. ppm = parts per million. 6. WS = reconnaissance groundwater sample.



Water level at time of drilling.



Water level prior to development.

GBLWC W:\GINT\GINT\PROJECTS\0624.04.10\MW09 TO MW11_GP49 TO GP54.GPJ 7/19/18

Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Collection Method	Sample Data			Blows/6"	Lithologic Column	Soil Description
					Number	Name (Type)				
21		100	GP	GP					odor; moist.	
22									20.0 to 24.0 feet: SANDY SILT (ML); gray; 80% fines, low plasticity; 20% sand, very fine to fine grained; soft; no odor; wet.	
23									PID = 0.0 ppm	
24									PID = 0.0 ppm	
25									PID = 0.0 ppm	
26		100	GP	GP					25.0 to 27.2 feet: SANDY SILT (ML); gray; 60% fines, low plasticity; 40% sand, very fine to fine grained; soft; no odor; wet.	
27									PID = 0.1 ppm	
28									PID = 0.0 ppm	27.2 to 29.1 feet: SILT (ML); gray; 100% fines, high plasticity; soft; no odor; moist.
29									PID = 0.0 ppm	
30									PID = 0.0 ppm	29.1 to 30.0 feet: SILTY SAND (SM); gray; 30% fines; 70% sand, very fine to fine grained; medium dense; no odor; moist.

Total Depth = 30.0 feet bgs.

Borehole Completion Details:

0 to 30.0 feet: 3.75-inch borehole.
 0 to 1.0 feet: Concrete.
 1.0 to 16.0 feet: Bentonite chips hydrated with potable water.
 16.0 to 28.0 feet: 10x20 silica sand filter pack.
 28.0 to 30.0 feet: Slough.

Monitoring Well Completion Details:

Washington State Department of Ecology Well Tag Number: BKL-332
 Traffic-grade, flush-mounted, monitoring well vault.
 0 to 17.0 feet: 2-inch diameter, schedule 40, polyvinyl chloride, riser pipe.
 17.0 to 27.0 feet: 2-inch diameter, schedule 40, polyvinyl chloride, 0.010 machine slot, prepacked well screen.
 27.0 to 27.2 feet: 2-inch, schedule 40, polyvinyl chloride pipe end cap.

NOTES: 1. bgs = below ground surface. 2. Depths are relative to feet bgs. 3. GW = temporary polyvinyl chloride screen. 4. PID = photoionization detector 5. ppm = parts per million. 6. WS = reconnaissance groundwater sample.



Water level at time of drilling.



Water level prior to development.

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number
0624.04.07

Well Number
MW01

Sheet
1 of 2

Project Name **Northern State Hospital Property**
 Project Location **24909 Hub Drive, Sedro-Woolley, Washington**
 Start/End Date **6/8/15 to 6/8/15**
 Driller/Equipment **Holt Services, Inc./Geoprobe 7822DT**
 Geologist/Engineer **C. Wise**
 Sample Method **Direct Push**

TOC Elevation (feet)
 Surface Elevation (feet) **119.5**
 Northing
 Easting
 Hole Depth **25.0-feet**
 Outer Hole Diam **3.75-inch**

Depth (feet, BGS)	Well Details	Sample Data			Blows/6"	Lithologic Column	Soil Description
		Interval	Percent Recovery	Collection Method			
1		68	GP				0.0 to 0.4 feet: ASPHALT; black; 10% fines; 30% sand, medium to coarse, angular; 60% gravel, fine, angular; dry. 0.4 to 3.4 feet: SILT (ML); yellowish brown; 95% fines, hard, nonplastic; 5% sand, very fine; dry.
2							
3							
4							3.4 to 5.0 feet: no recovery.
5		90	GP				5.0 to 9.2 feet: SILT (ML); yellowish brown; 95% fines, hard, nonplastic; 5% sand, very fine; dry.
6							
7							
8							
9							
10		48	GP				9.2 to 9.5 feet: GRAVELLY SAND (SP); brownish black; 10% fines; 60% sand, medium to coarse, angular to subangular; 30% gravel, fine, angular to subangular; loose; dry. 9.5 to 10.0 feet: no recovery.
11							10.0 to 10.8 feet: GRAVELLY SAND (SW); brownish black; 10% fines; 60% sand, medium to coarse, angular to subangular; 30% gravel, fine, angular to subangular; loose; dry.
12							10.8 to 12.0 feet: SILT (ML); yellowish brown; 95% fines, hard to stiff, nonplastic; 5% sand, very fine; moist.
13							12.0 to 12.4 feet: SILT (ML); blue gray; 90% fines, nonplastic; 10% sand, very fine; soft; moist to wet. 12.4 to 15.0 feet: no recovery.
14							
15		80	GP				15.0 to 16.5 feet: SILTY SAND (SM); blue gray; 20% fines; 80% sand, very fine; medium dense; moist.
16							
17							16.5 to 18.0 feet: SILT (ML); blue gray; 90% fines, low plasticity; medium soft; 10% sand, very fine; moist.
18							
19							18.0 to 19.0 feet: SILTY SAND (SM); blue gray; 20% fines; 80% sand, very fine, medium dense; moist to wet, wet at 18.5 feet. 19.0 to 20.0 feet: no recovery.
20							

NOTES: GP = Geoprobe macrocore liner.

 Water level at time of drilling.

GBLWC WA\GINT\GINT\PROJECTS\0624.04.07\MW01 TO MW04.GPJ 6/30/15

Geologic Borehole Log/Well Construction

Project Number
0624.04.07

Well Number
MW01

Sheet
2 of 2

Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Collection Method	Sample Data			Blows/6"	Lithologic Column	Soil Description
					Number	Name (Type)				
21			76	GP						20.0 to 20.5 feet: SILT (ML); blue gray; 95% fines, soft, medium plasticity; 5% sand, very fine; moist to wet.
22										20.5 to 21.3 feet: SILTY SAND (SM); blue gray; 20% fines; 80% sand, very fine, medium stiff; moist to wet.
23										21.3 to 22.1 feet: SILT (ML); blue gray; 95% fines, soft, medium plasticity; 5% sand, very fine; moist to wet.
24										22.1 to 23.8 feet: SILTY SAND (SM); blue gray; 20% fines; 80% sand, very fine, medium stiff; moist to wet.
25										23.8 to 25.0 feet: no recovery.

Total Depth = 25.0 feet below ground surface.

Borehole Completion Details:

0.0 to 25.0 feet: 3.75-inch borehole.

0.0 to 1.0 feet: Concrete.

1.0 to 19.0 feet: Bentonite chips hydrated with potable water.

19.0 to 25.0 feet: 10x20 silica sand filter pack.

Monitoring Well Completion Details:

Washington State Department of Ecology Well Tag Number BIQ 042.

Traffic grade, flush-mounted, monitoring well vault.

0.0 to 19.8 feet: 2-inch diameter, schedule 40, polyvinyl chloride, riser pipe.

19.8 to 24.8 feet: 2-inch diameter, schedule 40, polyvinyl chloride, 0.010 machine slot, prepacked, well screen.

24.8 to 20.0 feet: 2-inch, schedule 40, polyvinyl chloride pipe end cap.

NOTES: GP = Geoprobe macrocore liner.



Water level at time of drilling.

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number
0624.04.07

Well Number
MW02

Sheet
1 of 2

Project Name **Northern State Hospital Property**
 Project Location **24909 Hub Drive, Sedro-Woolley, Washington**
 Start/End Date **6/8/15 to 6/8/15**
 Driller/Equipment **Holt Services, Inc./Geoprobe 7822DT**
 Geologist/Engineer **C. Wise**
 Sample Method **Direct Push**

TOC Elevation (feet)
Surface Elevation (feet) **113.3**
 Northing
Easting
 Hole Depth **20.0-feet**
 Outer Hole Diam **3.75-inch**

Depth (feet, BGS)	Well Details	Sample Data			Blows/6"	Lithologic Column	Soil Description
		Interval	Percent Recovery	Collection Method			
1		72	GP				0.0 to 0.3 feet: GRAVEL (GP); gray; 5% fines; 25% sand, medium to coarse, angular; 70% gravel, coarse, angular; dry. (FILL) 0.3 to 0.6 feet: SILTY SAND (SM); black; 20% fines; 80% sand, medium, angular to subangular; dry. 0.6 to 3.6 feet: SILT (ML); yellowish brown; 85% fines, hard, nonplastic; 15% sand, very fine to fine; dry.
2							
3							
4							3.6 to 5.0 feet: no recovery.
5		80	GP				5.0 to 7.2 feet: SILT (ML); yellowish brown; 85% fines, hard, nonplastic; 15% sand, very fine to fine; dry.
6							
7							
8							7.2 to 7.4 feet: SAND (SW); dark brown; 20% fines; 40% sand, medium to coarse, angular to subangular; 40% gravel, coarse, angular to subangular; dry. 7.4 to 9.0 feet: SILT (ML); yellowish brown; 85% fines, hard, nonplastic; 15% sand, very fine to fine; dry.
9							9.0 to 10.0 feet: no recovery.
10		48	GP				10.0 to 12.4 feet: GRAVEL (GW); black; 5% fines; 25% sand, medium to coarse, angular; 70% gravel, fine to coarse, angular to subangular; dry to moist. @ 11.0 feet: Unit becomes wet.
11							
12							12.4 to 15.0 feet: no recovery.
13							
14							
15		48	GP				15.0 to 16.4 feet: SANDY GRAVEL (GW); black; 10% fines; 30% sand, medium to coarse, angular to subangular; 60% gravel, fine to medium, angular to subangular; moist.
16							
17							16.4 to 16.8 feet: SANDY GRAVEL (GW); reddish orange; 10% fines; 40% sand, medium to coarse, angular; 50% gravel, fine to medium, angular; moist @ 16.8 feet: Unit becomes wet.
18							16.8 to 17.4 feet: SANDY GRAVEL (GWS); gray; 10% fines; 30% sand, fine to medium, angular; 60% gravel, medium to coarse, angular to subangular; wet.
19							17.4 to 20.0 feet: no recovery.
20							

NOTES: GP = Geoprobe macrocore liner.

 Water level at time of drilling.

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Geologic Borehole Log/Well Construction

Project Number
0624.04.07

Well Number
MW02

Sheet
2 of 2

Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Collection Method	Sample Data			Blows/6"	Lithologic Column	Soil Description
					Number	Name (Type)				

Total Depth = 20.0 feet below ground surface.

Borehole Completion Details:

0.0 to 20.0 feet: 3.75-inch borehole.

0.0 to 1.0 feet: Concrete.

1.0 to 13.0 feet: Bentonite chips hydrated with potable water.

13.0 to 20.0 feet: 10x20 silica sand filter pack.

Monitoring Well Completion Details:

Washington State Department of Ecology Well Tag Number BIQ 041.

Traffic grade, flush-mounted, monitoring well vault.

0.0 to 14.0 feet: 2-inch diameter, schedule 40, polyvinyl chloride, riser pipe.

14.0 to 19.0 feet: 2-inch diameter, schedule 40, polyvinyl chloride, 0.010 machine slot, prepacked, well screen.

19.0 to 19.2 feet: 2-inch, schedule 40, polyvinyl chloride pipe end cap.

NOTES: GP = Geoprobe macrocore liner.



Water level at time of drilling.

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number
0624.04.07

Well Number
MW03


Sheet
1 of 2

Project Name **Northern State Hospital Property**
 Project Location **24909 Hub Drive, Sedro-Woolley, Washington**
 Start/End Date **6/8/15 to 6/8/15**
 Driller/Equipment **Holt Services, Inc./Geoprobe 7822DT**
 Geologist/Engineer **C. Wise**
 Sample Method **Direct Push**

TOC Elevation (feet)
 Surface Elevation (feet) **115.5**
 Northing
 Easting
 Hole Depth **20.0-feet**
 Outer Hole Diam **3.75-inch**

Depth (feet, BGS)	Well Details	Sample Data				Blows/6"	Lithologic Column	Soil Description
		Interval	Percent Recovery	Collection Method	Number			
1								0.0 to 0.8 feet: SANDY SILT (ML); brown; 70% fines, hard, nonplastic; 30% sand, very fine to fine; trace organics; dry. (TOPSOIL)
2								0.8 to 4.6 feet: SILT (ML); yellowish brown; 95% fines, hard, nonplastic; 5% sand, very fine; orange mottling; dry.
3								
4								
5								4.6 to 5.0 feet: no recovery.
6								5.0 to 8.0 feet: SILT (ML); yellowish brown; 95% fines, hard, nonplastic; 5% sand, very fine; orange mottling; dry.
7								
8								
9								8.0 to 10.0 feet: SILT (ML); yellowish brown; 95% fines, hard, nonplastic; 5% sand, very fine; soft; orange mottling; moist.
10								
11								10.0 to 12.2 feet: SILT (ML); yellowish brown; 95% fines, hard, nonplastic; 5% sand, very fine; soft; orange mottling; moist to wet at 10.5 feet.
12								
13								12.2 to 14.8 feet: SILT (ML); blue gray; 100% fines, medium plasticity, very soft; intermittent lenses of silty sand less than 0.2 inches thick; wet.
14								
15								14.8 to 15.0 feet: no recovery.
16								15.0 to 20.0 feet: SILT WITH SAND (ML); blue gray; 80% fines, soft, medium plasticity; 20% sand, very fine; intermittent lenses of silty sand less than 0.2 inches thick; wet.
17								
18								
19								
20								

NOTES: GP = Geoprobe macrocore liner.

 Water level at time of drilling.

GBLWC WA:GINTGINT\PROJECTS\0624.04.07\MW01 TO MW04.GPJ 6/30/15

Geologic Borehole Log/Well Construction

Project Number
0624.04.07

Well Number
MW03

Sheet
2 of 2

Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Collection Method	Sample Data			Lithologic Column	Soil Description
					Number	Name (Type)	Blows/6"		

Total Depth = 20.0 feet below ground surface.

Borehole Completion Details:

0.0 to 20.0 feet: 3.75-inch borehole.

0.0 to 1.5 feet: Concrete.

1.5 to 13.5 feet: Bentonite chips hydrated with potable water.

13.5 to 20.0 feet: 10x20 silica sand filter pack.

Monitoring Well Completion Details:

Washington State Department of Ecology Well Tag Number BIQ 043.

Traffic grade, flush-mounted, monitoring well vault.

0.0 to 14.5 feet: 2-inch diameter, schedule 40, polyvinyl chloride, riser pipe.

14.5 to 19.5 feet: 2-inch diameter, schedule 40, polyvinyl chloride, 0.010 machine slot, prepacked, well screen.

19.5 to 19.7 feet: 2-inch, schedule 40, polyvinyl chloride pipe end cap.

NOTES: GP = Geoprobe macrocore liner.



Water level at time of drilling.

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number
0624.04.07

Well Number
MW04

Sheet
1 of 2

Project Name **Northern State Hospital Property**
 Project Location **24909 Hub Drive, Sedro-Woolley, Washington**
 Start/End Date **6/8/15 to 6/8/15**
 Driller/Equipment **Holt Services, Inc./Geoprobe 7822DT**
 Geologist/Engineer **C. Wise**
 Sample Method **Direct Push**

TOC Elevation (feet)
 Surface Elevation (feet) **104.5**
 Northing
 Easting
 Hole Depth **20.0-feet**
 Outer Hole Diam **3.75-inch**

Depth (feet, BGS)	Well Details	Sample Data				Blows/6"	Lithologic Column	Soil Description
		Interval	Percent Recovery	Collection Method	Number			
1		64	GP					0.0 to 0.7 feet: SAND (SW); dark gray; 20% fines; 60% sand, fine, loose; 20% gravel, medium, angular to subangular; dry.
2								0.7 to 1.5 feet: SAND (SW); dark gray to black; 20% fines; 70% sand, fine to medium, loose; 10% gravel, medium, angular to subangular; trace coal fragments; dry.
3								1.5 to 3.2 feet: GRAVELLY SAND (SW); gray; 20% fines; 40% sand, fine to medium, loose; 40% gravel, medium to coarse, angular to subangular; dry.
4								3.2 to 5.0 feet: no recovery.
5		70	GP					5.0 to 5.5 feet: GRAVELLY SAND (SW); gray; 20% fines; 40% sand, fine to medium, loose; 40% gravel, medium to coarse, angular to subangular; dry.
6								5.5 to 6.2 feet: SANDY GRAVEL (GW); reddish brown; 10% fines; 40% sand, medium to coarse, angular to subangular; 50% gravel, fine to medium, angular to subangular, loose; trace brick fragments; dry.
7								6.2 to 8.5 feet: SILT WITH SAND (ML); dark gray; 80% fines, medium plasticity, soft; 20% sand, very fine to fine, angular to subangular; moist.
8								8.5 to 10.0 feet: no recovery.
9								
10		76	GP					10.0 to 11.1 feet: SILT WITH SAND (ML); dark gray; 80% fines, medium plasticity, soft; 20% sand, very fine to fine, angular to subangular; moist.
11								11.1 to 11.4 feet: SANDY GRAVEL (GW); reddish brown; 10% fines; 40% sand, medium to coarse, angular to subangular; 50% gravel, fine to medium, angular to subangular, loose; trace brick pieces; moist.
12								11.4 to 13.2 feet: SILTY SAND (SM); dark gray; 30% fines; 70% sand, fine to medium, angular to subangular; stiff; trace brick fragments; moist.
13								13.2 to 13.8 feet: SANDY SILT (ML); dark gray; 70% fines, hard, nonplastic; 30% sand, very fine to fine, angular to subrounded; trace lenses of silty sand; moist.
14								13.8 to 15.0 feet: no recovery.
15		92	GP					15.0 to 19.6 feet: SANDY SILT (ML); dark gray; 75% fines, low plasticity, stiff to medium stiff; 25% sand, very fine to fine, angular to subangular; moist to wet, wet at 16.5 feet.
16								
17								
18								
19								
20								19.6 to 20.0 feet: no recovery.

NOTES: GP = Geoprobe macrocore liner.

 Water level at time of drilling.

GBLWC WA\GINT\GINT\PROJECTS\0624.04.07\MW04.GPJ 6/30/15

Geologic Borehole Log/Well Construction

Project Number
0624.04.07

Well Number
MW04

Sheet
2 of 2

Depth (feet, BGS)	Well Details	Interval	Percent Recovery	Collection Method	Sample Data			Blows/6"	Lithologic Column	Soil Description
					Number	Name (Type)				

Total Depth = 20.0 feet below ground surface.

Borehole Completion Details:

0.0 to 20.0 feet: 3.75-inch borehole.

0.0 to 1.5 feet: Concrete.

1.5 to 8.0 feet: Bentonite chips hydrated with potable water.

8.0 to 20.0 feet: 10x20 silica sand filter pack.

Monitoring Well Completion Details:

Washington State Department of Ecology Well Tag Number BIQ 040.

Traffic grade, flush-mounted, monitoring well vault.

0.0 to 9.0 feet: 2-inch diameter, schedule 40, polyvinyl chloride, riser pipe.

9.0 to 19.0 feet: 2-inch diameter, schedule 40, polyvinyl chloride, 0.010 machine slot, prepacked, well screen.

19.0 to 19.2 feet: 2-inch, schedule 40, polyvinyl chloride pipe end cap.

NOTES: GP = Geoprobe macrocore liner.



Water level at time of drilling.



Project: Port of Skagit
Project Number: 1303-003
Logged by: CJT
Date Started: 8/28/17
Surface Conditions: Asphalt
Well Location N/S: 8' N of NE tank room corner
Well Location E/W: 23' W of NE tank room corner
Reviewed by: EBF
Date Completed: 8/28/17

BORING LOG | **B01**
 MW05

Site Address: 2070 Northern State Road
 Sedro-Woolley, Washington

Water Depth At Time of Drilling 11 feet bgs
 Water Depth After Completion -- feet bgs

Depth (feet bgs)	Interval	Blow Count	% Recovery	PID (ppm)	Sample ID	USCS Class	Graphic	Lithologic Description	Well Detail/ Water Depth
0				0.1	B01-0.5	GP		Asphalt Dry GRAVEL with sand, trace silt, asphalt pieces, dark brown to black, no hydrocarbon odor (5-20-75) (fill).	
			100	0.0		ML		Moist SILT, trace clay and very fine sand, tan to gray, no hydrocarbon odor (95-5-0).	
				0.0	B01-04	SM		Moist SAND with gravel and silt, gray/black/brown, no hydrocarbon odor (15-70-15).	
5			75	0.0		ML		Moist, clayey SILT, trace very fine sand, trace wood, tan to gray, no hydrocarbon odor (95-5-0).	
				0.0	B01-08	ML		Moist SILT with fine sand, trace wood and roots, dark brown, moderate organic odor, no hydrocarbon odor (80-20-0).	
10			100	0.2		SM		Wet, silty SAND, dark brown to black, no hydrocarbon odor (20-80-0).	
				0.2	B01-12	SM-ML		Moist to wet SILT and fine SAND, some wood pieces, dark brown/gray, very faint possible hydrocarbon odor (50-50-0).	
			100	0.0		ML		Moist to wet SILT, trace fine sand, gray, very faint possible hydrocarbon odor (95-5-0).	
15				0.3	B01-16	SM-ML		Moist to wet interbedded SILT with fine sand and SILTY SAND, gray, no hydrocarbon odor (50-50-0).	
			100	0.2					
20				0.2	B01-20			Boring terminated at 20 feet bgs. Completed as monitoring well MW05, screened from 10 to 20 feet bgs.	

Drilling Co./Driller: Standard Probe/Russell
Drilling Equipment: GeoProbe Truck
Sampler Type: Liner
Hammer Type/Weight: -- lbs
Total Boring Depth: 20 feet bgs
Total Well Depth: 20 feet bgs
State Well ID No.: BJP 714

Well/Auger Diameter: 1/2 inches
Well Screened Interval: 10-20 feet bgs
Screen Slot Size: 0.010 inches
Filter Pack Used: Colorado silica sand
Surface Seal: Concrete
Annular Seal: Bentonite
Monument Type: Flush mount

Notes/Comments:



Project: Port of Skagit
Project Number: 1303-003
Logged by: CJT
Date Started: 8/28/17
Surface Conditions: Concrete
Well Location N/S: 3' S of SW loading dock corner
Well Location E/W: 41' W of SW loading dock corner
Reviewed by: EBF
Date Completed: 8/28/17

BORING LOG | B05
MW06

Site Address: 2070 Northern State Road
 Sedro-Woolley, Washington

Water Depth At Time of Drilling 16 feet bgs
Water Depth After Completion -- feet bgs

Depth (feet bgs)	Interval	Blow Count	% Recovery	PID (ppm)	Sample ID	USCS Class	Graphic	Lithologic Description	Well Detail/ Water Depth
0								Concrete	
								Crushed asphalt	
			75	0.3		SM-ML		Moist SILT and fine SAND, trace organics, mottled tan/gray, no hydrocarbon odor (50-50-0).	
				0.4	B05-04				
5				0.3		ML		Moist SILT with fine sand, trace clay, trace organics, mottled tan/gray, no hydrocarbon odor (85-15-0).	
			100	0.4	B05-08				
				0.4					
10			100	0.4	B05-12			Moist SILT with clay, gray, no hydrocarbon odor (100-0-0).	
				0.3		ML			
			100	0.4	B05-16			Wet, silty SAND, gray, no hydrocarbon odor (40-60-0).	
				0.2		ML		Wet SILT and CLAY, trace sand, gray, no hydrocarbon odor (95-5-0).	
			100	0.2	B05-20			Wet, silty SAND, gray, no hydrocarbon odor (40-60-0).	
20									

Drilling Co./Driller: Standard Probe/Russell
Drilling Equipment: GeoProbe Truck
Sampler Type: Liner
Hammer Type/Weight: -- lbs
Total Boring Depth: 20 feet bgs
Total Well Depth: 20 feet bgs
State Well ID No.: BJP 715

Well/Auger Diameter: 1/2 inches
Well Screened Interval: 10-20 feet bgs
Screen Slot Size: 0.010 inches
Filter Pack Used: Colorado silica sand
Surface Seal: Concrete
Annular Seal: Bentonite
Monument Type: Flush mount

Notes/Comments:
 Boring terminated at 20 feet bgs. Completed as monitoring well MW06, screened from 10 to 20 feet bgs.



Project: Port of Skagit
Project Number: 1303-003
Logged by: GCF
Date Started: 9/19/17
Surface Conditions: Grass
Well Location N/S: 6' S of SW maintenance building corner
Well Location E/W: 6' E of SW maintenance building corner
Reviewed by: EBF
Date Completed: 9/19/17

BORING LOG | **B15**
 MW07

Site Address: 7682 Northern State Road
 Sedro-Woolley, Washington

Water Depth At Time of Drilling 15 feet bgs
Water Depth After Completion 10.16 feet bgs

Depth (feet bgs)	Interval	Blow Count	% Recovery	PID (ppm)	Sample ID	USCS Class	Graphic	Lithologic Description	Well Detail/ Water Depth
0			95	0.0		SM		Moist, silty SAND, trace gravel, brown, no hydrocarbon odor (30-65-5).	
5			100	16.3	B15-7	SM		Moist, silty fine SAND, gray, faint hydrocarbon odor (40-60-0).	
10			90	0.4		ML		Moist SILT with fine sand, brown with gray streaks, no hydrocarbon odor (80-20-0).	
			90	1.1	B15-12	SM ML		Moist, silty fine SAND, gray, no hydrocarbon odor (40-60-0).	
15			90	0.2	B15-16			Moist to wet SILT with fine sand, gray, no hydrocarbon odor (90-10-0).	
20			0					No recovery.	
Boring terminated at 20 feet bgs. Completed as monitoring well MW07, screened from 10 to 20									

Drilling Co./Driller: Standard Probe/Russell
Drilling Equipment: GeoProbe Truck
Sampler Type: Liner
Hammer Type/Weight: -- lbs
Total Boring Depth: 20 feet bgs
Total Well Depth: 20 feet bgs
State Well ID No.: BJP 716

Well/Auger Diameter: 1/2 inches
Well Screened Interval: 10-20 feet bgs
Screen Slot Size: 0.010 inches
Filter Pack Used: Colorado silica sand
Surface Seal: Concrete
Annular Seal: Bentonite
Monument Type: Flush mount

Notes/Comments:



Project: Port of Skagit
Project Number: 1303-003
Logged by: GCF
Date Started: 9/19/17
Surface Conditions: Asphalt
Well Location N/S: 15' S of SE maintenance building corner
Well Location E/W: 12' E of SE maintenance building corner
Reviewed by: EBF
Date Completed: 9/19/17

BORING LOG | **B16**
 MW08

Site Address: 7682 Northern State Road
 Sedro-Woolley, Washington

Water Depth At Time of Drilling 15 feet bgs
Water Depth After Completion 12.62 feet bgs

Depth (feet bgs)	Interval	Blow Count	% Recovery	PID (ppm)	Sample ID	USCS Class	Graphic	Lithologic Description	Well Detail/ Water Depth
0						SM		Moist, silty SAND with gravel, brown, no hydrocarbon odor (20-70-10).	
			90	0.0					
5			20	0.0				No recovery	
10			0						
			30	0.0	B16-15	ML		Moist to wet SILT with fine sand, gray, no hydrocarbon odor (70-30-0).	
15									
			100						
20				0.1	B16-20	SM		Wet, silty fine to medium SAND, gray, no hydrocarbon odor (20-80-0).	

Drilling Co./Driller: Standard Probe/Russell
Drilling Equipment: GeoProbe Truck
Sampler Type: Liner
Hammer Type/Weight: -- lbs
Total Boring Depth: 20 feet bgs
Total Well Depth: 20 feet bgs
State Well ID No.: BJP 717

Well/Auger Diameter: 1/2 inches
Well Screened Interval: 10-20 feet bgs
Screen Slot Size: 0.010 inches
Filter Pack Used: Colorado silica sand
Surface Seal: Concrete
Annular Seal: Bentonite
Monument Type: Flush mount

Notes/Comments:
 Boring terminated at 20 feet bgs. Completed as monitoring well MW08, screened from 10 to 20 feet bgs.

APPENDIX B

FIELD SAMPLING DATA SHEETS



Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA16				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/23/2018				
Sampling Event	April 2018	Sample Name	HA16-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		9:36:00 AM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0- to 0.5-ft bgs.
Rootlets and terracotta pieces in soil; no paint chips visible.
XRF: Pb = 283 ppm

General Sampling Comment

North side of Trevennen building.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA16				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/23/2018				
Sampling Event	April 2018	Sample Name	HA16-S-1.0				
Sub Area		Sample Depth	1				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		9:48:00 AM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0.5- to 1.0-ft bgs.
No paint chips visible.
XRF: Pb = 198 ppm

General Sampling Comment

North side of Trevennen building.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA17				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/23/2018				
Sampling Event	April 2018	Sample Name	HA17-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		10:15:00 AM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0- to 0.5-ft bgs. No paint chips visible. Some large (approximately 4-inch) pieces of terracotta, rootlets, and cobbles.
XRF: Pb = 77 ppm

General Sampling Comment

Located approximately 4-feet from west wall of Trevennen building.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA17				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/23/2018				
Sampling Event	April 2018	Sample Name	HA17-S-1.0				
Sub Area		Sample Depth	1				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		10:20:00 AM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0.5- to 1.0-ft bgs.
Moist soil, finer with depth, small to coarse size gravel, rootlets, no paint chips or terracotta pieces. XRF: Pb = 50 ppm

General Sampling Comment

Located approximately 4-feet from west wall of Trevennen building.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA18				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/23/2018				
Sampling Event	April 2018	Sample Name	HA18-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		10:42:00 AM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0- to 0.5-ft bgs. Very fine size gravel, loose, mostly organics, some small rootlets. No paint chips or terracotta pieces observed.
XRF: Pb = 244 ppm

General Sampling Comment

Location approximately 26-inches from south well of Trevennen building.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA18				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/23/2018				
Sampling Event	April 2018	Sample Name	HA18-S-1.0				
Sub Area		Sample Depth	1				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		10:50:00 AM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0.5- to 1.0-ft bgs. Very fine size gravel, loose, mostly organics, some small rootlets. No paint chips or terracotta pieces observed. Rocks encountered at approximately 10- to 12-inches bgs. XRF: Pb = 144 ppm

General Sampling Comment

Located on south wall of Trevennen building.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA19				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/23/2018				
Sampling Event	April 2018	Sample Name	HA19-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		12:05:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0- to 0.5-ft bgs. Medium to dark brown fine soil, mostly organics, few to no rocks observed, no paint chips or terracotta observed.
XRF: Pb = 489 ppm

General Sampling Comment

Located approximately 14-inches from east wall of Trevennen building.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA19				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/23/2018				
Sampling Event	April 2018	Sample Name	HA19-S-1.0				
Sub Area		Sample Depth	1				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		12:10:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0.5- to 1.0-ft bgs. Medium to dark brown fine soil, mostly organics, few to no rocks observed, no paint chips or terracotta observed.
XRF: Pb = 203 ppm

General Sampling Comment

Located approximately 14-inches from east wall of Trevennen building.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA20				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/23/2018				
Sampling Event	April 2018	Sample Name	HA20-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		1:35:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0- to 0.5-ft bgs. Dark brown fine soil, very few rocks or pebbles, no paint chips or terracotta pieces.
XRF: Pb = 208 ppm

General Sampling Comment

Soil sample (HA20) collected approximately 21-inches from southeast wall of Coleman building.

Analyzed paint on wall of Coleman building with XRF approximately 4-feet above ground surface, XRF reading of paint on wall: Pb = 10,355 ppm.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

Maul Foster & Alongi, Inc.

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA20				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/23/2018				
Sampling Event	April 2018	Sample Name	HA20-S-1.0				
Sub Area		Sample Depth	1				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		1:42:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0.5- to 1.0-ft bgs.
Dark brown fine soil, very few rocks or pebbles, no paint chips or terracotta pieces.
XRF: Pb = 74 ppm

General Sampling Comment

Located approximately 21-inches from southeast wall of Coleman building.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA21				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/23/2018				
Sampling Event	April 2018	Sample Name	HA21-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		2:16:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0- to 0.5-ft bgs. Dark brown, fine, organic soil, no paint chips or terracotta pieces, or rocks observed, small rootlets.
XRF: Pb = 254 ppm

General Sampling Comment

Located approximately 13-inches from south wall of Coleman building.
Wall of Coleman building, collected approximately 6-inches from ground surface analyzed by XRF, Pb = 4,742 (+- 358) ppm.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA21				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/23/2018				
Sampling Event	April 2018	Sample Name	HA21-S-1.0				
Sub Area		Sample Depth	1				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		2:20:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0.5- to 1.0-ft bgs. Dark brown, fine, organic soil, no paint chips or terracotta pieces, or rocks observed, small rootlets.
XRF: Pb = 162 ppm

General Sampling Comment

Located approximately 13-inches from south wall of Coleman building.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

Maul Foster & Alongi, Inc.

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA21				
Project Number	0624.04.10	Sampler	CRW				
Project Name	Northern State Hospital Property	Sampling Date	04/30/2018				
Sampling Event	April 2018	Sample Name	HA21-S-1.5				
Sub Area		Sample Depth	1.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		12:20:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 1.0- to 1.5-ft bgs.
Light brown clay with orange mottles.
XRF: Pb = 187

General Sampling Comment

--

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA22				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/23/2018				
Sampling Event	April 2018	Sample Name	HA22-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		2:50:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0.5- to 1.0-ft bgs.
Dark brown to medium, organics, no paint chips, terracotta pieces, or rocks, dry.
XRF: Pb = 136 ppm

General Sampling Comment

Located approximately 8-inches from west wall of Coleman building.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA22				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/23/2018				
Sampling Event	April 2018	Sample Name	HA22-S-1.0				
Sub Area		Sample Depth	1				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		2:54:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0.5- to 1.0-ft bgs.
Dark brown to medium becoming lighter with depth, organics, no paint chips, terracotta pieces, or rocks, dry. XRF: Pb = 77 ppm

General Sampling Comment

Located approximately 8-inches from west wall of Coleman building.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA23				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/23/2018				
Sampling Event	April 2018	Sample Name	HA23-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		3:47:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0- to 0.5-ft bgs.
XRF: Pb = 104 ppm

General Sampling Comment

Sample collected 8-inches from northwest side of north wall of Coleman building.
Unable to collect sample on northeast side of building due to recent landscaping of area with a XRF reading: Pb = 34 ppm.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA23				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/23/2018				
Sampling Event	April 2018	Sample Name	HA23-S-1.0				
Sub Area		Sample Depth	1				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		3:51:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0.5- to 1.0-ft bgs.
XRF: Pb = 80 ppm

General Sampling Comment

Located to northwest side of north wall of Coleman building. Unable to collect sample on northeast side of building due to recent landscaping of area, XRF: Pb = 34 ppm.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA24				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/23/2018				
Sampling Event	April 2018	Sample Name	HA24-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		4:30:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0- to 0.5-ft bgs.
Gray-brown, fine soil, no visible paint chips, rocks, dry.
XRF: Pb = 91 ppm

General Sampling Comment

Located approximately 20-inches from inner side of northeast corner of Denny building, cleared blackberries to sample.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA24				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/23/2018				
Sampling Event	April 2018	Sample Name	HA24-S-1.0				
Sub Area		Sample Depth	1				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		4:40:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0.5- to 1.0-ft bgs.
Gray-brown, fine soil, no visible paint chips, rocks, dry.
XRF: Pb = 93 ppm

General Sampling Comment

Located approximately 20-inches from inner side of northeast corner of Denny building, cleared blackberries to sample.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA25				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/23/2018				
Sampling Event	April 2018	Sample Name	HA25-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		5:26:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0- to 0.5-ft bgs.
Medium brown soil, no paint chips or rocks, native, moist.
XRF: Pb = 33 ppm

General Sampling Comment

Located approximately 4-inches from east wall of Denny building, closer to south side of building.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA25				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/23/2018				
Sampling Event	April 2018	Sample Name	HA25-S-1.0				
Sub Area		Sample Depth	1.0				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		5:28:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0.5- to 1.0-ft bgs.
Medium brown soil, no paint chips or rocks, native, moist.
XRF: Pb = 34 ppm

General Sampling Comment

Located approximately 4-inches from east wall of Denny building, closer to south side of building.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA26				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/23/2018				
Sampling Event	April 2018	Sample Name	HA26-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		5:48:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0- to 0.5-ft bgs.
No paint chips or gravel observed.
XRF: Pb = 199 ppm

General Sampling Comment

Collected 7-inches from east side of Denny building.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA26				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/23/2018				
Sampling Event	April 2018	Sample Name	HA26-S-1.0				
Sub Area		Sample Depth	1				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		5:52:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0.5- to 1.0-ft bgs.
No paint chips or gravel observed.
XRF: Pb = 370 ppm

General Sampling Comment

Collected 7-inches from east side of Denny building.
Collected second XRF reading from same location, XRF: Pb = 308 ppm.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA26				
Project Number	0624.04.10	Sampler	CRW				
Project Name	Northern State Hospital Property	Sampling Date	04/30/2018				
Sampling Event	April 2018	Sample Name	HA26-S-1.5				
Sub Area		Sample Depth	1.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		2:15:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 1.0- to 1.5-ft bgs.
Light brown clay with mottles and some paint chips.
XRF: Pb = 292 ppm

General Sampling Comment

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Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA27				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/23/2018				
Sampling Event	April 2018	Sample Name	HA27-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		6:20:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0- to 0.5-ft bgs. Dark brown to black, fine, organics, no paint chips, asphalt-like fragments observed, moist.
XRF: Pb = 117 ppm

General Sampling Comment

Collected 30-inches from west wall of Denny building, heavily surrounded by blackberries.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA27				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/23/2018				
Sampling Event	April 2018	Sample Name	HA27-S-1.0				
Sub Area		Sample Depth	1				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		6:24:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0.5- to 1.0-ft bgs. Dark brown to black, fine, organics, no paint chips, asphalt-like fragments observed, moist.
XRF: Pb = 66 ppm

General Sampling Comment

Collected 30-inches from west wall of Denny building, heavily surrounded by blackberries.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA28				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/23/2018				
Sampling Event	April 2018	Sample Name	HA28-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		7:10:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0- to 0.5-ft bgs. Dark brown to black, fine, organics, no paint chips, asphalt-like fragments observed, moist.
XRF: Pb = 117 ppm

General Sampling Comment

Collected on interior (courtyard-facing) side of north courtyard of Denny building 7-inches from wall of Denny building, heavily surrounded by blackberries.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA28				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/23/2018				
Sampling Event	April 2018	Sample Name	HA28-S-1.0				
Sub Area		Sample Depth	1				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		7:20:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0.5- to 1.0-ft bgs. Dark brown to black, fine, organics, no paint chips, asphalt-like fragments observed, moist.
XRF: Pb = 174 ppm

General Sampling Comment

Collected on interior (courtyard-facing) side of north courtyard of Denny building 7-inches from wall of Denny building closer to the northwest, heavily surrounded by blackberries.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA28				
Project Number	0624.04.10	Sampler	CRW				
Project Name	Northern State Hospital Property	Sampling Date	04/30/2018				
Sampling Event	April 2018	Sample Name	HA28-S-1.5				
Sub Area		Sample Depth	1.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		1:20:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 1.0- to 1.5-ft bgs.
Light brown clay with mottles.
XRF: Pb = 112 ppm

General Sampling Comment

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Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA29				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/23/2018				
Sampling Event	April 2018	Sample Name	HA29-S-1.0-CS				
Sub Area		Sample Depth	1				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Composite		7:30:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0.5- to 1.0-ft bgs.
XRF: Pb = 139 ppm

General Sampling Comment

Sample composited from five discrete samples collected to 1.0 feet bgs from samples around the Denny building.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA30				
Project Number	0624.04.10	Sampler	CRW				
Project Name	Northern State Hospital Property	Sampling Date	04/30/2018				
Sampling Event	April 2018	Sample Name	HA30-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		10:50:00 AM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0- to 0.5-ft bgs at five from from HA16.
Lots of terracotta fragments.
XRF: Pb = 82

General Sampling Comment

Two feet from HA16 at 0.5 feet bgs, XRF: Pb = 169 ppm
Three feet from HA16 at 0.5 feet bgs, XRF: Pb = 200 ppm
Four feet from HA16 at 0.5 feet bgs, XRF: Pb = 134 ppm
Five feet from HA16 at 0.5 feet bgs, XRF: Pb = 82 ppm (sample collected)

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA30				
Project Number	0624.04.10	Sampler	CRW				
Project Name	Northern State Hospital Property	Sampling Date	04/30/2018				
Sampling Event	April 2018	Sample Name	HA30-S-1.0				
Sub Area		Sample Depth	1				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		11:00:00 AM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0.5- to 1.0-ft bgs.
Lots of terracotta fragments.
XRF: Pb = 58 ppm

General Sampling Comment

Five feet from HA16 at 1.0 feet bgs, XRF: Pb = 58 ppm

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA31				
Project Number	0624.04.10	Sampler	CRW				
Project Name	Northern State Hospital Property	Sampling Date	04/30/2018				
Sampling Event	April 2018	Sample Name	HA31-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		11:20:00 AM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0- to 0.5-ft bgs.
Very gravelly well graded sand, coarse grained.
XRF: Pb = 52 ppm

General Sampling Comment

Collected XRF reading four feet from HA19 at 0.5 feet bgs, Pb = 436 ppm.
Moved to five feet from HA19 at 0.5 feet bgs, Pb = 52 ppm, prior to collecting sample.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA31				
Project Number	0624.04.10	Sampler	CRW				
Project Name	Northern State Hospital Property	Sampling Date	04/30/2018				
Sampling Event	April 2018	Sample Name	HA31-S-1.0				
Sub Area		Sample Depth	1				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		11:30:00 AM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0.5- to 1.0-ft bgs.
Very gravelly well graded sand, coarse grained.
XRF: Pb = 11 ppm

General Sampling Comment

Collected XRF reading five feet from HA19 at 1.0 feet bgs, Pb = 11 ppm, prior to collecting sample.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA32				
Project Number	0624.04.10	Sampler	CRW				
Project Name	Northern State Hospital Property	Sampling Date	04/30/2018				
Sampling Event	April 2018	Sample Name	HA32-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		12:00:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0- to 0.5-ft bgs.
Lots of organics, some terracotta pieces.
XRF: Pb = 82 ppm

General Sampling Comment

Collected XRF reading three feet from HA20 at 0.5 feet bgs, Pb = 82 ppm, prior to collecting sample.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA32				
Project Number	0624.04.10	Sampler	CRW				
Project Name	Northern State Hospital Property	Sampling Date	04/30/2018				
Sampling Event	April 2018	Sample Name	HA32-S-1.0				
Sub Area		Sample Depth	1				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		12:05:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0.5- to 1.0-ft bgs.
Light brown silt with orange mottles.
XRF: Pb = 16 ppm

General Sampling Comment

Collected XRF reading three feet from HA20 at 1.0 feet bgs, Pb = 16 ppm, prior to collecting sample.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA33				
Project Number	0624.04.10	Sampler	CRW				
Project Name	Northern State Hospital Property	Sampling Date	04/30/2018				
Sampling Event	April 2018	Sample Name	HA33-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		12:35:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0- to 0.5-ft bgs at five feet from HA21.
Very gravelly sand, lots of organics.
XRF: Pb = 21 ppm

General Sampling Comment

Collected XRF reading three feet from HA21 at 0.5 feet bgs, Pb = 281 ppm
Moved out five feet from HA21, collected XRF reading at 0.5 feet bgs, Pb = 21 ppm
(sample collected)

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA33				
Project Number	0624.04.10	Sampler	CRW				
Project Name	Northern State Hospital Property	Sampling Date	04/30/2018				
Sampling Event	April 2018	Sample Name	HA33-S-1.0				
Sub Area		Sample Depth	1				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		12:40:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0.5- to 1.0-ft bgs.
Very gravelly sand, lots of organics.
XRF: Pb = 12 ppm

General Sampling Comment

Moved out five feet from HA21, collected XRF reading at 1.0 feet bgs, Pb = 12 ppm

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA33				
Project Number	0624.04.10	Sampler	CRW				
Project Name	Northern State Hospital Property	Sampling Date	04/30/2018				
Sampling Event	April 2018	Sample Name	HA33-S-1.5				
Sub Area		Sample Depth	1.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		12:45:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 1.0- to 1.5-ft bgs.
Sand with clay, fewer organics.
XRF: Pb = 15 ppm

General Sampling Comment

Moved out five feet from HA21, collected XRF reading at 1.5 feet bgs, Pb = 15 ppm

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA34				
Project Number	0624.04.10	Sampler	CRW				
Project Name	Northern State Hospital Property	Sampling Date	04/30/2018				
Sampling Event	April 2018	Sample Name	HA34-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		1:30:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0- to 0.5-ft bgs.
Silty sand, lots of organics.
XRF: Pb = 82 ppm

General Sampling Comment

Collected XRF reading three feet from HA28 at 0.5 feet bgs, Pb = 82 ppm, prior to collecting sample.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA34				
Project Number	0624.04.10	Sampler	CRW				
Project Name	Northern State Hospital Property	Sampling Date	04/30/2018				
Sampling Event	April 2018	Sample Name	HA34-S-1.0				
Sub Area		Sample Depth	1				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		1:35:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0.5- to 1.0-ft bgs.
Silty sand with more fines, lots of organics.
XRF: Pb = 83 ppm

General Sampling Comment

Collected XRF reading three feet from HA28 at 1.0 feet bgs, Pb = 83 ppm, prior to collecting sample.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA34				
Project Number	0624.04.10	Sampler	CRW				
Project Name	Northern State Hospital Property	Sampling Date	04/30/2018				
Sampling Event	April 2018	Sample Name	HA34-S-1.5				
Sub Area		Sample Depth	1.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		1:40:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 1.0- to 1.5-ft bgs.
Mottled silt.
XRF: Pb = 44 ppm

General Sampling Comment

Collected XRF reading three feet from HA28 at 1.5 feet bgs, Pb = 44 ppm, prior to collecting sample.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA35				
Project Number	0624.04.10	Sampler	CRW				
Project Name	Northern State Hospital Property	Sampling Date	04/30/2018				
Sampling Event	April 2018	Sample Name	HA35-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		2:40:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0- to 0.5-ft bgs at five feet from HA26.
Sandy silt, lots of organics, rootlets.
XRF: Pb = 108 ppm

General Sampling Comment

Three feet from HA26 at 0.5 feet bgs, XRF: Pb = 155 ppm
Four feet from HA26 at 0.5 feet bgs, XRF: Pb = 159 ppm
Five feet from HA26 at 0.5 feet bgs, XRF: Pb = 108 ppm (sample collected)

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA35				
Project Number	0624.04.10	Sampler	CRW				
Project Name	Northern State Hospital Property	Sampling Date	04/30/2018				
Sampling Event	April 2018	Sample Name	HA35-S-1.0				
Sub Area		Sample Depth	1				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		2:45:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 0.5- to 1.0-ft bgs.
Sandy silt.
XRF: Pb = 47 ppm

General Sampling Comment

Five feet from HA26 at 1.0 feet bgs, XRF: Pb = 47 ppm

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	HA35				
Project Number	0624.04.10	Sampler	CRW				
Project Name	Northern State Hospital Property	Sampling Date	04/30/2018				
Sampling Event	April 2018	Sample Name	HA35-S-1.5				
Sub Area		Sample Depth	1.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Discrete		2:50:00 PM	2 oz. soil	
					4 oz. soil	1
					8 oz. soil	
					Other	
					Total Containers	1

Sample Description:

Sample collected from 1.0- to 1.5-ft bgs.
Sandy silt. mottling.
XRF: Pb = 52 ppm

General Sampling Comment

Five feet from HA26 at 1.5 feet bgs, XRF: Pb = 52 ppm

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	DU01				
Project Number	0624.04.10	Sampler	CRW & LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/25/2018				
Sampling Event	April 2018	Sample Name	DU01-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Composite		5:05:00 PM	2 oz. soil	
					4 oz. soil	5
					8 oz. soil	
					Other	1
					Total Containers	6

Sample Description:

Incremental sampling methodology (ISM) sample, collected from 0 to 0.5-ft bgs.
ISM sample, F, coal-like fragments.

General Sampling Comment

SS31-S-0.5 @ 17:05.
SS32-S-0.5 @ 17:20, rocky with gravel.
SS33-S-0.5 @ 17:30, only top 4-inches able to be sampled, very gravelly, terracotta-like pieces.
SS34-S-0.5 @ 17:55.
SS35-S-0.5 @ 18:05, coal- and terracotta-like pieces

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	DU02				
Project Number	0624.04.10	Sampler	CRW & LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/25/2018				
Sampling Event	April 2018	Sample Name	DU02-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Composite		6:30:00 PM	2 oz. soil	
					4 oz. soil	5
					8 oz. soil	
					Other	1
					Total Containers	6

Sample Description:

Incremental sampling methodology (ISM) sample, collected from 0- to 0.5-ft bgs.
ISM sample, F, gravel and terracotta pieces.
ISM sample, C, ash and coal fragments.

General Sampling Comment

SS36-S-0.5 @ 18:40, rocks/gravel
SS37-S-0.5 @ 18:55, lots of gravel at depth.
SS38-S-0.5 @ 19:05, black, coal-like fragments
SS39-S-0.5 @ 19:15, gravelly.
SS40-S-0.5 @ 19:23, gravelly.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	DU03				
Project Number	0624.04.10	Sampler	CRW & LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/27/2018				
Sampling Event	April 2018	Sample Name	DU03-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Composite		4:00:00 PM	2 oz. soil	
					4 oz. soil	
					8 oz. soil	
					Other	1
					Total Containers	1

Sample Description:

Incremental sampling methodology sample, collected from 0- to 0.5-ft bgs.
Organics and clay.

General Sampling Comment

SS86-S-0.5 @ 16:10, in tall grass.
SS87-S-0.5 @ 16:15, in ball field grass.
SS88-S-0.5 @ 16:30, very coarse gravel with fines.
SS89-S-0.5 @ 16:40, very gravelly.
SS90-S-0.5 @ 17:00, lots of organics.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	DU04				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/24/2018				
Sampling Event	April 2018	Sample Name	DU04-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Composite		1:30:00 PM	2 oz. soil	
					4 oz. soil	5
					8 oz. soil	
					Other	1
					Total Containers	6

Sample Description:

Incremental sampling methodology sample, collected from 0- to 0.5-ft bgs.

General Sampling Comment

SS06-S-0.5 @ 13:30, medium brown clay-like soil, trace rootlets.
SS07-S-0.5 @ 13:52, coal-like fragments.
SS08-S-0.5 @ 14:20, coal-like fragments, organics, trace rootlets.
SS09-S-0.5 @ 14:30.
SS10-S-0.5 @ 14:55, coal-like fragments, rootlets.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	DU05				
Project Number	0624.04.10	Sampler	CRW & LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/26/2018				
Sampling Event	April 2018	Sample Name	DU05-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Composite		8:00:00 PM	2 oz. soil	
					4 oz. soil	5
					8 oz. soil	
					Other	1
					Total Containers	6

Sample Description:

Incremental sampling methodology sample, collected from 0- to 0.5 ft bgs.

General Sampling Comment

SS61-S-0.5 @ 20:15.
SS62-S-0.5 @ 20:20, light tan/gray, fine-grained soil, black and terracotta fragments.
SS63-S-0.5 @ 20:30.
SS64-S-0.5 @ 20:40.
SS65-S-0.5 @ 20:50.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	DU06				
Project Number	0624.04.10	Sampler	LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/24/2018				
Sampling Event	April 2018	Sample Name	DU06-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Composite		9:30:00 AM	2 oz. soil	
					4 oz. soil	5
					8 oz. soil	
					Other	1
					Total Containers	6

Sample Description:

Incremental sampling methodology sample, collected from 0- to 0.5-ft bgs. Brown fine soil, few rocks, rootlets present, no paint chips or terracotta pieces observed.

General Sampling Comment

SS01-S-0.5 @ 9:30, dark brown, clay-like, rootlets.
SS02-S-0.5 @ 11:21, very dark brownish black and clay-like, rootlets.
SS03-S-0.5 @ 11:40, rootlets, wet.
SS04-S-0.5 @ 12:14, light to medium brown, rootlets, dry.
SS05-S-0.5 @ 12:32, rootlets, dry.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	DU07				
Project Number	0624.04.10	Sampler	CRW & LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/24/2018				
Sampling Event	April 2018	Sample Name	DU07-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Composite		3:47:00 PM	2 oz. soil	
					4 oz. soil	5
					8 oz. soil	
					Other	1
					Total Containers	6

Sample Description:

Incremental sampling methodology (ISM) sample, collected from 0- to 0.5 ft bgs. Terracotta pieces observed in some ISM samples.

General Sampling Comment

SS11-S-0.5 @ 15:47, Medium brown soil, some gravel, organics.
SS12-S-0.5 @ 16:10, sandy soil.
SS13-S-0.5 @ 16:22, black and red fragments.
SS14-S-0.5 @ 17:13, among trees.
SS15-S-0.5 @ 17:22, gravelly.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	DU08				
Project Number	0624.04.10	Sampler	CRW & LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/26/2018				
Sampling Event	April 2018	Sample Name	DU08-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Composite		6:15:00 PM	2 oz. soil	
					4 oz. soil	5
					8 oz. soil	
					Other	1
					Total Containers	6

Sample Description:

Incremental sampling methodology (ISM) sample, collected from 0- to 0.5-ft bgs.
ISM sample, B, light tan/gray fine soil
ISM sample, F, black coal- and ash-like fragments and terracotta pieces

General Sampling Comment

SS56-S-0.5 @ 18:25, tight soil.
SS57-S-0.5 @ 18:50, concrete at 4-inches bgs.
SS58-S-0.5 @ 19:00, light brown, rootlets, under sod.
SS59-S-0.5 @ 19:10, organics.
SS60-S-0.5 @ 19:30, organics, lots of worms.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	DU09				
Project Number	0624.04.10	Sampler	CRW				
Project Name	Northern State Hospital Property	Sampling Date	04/30/2018				
Sampling Event	April 2018	Sample Name	DU09-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Composite		3:00:00 PM	2 oz. soil	
					4 oz. soil	5
					8 oz. soil	
					Other	1
					Total Containers	6

Sample Description:

Incremental sampling methodology sample, collected from 0- to 0.5-ft bgs.

General Sampling Comment

SS96-S-0.5 @ 15:30, lots of terracotta pieces.
SS97-S-0.5 @ 15:35, some burnt-wood pieces.
SS98-S-0.5 @ 15:50, lots of organics, burnt wood fragments.
SS99-S-0.5 @ 16:20, mostly clay, rootlets.
SS100-S-0.5 @ 16:30, mostly clay, rootlets.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

Maul Foster & Alongi, Inc.

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	DU10				
Project Number	0624.04.10	Sampler	CRW				
Project Name	Northern State Hospital Property	Sampling Date	04/27/2018				
Sampling Event	April 2018	Sample Name	DU10A-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Composite		10:15:00 AM	2 oz. soil	
					4 oz. soil	5
					8 oz. soil	
					Other	1
					Total Containers	6

Sample Description:

Incremental sampling methodology (ISM) sample, collected from 0- to 0.5-ft bgs. Fine organics, some black fragments. ISM samples collected under tall grass. At ISM location, A8, dark black, burnt wood-like debris @ 0.25 - 0.5 feet bgs.

General Sampling Comment

SS71-S-0.5 @ 10:30.
SS72-S-0.5 @ 11:00.
SS73-S-0.5 @ 11:20.
SS74-S-0.5 @ 11:40, orange mottling and black fragments, burnt wood-like.
SS75-S-0.5 @ 12:00.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	DU10				
Project Number	0624.04.10	Sampler	CRW & LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/27/2018				
Sampling Event	April 2018	Sample Name	DU10B-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Composite		1:55:00 PM	2 oz. soil	
					4 oz. soil	5
					8 oz. soil	
					Other	1
					Total Containers	6

Sample Description:

Incremental sampling methodology (ISM) sample, collected from 0- to 0.5-ft bgs. Organics and clay.

General Sampling Comment

SS76-S-0.5 @ 13:55, organics, iron oxidation.
SS77-S-0.5 @ 14:00, clay with depth.
SS78-S-0.5 @ 14:05, very clayey, black fragments.
SS79-S-0.5 @ 14:18.
SS80-S-0.5 @ 14:30.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	DU10				
Project Number	0624.04.10	Sampler	CRW				
Project Name	Northern State Hospital Property	Sampling Date	04/27/2018				
Sampling Event	April 2018	Sample Name	DU10C-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Composite		1:00:00 PM	2 oz. soil	
					4 oz. soil	5
					8 oz. soil	
					Other	1
					Total Containers	6

Sample Description:

Incremental sampling methodology (ISM) sample, collected from 0- to 0.5-ft bgs. Mostly organics with some clay.

General Sampling Comment

SS81-S-0.5 @ 13:00, some terracotta.
SS82-S-0.5 @ 13:20.
SS83-S-0.5 @ 13:40.
SS84-S-0.5 @ 15:10.
SS85-S-0.5 @ 15:30, gravelly, primarily clay.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	DU11				
Project Number	0624.04.10	Sampler	CRW & LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/26/2018				
Sampling Event	April 2018	Sample Name	DU11-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Composite		5:15:00 PM	2 oz. soil	
					4 oz. soil	5
					8 oz. soil	
					Other	1
					Total Containers	6

Sample Description:

Incremental sampling methodology sample, collected from 0- to 0.5-ft bgs.
No terracotta or coal-like pieces observed. Relatively homogeneous black/gray fine organic soil.

General Sampling Comment

SS51-S-0.5 @ 17:25, blackish gray organics.
SS52-S-0.5 @ 17:35, clay-like, blackish gray.
SS53-S-0.5 @ 17:40, clay-like blackish gray.
SS54-S-0.5 @ 17:50, clay-like blackish gray and woody debris.
SS55-S-0.5 @ 18:00, clay-like blackish gray.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

Maul Foster & Alongi, Inc.

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	DU12				
Project Number	0624.04.10	Sampler	CRW & LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/27/2018				
Sampling Event	April 2018	Sample Name	DU12-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Composite		5:20:00 PM	2 oz. soil	
					4 oz. soil	5
					8 oz. soil	
					Other	1
					Total Containers	6

Sample Description:

Incremental sampling methodology (ISM) sample, collected from 0- to 0.5-ft bgs.
At ISM location, 12H, wood debris in silt.

General Sampling Comment

SS91-S-0.5 @ 17:30, clayey, building debris next to sample location.
SS92-S-0.5 @ 17:55, terracotta, black coal-like fragments, organics.
SS93-S-0.5 @ 18:20, clay, some organics.
SS94-S-0.5 @ 18:40, organics with woody debris
SS95-S-0.5 @ 18:50.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	DU13				
Project Number	0624.04.10	Sampler	CRW & LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/26/2018				
Sampling Event	April 2018	Sample Name	DU13-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Composite		8:05:00 AM	2 oz. soil	
					4 oz. soil	5
					8 oz. soil	
					Other	1
					Total Containers	6

Sample Description:

Incremental sampling methodology sample, collected from 0- to 0.5-ft bgs.

General Sampling Comment

SS41-S-0.5 @ 8:25, adjacent to reseviior.
SS42-S-0.5 @ 9:00, dark clayey soil, some gravel.
SS43-S-0.5 @ 9:50, brown, very organic.
SS44-S-0.5 @ 10:20.
SS45-S-0.5 @ 10:45.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	DU14				
Project Number	0624.04.10	Sampler	CRW & LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/27/2018				
Sampling Event	April 2018	Sample Name	DU14-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Composite		8:05:00 AM	2 oz. soil	
					4 oz. soil	5
					8 oz. soil	
					Other	1
					Total Containers	6

Sample Description:

Incremental sampling methodology sample, collected from 0- to 0.5-ft bgs.
Mostly fine grained organics.

General Sampling Comment

SS66-S-0.5 @ 8:05.
SS67-S-0.5 @ 8:20.
SS68-S-0.5 @ 8:45.
SS69-S-0.5 @ 9:00, gray, organics.
SS70-S-0.5 @ 9:45, gray, organics.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

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Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	DU15				
Project Number	0624.04.10	Sampler	CRW & LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/25/2018				
Sampling Event	April 2018	Sample Name	DU15-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Composite		11:50:00 AM	2 oz. soil	
					4 oz. soil	5
					8 oz. soil	
					Other	1
					Total Containers	6

Sample Description:

Incremental sampling methodology sample, collected from 0- to 0.5-ft bgs.
Predominantly fine, organic, dark brown with trace gravel.

General Sampling Comment

SS21-S-0.5 @ 12:00, soft soil under sod, terracotta and coal.
SS22-S-0.5 @ 12:17.
SS23-S-0.5 @ 12:28, soft organic soil.
SS24-S-0.5 @ 14:17, more gravel.
SS25-S-0.5 @ 14:30, lots of blackberries, some black fragments.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	DU16				
Project Number	0624.04.10	Sampler	CRW & LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/26/2018				
Sampling Event	April 2018	Sample Name	DU16-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Composite		12:45:00 PM	2 oz. soil	
					4 oz. soil	5
					8 oz. soil	
					Other	1
					Total Containers	6

Sample Description:

Incremental sampling methodology (ISM) sample, collected from 0- to 0.5-ft bgs.
Organics and clay.
ISM sample, 16F, burnt wood in top 4-inches of soil.

General Sampling Comment

SS46-S-0.5 @ 13:00, dark brown, fine, rootlets with light brown clay with mottles.
SS47-S-0.5 @ 13:25.
SS48-S-0.5 @ 13:50, reddish tan, lots of organics.
SS49-S-0.5 @ 14:30, dark brown to black, fine, organics, near wetland.
SS50-S-0.5 @ 14:50.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	DU17				
Project Number	0624.04.10	Sampler	CRW & LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/25/2018				
Sampling Event	April 2018	Sample Name	DU17-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Composite		7:45:00 AM	2 oz. soil	
					4 oz. soil	5
					8 oz. soil	
					Other	1
					Total Containers	6

Sample Description:

Incremental sampling methodology sample, collected from 0- to 0.5-ft bgs.
At some locations, dark brown organic soil near surface and light brown clay with depth.

General Sampling Comment

SS16-S-0.5 @ 8:12, coal- and terracotta-like fragments.
SS17-S-0.5 @ 8:50, deer fur at top of soil.
SS18-S-0.5 @ 9:50, dark soil, organics, large cobbles.
SS19-S-0.5 @ 11:05, west bank of Brickyard Creek.
SS20-S-0.5 @ 11:20, clay with black fragments.

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Soil Field Sampling Data Sheet

Client Name	Port of Skagit	Sample Location	DU18				
Project Number	0624.04.10	Sampler	CRW & LBP				
Project Name	Northern State Hospital Property	Sampling Date	04/25/2018				
Sampling Event	April 2018	Sample Name	DU18-S-0.5				
Sub Area		Sample Depth	0.5				
FSDS QA:	LBP 5/18/18	Easting		Northing		TOC	

Sample Information

Sampling Method	Sample Type	Sample Category	PID/FID	Sampling Time	Container Code	#
(2) Hand Auger	Soil	Composite		3:20:00 PM	2 oz. soil	
					4 oz. soil	5
					8 oz. soil	
					Other	1
					Total Containers	6

Sample Description:

Incremental sampling methodology sample, collected from 0- to 0.5-ft bgs.
Light gray/tan soil.

General Sampling Comment

SS26-S-0.5 @ 15:20.
SS27-S-0.5 @ 15:35, terracotta and coal.
SS28-S-0.5 @ 15:45, three-inches of sod.
SS29-S-0.5 @ 16:00, coal-like fragments.
SS30-S-0.5 @ 16:05

Sampling Method Code:

(1) Backhoe, (2) Hand Auger, (3) Drill Bit Cutting Head, (4) Geoprobe, (5) Split Spoon, (6) Shelby Tube, (7) Grab, (8) Other (Specify)

Signature _____

APPENDIX C

ANALYTICAL LABORATORY REPORTS



Apex Labs

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323 Phone
503-718-0333 Fax

Thursday, April 26, 2018

Heather Good
Maul Foster & Alongi, INC-Bellingham
1329 North State Street, Suite 301
Bellingham, WA 98225

RE: 0624.04.10-03--Northern State Hospital / 0624.04.04-10

Enclosed are the results of analyses for work order A8D0754, which was received by the laboratory on 4/24/2018 at 12:50:00PM.

Thank you for using Apex Labs. We appreciate your business and strive to provide the highest quality services to the environmental industry.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: ldomenighini@apex-labs.com, or by phone at 503-718-2323.

Apex Laboratories



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Lisa Domenighini, Client Services Manager

Maul Foster & Alongi, INC-Bellingham

1329 North State Street, Suite 301
Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**

Project Number: 0624.04.04-10
Project Manager: Heather Good

Reported:

04/26/18 15:29

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
HA16-S-0.5	A8D0754-01	Soil	04/23/18 09:36	04/24/18 12:50
HA16-S-1.0	A8D0754-02	Soil	04/23/18 09:48	04/24/18 12:50
HA17-S-0.5	A8D0754-03	Soil	04/23/18 10:15	04/24/18 12:50
HA17-S-1.0	A8D0754-04	Soil	04/23/18 10:20	04/24/18 12:50
HA18-S-0.5	A8D0754-05	Soil	04/23/18 10:42	04/24/18 12:50
HA18-S-1.0	A8D0754-06	Soil	04/23/18 10:50	04/24/18 12:50
HA19-S-0.5	A8D0754-07	Soil	04/23/18 12:05	04/24/18 12:50
HA19-S-1.0	A8D0754-08	Soil	04/23/18 12:10	04/24/18 12:50
HA20-S-0.5	A8D0754-09	Soil	04/23/18 13:35	04/24/18 12:50
HA20-S-1.0	A8D0754-10	Soil	04/23/18 13:42	04/24/18 12:50
HA21-S-0.5	A8D0754-11	Soil	04/23/18 14:16	04/24/18 12:50
HA21-S-1.0	A8D0754-12	Soil	04/23/18 14:20	04/24/18 12:50
HA22-S-0.5	A8D0754-13	Soil	04/23/18 14:50	04/24/18 12:50
HA22-S-1.0	A8D0754-14	Soil	04/23/18 14:54	04/24/18 12:50
HA23-S-0.5	A8D0754-15	Soil	04/23/18 15:47	04/24/18 12:50
HA23-S-1.0	A8D0754-16	Soil	04/23/18 15:51	04/24/18 12:50
HA24-S-0.5	A8D0754-17	Soil	04/23/18 16:30	04/24/18 12:50
HA24-S-1.0	A8D0754-18	Soil	04/23/18 16:40	04/24/18 12:50
HA25-S-0.5	A8D0754-19	Soil	04/23/18 17:26	04/24/18 12:50
HA25-S-1.0	A8D0754-20	Soil	04/23/18 17:28	04/24/18 12:50
HA26-S-0.5	A8D0754-21	Soil	04/23/18 17:48	04/24/18 12:50
HA26-S-1.0	A8D0754-22	Soil	04/23/18 17:52	04/24/18 12:50
HA27-S-0.5	A8D0754-23	Soil	04/23/18 18:20	04/24/18 12:50
HA27-S-1.0	A8D0754-24	Soil	04/23/18 18:24	04/24/18 12:50
HA28-S-0.5	A8D0754-25	Soil	04/23/18 19:10	04/24/18 12:50
HA28-S-1.0	A8D0754-26	Soil	04/23/18 19:20	04/24/18 12:50
HA29-S-1.0-CS	A8D0754-27	Soil	04/23/18 19:30	04/24/18 12:50

Apex Laboratories



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Maul Foster & Alongi, INC-Bellingham

1329 North State Street, Suite 301
Bellingham, WA 98225

Project: 0624.04.10-03--Northern State Hospital

Project Number: 0624.04.04-10
Project Manager: Heather Good

Reported:

04/26/18 15:29

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
HA16-S-0.5 (A8D0754-01)								
Matrix: Soil								
Batch: 8041092								
Lead	342	0.132	0.264	mg/kg dry	10	04/24/18 18:05	EPA 6020A	
HA16-S-1.0 (A8D0754-02)								
Matrix: Soil								
Batch: 8041092								
Lead	224	0.132	0.263	mg/kg dry	10	04/24/18 18:30	EPA 6020A	
HA17-S-0.5 (A8D0754-03)								
Matrix: Soil								
Batch: 8041092								
Lead	82.8	0.130	0.259	mg/kg dry	10	04/24/18 18:35	EPA 6020A	
HA17-S-1.0 (A8D0754-04)								
Matrix: Soil								
Batch: 8041092								
Lead	45.6	0.135	0.269	mg/kg dry	10	04/24/18 18:40	EPA 6020A	
HA18-S-0.5 (A8D0754-05)								
Matrix: Soil								
Batch: 8041092								
Lead	327	0.123	0.246	mg/kg dry	10	04/24/18 18:55	EPA 6020A	
HA18-S-1.0 (A8D0754-06)								
Matrix: Soil								
Batch: 8041092								
Lead	65.6	0.122	0.243	mg/kg dry	10	04/24/18 19:00	EPA 6020A	
HA19-S-0.5 (A8D0754-07)								
Matrix: Soil								
Batch: 8041092								
Lead	126	0.136	0.271	mg/kg dry	10	04/24/18 19:04	EPA 6020A	
HA19-S-1.0 (A8D0754-08)								
Matrix: Soil								
Batch: 8041092								
Lead	112	0.129	0.259	mg/kg dry	10	04/24/18 19:09	EPA 6020A	
HA20-S-0.5 (A8D0754-09)								
Matrix: Soil								
Batch: 8041092								
Lead	355	0.149	0.299	mg/kg dry	10	04/24/18 19:24	EPA 6020A	
HA20-S-1.0 (A8D0754-10)								
Matrix: Soil								
Batch: 8041092								
Lead	84.6	0.142	0.284	mg/kg dry	10	04/24/18 19:29	EPA 6020A	
HA21-S-0.5 (A8D0754-11)								
Matrix: Soil								
Batch: 8041092								
Lead	421	0.147	0.294	mg/kg dry	10	04/24/18 19:34	EPA 6020A	
HA21-S-1.0 (A8D0754-12)								
Matrix: Soil								

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Maul Foster & Alongi, INC-Bellingham

1329 North State Street, Suite 301
Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**

Project Number: 0624.04.04-10
Project Manager: Heather Good

Reported:

04/26/18 15:29

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
HA21-S-1.0 (A8D0754-12) Matrix: Soil								
Batch: 8041092								
Lead	256	0.150	0.300	mg/kg dry	10	04/24/18 19:39	EPA 6020A	
HA22-S-0.5 (A8D0754-13) Matrix: Soil								
Batch: 8041092								
Lead	172	0.127	0.254	mg/kg dry	10	04/24/18 19:44	EPA 6020A	
HA22-S-1.0 (A8D0754-14) Matrix: Soil								
Batch: 8041092								
Lead	111	0.136	0.272	mg/kg dry	10	04/24/18 19:49	EPA 6020A	
HA23-S-0.5 (A8D0754-15) Matrix: Soil								
Batch: 8041092								
Lead	146	0.150	0.300	mg/kg dry	10	04/24/18 19:54	EPA 6020A	
HA23-S-1.0 (A8D0754-16) Matrix: Soil								
Batch: 8041092								
Lead	146	0.140	0.280	mg/kg dry	10	04/24/18 19:59	EPA 6020A	
HA24-S-0.5 (A8D0754-17) Matrix: Soil								
Batch: 8041092								
Lead	120	0.136	0.272	mg/kg dry	10	04/24/18 20:04	EPA 6020A	
HA24-S-1.0 (A8D0754-18) Matrix: Soil								
Batch: 8041092								
Lead	95.8	0.135	0.270	mg/kg dry	10	04/24/18 20:09	EPA 6020A	
HA25-S-0.5 (A8D0754-19) Matrix: Soil								
Batch: 8041092								
Lead	45.4	0.148	0.296	mg/kg dry	10	04/24/18 20:24	EPA 6020A	
HA25-S-1.0 (A8D0754-20) Matrix: Soil								
Batch: 8041095								
Lead	50.4	0.149	0.299	mg/kg dry	10	04/24/18 20:49	EPA 6020A	
HA26-S-0.5 (A8D0754-21) Matrix: Soil								
Batch: 8041095								
Lead	249	0.141	0.282	mg/kg dry	10	04/24/18 20:54	EPA 6020A	
HA26-S-1.0 (A8D0754-22) Matrix: Soil								
Batch: 8041095								
Lead	396	0.138	0.277	mg/kg dry	10	04/24/18 20:59	EPA 6020A	
HA27-S-0.5 (A8D0754-23) Matrix: Soil								

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Maul Foster & Alongi, INC-Bellingham

1329 North State Street, Suite 301
 Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**

Project Number: 0624.04.04-10
 Project Manager: Heather Good

Reported:

04/26/18 15:29

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
HA27-S-0.5 (A8D0754-23) Matrix: Soil								
Batch: 8041095								
Lead	185	0.156	0.311	mg/kg dry	10	04/24/18 21:04	EPA 6020A	Q-42
HA27-S-1.0 (A8D0754-24) Matrix: Soil								
Batch: 8041095								
Lead	120	0.167	0.334	mg/kg dry	10	04/24/18 22:25	EPA 6020A	
HA28-S-0.5 (A8D0754-25) Matrix: Soil								
Batch: 8041095								
Lead	213	0.139	0.278	mg/kg dry	10	04/24/18 22:30	EPA 6020A	
HA28-S-1.0 (A8D0754-26) Matrix: Soil								
Batch: 8041095								
Lead	282	0.142	0.285	mg/kg dry	10	04/24/18 22:35	EPA 6020A	
HA29-S-1.0-CS (A8D0754-27) Matrix: Soil								
Batch: 8041095								
Lead	276	0.154	0.308	mg/kg dry	10	04/24/18 22:40	EPA 6020A	

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Maul Foster & Alongi, INC-Bellingham
 1329 North State Street, Suite 301
 Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**
 Project Number: 0624.04.04-10
 Project Manager: Heather Good

Reported:
 04/26/18 15:29

ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
HA16-S-0.5 (A8D0754-01)			Matrix: Soil		Batch: 8041072			
% Solids	74.4	1.00	1.00	% by Weight	1	04/25/18 08:51	EPA 8000C	
HA16-S-1.0 (A8D0754-02)			Matrix: Soil		Batch: 8041072			
% Solids	76.7	1.00	1.00	% by Weight	1	04/25/18 08:51	EPA 8000C	
HA17-S-0.5 (A8D0754-03)			Matrix: Soil		Batch: 8041072			
% Solids	82.8	1.00	1.00	% by Weight	1	04/25/18 08:51	EPA 8000C	
HA17-S-1.0 (A8D0754-04)			Matrix: Soil		Batch: 8041072			
% Solids	82.2	1.00	1.00	% by Weight	1	04/25/18 08:51	EPA 8000C	
HA18-S-0.5 (A8D0754-05)			Matrix: Soil		Batch: 8041072			
% Solids	84.4	1.00	1.00	% by Weight	1	04/25/18 08:51	EPA 8000C	
HA18-S-1.0 (A8D0754-06)			Matrix: Soil		Batch: 8041072			
% Solids	87.3	1.00	1.00	% by Weight	1	04/25/18 08:51	EPA 8000C	
HA19-S-0.5 (A8D0754-07)			Matrix: Soil		Batch: 8041072			
% Solids	78.7	1.00	1.00	% by Weight	1	04/25/18 08:51	EPA 8000C	
HA19-S-1.0 (A8D0754-08)			Matrix: Soil		Batch: 8041072			
% Solids	74.7	1.00	1.00	% by Weight	1	04/25/18 08:51	EPA 8000C	
HA20-S-0.5 (A8D0754-09)			Matrix: Soil		Batch: 8041072			
% Solids	73.9	1.00	1.00	% by Weight	1	04/25/18 08:51	EPA 8000C	
HA20-S-1.0 (A8D0754-10)			Matrix: Soil		Batch: 8041072			
% Solids	74.7	1.00	1.00	% by Weight	1	04/25/18 08:51	EPA 8000C	
HA21-S-0.5 (A8D0754-11)			Matrix: Soil		Batch: 8041072			
% Solids	72.7	1.00	1.00	% by Weight	1	04/25/18 08:51	EPA 8000C	
HA21-S-1.0 (A8D0754-12)			Matrix: Soil		Batch: 8041072			
% Solids	73.8	1.00	1.00	% by Weight	1	04/25/18 08:51	EPA 8000C	
HA22-S-0.5 (A8D0754-13)			Matrix: Soil		Batch: 8041072			
% Solids	77.1	1.00	1.00	% by Weight	1	04/25/18 08:51	EPA 8000C	
HA22-S-1.0 (A8D0754-14)			Matrix: Soil		Batch: 8041072			
% Solids	73.5	1.00	1.00	% by Weight	1	04/25/18 08:51	EPA 8000C	
HA23-S-0.5 (A8D0754-15)			Matrix: Soil		Batch: 8041072			
% Solids	72.1	1.00	1.00	% by Weight	1	04/25/18 08:51	EPA 8000C	
HA23-S-1.0 (A8D0754-16)			Matrix: Soil		Batch: 8041072			
% Solids	73.6	1.00	1.00	% by Weight	1	04/25/18 08:51	EPA 8000C	

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Maul Foster & Alongi, INC-Bellingham

1329 North State Street, Suite 301
 Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**

Project Number: 0624.04.04-10
 Project Manager: Heather Good

Reported:

04/26/18 15:29

ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	MDL	Reporting		Dilution	Date Analyzed	Method	Notes
			Limit	Units				
HA24-S-0.5 (A8D0754-17)				Matrix: Soil			Batch: 8041072	
% Solids	72.8	1.00	1.00	% by Weight	1	04/25/18 08:51	EPA 8000C	
HA24-S-1.0 (A8D0754-18)				Matrix: Soil			Batch: 8041072	
% Solids	73.4	1.00	1.00	% by Weight	1	04/25/18 08:51	EPA 8000C	
HA25-S-0.5 (A8D0754-19)				Matrix: Soil			Batch: 8041072	
% Solids	68.1	1.00	1.00	% by Weight	1	04/25/18 08:51	EPA 8000C	
HA25-S-1.0 (A8D0754-20)				Matrix: Soil			Batch: 8041072	
% Solids	66.9	1.00	1.00	% by Weight	1	04/25/18 08:51	EPA 8000C	
HA26-S-0.5 (A8D0754-21)				Matrix: Soil			Batch: 8041072	
% Solids	75.9	1.00	1.00	% by Weight	1	04/25/18 08:51	EPA 8000C	
HA26-S-1.0 (A8D0754-22)				Matrix: Soil			Batch: 8041072	
% Solids	74.5	1.00	1.00	% by Weight	1	04/25/18 08:51	EPA 8000C	
HA27-S-0.5 (A8D0754-23)				Matrix: Soil			Batch: 8041072	
% Solids	67.4	1.00	1.00	% by Weight	1	04/25/18 08:51	EPA 8000C	
HA27-S-1.0 (A8D0754-24)				Matrix: Soil			Batch: 8041072	
% Solids	65.5	1.00	1.00	% by Weight	1	04/25/18 08:51	EPA 8000C	
HA28-S-0.5 (A8D0754-25)				Matrix: Soil			Batch: 8041072	
% Solids	74.6	1.00	1.00	% by Weight	1	04/25/18 08:51	EPA 8000C	
HA28-S-1.0 (A8D0754-26)				Matrix: Soil			Batch: 8041072	
% Solids	74.1	1.00	1.00	% by Weight	1	04/25/18 08:51	EPA 8000C	
HA29-S-1.0-CS (A8D0754-27)				Matrix: Soil			Batch: 8041072	
% Solids	71.7	1.00	1.00	% by Weight	1	04/25/18 08:51	EPA 8000C	

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1329 North State Street, Suite 301
Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**

Project Number: 0624.04.04-10
Project Manager: Heather Good

Reported:

04/26/18 15:29

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8041092 - EPA 3051A						Soil						
Blank (8041092-BLK1)						Prepared: 04/24/18 13:52 Analyzed: 04/24/18 17:55						
EPA 6020A												
Lead	ND	0.0962	0.192	mg/kg wet	10	---	---	---	---	---	---	---
LCS (8041092-BS1)						Prepared: 04/24/18 13:52 Analyzed: 04/24/18 18:00						
EPA 6020A												
Lead	52.1	0.100	0.200	mg/kg wet	10	50.0	---	104	80-120	---	---	---
Duplicate (8041092-DUP1)						Prepared: 04/24/18 13:52 Analyzed: 04/24/18 18:45						
QC Source Sample: HA17-S-1.0 (A8D0754-04)												
EPA 6020A												
Lead	45.6	0.130	0.260	mg/kg dry	10	---	45.6	---	---	0.008	40%	---
Matrix Spike (8041092-MS1)						Prepared: 04/24/18 13:52 Analyzed: 04/24/18 18:50						
QC Source Sample: HA17-S-1.0 (A8D0754-04)												
EPA 6020A												
Lead	115	0.131	0.262	mg/kg dry	10	65.6	45.6	106	75-125	---	---	---
Matrix Spike (8041092-MS2)						Prepared: 04/24/18 13:52 Analyzed: 04/24/18 20:29						
QC Source Sample: HA25-S-0.5 (A8D0754-19)												
EPA 6020A												
Lead	114	0.144	0.288	mg/kg dry	10	72.0	45.4	95	75-125	---	---	---
Batch 8041095 - EPA 3051A						Soil						
Blank (8041095-BLK1)						Prepared: 04/24/18 15:01 Analyzed: 04/24/18 20:39						
EPA 6020A												
Lead	ND	0.0962	0.192	mg/kg wet	10	---	---	---	---	---	---	---
LCS (8041095-BS1)						Prepared: 04/24/18 15:01 Analyzed: 04/24/18 20:44						
EPA 6020A												
Lead	52.2	0.100	0.200	mg/kg wet	10	50.0	---	104	80-120	---	---	---
Duplicate (8041095-DUP1)						Prepared: 04/24/18 15:01 Analyzed: 04/24/18 21:09						
QC Source Sample: HA27-S-0.5 (A8D0754-23)												
EPA 6020A												
Lead	203	0.147	0.295	mg/kg dry	10	---	185	---	---	9	40%	---

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Maul Foster & Alongi, INC-Bellingham

1329 North State Street, Suite 301
 Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**

Project Number: 0624.04.04-10
 Project Manager: Heather Good

Reported:

04/26/18 15:29

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8041095 - EPA 3051A						Soil						
Matrix Spike (8041095-MS1)						Prepared: 04/24/18 15:01 Analyzed: 04/24/18 21:14						
QC Source Sample: HA27-S-0.5 (A8D0754-23)												
EPA 6020A												
Lead	290	0.145	0.289	mg/kg dry	10	72.3	185	145	75-125	---	---	Q-03, Q-04

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Maul Foster & Alongi, INC-Bellingham
 1329 North State Street, Suite 301
 Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**
 Project Number: 0624.04.04-10
 Project Manager: Heather Good

Reported:
 04/26/18 15:29

QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8041072 - Total Solids (Dry Weight)						Soil						
Duplicate (8041072-DUP1)						Prepared: 04/24/18 09:45 Analyzed: 04/25/18 08:51						
QC Source Sample: Other (A8D0691-01)												
EPA 8000C												
% Solids	86.0	1.00	1.00	% by Weight	1	---	88.1	---	---	2	10%	
Duplicate (8041072-DUP3)						Prepared: 04/24/18 18:16 Analyzed: 04/25/18 08:51						
QC Source Sample: HA17-S-0.5 (A8D0754-03)												
EPA 8000C												
% Solids	85.5	1.00	1.00	% by Weight	1	---	82.8	---	---	3	10%	
Duplicate (8041072-DUP4)						Prepared: 04/24/18 18:16 Analyzed: 04/25/18 08:51						
QC Source Sample: HA23-S-0.5 (A8D0754-15)												
EPA 8000C												
% Solids	71.5	1.00	1.00	% by Weight	1	---	72.1	---	---	0.7	10%	
Duplicate (8041072-DUP5)						Prepared: 04/24/18 18:16 Analyzed: 04/25/18 08:51						
QC Source Sample: HA29-S-1.0-CS (A8D0754-27)												
EPA 8000C												
% Solids	71.3	1.00	1.00	% by Weight	1	---	71.7	---	---	0.5	10%	
Duplicate (8041072-DUP6)						Prepared: 04/24/18 18:16 Analyzed: 04/25/18 08:51						
QC Source Sample: Other (A8D0771-05)												
EPA 8000C												
% Solids	75.0	1.00	1.00	% by Weight	1	---	75.7	---	---	1	10%	
Duplicate (8041072-DUP7)						Prepared: 04/24/18 19:51 Analyzed: 04/25/18 08:51						
QC Source Sample: Other (A8D0765-02)												
EPA 8000C												
% Solids	85.4	1.00	1.00	% by Weight	1	---	85.6	---	---	0.2	10%	
Duplicate (8041072-DUP8)						Prepared: 04/24/18 19:51 Analyzed: 04/25/18 08:51						
QC Source Sample: Other (A8D0778-01)												
EPA 8000C												
% Solids	77.9	1.00	1.00	% by Weight	1	---	78.6	---	---	1	10%	
Duplicate (8041072-DUP9)						Prepared: 04/24/18 19:51 Analyzed: 04/25/18 08:51						
QC Source Sample: Other (A8D0779-08)												

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Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10--Northern State Hospital Project Number: 0624.04.04-10 Project Manager: Heather Good	Reported: 04/26/18 15:29
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QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8041072 - Total Solids (Dry Weight)						Soil						
Duplicate (8041072-DUP9)						Prepared: 04/24/18 19:51 Analyzed: 04/25/18 08:51						
QC Source Sample: Other (A8D0779-08)												
EPA 8000C												
% Solids	75.7	1.00	1.00	% by Weight	1	---	76.2	---	---	0.7	10%	



Maul Foster & Alongi, INC-Bellingham

1329 North State Street, Suite 301
 Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**

Project Number: 0624.04.04-10
 Project Manager: Heather Good

Reported:

04/26/18 15:29

SAMPLE PREPARATION INFORMATION

Total Metals by EPA 6020 (ICPMS)

Prep: EPA 3051A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 8041092							
A8D0754-01	Soil	EPA 6020A	04/23/18 09:36	04/24/18 13:52	0.51g/50mL	0.5g/50mL	0.98
A8D0754-02	Soil	EPA 6020A	04/23/18 09:48	04/24/18 13:52	0.495g/50mL	0.5g/50mL	1.01
A8D0754-03	Soil	EPA 6020A	04/23/18 10:15	04/24/18 13:52	0.466g/50mL	0.5g/50mL	1.07
A8D0754-04	Soil	EPA 6020A	04/23/18 10:20	04/24/18 13:52	0.452g/50mL	0.5g/50mL	1.11
A8D0754-05	Soil	EPA 6020A	04/23/18 10:42	04/24/18 13:52	0.481g/50mL	0.5g/50mL	1.04
A8D0754-06	Soil	EPA 6020A	04/23/18 10:50	04/24/18 13:52	0.471g/50mL	0.5g/50mL	1.06
A8D0754-07	Soil	EPA 6020A	04/23/18 12:05	04/24/18 13:52	0.469g/50mL	0.5g/50mL	1.07
A8D0754-08	Soil	EPA 6020A	04/23/18 12:10	04/24/18 13:52	0.517g/50mL	0.5g/50mL	0.97
A8D0754-09	Soil	EPA 6020A	04/23/18 13:35	04/24/18 13:52	0.453g/50mL	0.5g/50mL	1.10
A8D0754-10	Soil	EPA 6020A	04/23/18 13:42	04/24/18 13:52	0.471g/50mL	0.5g/50mL	1.06
A8D0754-11	Soil	EPA 6020A	04/23/18 14:16	04/24/18 13:52	0.467g/50mL	0.5g/50mL	1.07
A8D0754-12	Soil	EPA 6020A	04/23/18 14:20	04/24/18 13:52	0.452g/50mL	0.5g/50mL	1.11
A8D0754-13	Soil	EPA 6020A	04/23/18 14:50	04/24/18 13:52	0.511g/50mL	0.5g/50mL	0.98
A8D0754-14	Soil	EPA 6020A	04/23/18 14:54	04/24/18 13:52	0.499g/50mL	0.5g/50mL	1.00
A8D0754-15	Soil	EPA 6020A	04/23/18 15:47	04/24/18 13:52	0.463g/50mL	0.5g/50mL	1.08
A8D0754-16	Soil	EPA 6020A	04/23/18 15:51	04/24/18 13:52	0.485g/50mL	0.5g/50mL	1.03
A8D0754-17	Soil	EPA 6020A	04/23/18 16:30	04/24/18 13:52	0.505g/50mL	0.5g/50mL	0.99
A8D0754-18	Soil	EPA 6020A	04/23/18 16:40	04/24/18 13:52	0.505g/50mL	0.5g/50mL	0.99
A8D0754-19	Soil	EPA 6020A	04/23/18 17:26	04/24/18 13:52	0.496g/50mL	0.5g/50mL	1.01

Batch: 8041095

A8D0754-20	Soil	EPA 6020A	04/23/18 17:28	04/24/18 15:01	0.5g/50mL	0.5g/50mL	1.00
A8D0754-21	Soil	EPA 6020A	04/23/18 17:48	04/24/18 15:01	0.467g/50mL	0.5g/50mL	1.07
A8D0754-22	Soil	EPA 6020A	04/23/18 17:52	04/24/18 15:01	0.485g/50mL	0.5g/50mL	1.03
A8D0754-23	Soil	EPA 6020A	04/23/18 18:20	04/24/18 15:01	0.477g/50mL	0.5g/50mL	1.05
A8D0754-24	Soil	EPA 6020A	04/23/18 18:24	04/24/18 15:01	0.458g/50mL	0.5g/50mL	1.09
A8D0754-25	Soil	EPA 6020A	04/23/18 19:10	04/24/18 15:01	0.482g/50mL	0.5g/50mL	1.04
A8D0754-26	Soil	EPA 6020A	04/23/18 19:20	04/24/18 15:01	0.474g/50mL	0.5g/50mL	1.05
A8D0754-27	Soil	EPA 6020A	04/23/18 19:30	04/24/18 15:01	0.453g/50mL	0.5g/50mL	1.10

Percent Dry Weight

Prep: Total Solids (Dry Weight)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 8041072							
A8D0754-01	Soil	EPA 8000C	04/23/18 09:36	04/24/18 18:16	1N/A/1N/A	1N/A/1N/A	NA
A8D0754-02	Soil	EPA 8000C	04/23/18 09:48	04/24/18 18:16	1N/A/1N/A	1N/A/1N/A	NA

Apex Laboratories

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Lisa Domenighini, Client Services Manager

Maul Foster & Alongi, INC-Bellingham

1329 North State Street, Suite 301
 Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**

Project Number: 0624.04.04-10
 Project Manager: Heather Good

Reported:

04/26/18 15:29

SAMPLE PREPARATION INFORMATION

Percent Dry Weight

Prep: Total Solids (Dry Weight)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A8D0754-03	Soil	EPA 8000C	04/23/18 10:15	04/24/18 18:16	1N/A/1N/A	1N/A/1N/A	NA
A8D0754-04	Soil	EPA 8000C	04/23/18 10:20	04/24/18 18:16	1N/A/1N/A	1N/A/1N/A	NA
A8D0754-05	Soil	EPA 8000C	04/23/18 10:42	04/24/18 18:16	1N/A/1N/A	1N/A/1N/A	NA
A8D0754-06	Soil	EPA 8000C	04/23/18 10:50	04/24/18 18:16	1N/A/1N/A	1N/A/1N/A	NA
A8D0754-07	Soil	EPA 8000C	04/23/18 12:05	04/24/18 18:16	1N/A/1N/A	1N/A/1N/A	NA
A8D0754-08	Soil	EPA 8000C	04/23/18 12:10	04/24/18 18:16	1N/A/1N/A	1N/A/1N/A	NA
A8D0754-09	Soil	EPA 8000C	04/23/18 13:35	04/24/18 18:16	1N/A/1N/A	1N/A/1N/A	NA
A8D0754-10	Soil	EPA 8000C	04/23/18 13:42	04/24/18 18:16	1N/A/1N/A	1N/A/1N/A	NA
A8D0754-11	Soil	EPA 8000C	04/23/18 14:16	04/24/18 18:16	1N/A/1N/A	1N/A/1N/A	NA
A8D0754-12	Soil	EPA 8000C	04/23/18 14:20	04/24/18 18:16	1N/A/1N/A	1N/A/1N/A	NA
A8D0754-13	Soil	EPA 8000C	04/23/18 14:50	04/24/18 18:16	1N/A/1N/A	1N/A/1N/A	NA
A8D0754-14	Soil	EPA 8000C	04/23/18 14:54	04/24/18 18:16	1N/A/1N/A	1N/A/1N/A	NA
A8D0754-15	Soil	EPA 8000C	04/23/18 15:47	04/24/18 18:16	1N/A/1N/A	1N/A/1N/A	NA
A8D0754-16	Soil	EPA 8000C	04/23/18 15:51	04/24/18 18:16	1N/A/1N/A	1N/A/1N/A	NA
A8D0754-17	Soil	EPA 8000C	04/23/18 16:30	04/24/18 18:16	1N/A/1N/A	1N/A/1N/A	NA
A8D0754-18	Soil	EPA 8000C	04/23/18 16:40	04/24/18 18:16	1N/A/1N/A	1N/A/1N/A	NA
A8D0754-19	Soil	EPA 8000C	04/23/18 17:26	04/24/18 18:16	1N/A/1N/A	1N/A/1N/A	NA
A8D0754-20	Soil	EPA 8000C	04/23/18 17:28	04/24/18 18:16	1N/A/1N/A	1N/A/1N/A	NA
A8D0754-21	Soil	EPA 8000C	04/23/18 17:48	04/24/18 18:16	1N/A/1N/A	1N/A/1N/A	NA
A8D0754-22	Soil	EPA 8000C	04/23/18 17:52	04/24/18 18:16	1N/A/1N/A	1N/A/1N/A	NA
A8D0754-23	Soil	EPA 8000C	04/23/18 18:20	04/24/18 18:16	1N/A/1N/A	1N/A/1N/A	NA
A8D0754-24	Soil	EPA 8000C	04/23/18 18:24	04/24/18 18:16	1N/A/1N/A	1N/A/1N/A	NA
A8D0754-25	Soil	EPA 8000C	04/23/18 19:10	04/24/18 18:16	1N/A/1N/A	1N/A/1N/A	NA
A8D0754-26	Soil	EPA 8000C	04/23/18 19:20	04/24/18 18:16	1N/A/1N/A	1N/A/1N/A	NA
A8D0754-27	Soil	EPA 8000C	04/23/18 19:30	04/24/18 18:16	1N/A/1N/A	1N/A/1N/A	NA

Apex Laboratories



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Lisa Domenighini, Client Services Manager

Maul Foster & Alongi, INC-Bellingham

1329 North State Street, Suite 301
Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**

Project Number: 0624.04.04-10
Project Manager: Heather Good

Reported:

04/26/18 15:29

Notes and Definitions

Qualifiers:

- Q-03 Spike recovery and/or RPD is outside control limits due to the high concentration of analyte present in the sample.
- Q-04 Spike recovery and/or RPD is outside control limits due to a non-homogeneous sample matrix.
- Q-42 Matrix Spike and/or Duplicate analysis was performed on this sample. % Recovery or RPD for this analyte is outside laboratory control limits. (Refer to the QC Section of Analytical Report.)

Notes and Conventions:

- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis. Results listed as 'wet' or without 'dry' designation are not dry weight corrected.
- RPD Relative Percent Difference
- MDL If MDL is not listed, data has been evaluated to the Method Reporting Limit only.
- WMSC Water Miscible Solvent Correction has been applied to Results and MRLs for volatiles soil samples per EPA 8000C.
- Batch QC In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) is analyzed to demonstrate accuracy and precision of the extraction and analysis.
- Blank Policy Apex assesses blank data for potential high bias down to a level equal to 1/2 the method reporting limit (MRL), except for conventional chemistry and HCID analyses which are assessed only to the MRL. Sample results flagged with a B or B-02 qualifier are potentially biased high if they are less than ten times the level found in the blank for inorganic analyses or less than five times the level found in the blank for organic analyses.
- For accurate comparison of volatile results to the level found in the blank; water sample results should be divided by the dilution factor, and soil sample results should be divided by 1/50 of the sample dilution to account for the sample prep factor.
- Results qualified as reported below the MRL may include a potential high bias if associated with a B or B-02 qualified blank. B and B-02 qualifications are not applied to J qualified results reported below the MRL.
- QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
- *** Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Apex Laboratories



Lisa Domenighini, Client Services Manager

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Maul Foster & Alongi, INC-Bellingham
1329 North State Street, Suite 301
Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**
Project Number: 0624.04.04-10
Project Manager: Heather Good

Reported:
04/26/18 15:29

CHAIN OF CUSTODY

APEX LABS Lab # ARD0754 coc 3 of 5

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

Company: Maul Foster-Alongi Project Mgr: Heather Good Project Name: Swift Center Project # 0624.04.10
Address: 1329 N. State St. Ste 301, Bham, VA Phone: 360.594.6257 Email: hgood@maulfoster.com
Sampled by: C. Wise & B. Paulik

SAMPLE ID	LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	ANALYSIS REQUEST	
						YES	NO
1 HA16-S-0.5		4/24/18	936	S	1		1200-Z
2 HA16-S-1.0		948		S			1200-COLS
3 HA17-S-0.5		1015		S			TOTAL DISS TCLP
4 HA17-S-1.0		1020		S			Sr, Ag, Na, TL, V, Zn
5 HA18-S-0.5		1042		S			Hg, Pb, Mn, Mo, Ni, K
6 HA18-S-1.0		1050		S			Cr, Cd, Cu, Fe, Pb, Ca
7 HA19-S-0.5		1205		S			Al, Sb, As, Ba, Be, Cd
8 HA19-S-1.0		1210		S			TCLP Metals (8)
9 HA20-S-0.5		1335		S			RCRA Metals (8)
10 HA20-S-1.0		1342		S			600 TTO
							8082 PCBs
							8270 SIM PAHS
							8270 SVOC
							8260 BTEX VOCs
							8260 HVOCS
							8260 RBDM VOCs
							8260 VOCs Full List
							NWTPH-GX
							NWTPH-DX
							NWTPH-CID

Normal Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 1 Day 2 Day 3 Day 4 DAY 5 DAY Other: _____

SPECIAL INSTRUCTIONS:

RELINQUISHED BY: [Signature] Date: 4/24/18 RECEIVED BY: [Signature] Date: 4/24/18
Signature: [Signature] Date: 4/24/18 Signature: [Signature] Date: 4/24/18
Printed Name: Carolyne Time: 815 Printed Name: Shirley Time: 1250

Company: MFA Company: ESS-NW

Lisa Domenighini

Maul Foster & Alongi, INC-Bellingham
1329 North State Street, Suite 301
Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**

Project Number: 0624.04.04-10
Project Manager: Heather Good

Reported:
04/26/18 15:29

CHAIN OF CUSTODY

APEX LABS Lab # ABDU7524 COC 4 of 5

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

Company: Maul Foster Alongi Project Mgr: Heather Good Project Name: Swift Center Project # 0624.04.10
Address: 1329 N. State St. Ste 301, Bham, WA Phone: 3605946257 Email: hgood@maulfoster.com
Sampled by: C. Wise & B. Pawelick

SAMPLE ID	LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	ANALYSIS REQUEST	
						YES	NO
HA21-S-0.5		4/23/18	1416	S	1		Lead
HA21-S-1.0		1420	S	1			X
HA22-S-0.5		1450	S	1			X
HA22-S-1.0		1454	S	1			X
HA23-S-0.5		1547	S	1			X
HA23-S-1.0		1551	S	1			X
HA24-S-0.5		1630	S	1			X
HA24-S-1.0		1640	S	1			X
HA25-S-0.5		1726	S	1			X
HA25-S-1.0		1728	S	1			X

Site Location: OR WA Other: _____

ANALYSIS REQUEST:

AL, SB, AS, BA, BS, CA, CR, CS, CO, CU, FE, PB, Hg, Mn, Ni, Zn, Se, Ag, Na, TL, V, Zn, TOTAL DISS TCLP, 1200-COLS, 1200-Z

RCRA Metals (8) _____
TCLP Metals (8) _____
600 TTO _____
8082 PCBs _____
8270 SIM PAHs _____
8270 SVOC _____
8260 BTEX VOCs _____
8260 HVCs _____
8260 RBDM VOCs _____
8260 VOCs Full List _____
NWTPH-CX _____
NWTPH-DX _____
NWTPH-HCID _____

SPECIAL INSTRUCTIONS:

Normal Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 1 Day 2 Day 3 Day 4 DAY 5 DAY Other: _____

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY: Caroleyn Wise Date: 4/24/18 Signature: [Signature] Date: 4/24/18
Printed Name: Caroleyn Wise Time: 8:15 Printed Name: [Signature] Time: 12:50

RECEIVED BY: [Signature] Date: 4/24/18 Signature: [Signature] Date: 4/24/18
Printed Name: [Signature] Time: 12:50 Printed Name: [Signature] Time: 12:50

Company: MFA Company: ESS NW

Lisa Domenighini

Maul Foster & Alongi, INC-Bellingham
 1329 North State Street, Suite 301
 Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**

Project Number: 0624.04.04-10
 Project Manager: Heather Good

Reported:
 04/26/18 15:29

Lab # A8D0754 COC 5 of 5

CHAIN OF CUSTODY

APEX LABS

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

Company: <u>Maul Foster Alongi</u>		Project Mgr: <u>Heather Good</u>		Project Name: <u>Swift Center</u>		Project # <u>0624.04.10</u>																		
Address: <u>1329 N. State St. Ste 301, Bham, WA</u>		Phone: <u>360594257</u>		Fax:		Email: <u>hgood@maulfoster.com</u>																		
Sampled by: <u>C. Wise ? B. Paulik</u>																								
Site Location: OR <input type="checkbox"/> WA <input checked="" type="checkbox"/>																								
Other:																								
SAMPLE ID	LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-CID	NWTPH-DX	NWTPH-GX	8260 VOCs Full List	8260 RBDM VOCs	8260 HVOCs	8260 BTEX VOCs	8270 SVOC	8270 SMT PAHS	8082 PCBs	600 TTO	RCA Metals (8)	TCLP Metals (8)	AL, Sb, As, Ba, Be, Cd, Cr, Cu, Co, Ni, Fe, Pb, Hg, Mn, Mo, Ni, N, K, Se, Ag, Na, TL, V, Zn	TOTAL DIS TCLP	1200-COLS	1200-Z		
1 HA26-S-0.5		4/23/18	1748	S	1																			
2 HA26-S-1.0		1752	S																					X
3 HA27-S-0.5		1820	S																					X
4 HA27-S-1.0		1824	S																					X
5 HA28-S-0.5		1910	S																					X
6 HA28-S-1.0		1920	S																					X
7 HA29-S-1.0-CS		1930	S																					X
8																								
9																								
10																								
Normal Turn Around Time (TAT) = 10 Business Days						YES	NO																	
TAT Requested (circle)						(1 Day)	2 Day	3 Day																
SAMPLES ARE HELD FOR 30 DAYS						4 DAY	5 DAY	Other:																
RELINQUISHED BY:		Signature: <u>Carolyn Wise</u>		Date: <u>4/18/18</u>		Signature: <u>[Signature]</u>		Date: <u>4/18/18</u>		RELINQUISHED BY:		Signature: <u>[Signature]</u>		Date: <u>4/18/18</u>		Signature: <u>[Signature]</u>		Date: <u>4/18/18</u>		Signature: <u>[Signature]</u>		Date: <u>4/18/18</u>		
Printed Name: <u>Carolyn Wise</u>		Time: <u>8:15</u>		Printed Name: <u>[Name]</u>		Time: <u>8:15</u>		Printed Name: <u>[Name]</u>		Time: <u>8:15</u>		Printed Name: <u>[Name]</u>		Time: <u>8:15</u>		Printed Name: <u>[Name]</u>		Time: <u>8:15</u>		Printed Name: <u>[Name]</u>		Time: <u>8:15</u>		
Company: <u>MFA</u>		Company: <u>ESS-NW</u>		Company: <u>ESS-NW</u>		Company: <u>ESS-NW</u>		Company: <u>ESS-NW</u>		Company: <u>ESS-NW</u>		Company: <u>ESS-NW</u>		Company: <u>ESS-NW</u>		Company: <u>ESS-NW</u>		Company: <u>ESS-NW</u>		Company: <u>ESS-NW</u>		Company: <u>ESS-NW</u>		

Lisa Domenighini

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.04-10 Project Manager: Heather Good	Reported: 04/26/18 15:29
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APEX LABS COOLER RECEIPT FORM

Client: Maul Foster Bellingham Element WO#: A8 D0754
 Project/Project #: Swift Center / 0624-04-10

Delivery info:
 Date/Time Received: 4/24/18 @ 1250 By: (S)
 Delivered by: Apex Client ESS FedEx UPS Swift Senvoy SDS Other
Cooler Inspection Inspected by: (S) : 4/24/18 @ 1250
 Chain of Custody Included? Yes No Custody Seals? Yes No
 Signed/Dated by Client? Yes No
 Signed/Dated by Apex? Yes No

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (deg. C)	<u>1.8</u>	<u>5.4</u>					
Received on Ice? <u>(Y/N)</u>	<u>(Y)</u>	<u>(N)</u>					
Temp. Blanks? <u>(Y/N)</u>	<u>(Y)</u>	<u>(N)</u>					
Ice Type: (Gel/Real) Other	<u>(Real)</u>						
Condition:	<u>good</u>						

Cooler out of temp? (Y/N) Possible reason why:
 If some coolers are in temp and some out, were green dot applied to out of temperature samples? Yes/No/NA (NA)
Samples Inspection: Inspected by: (S) : 4/24/18 @ 1205

All Samples Intact? Yes No Comments: _____

Bottle Labels/COCs agree? Yes No Comments: _____

Containers/Volumes Received Appropriate for Analysis? Yes No Comments: _____

Do VOA Vials have Visible Headspace? Yes No NA
 Comments: _____

Water Samples: pH Checked and Appropriate (except VOAs): Yes No NA
 Comments: _____

Additional Information: _____

Labeled by: WS Witness: JS Cooler Inspected by: (S) See Project Contact Form: Y

Lisa A. Domenighini



Apex Laboratories, LLC

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

AMENDED REPORT

Wednesday, May 23, 2018

Heather Good
Maul Foster & Alongi, INC-Bellingham
1329 North State Street, Suite 301
Bellingham, WA 98225

RE: A8D0757 - 0624.04.10-03--Northern State Hospital - Swift Center/0624.04.10

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A8D0757, which was received by the laboratory on 4/24/2018 at 12:50:00PM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: ldomenighini@apex-labs.com, or by phone at 503-718-2323.

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.

All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.



Apex Laboratories

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: Swift Center/0624.04.10 Project Manager: Heather Good	Report ID: A8D0757 - 05 23 18 1243
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ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW10-S-1.0	A8D0757-01	Soil	04/23/18 11:30	04/24/18 12:50
MW10-S-13.5	A8D0757-02	Soil	04/23/18 11:40	04/24/18 12:50
MW10-S-24.5	A8D0757-03	Soil	04/23/18 11:45	04/24/18 12:50
MW09-S-0.5	A8D0757-04	Soil	04/23/18 15:40	04/24/18 12:50
MW09-S-6.0	A8D0757-05	Soil	04/23/18 16:10	04/24/18 12:50
MW09-S-19.0	A8D0757-06	Soil	04/23/18 16:20	04/24/18 12:50
GP49-S-0.5	A8D0757-07	Soil	04/23/18 17:20	04/24/18 12:50
GP49-S-7.0	A8D0757-08	Soil	04/23/18 17:25	04/24/18 12:50
GP49-S-10.0	A8D0757-09	Soil	04/23/18 17:30	04/24/18 12:50
GP50-S-0.5	A8D0757-10	Soil	04/23/18 17:40	04/24/18 12:50
GP50-S-1.5	A8D0757-11	Soil	04/23/18 17:45	04/24/18 12:50
GP51-S-0.5	A8D0757-12	Soil	04/23/18 17:50	04/24/18 12:50
GP51-S-1.0	A8D0757-13	Soil	04/23/18 17:55	04/24/18 12:50
GP52-S-0.5	A8D0757-14	Soil	04/23/18 18:00	04/24/18 12:50
GP52-S-6.0	A8D0757-15	Soil	04/23/18 18:05	04/24/18 12:50
GP52-S-7.5	A8D0757-16	Soil	04/23/18 18:10	04/24/18 12:50



Apex Laboratories, LLC

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham

1329 North State Street, Suite 301
Bellingham, WA 98225

Project: 0624.04.10-03--Northern State Hospital

Project Number: Swift Center/0624.04.10

Project Manager: Heather Good

Report ID:

A8D0757 - 05 23 18 1243

ANALYTICAL CASE NARRATIVE

Work Order: A8D0757

Amended Report

MDL reporting-

This report has been amended to reflect MDL reporting.

Lisa Domenighini
Client Services Manager
5-23-18

Subcontract

This report is not complete without the attached subcontract laboratory report for Dioxins and Furans that was subcontracted to Cape Fear Environmental.

Lisa Domenighini
Client Services Manager
5-10-18

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: Swift Center/0624.04.10 Project Manager: Heather Good	Report ID: A8D0757 - 05 23 18 1243
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ANALYTICAL SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
GP49-S-0.5 (A8D0757-07)			Matrix: Soil			Batch: 8041135		
Diesel	16.9	12.5	25.0	mg/kg dry	1	04/25/18	NWTPH-Dx	J
Oil	ND	25.0	50.0	mg/kg dry	1	04/25/18	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 90 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>04/25/18</i>	<i>NWTPH-Dx</i>
GP49-S-7.0 (A8D0757-08)			Matrix: Soil			Batch: 8041135		
Diesel	ND	13.5	27.1	mg/kg dry	1	04/25/18	NWTPH-Dx	
Oil	ND	27.1	54.1	mg/kg dry	1	04/25/18	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 92 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>04/25/18</i>	<i>NWTPH-Dx</i>
GP49-S-10.0 (A8D0757-09)			Matrix: Soil			Batch: 8041135		
Diesel	ND	12.9	25.8	mg/kg dry	1	04/25/18	NWTPH-Dx	
Oil	ND	25.8	51.5	mg/kg dry	1	04/25/18	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 94 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>04/25/18</i>	<i>NWTPH-Dx</i>
GP50-S-0.5 (A8D0757-10)			Matrix: Soil			Batch: 8041135		
Diesel	38.2	12.8	25.6	mg/kg dry	1	04/26/18	NWTPH-Dx	F-17
Oil	35.5	25.6	51.2	mg/kg dry	1	04/26/18	NWTPH-Dx	J
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 83 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>04/26/18</i>	<i>NWTPH-Dx</i>
GP50-S-1.5 (A8D0757-11)			Matrix: Soil			Batch: 8041135		
Diesel	ND	12.7	25.3	mg/kg dry	1	04/26/18	NWTPH-Dx	
Oil	ND	25.3	50.6	mg/kg dry	1	04/26/18	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 80 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>04/26/18</i>	<i>NWTPH-Dx</i>
GP51-S-0.5 (A8D0757-12)			Matrix: Soil			Batch: 8041135		
Diesel	14.5	10.6	25.0	mg/kg dry	1	04/26/18	NWTPH-Dx	J
Oil	22.3	21.2	50.0	mg/kg dry	1	04/26/18	NWTPH-Dx	J
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 87 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>04/26/18</i>	<i>NWTPH-Dx</i>
GP51-S-1.0 (A8D0757-13)			Matrix: Soil			Batch: 8041135		
Diesel	ND	12.3	25.0	mg/kg dry	1	04/26/18	NWTPH-Dx	
Oil	ND	24.6	50.0	mg/kg dry	1	04/26/18	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 86 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>04/26/18</i>	<i>NWTPH-Dx</i>
GP52-S-0.5 (A8D0757-14)			Matrix: Soil			Batch: 8041135		
Diesel	ND	10.5	25.0	mg/kg dry	1	04/26/18	NWTPH-Dx	

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: Swift Center/0624.04.10 Project Manager: Heather Good	Report ID: A8D0757 - 05 23 18 1243
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ANALYTICAL SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
			Matrix: Soil			Batch: 8041135		
Oil	ND	21.0	50.0	mg/kg dry	1	04/26/18	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 87 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>04/26/18</i>	<i>NWTPH-Dx</i>
			Matrix: Soil			Batch: 8041135		
Diesel	ND	15.2	30.3	mg/kg dry	1	04/26/18	NWTPH-Dx	
Oil	ND	30.3	60.6	mg/kg dry	1	04/26/18	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 89 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>04/26/18</i>	<i>NWTPH-Dx</i>
			Matrix: Soil			Batch: 8041135		
Diesel	15.9	14.0	27.9	mg/kg dry	1	04/26/18	NWTPH-Dx	J
Oil	ND	27.9	55.9	mg/kg dry	1	04/26/18	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 97 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>04/26/18</i>	<i>NWTPH-Dx</i>



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham
1329 North State Street, Suite 301
Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**
Project Number: **Swift Center/0624.04.10**
Project Manager: **Heather Good**

Report ID:
A8D0757 - 05 23 18 1243

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW10-S-1.0 (A8D0757-01)			Matrix: Soil			Batch: 8041067		
1,1-Dichloroethene	ND	20.3	40.6	ug/kg dry	50	04/24/18	5035A/8260C	
cis-1,2-Dichloroethene	ND	20.3	40.6	ug/kg dry	50	04/24/18	5035A/8260C	
trans-1,2-Dichloroethene	ND	20.3	40.6	ug/kg dry	50	04/24/18	5035A/8260C	
Tetrachloroethene (PCE)	ND	20.3	40.6	ug/kg dry	50	04/24/18	5035A/8260C	
Trichloroethene (TCE)	ND	20.3	40.6	ug/kg dry	50	04/24/18	5035A/8260C	
Vinyl chloride	ND	20.3	40.6	ug/kg dry	50	04/24/18	5035A/8260C	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 92 %</i>		<i>Limits: 80-120 %</i>		<i>1</i>	<i>04/24/18</i>	<i>5035A/8260C</i>
<i>Toluene-d8 (Surr)</i>		<i>94 %</i>		<i>80-120 %</i>		<i>1</i>	<i>04/24/18</i>	<i>5035A/8260C</i>
<i>4-Bromofluorobenzene (Surr)</i>		<i>108 %</i>		<i>80-120 %</i>		<i>1</i>	<i>04/24/18</i>	<i>5035A/8260C</i>
MW10-S-13.5 (A8D0757-02)			Matrix: Soil			Batch: 8041067		
1,1-Dichloroethene	ND	16.8	33.6	ug/kg dry	50	04/24/18	5035A/8260C	
cis-1,2-Dichloroethene	ND	16.8	33.6	ug/kg dry	50	04/24/18	5035A/8260C	
trans-1,2-Dichloroethene	ND	16.8	33.6	ug/kg dry	50	04/24/18	5035A/8260C	
Tetrachloroethene (PCE)	6700	16.8	33.6	ug/kg dry	50	04/24/18	5035A/8260C	
Trichloroethene (TCE)	56.0	16.8	33.6	ug/kg dry	50	04/24/18	5035A/8260C	
Vinyl chloride	ND	16.8	33.6	ug/kg dry	50	04/24/18	5035A/8260C	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 94 %</i>		<i>Limits: 80-120 %</i>		<i>1</i>	<i>04/24/18</i>	<i>5035A/8260C</i>
<i>Toluene-d8 (Surr)</i>		<i>93 %</i>		<i>80-120 %</i>		<i>1</i>	<i>04/24/18</i>	<i>5035A/8260C</i>
<i>4-Bromofluorobenzene (Surr)</i>		<i>109 %</i>		<i>80-120 %</i>		<i>1</i>	<i>04/24/18</i>	<i>5035A/8260C</i>
MW10-S-24.5 (A8D0757-03RE1)			Matrix: Soil			Batch: 8041110		
1,1-Dichloroethene	ND	15.9	31.8	ug/kg dry	50	04/25/18	5035A/8260C	
cis-1,2-Dichloroethene	ND	15.9	31.8	ug/kg dry	50	04/25/18	5035A/8260C	
trans-1,2-Dichloroethene	ND	15.9	31.8	ug/kg dry	50	04/25/18	5035A/8260C	
Tetrachloroethene (PCE)	ND	15.9	31.8	ug/kg dry	50	04/25/18	5035A/8260C	
Trichloroethene (TCE)	ND	15.9	31.8	ug/kg dry	50	04/25/18	5035A/8260C	
Vinyl chloride	ND	15.9	31.8	ug/kg dry	50	04/25/18	5035A/8260C	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 97 %</i>		<i>Limits: 80-120 %</i>		<i>1</i>	<i>04/25/18</i>	<i>5035A/8260C</i>
<i>Toluene-d8 (Surr)</i>		<i>94 %</i>		<i>80-120 %</i>		<i>1</i>	<i>04/25/18</i>	<i>5035A/8260C</i>
<i>4-Bromofluorobenzene (Surr)</i>		<i>106 %</i>		<i>80-120 %</i>		<i>1</i>	<i>04/25/18</i>	<i>5035A/8260C</i>
MW09-S-0.5 (A8D0757-04)			Matrix: Soil			Batch: 8041067		
1,1-Dichloroethene	ND	15.3	30.6	ug/kg dry	50	04/24/18	5035A/8260C	
cis-1,2-Dichloroethene	ND	15.3	30.6	ug/kg dry	50	04/24/18	5035A/8260C	
trans-1,2-Dichloroethene	ND	15.3	30.6	ug/kg dry	50	04/24/18	5035A/8260C	
Tetrachloroethene (PCE)	ND	15.3	30.6	ug/kg dry	50	04/24/18	5035A/8260C	
Trichloroethene (TCE)	ND	15.3	30.6	ug/kg dry	50	04/24/18	5035A/8260C	

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: Swift Center/0624.04.10 Project Manager: Heather Good	Report ID: A8D0757 - 05 23 18 1243
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ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW09-S-0.5 (A8D0757-04)			Matrix: Soil			Batch: 8041067		
Vinyl chloride	ND	15.3	30.6	ug/kg dry	50	04/24/18	5035A/8260C	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 93 %</i>		<i>Limits: 80-120 %</i>		<i>1</i>	<i>04/24/18</i>	<i>5035A/8260C</i>
<i>Toluene-d8 (Surr)</i>		<i>93 %</i>		<i>80-120 %</i>		<i>1</i>	<i>04/24/18</i>	<i>5035A/8260C</i>
<i>4-Bromofluorobenzene (Surr)</i>		<i>109 %</i>		<i>80-120 %</i>		<i>1</i>	<i>04/24/18</i>	<i>5035A/8260C</i>
MW09-S-6.0 (A8D0757-05)			Matrix: Soil			Batch: 8041067		
1,1-Dichloroethene	ND	16.0	32.0	ug/kg dry	50	04/24/18	5035A/8260C	
cis-1,2-Dichloroethene	ND	16.0	32.0	ug/kg dry	50	04/24/18	5035A/8260C	
trans-1,2-Dichloroethene	ND	16.0	32.0	ug/kg dry	50	04/24/18	5035A/8260C	
Tetrachloroethene (PCE)	ND	16.0	32.0	ug/kg dry	50	04/24/18	5035A/8260C	
Trichloroethene (TCE)	ND	16.0	32.0	ug/kg dry	50	04/24/18	5035A/8260C	
Vinyl chloride	ND	16.0	32.0	ug/kg dry	50	04/24/18	5035A/8260C	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 94 %</i>		<i>Limits: 80-120 %</i>		<i>1</i>	<i>04/24/18</i>	<i>5035A/8260C</i>
<i>Toluene-d8 (Surr)</i>		<i>93 %</i>		<i>80-120 %</i>		<i>1</i>	<i>04/24/18</i>	<i>5035A/8260C</i>
<i>4-Bromofluorobenzene (Surr)</i>		<i>109 %</i>		<i>80-120 %</i>		<i>1</i>	<i>04/24/18</i>	<i>5035A/8260C</i>
MW09-S-19.0 (A8D0757-06)			Matrix: Soil			Batch: 8041067		
1,1-Dichloroethene	ND	14.9	29.9	ug/kg dry	50	04/24/18	5035A/8260C	
cis-1,2-Dichloroethene	ND	14.9	29.9	ug/kg dry	50	04/24/18	5035A/8260C	
trans-1,2-Dichloroethene	ND	14.9	29.9	ug/kg dry	50	04/24/18	5035A/8260C	
Tetrachloroethene (PCE)	ND	14.9	29.9	ug/kg dry	50	04/24/18	5035A/8260C	
Trichloroethene (TCE)	ND	14.9	29.9	ug/kg dry	50	04/24/18	5035A/8260C	
Vinyl chloride	ND	14.9	29.9	ug/kg dry	50	04/24/18	5035A/8260C	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 95 %</i>		<i>Limits: 80-120 %</i>		<i>1</i>	<i>04/24/18</i>	<i>5035A/8260C</i>
<i>Toluene-d8 (Surr)</i>		<i>94 %</i>		<i>80-120 %</i>		<i>1</i>	<i>04/24/18</i>	<i>5035A/8260C</i>
<i>4-Bromofluorobenzene (Surr)</i>		<i>107 %</i>		<i>80-120 %</i>		<i>1</i>	<i>04/24/18</i>	<i>5035A/8260C</i>



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: Swift Center/0624.04.10 Project Manager: Heather Good	Report ID: A8D0757 - 05 23 18 1243
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ANALYTICAL SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
GP49-S-0.5 (A8D0757-07RE1)			Matrix: Soil			Batch: 8041238		
Benz(a)anthracene	23.0	6.32	12.6	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	M-05
Benzo(a)pyrene	18.1	6.32	12.6	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Benzo(b)fluoranthene	23.4	6.32	12.6	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	M-05
Benzo(k)fluoranthene	9.34	6.32	12.6	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	J
Chrysene	23.3	6.32	12.6	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	M-05
Dibenz(a,h)anthracene	ND	6.32	12.6	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Indeno(1,2,3-cd)pyrene	13.1	6.32	12.6	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 81 %</i>		<i>Limits: 44-120 %</i>		<i>1</i>	<i>04/30/18</i>	<i>EPA 8270D (SIM)</i>
<i>p-Terphenyl-d14 (Surr)</i>		<i>84 %</i>		<i>54-127 %</i>		<i>1</i>	<i>04/30/18</i>	<i>EPA 8270D (SIM)</i>
GP49-S-7.0 (A8D0757-08RE1)			Matrix: Soil			Batch: 8041238		
Benz(a)anthracene	ND	7.33	14.7	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Benzo(a)pyrene	ND	7.33	14.7	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Benzo(b)fluoranthene	ND	7.33	14.7	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Benzo(k)fluoranthene	ND	7.33	14.7	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Chrysene	ND	7.33	14.7	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Dibenz(a,h)anthracene	ND	7.33	14.7	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Indeno(1,2,3-cd)pyrene	ND	7.33	14.7	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 80 %</i>		<i>Limits: 44-120 %</i>		<i>1</i>	<i>04/30/18</i>	<i>EPA 8270D (SIM)</i>
<i>p-Terphenyl-d14 (Surr)</i>		<i>84 %</i>		<i>54-127 %</i>		<i>1</i>	<i>04/30/18</i>	<i>EPA 8270D (SIM)</i>
GP49-S-10.0 (A8D0757-09RE1)			Matrix: Soil			Batch: 8041238		
Benz(a)anthracene	ND	6.43	12.9	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Benzo(a)pyrene	ND	6.43	12.9	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Benzo(b)fluoranthene	ND	6.43	12.9	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Benzo(k)fluoranthene	ND	6.43	12.9	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Chrysene	ND	6.43	12.9	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Dibenz(a,h)anthracene	ND	6.43	12.9	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Indeno(1,2,3-cd)pyrene	ND	6.43	12.9	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 83 %</i>		<i>Limits: 44-120 %</i>		<i>1</i>	<i>04/30/18</i>	<i>EPA 8270D (SIM)</i>
<i>p-Terphenyl-d14 (Surr)</i>		<i>89 %</i>		<i>54-127 %</i>		<i>1</i>	<i>04/30/18</i>	<i>EPA 8270D (SIM)</i>
GP50-S-0.5 (A8D0757-10RE1)			Matrix: Soil			Batch: 8041238		
Benz(a)anthracene	25.2	6.53	13.1	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	M-05
Benzo(a)pyrene	16.8	6.53	13.1	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Benzo(b)fluoranthene	18.5	6.53	13.1	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	M-05
Benzo(k)fluoranthene	ND	6.53	13.1	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Chrysene	25.7	6.53	13.1	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	M-05

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: Swift Center/0624.04.10 Project Manager: Heather Good	Report ID: A8D0757 - 05 23 18 1243
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ANALYTICAL SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
GP50-S-0.5 (A8D0757-10RE1)			Matrix: Soil			Batch: 8041238		
Dibenz(a,h)anthracene	ND	6.53	13.1	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Indeno(1,2,3-cd)pyrene	8.50	6.53	13.1	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	J
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 78 %</i>		<i>Limits: 44-120 %</i>	<i>1</i>	<i>04/30/18</i>	<i>EPA 8270D (SIM)</i>	
<i>p-Terphenyl-d14 (Surr)</i>		<i>81 %</i>		<i>54-127 %</i>	<i>1</i>	<i>04/30/18</i>	<i>EPA 8270D (SIM)</i>	
GP50-S-1.5 (A8D0757-11RE1)			Matrix: Soil			Batch: 8041238		
Benz(a)anthracene	ND	6.42	12.8	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Benzo(a)pyrene	ND	6.42	12.8	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Benzo(b)fluoranthene	ND	6.42	12.8	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Benzo(k)fluoranthene	ND	6.42	12.8	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Chrysene	ND	6.42	12.8	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Dibenz(a,h)anthracene	ND	6.42	12.8	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Indeno(1,2,3-cd)pyrene	ND	6.42	12.8	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 80 %</i>		<i>Limits: 44-120 %</i>	<i>1</i>	<i>04/30/18</i>	<i>EPA 8270D (SIM)</i>	
<i>p-Terphenyl-d14 (Surr)</i>		<i>88 %</i>		<i>54-127 %</i>	<i>1</i>	<i>04/30/18</i>	<i>EPA 8270D (SIM)</i>	
GP51-S-0.5 (A8D0757-12RE1)			Matrix: Soil			Batch: 8041238		
Benzo(a)anthracene	7.78	5.29	10.6	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	J
Benzo(a)pyrene	ND	5.29	10.6	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Benzo(b)fluoranthene	7.15	5.29	10.6	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	J
Benzo(k)fluoranthene	ND	5.29	10.6	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Chrysene	6.82	5.29	10.6	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	J
Dibenz(a,h)anthracene	ND	5.29	10.6	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Indeno(1,2,3-cd)pyrene	ND	5.29	10.6	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 78 %</i>		<i>Limits: 44-120 %</i>	<i>1</i>	<i>04/30/18</i>	<i>EPA 8270D (SIM)</i>	
<i>p-Terphenyl-d14 (Surr)</i>		<i>81 %</i>		<i>54-127 %</i>	<i>1</i>	<i>04/30/18</i>	<i>EPA 8270D (SIM)</i>	
GP51-S-1.0 (A8D0757-13RE1)			Matrix: Soil			Batch: 8041238		
Benz(a)anthracene	ND	6.24	12.5	ug/kg dry	1	05/01/18	EPA 8270D (SIM)	
Benzo(a)pyrene	ND	6.24	12.5	ug/kg dry	1	05/01/18	EPA 8270D (SIM)	
Benzo(b)fluoranthene	ND	6.24	12.5	ug/kg dry	1	05/01/18	EPA 8270D (SIM)	
Benzo(k)fluoranthene	ND	6.24	12.5	ug/kg dry	1	05/01/18	EPA 8270D (SIM)	
Chrysene	ND	6.24	12.5	ug/kg dry	1	05/01/18	EPA 8270D (SIM)	
Dibenz(a,h)anthracene	ND	6.24	12.5	ug/kg dry	1	05/01/18	EPA 8270D (SIM)	
Indeno(1,2,3-cd)pyrene	ND	6.24	12.5	ug/kg dry	1	05/01/18	EPA 8270D (SIM)	
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 78 %</i>		<i>Limits: 44-120 %</i>	<i>1</i>	<i>05/01/18</i>	<i>EPA 8270D (SIM)</i>	
<i>p-Terphenyl-d14 (Surr)</i>		<i>85 %</i>		<i>54-127 %</i>	<i>1</i>	<i>05/01/18</i>	<i>EPA 8270D (SIM)</i>	

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AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: Swift Center/0624.04.10 Project Manager: Heather Good	Report ID: A8D0757 - 05 23 18 1243
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ANALYTICAL SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
GP52-S-0.5 (A8D0757-14RE1)			Matrix: Soil			Batch: 8041238		
Benz(a)anthracene	ND	5.06	10.1	ug/kg dry	1	05/01/18	EPA 8270D (SIM)	
Benzo(a)pyrene	ND	5.06	10.1	ug/kg dry	1	05/01/18	EPA 8270D (SIM)	
Benzo(b)fluoranthene	ND	5.06	10.1	ug/kg dry	1	05/01/18	EPA 8270D (SIM)	
Benzo(k)fluoranthene	ND	5.06	10.1	ug/kg dry	1	05/01/18	EPA 8270D (SIM)	
Chrysene	ND	5.06	10.1	ug/kg dry	1	05/01/18	EPA 8270D (SIM)	
Dibenz(a,h)anthracene	ND	5.06	10.1	ug/kg dry	1	05/01/18	EPA 8270D (SIM)	
Indeno(1,2,3-cd)pyrene	ND	5.06	10.1	ug/kg dry	1	05/01/18	EPA 8270D (SIM)	
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 83 %</i>		<i>Limits: 44-120 %</i>		<i>1</i>	<i>05/01/18</i>	<i>EPA 8270D (SIM)</i>
<i>p-Terphenyl-d14 (Surr)</i>		<i>87 %</i>		<i>54-127 %</i>		<i>1</i>	<i>05/01/18</i>	<i>EPA 8270D (SIM)</i>
GP52-S-6.0 (A8D0757-15RE1)			Matrix: Soil			Batch: 8041238		
Benz(a)anthracene	ND	7.64	15.3	ug/kg dry	1	05/01/18	EPA 8270D (SIM)	
Benzo(a)pyrene	ND	7.64	15.3	ug/kg dry	1	05/01/18	EPA 8270D (SIM)	
Benzo(b)fluoranthene	ND	7.64	15.3	ug/kg dry	1	05/01/18	EPA 8270D (SIM)	
Benzo(k)fluoranthene	ND	7.64	15.3	ug/kg dry	1	05/01/18	EPA 8270D (SIM)	
Chrysene	ND	7.64	15.3	ug/kg dry	1	05/01/18	EPA 8270D (SIM)	
Dibenz(a,h)anthracene	ND	7.64	15.3	ug/kg dry	1	05/01/18	EPA 8270D (SIM)	
Indeno(1,2,3-cd)pyrene	ND	7.64	15.3	ug/kg dry	1	05/01/18	EPA 8270D (SIM)	
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 76 %</i>		<i>Limits: 44-120 %</i>		<i>1</i>	<i>05/01/18</i>	<i>EPA 8270D (SIM)</i>
<i>p-Terphenyl-d14 (Surr)</i>		<i>76 %</i>		<i>54-127 %</i>		<i>1</i>	<i>05/01/18</i>	<i>EPA 8270D (SIM)</i>
GP52-S-7.5 (A8D0757-16RE1)			Matrix: Soil			Batch: 8041238		
Benz(a)anthracene	ND	7.42	14.8	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Benzo(a)pyrene	ND	7.42	14.8	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Benzo(b)fluoranthene	ND	7.42	14.8	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Benzo(k)fluoranthene	ND	7.42	14.8	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Chrysene	ND	7.42	14.8	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Dibenz(a,h)anthracene	ND	7.42	14.8	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
Indeno(1,2,3-cd)pyrene	ND	7.42	14.8	ug/kg dry	1	04/30/18	EPA 8270D (SIM)	
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 88 %</i>		<i>Limits: 44-120 %</i>		<i>1</i>	<i>04/30/18</i>	<i>EPA 8270D (SIM)</i>
<i>p-Terphenyl-d14 (Surr)</i>		<i>94 %</i>		<i>54-127 %</i>		<i>1</i>	<i>04/30/18</i>	<i>EPA 8270D (SIM)</i>

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AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: Swift Center/0624.04.10 Project Manager: Heather Good	Report ID: A8D0757 - 05 23 18 1243
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ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW10-S-1.0 (A8D0757-01)			Matrix: Soil			Batch: 8041146		
% Solids	68.3	1.00	1.00	% by Weight	1	04/26/18	EPA 8000C	
MW10-S-13.5 (A8D0757-02)			Matrix: Soil			Batch: 8041146		
% Solids	72.5	1.00	1.00	% by Weight	1	04/26/18	EPA 8000C	
MW10-S-24.5 (A8D0757-03)			Matrix: Soil			Batch: 8041146		
% Solids	76.9	1.00	1.00	% by Weight	1	04/26/18	EPA 8000C	
MW09-S-0.5 (A8D0757-04)			Matrix: Soil			Batch: 8041146		
% Solids	78.3	1.00	1.00	% by Weight	1	04/26/18	EPA 8000C	
MW09-S-6.0 (A8D0757-05)			Matrix: Soil			Batch: 8041146		
% Solids	77.9	1.00	1.00	% by Weight	1	04/26/18	EPA 8000C	
MW09-S-19.0 (A8D0757-06)			Matrix: Soil			Batch: 8041146		
% Solids	77.6	1.00	1.00	% by Weight	1	04/26/18	EPA 8000C	
GP49-S-0.5 (A8D0757-07)			Matrix: Soil			Batch: 8041146		
% Solids	76.4	1.00	1.00	% by Weight	1	04/26/18	EPA 8000C	
GP49-S-7.0 (A8D0757-08)			Matrix: Soil			Batch: 8041146		
% Solids	67.4	1.00	1.00	% by Weight	1	04/26/18	EPA 8000C	
GP49-S-10.0 (A8D0757-09)			Matrix: Soil			Batch: 8041146		
% Solids	74.6	1.00	1.00	% by Weight	1	04/26/18	EPA 8000C	
GP50-S-0.5 (A8D0757-10)			Matrix: Soil			Batch: 8041146		
% Solids	75.5	1.00	1.00	% by Weight	1	04/26/18	EPA 8000C	
GP50-S-1.5 (A8D0757-11)			Matrix: Soil			Batch: 8041146		
% Solids	73.7	1.00	1.00	% by Weight	1	04/26/18	EPA 8000C	
GP51-S-0.5 (A8D0757-12)			Matrix: Soil			Batch: 8041146		
% Solids	87.9	1.00	1.00	% by Weight	1	04/26/18	EPA 8000C	
GP51-S-1.0 (A8D0757-13)			Matrix: Soil			Batch: 8041146		
% Solids	74.5	1.00	1.00	% by Weight	1	04/26/18	EPA 8000C	

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ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
GP52-S-0.5 (A8D0757-14)			Matrix: Soil			Batch: 8041146		
% Solids	94.6	1.00	1.00	% by Weight	1	04/26/18	EPA 8000C	
GP52-S-6.0 (A8D0757-15)			Matrix: Soil			Batch: 8041146		
% Solids	63.8	1.00	1.00	% by Weight	1	04/26/18	EPA 8000C	
GP52-S-7.5 (A8D0757-16)			Matrix: Soil			Batch: 8041146		
% Solids	63.3	1.00	1.00	% by Weight	1	04/26/18	EPA 8000C	



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QUALITY CONTROL (QC) SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8041135 - EPA 3546 (Fuels)						Soil						
Blank (8041135-BLK1)						Prepared: 04/25/18 13:36 Analyzed: 04/25/18 22:15						
<u>NWTPH-Dx</u>												
Diesel	ND	8.33	25.0	mg/kg wet	1	---	---	---	---	---	---	
Oil	ND	16.7	50.0	mg/kg wet	1	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 97 %		Limits: 50-150 %		Dilution: 1x						
LCS (8041135-BS1)						Prepared: 04/25/18 13:36 Analyzed: 04/25/18 22:36						
<u>NWTPH-Dx</u>												
Diesel	113	10.0	25.0	mg/kg wet	1	125	---	91	76-115%	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 102 %		Limits: 50-150 %		Dilution: 1x						
Duplicate (8041135-DUP1)						Prepared: 04/25/18 13:36 Analyzed: 04/25/18 23:17						
<u>QC Source Sample: GP49-S-0.5 (A8D0757-07)</u>												
<u>NWTPH-Dx</u>												
Diesel	ND	12.6	25.1	mg/kg dry	1	---	16.9	---	---	***	30%	Q-05
Oil	ND	25.1	50.2	mg/kg dry	1	---	ND	---	---	---	30%	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 86 %		Limits: 50-150 %		Dilution: 1x						
Duplicate (8041135-DUP2)						Prepared: 04/25/18 13:36 Analyzed: 04/26/18 08:54						
<u>QC Source Sample: Non-SDG (A8D0782-01)</u>												
Diesel	ND	9.47	25.0	mg/kg dry	1	---	ND	---	---	---	30%	
Oil	ND	18.9	50.0	mg/kg dry	1	---	ND	---	---	---	30%	
<i>Surr: o-Terphenyl (Surr)</i>		Recovery: 94 %		Limits: 50-150 %		Dilution: 1x						



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QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8041067 - EPA 5035A						Soil						
Blank (8041067-BLK1)			Prepared: 04/24/18 08:30 Analyzed: 04/24/18 10:59									
5035A/8260C												
1,1-Dichloroethene	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
Vinyl chloride	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		Recovery: 98 %		Limits: 80-120 %		Dilution: 1x						
Toluene-d8 (Surr)		97 %		80-120 %		"						
4-Bromofluorobenzene (Surr)		106 %		80-120 %		"						
LCS (8041067-BS1)						Prepared: 04/24/18 08:30 Analyzed: 04/24/18 10:05						
5035A/8260C												
1,1-Dichloroethene	931	12.5	25.0	ug/kg wet	50	1000	---	93	80-120%	---	---	
cis-1,2-Dichloroethene	989	12.5	25.0	ug/kg wet	50	1000	---	99	80-120%	---	---	
trans-1,2-Dichloroethene	928	12.5	25.0	ug/kg wet	50	1000	---	93	80-120%	---	---	
Tetrachloroethene (PCE)	1050	12.5	25.0	ug/kg wet	50	1000	---	105	80-120%	---	---	
Trichloroethene (TCE)	1030	12.5	25.0	ug/kg wet	50	1000	---	103	80-120%	---	---	
Vinyl chloride	1130	12.5	25.0	ug/kg wet	50	1000	---	113	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)		Recovery: 96 %		Limits: 80-120 %		Dilution: 1x						
Toluene-d8 (Surr)		96 %		80-120 %		"						
4-Bromofluorobenzene (Surr)		102 %		80-120 %		"						
Duplicate (8041067-DUP1)						Prepared: 04/20/18 13:45 Analyzed: 04/24/18 13:41						
QC Source Sample: Non-SDG (A8D0714-01)												
1,1-Dichloroethene	ND	53.9	108	ug/kg dry	200	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	53.9	108	ug/kg dry	200	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	53.9	108	ug/kg dry	200	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	53.9	108	ug/kg dry	200	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	53.9	108	ug/kg dry	200	---	ND	---	---	---	30%	
Vinyl chloride	ND	53.9	108	ug/kg dry	200	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)		Recovery: 91 %		Limits: 80-120 %		Dilution: 1x						
Toluene-d8 (Surr)		93 %		80-120 %		"						
4-Bromofluorobenzene (Surr)		107 %		80-120 %		"						

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AMENDED REPORT

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QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8041067 - EPA 5035A						Soil						
Matrix Spike (8041067-MS1)			Prepared: 04/20/18 13:45 Analyzed: 04/24/18 14:08									
QC Source Sample: Non-SDG (A8D0714-01)												
5035A/8260C												
1,1-Dichloroethene	3640	53.9	108	ug/kg dry	200	4310	ND	85	70-131%	---	---	
cis-1,2-Dichloroethene	3680	53.9	108	ug/kg dry	200	4310	ND	86	77-123%	---	---	
trans-1,2-Dichloroethene	3620	53.9	108	ug/kg dry	200	4310	ND	84	74-125%	---	---	
Tetrachloroethene (PCE)	4520	53.9	108	ug/kg dry	200	4310	ND	105	73-128%	---	---	
Trichloroethene (TCE)	4230	53.9	108	ug/kg dry	200	4310	ND	98	77-123%	---	---	
Vinyl chloride	3910	53.9	108	ug/kg dry	200	4310	ND	91	56-135%	---	---	
Surr: 1,4-Difluorobenzene (Surr)		Recovery: 91 %		Limits: 80-120 %		Dilution: 1x						
Toluene-d8 (Surr)		94 %		80-120 %		"						
4-Bromofluorobenzene (Surr)		107 %		80-120 %		"						



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QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8041110 - EPA 5035A						Soil						
Blank (8041110-BLK1)						Prepared: 04/25/18 09:00 Analyzed: 04/25/18 12:00						
5035A/8260C												
1,1-Dichloroethene	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
Vinyl chloride	ND	8.33	16.7	ug/kg wet	50	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		Recovery: 96 %		Limits: 80-120 %		Dilution: 1x						
Toluene-d8 (Surr)		96 %		80-120 %		"						
4-Bromofluorobenzene (Surr)		105 %		80-120 %		"						
LCS (8041110-BS2)						Prepared: 04/25/18 09:00 Analyzed: 04/25/18 11:06						
5035A/8260C												
1,1-Dichloroethene	883	12.5	25.0	ug/kg wet	50	1000	---	88	80-120%	---	---	
cis-1,2-Dichloroethene	917	12.5	25.0	ug/kg wet	50	1000	---	92	80-120%	---	---	
trans-1,2-Dichloroethene	870	12.5	25.0	ug/kg wet	50	1000	---	87	80-120%	---	---	
Tetrachloroethene (PCE)	1060	12.5	25.0	ug/kg wet	50	1000	---	106	80-120%	---	---	
Trichloroethene (TCE)	985	12.5	25.0	ug/kg wet	50	1000	---	98	80-120%	---	---	
Vinyl chloride	1080	12.5	25.0	ug/kg wet	50	1000	---	108	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr)		Recovery: 97 %		Limits: 80-120 %		Dilution: 1x						
Toluene-d8 (Surr)		97 %		80-120 %		"						
4-Bromofluorobenzene (Surr)		105 %		80-120 %		"						
Duplicate (8041110-DUP1)						Prepared: 04/12/18 09:05 Analyzed: 04/25/18 15:10						
QC Source Sample: Non-SDG (A8D0629-03)												
1,1-Dichloroethene	ND	15.0	30.0	ug/kg dry	50	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	15.0	30.0	ug/kg dry	50	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	15.0	30.0	ug/kg dry	50	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	15.0	30.0	ug/kg dry	50	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	15.0	30.0	ug/kg dry	50	---	ND	---	---	---	30%	
Vinyl chloride	ND	15.0	30.0	ug/kg dry	50	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)		Recovery: 98 %		Limits: 80-120 %		Dilution: 1x						
Toluene-d8 (Surr)		96 %		80-120 %		"						
4-Bromofluorobenzene (Surr)		106 %		80-120 %		"						

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: Swift Center/0624.04.10 Project Manager: Heather Good	Report ID: A8D0757 - 05 23 18 1243
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QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8041110 - EPA 5035A						Soil						
Matrix Spike (8041110-MS1)			Prepared: 04/12/18 09:15 Analyzed: 04/25/18 16:04									
QC Source Sample: Non-SDG (A8D0629-04)												
5035A/8260C												
1,1-Dichloroethene	862	11.7	23.3	ug/kg dry	50	933	ND	92	70-131%	---	---	
cis-1,2-Dichloroethene	894	11.7	23.3	ug/kg dry	50	933	ND	96	77-123%	---	---	
trans-1,2-Dichloroethene	852	11.7	23.3	ug/kg dry	50	933	ND	91	74-125%	---	---	
Tetrachloroethene (PCE)	951	11.7	23.3	ug/kg dry	50	933	ND	102	73-128%	---	---	
Trichloroethene (TCE)	949	11.7	23.3	ug/kg dry	50	933	ND	102	77-123%	---	---	
Vinyl chloride	1100	11.7	23.3	ug/kg dry	50	933	ND	118	56-135%	---	---	
Surr: 1,4-Difluorobenzene (Surr)		Recovery: 97 %		Limits: 80-120 %		Dilution: 1x						
Toluene-d8 (Surr)		94 %		80-120 %		"						
4-Bromofluorobenzene (Surr)		102 %		80-120 %		"						



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: Swift Center/0624.04.10 Project Manager: Heather Good	Report ID: A8D0757 - 05 23 18 1243
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QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8041238 - EPA 3546												
Soil												
Blank (8041238-BLK1)												
Prepared: 04/30/18 09:57 Analyzed: 04/30/18 16:10												
EPA 8270D (SIM)												
Acenaphthene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Acenaphthylene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Anthracene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Benz(a)anthracene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Benzo(a)pyrene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Benzo(g,h,i)perylene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Chrysene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Dibenzofuran	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Fluoranthene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Fluorene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
1-Methylnaphthalene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
2-Methylnaphthalene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Naphthalene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Phenanthrene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Pyrene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
<i>Surr: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 92%</i>		<i>Limits: 44-120%</i>		<i>Dilution: 1x</i>						
<i>p-Terphenyl-d14 (Surr)</i>		<i>103%</i>		<i>54-127%</i>		<i>"</i>						

LCS (8041238-BS1)												
Prepared: 04/30/18 09:57 Analyzed: 04/30/18 16:37												
EPA 8270D (SIM)												
Acenaphthene	725	5.00	10.0	ug/kg wet	1	800	---	91	40-122%	---	---	
Acenaphthylene	746	5.00	10.0	ug/kg wet	1	800	---	93	32-132%	---	---	
Anthracene	685	5.00	10.0	ug/kg wet	1	800	---	86	47-123%	---	---	
Benz(a)anthracene	718	5.00	10.0	ug/kg wet	1	800	---	90	49-126%	---	---	
Benzo(a)pyrene	712	5.00	10.0	ug/kg wet	1	800	---	89	45-129%	---	---	
Benzo(b)fluoranthene	722	5.00	10.0	ug/kg wet	1	800	---	90	45-132%	---	---	
Benzo(k)fluoranthene	721	5.00	10.0	ug/kg wet	1	800	---	90	47-132%	---	---	
Benzo(g,h,i)perylene	661	5.00	10.0	ug/kg wet	1	800	---	83	43-134%	---	---	
Chrysene	740	5.00	10.0	ug/kg wet	1	800	---	93	50-124%	---	---	
Dibenz(a,h)anthracene	727	5.00	10.0	ug/kg wet	1	800	---	91	45-134%	---	---	

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham
1329 North State Street, Suite 301
Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**
Project Number: **Swift Center/0624.04.10**
Project Manager: **Heather Good**

Report ID:
A8D0757 - 05 23 18 1243

QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8041238 - EPA 3546												
Soil												
LCS (8041238-BS1)												
					Prepared: 04/30/18 09:57 Analyzed: 04/30/18 16:37							
Dibenzofuran	711	5.00	10.0	ug/kg wet	1	800	---	89	44-120%	---	---	
Fluoranthene	648	5.00	10.0	ug/kg wet	1	800	---	81	50-127%	---	---	
Fluorene	714	5.00	10.0	ug/kg wet	1	800	---	89	43-125%	---	---	
Indeno(1,2,3-cd)pyrene	835	5.00	10.0	ug/kg wet	1	800	---	104	45-133%	---	---	
1-Methylnaphthalene	684	5.00	10.0	ug/kg wet	1	800	---	86	40-120%	---	---	
2-Methylnaphthalene	694	5.00	10.0	ug/kg wet	1	800	---	87	38-122%	---	---	
Naphthalene	679	5.00	10.0	ug/kg wet	1	800	---	85	35-123%	---	---	
Phenanthrene	675	5.00	10.0	ug/kg wet	1	800	---	84	50-121%	---	---	
Pyrene	635	5.00	10.0	ug/kg wet	1	800	---	79	47-127%	---	---	

Surr: 2-Fluorobiphenyl (Surr) Recovery: 91 % Limits: 44-120 % Dilution: 1x
p-Terphenyl-d14 (Surr) 100 % 54-127 % "

Duplicate (8041238-DUP1) Prepared: 04/30/18 09:57 Analyzed: 04/30/18 17:29

QC Source Sample: GP49-S-0.5 (A8D0757-07RE1)

EPA 8270D (SIM)

Benz(a)anthracene	17.5	6.31	12.6	ug/kg dry	1	---	23.0	---	---	27	30%	M-05
Benzo(a)pyrene	14.7	6.31	12.6	ug/kg dry	1	---	18.1	---	---	21	30%	
Benzo(b)fluoranthene	18.3	6.31	12.6	ug/kg dry	1	---	23.4	---	---	24	30%	M-05
Benzo(k)fluoranthene	6.95	6.31	12.6	ug/kg dry	1	---	9.34	---	---	29	30%	J
Chrysene	21.4	6.31	12.6	ug/kg dry	1	---	23.3	---	---	8	30%	M-05
Dibenz(a,h)anthracene	ND	6.31	12.6	ug/kg dry	1	---	ND	---	---	---	30%	
Indeno(1,2,3-cd)pyrene	11.1	6.31	12.6	ug/kg dry	1	---	13.1	---	---	16	30%	J

Surr: 2-Fluorobiphenyl (Surr) Recovery: 79 % Limits: 44-120 % Dilution: 1x
p-Terphenyl-d14 (Surr) 83 % 54-127 % "

Matrix Spike (8041238-MS1) Prepared: 04/30/18 09:57 Analyzed: 04/30/18 20:33

QC Source Sample: GP52-S-7.5 (A8D0757-16RE1)

EPA 8270D (SIM)

Benz(a)anthracene	954	7.42	14.8	ug/kg dry	1	1190	ND	80	49-126%	---	---	
Benzo(a)pyrene	942	7.42	14.8	ug/kg dry	1	1190	ND	79	45-129%	---	---	
Benzo(b)fluoranthene	967	7.42	14.8	ug/kg dry	1	1190	ND	82	45-132%	---	---	
Benzo(k)fluoranthene	909	7.42	14.8	ug/kg dry	1	1190	ND	77	47-132%	---	---	
Chrysene	980	7.42	14.8	ug/kg dry	1	1190	ND	83	50-124%	---	---	
Dibenz(a,h)anthracene	944	7.42	14.8	ug/kg dry	1	1190	ND	80	45-134%	---	---	

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

<u>Maul Foster & Alongi, INC-Bellingham</u> 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: <u>0624.04.10-03--Northern State Hospital</u> Project Number: Swift Center/0624.04.10 Project Manager: Heather Good	Report ID: A8D0757 - 05 23 18 1243
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QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8041238 - EPA 3546						Soil						
Matrix Spike (8041238-MS1)			Prepared: 04/30/18 09:57 Analyzed: 04/30/18 20:33									
QC Source Sample: GP52-S-7.5 (A8D0757-16RE1)												
Indeno(1,2,3-cd)pyrene	856	7.42	14.8	ug/kg dry	1	1190	ND	72	45-133%	---	---	
<i>Surr: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 86 %</i>		<i>Limits: 44-120 %</i>		<i>Dilution: 1x</i>						
<i>p-Terphenyl-d14 (Surr)</i>		<i>91 %</i>		<i>54-127 %</i>		<i>"</i>						



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: Swift Center/0624.04.10 Project Manager: Heather Good	Report ID: A8D0757 - 05 23 18 1243
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QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8041146 - Total Solids (Dry Weight)						Soil						
Duplicate (8041146-DUP1)			Prepared: 04/25/18 19:10 Analyzed: 04/26/18 10:15									
QC Source Sample: Non-SDG (A8D0803-01)												
% Solids	71.7	1.00	1.00	% by Weight	1	---	71.9	---	---	0.4	10%	
Duplicate (8041146-DUP2)			Prepared: 04/25/18 19:10 Analyzed: 04/26/18 10:15									
QC Source Sample: Non-SDG (A8D0812-04)												
% Solids	76.1	1.00	1.00	% by Weight	1	---	76.0	---	---	0.1	10%	
Duplicate (8041146-DUP3)			Prepared: 04/25/18 19:35 Analyzed: 04/26/18 10:15									
QC Source Sample: Non-SDG (A8D0819-02)												
% Solids	82.6	1.00	1.00	% by Weight	1	---	82.3	---	---	0.4	10%	
Duplicate (8041146-DUP4)			Prepared: 04/25/18 19:35 Analyzed: 04/26/18 10:15									
QC Source Sample: Non-SDG (A8D0824-03)												
% Solids	83.2	1.00	1.00	% by Weight	1	---	83.5	---	---	0.3	10%	
Duplicate (8041146-DUP5)			Prepared: 04/25/18 19:10 Analyzed: 04/26/18 10:15									
QC Source Sample: Non-SDG (A8D0775-01)												
% Solids	89.8	1.00	1.00	% by Weight	1	---	90.2	---	---	0.5	10%	
Duplicate (8041146-DUP6)			Prepared: 04/26/18 09:56 Analyzed: 04/26/18 10:15									
QC Source Sample: Non-SDG (A8D0782-01)												
% Solids	91.3	1.00	1.00	% by Weight	1	---	91.5	---	---	0.2	10%	

No Client related Batch QC samples analyzed for this batch. See notes page for more information.



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham
1329 North State Street, Suite 301
Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**
Project Number: **Swift Center/0624.04.10**
Project Manager: **Heather Good**

Report ID:
A8D0757 - 05 23 18 1243

SAMPLE PREPARATION INFORMATION

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Prep: EPA 3546 (Fuels)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 8041135							
A8D0757-07	Soil	NWTPH-Dx	04/23/18 17:20	04/25/18 13:36	10.46g/5mL	10g/5mL	0.96
A8D0757-08	Soil	NWTPH-Dx	04/23/18 17:25	04/25/18 13:36	10.96g/5mL	10g/5mL	0.91
A8D0757-09	Soil	NWTPH-Dx	04/23/18 17:30	04/25/18 13:36	10.4g/5mL	10g/5mL	0.96
A8D0757-10	Soil	NWTPH-Dx	04/23/18 17:40	04/25/18 13:36	10.35g/5mL	10g/5mL	0.97
A8D0757-11	Soil	NWTPH-Dx	04/23/18 17:45	04/25/18 13:36	10.72g/5mL	10g/5mL	0.93
A8D0757-12	Soil	NWTPH-Dx	04/23/18 17:50	04/25/18 13:36	10.73g/5mL	10g/5mL	0.93
A8D0757-13	Soil	NWTPH-Dx	04/23/18 17:55	04/25/18 13:36	10.92g/5mL	10g/5mL	0.92
A8D0757-14	Soil	NWTPH-Dx	04/23/18 18:00	04/25/18 13:36	10.05g/5mL	10g/5mL	1.00
A8D0757-15	Soil	NWTPH-Dx	04/23/18 18:05	04/25/18 13:36	10.35g/5mL	10g/5mL	0.97
A8D0757-16	Soil	NWTPH-Dx	04/23/18 18:10	04/25/18 13:36	11.32g/5mL	10g/5mL	0.88

Halogenated Volatile Organic Compounds by EPA 8260C

Prep: EPA 5035A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 8041067							
A8D0757-01	Soil	5035A/8260C	04/23/18 11:30	04/23/18 11:30	6.31g/5mL	5g/5mL	0.79
A8D0757-02	Soil	5035A/8260C	04/23/18 11:40	04/23/18 11:40	7.16g/5mL	5g/5mL	0.70
A8D0757-04	Soil	5035A/8260C	04/23/18 15:40	04/23/18 15:40	6.75g/5mL	5g/5mL	0.74
A8D0757-05	Soil	5035A/8260C	04/23/18 16:10	04/23/18 16:10	6.45g/5mL	5g/5mL	0.78
A8D0757-06	Soil	5035A/8260C	04/23/18 16:20	04/23/18 16:20	7.11g/5mL	5g/5mL	0.70
Batch: 8041110							
A8D0757-03RE1	Soil	5035A/8260C	04/23/18 11:45	04/23/18 11:45	6.68g/5mL	5g/5mL	0.75

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Prep: EPA 3546

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 8041238							
A8D0757-07RE1	Soil	EPA 8270D (SIM)	04/23/18 17:20	04/30/18 09:57	10.35g/5mL	10g/5mL	0.97
A8D0757-08RE1	Soil	EPA 8270D (SIM)	04/23/18 17:25	04/30/18 09:57	10.11g/5mL	10g/5mL	0.99
A8D0757-09RE1	Soil	EPA 8270D (SIM)	04/23/18 17:30	04/30/18 09:57	10.42g/5mL	10g/5mL	0.96

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: Swift Center/0624.04.10 Project Manager: Heather Good	Report ID: A8D0757 - 05 23 18 1243
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SAMPLE PREPARATION INFORMATION

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Prep: EPA 3546					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
A8D0757-10RE1	Soil	EPA 8270D (SIM)	04/23/18 17:40	04/30/18 09:57	10.15g/5mL	10g/5mL	0.99
A8D0757-11RE1	Soil	EPA 8270D (SIM)	04/23/18 17:45	04/30/18 09:57	10.57g/5mL	10g/5mL	0.95
A8D0757-12RE1	Soil	EPA 8270D (SIM)	04/23/18 17:50	04/30/18 09:57	10.76g/5mL	10g/5mL	0.93
A8D0757-13RE1	Soil	EPA 8270D (SIM)	04/23/18 17:55	04/30/18 09:57	10.75g/5mL	10g/5mL	0.93
A8D0757-14RE1	Soil	EPA 8270D (SIM)	04/23/18 18:00	04/30/18 09:57	10.45g/5mL	10g/5mL	0.96
A8D0757-15RE1	Soil	EPA 8270D (SIM)	04/23/18 18:05	04/30/18 09:57	10.26g/5mL	10g/5mL	0.98
A8D0757-16RE1	Soil	EPA 8270D (SIM)	04/23/18 18:10	04/30/18 09:57	10.66g/5mL	10g/5mL	0.94

Percent Dry Weight

Prep: Total Solids (Dry Weight)					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
Batch: 8041146							
A8D0757-01	Soil	EPA 8000C	04/23/18 11:30	04/25/18 19:10	1N/A/1N/A	1N/A/1N/A	NA
A8D0757-02	Soil	EPA 8000C	04/23/18 11:40	04/25/18 19:10	1N/A/1N/A	1N/A/1N/A	NA
A8D0757-03	Soil	EPA 8000C	04/23/18 11:45	04/25/18 19:10	1N/A/1N/A	1N/A/1N/A	NA
A8D0757-04	Soil	EPA 8000C	04/23/18 15:40	04/25/18 19:10	1N/A/1N/A	1N/A/1N/A	NA
A8D0757-05	Soil	EPA 8000C	04/23/18 16:10	04/25/18 19:35	1N/A/1N/A	1N/A/1N/A	NA
A8D0757-06	Soil	EPA 8000C	04/23/18 16:20	04/25/18 19:35	1N/A/1N/A	1N/A/1N/A	NA
A8D0757-07	Soil	EPA 8000C	04/23/18 17:20	04/25/18 19:35	1N/A/1N/A	1N/A/1N/A	NA
A8D0757-08	Soil	EPA 8000C	04/23/18 17:25	04/25/18 19:35	1N/A/1N/A	1N/A/1N/A	NA
A8D0757-09	Soil	EPA 8000C	04/23/18 17:30	04/25/18 19:35	1N/A/1N/A	1N/A/1N/A	NA
A8D0757-10	Soil	EPA 8000C	04/23/18 17:40	04/25/18 19:35	1N/A/1N/A	1N/A/1N/A	NA
A8D0757-11	Soil	EPA 8000C	04/23/18 17:45	04/25/18 19:35	1N/A/1N/A	1N/A/1N/A	NA
A8D0757-12	Soil	EPA 8000C	04/23/18 17:50	04/25/18 19:35	1N/A/1N/A	1N/A/1N/A	NA
A8D0757-13	Soil	EPA 8000C	04/23/18 17:55	04/25/18 19:35	1N/A/1N/A	1N/A/1N/A	NA
A8D0757-14	Soil	EPA 8000C	04/23/18 18:00	04/25/18 19:35	1N/A/1N/A	1N/A/1N/A	NA
A8D0757-15	Soil	EPA 8000C	04/23/18 18:05	04/25/18 19:35	1N/A/1N/A	1N/A/1N/A	NA
A8D0757-16	Soil	EPA 8000C	04/23/18 18:10	04/25/18 19:35	1N/A/1N/A	1N/A/1N/A	NA



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham

1329 North State Street, Suite 301
Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**

Project Number: **Swift Center/0624.04.10**

Project Manager: **Heather Good**

Report ID:

A8D0757 - 05 23 18 1243

QUALIFIER DEFINITIONS

Client Sample and Quality Control (QC) Sample Qualifier Definitions:

- F-17** No fuel pattern detected. The Diesel result represents carbon range C12 to C24, and the Oil result represents >C24 to C40.
- J** Estimated Result. Result detected below the lowest point of the calibration curve, but above the specified MDL.
- M-05** Estimated results. Peak separation for structural isomers is insufficient for accurate quantification.
- Q-05** Analyses are not controlled on RPD values from sample and duplicate concentrations that are below 5 times the reporting level.



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham
1329 North State Street, Suite 301
Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**
Project Number: **Swift Center/0624.04.10**
Project Manager: **Heather Good**

Report ID:
A8D0757 - 05 23 18 1243

REPORTING NOTES AND CONVENTIONS:

Abbreviations:

- DET Analyte DETECTED at or above the detection or reporting limit.
- ND Analyte NOT DETECTED at or above the detection or reporting limit.
- NR Result Not Reported
- RPD Relative Percent Difference

Detection Limits: Limit of Detection (LOD)

Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).
If no value is listed ('----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

Reporting Conventions:

- Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as "dry", "wet", or "" (blank) designation.
- "dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")
See Percent Solids section for details of dry weight analysis.
- "wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.
- " " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

- " --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
- " *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to 1/2 the Reporting Limit (RL).
-For Blank hits falling between 1/2 the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: Swift Center/0624.04.10 Project Manager: Heather Good	Report ID: A8D0757 - 05 23 18 1243
---	--	--

REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks (Cont.):

Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the blank results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met. Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: Swift Center/0624.04.10 Project Manager: Heather Good	Report ID: A8D0757 - 05 23 18 1243
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LABORATORY ACCREDITATION INFORMATION

TNI Certification ID: OR100062 (Primary Accreditation) - EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Cert?
<u>All reported analytes are included in Apex Laboratories' current ORELAP scope.</u>					

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation. Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provided by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham Project: 0624.04.10-03--Northern State Hospital
 1329 North State Street, Suite 301 Project Number: Swift Center/0624.04.10
 Bellingham, WA 98225 Project Manager: Heather Good Report ID: A8D0757 - 05 23 18 1243

APEX LABS

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

Lab # **A8D0757** COC 1 of 5

CHAIN OF CUSTODY

PO#

Project # 0624-04-10

Project Name: Swift Center

Project Mgr: Heather Good

Address: 1329 N. State St. Ste 301 Bham WA

Phone: 3605946257

Fax: 3605946270

Email: hegood@maulfoster.com

Sampled by: C. Wise & B. Pawlik

Site Location: WA

Other: _____

SAMPLE ID

LAB ID #

DATE

TIME

MATRIX

OF CONTAINERS

NWTPH-ACID

NWTPH-DX

NWTPH-GX

8260 VOCs Full List

8260 RBDM VOCs

8260 HVOCs

8260 BTEX VOCs

8270 SVOC

8270 SIM PART CRAT?

8082 PCBs

600 TIO

RCRA Metals (8)

TCLP Metals (8)

AL, SH, AS, BA, BE, CA, CR, CU, FE, NI, PB, SE, SS, TR, VA, ZN

TOTAL DISS TCLP

1200-COLS

1200-Z

8260 eVOCs

8260 Diagnostics

1	MW10-S-1.0	4/24/18	1130	S	3																																		
2	MW10-S-13.5		1140	S	3																																		
3	MW10-S-24.5		1145	S	3																																		
4	MW09-S-0.5		1540	S	3																																		
5	MW09-S-6.0		1610	S	3																																		
6	MW09-S-19.0		1620	S	3																																		
7	GP49-S-0.5		1720	S	1						X																												
8	GP49-S-7.0		1725	S	1						X																												
9	GP49-S-10.0		1730	S	1						X																												
10	GP50-S-0.5		1740	S	1						X																												

SPECIAL INSTRUCTIONS:

RECEIVED BY: [Signature] Date: 4/24/18

REMOVED BY: [Signature] Date: 4/24/18

Signature: [Signature] Date: 4/24/18

Printed Name: [Signature] Time: 12:50

Company: E5S-NN

Company: [Signature]

Apex Laboratories

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Lisa Domenighini

Lisa Domenighini, Client Services Manager



AMENDED REPORT

Apex Laboratories, LLC

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Maul Foster & Alongi, INC-Bellingham
1329 North State Street, Suite 301
Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**

Project Number: **Swift Center/0624.04.10**

Project Manager: **Heather Good**

Report ID:

A8D0757 - 05 23 18 1243

CHAIN OF CUSTODY

Lab # A8D0757 PO# 0624.04.10
COC # of 5

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

Company: **Maul Foster Alongi** Project Mgr: **Heather Good** Project Name: **Swift Center** Project # **0624.04.10**
Address: **1329 N. State St, Ste 301, Bham, WA** Phone: **360.594.6257** Fax: **360.594.6270** Email: **hgood@maulfoster.com**
Sampled by: **C. Wise ? B. Paulik**

DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-FCID	NWTPH-DS	NWTPH-GX	8260 VOCs Full List	8260 RBDM VOCs	8260 HVOCs	8260 BTEX VOCs	8270 SVOC	8270 SIM. PAHs	8082 PCBs	600 TTO	RCRA Metals (8)	TCLP Metals (8)	AL, SH, AS, BA, BE, CA, CB, CO, CU, FE, NI, PB, SE, AG, NA, TI, V, ZN	TOTAL DISS TCLP	1200-COLS	1200-Z
9/23/18	1745	S	1	X								X								
1950		S	1	X								X								
1755		S	1	X								X								
1800		S	1	X								X								
1805		S	1	X								X								
1810		S	1	X								X								

Site Location: OR (WA) Other: _____

SAMPLE ID: GP5D-S-1.5, GP51-S-0.5, GP51-S-1.0, GP52-S-0.5, GP52-S-6.0, GP52-S-7.5

Normal Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 1 Day, 2 Day, 3 Day, 4 DAY, 5 DAY, Other: _____

SPECIAL INSTRUCTIONS: _____

RELINQUISHED BY: [Signature] Date: 9/24/18 Signature: [Signature] Date: 4/24/18
Printed Name: Carolyn Wise Time: 8:15 Printed Name: [Signature] Time: 12:50
Company: MFA Company: ESS-NW

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Lisa Domenighini

Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: Swift Center/0624.04.10 Project Manager: Heather Good	Report ID: A8D0757 - 05 23 18 1243
---	--	--

APEX LABS COOLER RECEIPT FORM

Client: Maul Foster Bellingham Element WO#: A8 D0757
 Project/Project #: Swift Center / 0624-04-10

Delivery info:
 Date/Time Received: 4/24/18 @ 1250 By: [Signature]
 Delivered by: Apex Client ESS FedEx UPS Swift Senvoy SDS Other

Cooler Inspection Inspected by: [Signature] : 4/24/18 @ 1250
 Chain of Custody Included? Yes No Custody Seals? Yes No
 Signed/Dated by Client? Yes No
 Signed/Dated by Apex? Yes No

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (deg. C)	<u>1.8</u>	<u>5.4</u>					
Received on Ice? (Y/N)	<u>(Y)</u>						
Temp. Blanks? (Y/N)	<u>4.9</u>	<u>1.6</u>					
Ice Type: (Gel/Real/Other)	<u>(G)</u>						
Condition:	<u>good</u>						

Cooler out of temp? (Y/N) Possible reason why: _____
 If some coolers are in temp and some out, were green dot applied to put of temperature samples? Yes/No/NA (NA)
Samples Inspection: Inspected by: [Signature] : 4/24/18 @ 1230
 All Samples Intact? Yes No Comments: _____

Bottle Labels/COCs agree? Yes No Comments: MW 09-S-D.5 containers
read MW 09-S-1.0, 3 TBS # 1766 received but not listed on CoC
 Containers/Volumes Received Appropriate for Analysis? Yes No Comments: _____

Do VOA Vials have Visible Headspace? Yes No NA
 Comments: _____

Water Samples: pH Checked and Appropriate (except VOAs): Yes No NA
 Comments: _____

Additional Information: Subsampler: [Signature]
Subsampling reviewer: [Signature]

Labeled by: [Signature] Witness: [Signature] Cooler Inspected by: [Signature] See Project Contact Form: Y

Lisa Domenighini

May 10, 2018

Ms. Lisa Domenighini
Apex Laboratories
12232 S.W. Garden Place
Portland, Oregon 97223

Re: Dioxin & PCB's subcontract
Work Order: 13235
SDG: A8D0757

Dear Ms. Domenighini:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on April 25, 2018. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Cynde Larkins
Project Manager

Enclosures

SUBCONTRACT ORDER

Apex Laboratories

A8D0757

⑧ 4/23/18

CFA WO#13235

SENDING LABORATORY:

Apex Laboratories
12232 S.W. Garden Place
Tigard, OR 97223
Phone: (503) 718-2323
Fax: (503) 718-0333
Project Manager: Lisa Domenighini

RECEIVING LABORATORY:

Cape Fear Analytical, LLC
3306 Kitty Hawk Rd Suite 120
Wilmington, NC 28405
Phone : (910) 795-0421
Fax: -

Sample Name: GP49-S-0.5 Soil Sampled: 04/23/18 17:20 (A8D0757-07)

Analysis	Due	Expires	Comments
1613 Dioxin (Sub) Containers Supplied: (B)4 oz Glass Jar	05/07/18 17:00	04/30/18 17:20	

Sample Name: GP52-S-0.5 Soil Sampled: 04/23/18 18:00 (A8D0757-14)

Analysis	Due	Expires	Comments
1613 Dioxin (Sub) Containers Supplied: (B)4 oz Glass Jar	05/07/18 17:00	04/30/18 18:00	

Standard TAT

5.10C

[Signature] 4/24/18

Fed Ex (Shipper)

Released By Date Received By Date

Fed Ex (Shipper)

[Signature] CFA 2/2/18 09:36

Released By Date Received By Date

SAMPLE RECEIPT CHECKLIST
Cape Fear Analytical

13235

Client: APEX	Work Order: 13125 ^{CD} _{25APR18}
Shipping Company: FedEx	Date/Time Received: 25APR18 @ 0936

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			<input checked="" type="checkbox"/>
Samples identified as Foreign Soil?			<input checked="" type="checkbox"/>

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Samples < 2x background?		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			<input checked="" type="checkbox"/>

Air Witness: **MF**

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: seals broken damaged container leaking container other(describe)
2 Chain of Custody documents included with shipment?	<input checked="" type="checkbox"/>			
3 Samples requiring cold preservation within 0-6°C?	<input checked="" type="checkbox"/>			Preservation Method: ice bags blue ice dry ice none other (describe) AS 25APR18 5.5 5.7°C - 0.6°C = 5.1°C
4 Aqueous samples found to have visible solids?		<input checked="" type="checkbox"/>		Sample IDs, containers affected:
5 Samples requiring chemical preservation at proper pH?		<input checked="" type="checkbox"/>		Sample IDs, containers affected and pH observed: If preservative added, Lot#:
6 Samples requiring preservation have no residual chlorine?		<input checked="" type="checkbox"/>		Sample IDs, containers affected: If preservative added, Lot#:
7 Samples received within holding time?	<input checked="" type="checkbox"/>			Sample IDs, tests affected:
8 Sample IDs on COC match IDs on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
9 Date & time of COC match date & time on containers?	<input checked="" type="checkbox"/>			Sample IDs, containers affected:
10 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>			List type and number of containers / Sample IDs, containers affected: #2 - 4 oz clear glass
11 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			

Comments:
temp blank included

Checklist performed by: Initials: **AS** Date: **25APR18**

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Apex Laboratories (APEX)
SDG A8D0757
Work Order 13235**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 37541
Clean Up Batch Number: 37540
Extraction Batch Number: 37539

Sample Analysis

The following samples were analyzed using the analytical protocol as established in Method 1613B:

Sample ID	Client ID
12021188	Method Blank (MB)
12021189	Laboratory Control Sample (LCS)
12021190	Laboratory Control Sample Duplicate (LCSD)
12021191	13235001(GP49-S-0.5) Matrix Spike (MS)
12021192	13235001(GP49-S-0.5) Matrix Spike Duplicate (MSD)
13235001	GP49-S-0.5
13235002	GP52-S-0.5

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 15.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2009 TNI Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

Sample 13235001 (GP49-S-0.5)- Batch 37541 was selected for analysis as the matrix spike and matrix spike duplicate.

Matrix Spike (MS) Recovery Statement

The MS recoveries were within the established acceptance limits.

Matrix Spike Duplicate (MSD) Recovery Statement

The MSD recoveries were within the established acceptance limits.

MS/MSD Relative Percent Difference (RPD) Statement

The RPD(s) between the MS and MSD met the acceptance limits.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Qualifier Definition Report for

APEX001 Apex Laboratories

Client SDG: A8D0757 CFA Work Order: 13235

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- K Estimated Maximum Possible Concentration
- U Analyte was analyzed for, but not detected above the specified detection limit.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Heather Patterson

Date: 10 MAY 2018

Title: Group Leader

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 2

SDG Number: A8D0757	Client: APEX001	Project: APEX00111
Lab Sample ID: 13235001	Date Collected: 04/23/2018 17:20	Matrix: SOIL
Client Sample: 1613B Soil	Date Received: 04/25/2018 09:36	%Moisture: 27.9
Client ID: GP49-S-0.5		Prep Basis: Dry Weight
Batch ID: 37541	Method: EPA Method 1613B	Instrument: HRP750
Run Date: 05/04/2018 22:25	Analyst: MJC	Dilution: 1
Data File: A03MAY18A_4-9		
Prep Batch: 37539	Prep Method: SW846 3540C	
Prep Date: 03-MAY-18	Prep Aliquot: 13.97 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.0994	pg/g	0.0994	0.993
40321-76-4	1,2,3,7,8-PeCDD	J	0.177	pg/g	0.101	4.96
39227-28-6	1,2,3,4,7,8-HxCDD	JK	0.212	pg/g	0.139	4.96
57653-85-7	1,2,3,6,7,8-HxCDD	JK	0.397	pg/g	0.133	4.96
19408-74-3	1,2,3,7,8,9-HxCDD	J	0.355	pg/g	0.139	4.96
35822-46-9	1,2,3,4,6,7,8-HpCDD		6.09	pg/g	0.222	4.96
3268-87-9	1,2,3,4,6,7,8,9-OCDD		36.2	pg/g	0.224	9.93
51207-31-9	2,3,7,8-TCDF	JK	0.306	pg/g	0.126	0.993
57117-41-6	1,2,3,7,8-PeCDF	J	0.244	pg/g	0.0568	4.96
57117-31-4	2,3,4,7,8-PeCDF	JK	0.238	pg/g	0.0572	4.96
70648-26-9	1,2,3,4,7,8-HxCDF	J	0.218	pg/g	0.0756	4.96
57117-44-9	1,2,3,6,7,8-HxCDF	JK	0.193	pg/g	0.0818	4.96
60851-34-5	2,3,4,6,7,8-HxCDF	JK	0.202	pg/g	0.0798	4.96
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.0931	pg/g	0.0931	4.96
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	1.76	pg/g	0.100	4.96
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.149	pg/g	0.149	4.96
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	2.58	pg/g	0.164	9.93
41903-57-5	Total TeCDD	K	3.86	pg/g	0.0994	0.993
36088-22-9	Total PeCDD	JK	4.20	pg/g	0.101	4.96
34465-46-8	Total HxCDD	K	6.32	pg/g	0.133	4.96
37871-00-4	Total HpCDD		11.6	pg/g	0.222	4.96
30402-14-3	Total TeCDF	K	3.20	pg/g	0.126	0.993
30402-15-4	Total PeCDF	JK	3.09	pg/g	0.0441	4.96
55684-94-1	Total HxCDF	JK	2.74	pg/g	0.0756	4.96
38998-75-3	Total HpCDF	J	3.68	pg/g	0.100	4.96
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.534	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.589	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		196	199	pg/g	98.8	(25%-164%)
13C-1,2,3,7,8-PeCDD		176	199	pg/g	88.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		170	199	pg/g	85.9	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		158	199	pg/g	79.7	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		175	199	pg/g	88.0	(23%-140%)
13C-OCDD		355	397	pg/g	89.3	(17%-157%)
13C-2,3,7,8-TCDF		168	199	pg/g	84.6	(24%-169%)
13C-1,2,3,7,8-PeCDF		168	199	pg/g	84.6	(24%-185%)
13C-2,3,4,7,8-PeCDF		165	199	pg/g	83.1	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		153	199	pg/g	77.0	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		134	199	pg/g	67.5	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		149	199	pg/g	74.8	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		156	199	pg/g	78.4	(29%-147%)

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: A8D0757	Client: APEX001	Project: APEX00111
Lab Sample ID: 13235001	Date Collected: 04/23/2018 17:20	Matrix: SOIL
Client Sample: 1613B Soil	Date Received: 04/25/2018 09:36	%Moisture: 27.9
Client ID: GP49-S-0.5		Prep Basis: Dry Weight
Batch ID: 37541	Method: EPA Method 1613B	
Run Date: 05/04/2018 22:25	Analyst: MJC	Instrument: HRP750
Data File: A03MAY18A_4-9		Dilution: 1
Prep Batch: 37539	Prep Method: SW846 3540C	
Prep Date: 03-MAY-18	Prep Aliquot: 13.97 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
Surrogate/Tracer recovery						
		Qual	Result	Nominal	Units	Recovery%
						Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF			144	199	pg/g	72.7 (28%-143%)
13C-1,2,3,4,7,8,9-HpCDF			151	199	pg/g	75.9 (26%-138%)
37Cl-2,3,7,8-TCDD			21.3	19.9	pg/g	107 (35%-197%)

Comments:
J Value is estimated
K Estimated Maximum Possible Concentration
U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: A8D0757	Client: APEX001	Project: APEX00111
Lab Sample ID: 13235002	Date Collected: 04/23/2018 18:00	Matrix: SOIL
Client Sample: 1613B Soil	Date Received: 04/25/2018 09:36	%Moisture: 8.1
Client ID: GP52-S-0.5		Prep Basis: Dry Weight
Batch ID: 37541	Method: EPA Method 1613B	
Run Date: 05/05/2018 00:48	Analyst: MJC	Instrument: HRP750
Data File: A03MAY18A_4-12		Dilution: 1
Prep Batch: 37539	Prep Method: SW846 3540C	
Prep Date: 03-MAY-18	Prep Aliquot: 10.9 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.11	pg/g	0.110	0.998
40321-76-4	1,2,3,7,8-PeCDD	J	0.248	pg/g	0.0976	4.99
39227-28-6	1,2,3,4,7,8-HxCDD	J	0.289	pg/g	0.140	4.99
57653-85-7	1,2,3,6,7,8-HxCDD	J	0.525	pg/g	0.132	4.99
19408-74-3	1,2,3,7,8,9-HxCDD	J	0.465	pg/g	0.139	4.99
35822-46-9	1,2,3,4,6,7,8-HpCDD		6.20	pg/g	0.180	4.99
3268-87-9	1,2,3,4,6,7,8,9-OCDD		33.4	pg/g	0.199	9.98
51207-31-9	2,3,7,8-TCDF	J	0.232	pg/g	0.135	0.998
57117-41-6	1,2,3,7,8-PeCDF	J	0.156	pg/g	0.0852	4.99
57117-31-4	2,3,4,7,8-PeCDF	J	0.333	pg/g	0.0757	4.99
70648-26-9	1,2,3,4,7,8-HxCDF	J	0.202	pg/g	0.0818	4.99
57117-44-9	1,2,3,6,7,8-HxCDF	JK	0.166	pg/g	0.0902	4.99
60851-34-5	2,3,4,6,7,8-HxCDF	JK	0.220	pg/g	0.0908	4.99
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.112	pg/g	0.112	4.99
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	1.71	pg/g	0.111	4.99
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	0.230	pg/g	0.151	4.99
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	9.58	pg/g	0.187	9.98
41903-57-5	Total TeCDD		20.6	pg/g	0.110	0.998
36088-22-9	Total PeCDD		21.4	pg/g	0.0976	4.99
34465-46-8	Total HxCDD		27.5	pg/g	0.132	4.99
37871-00-4	Total HpCDD		11.2	pg/g	0.180	4.99
30402-14-3	Total TeCDF		3.40	pg/g	0.135	0.998
30402-15-4	Total PeCDF	JK	4.02	pg/g	0.0489	4.99
55684-94-1	Total HxCDF	JK	2.83	pg/g	0.0818	4.99
38998-75-3	Total HpCDF		8.16	pg/g	0.111	4.99
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.656	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.717	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		191	200	pg/g	95.4	(25%-164%)
13C-1,2,3,7,8-PeCDD		187	200	pg/g	93.8	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		175	200	pg/g	87.9	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		166	200	pg/g	83.0	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		185	200	pg/g	92.6	(23%-140%)
13C-OCDD		375	399	pg/g	94.0	(17%-157%)
13C-2,3,7,8-TCDF		174	200	pg/g	86.9	(24%-169%)
13C-1,2,3,7,8-PeCDF		178	200	pg/g	89.4	(24%-185%)
13C-2,3,4,7,8-PeCDF		178	200	pg/g	89.0	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		157	200	pg/g	78.6	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		140	200	pg/g	69.9	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		153	200	pg/g	76.8	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		157	200	pg/g	78.7	(29%-147%)

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: A8D0757	Client: APEX001	Project: APEX00111
Lab Sample ID: 13235002	Date Collected: 04/23/2018 18:00	Matrix: SOIL
Client Sample: 1613B Soil	Date Received: 04/25/2018 09:36	%Moisture: 8.1
Client ID: GP52-S-0.5		Prep Basis: Dry Weight
Batch ID: 37541	Method: EPA Method 1613B	
Run Date: 05/05/2018 00:48	Analyst: MJC	Instrument: HRP750
Data File: A03MAY18A_4-12		Dilution: 1
Prep Batch: 37539	Prep Method: SW846 3540C	
Prep Date: 03-MAY-18	Prep Aliquot: 10.9 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
Surrogate/Tracer recovery						
		Qual	Result	Nominal	Units	Recovery% Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF			147	200	pg/g	73.6 (28%-143%)
13C-1,2,3,4,7,8,9-HpCDF			156	200	pg/g	78.2 (26%-138%)
37Cl-2,3,7,8-TCDD			20.6	20.0	pg/g	103 (35%-197%)

Comments:
J Value is estimated
K Estimated Maximum Possible Concentration
U Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: A8D0757

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12021189	LCS for batch 37539	13C-2,3,7,8-TCDD		95.2	(20%-175%)
		13C-1,2,3,7,8-PeCDD		91.6	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		90.5	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		85.6	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		94.8	(22%-166%)
		13C-OCDD		93.4	(13%-199%)
		13C-2,3,7,8-TCDF		83.6	(22%-152%)
		13C-1,2,3,7,8-PeCDF		86.6	(21%-192%)
		13C-2,3,4,7,8-PeCDF		86.5	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		80.8	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		71.1	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		79.5	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		81.1	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		73.8	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		79.3	(20%-186%)
		37Cl-2,3,7,8-TCDD		103	(31%-191%)
12021190	LCSD for batch 37539	13C-2,3,7,8-TCDD		98.1	(20%-175%)
		13C-1,2,3,7,8-PeCDD		92.3	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		89.2	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		86.1	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		93.5	(22%-166%)
		13C-OCDD		92.0	(13%-199%)
		13C-2,3,7,8-TCDF		86.3	(22%-152%)
		13C-1,2,3,7,8-PeCDF		88.6	(21%-192%)
		13C-2,3,4,7,8-PeCDF		88.5	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		79.4	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		71.9	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		78.4	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		80.6	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		72.8	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		78.2	(20%-186%)
		37Cl-2,3,7,8-TCDD		104	(31%-191%)
12021188	MB for batch 37539	13C-2,3,7,8-TCDD		98.0	(25%-164%)
		13C-1,2,3,7,8-PeCDD		94.2	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		93.0	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		86.5	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		98.4	(23%-140%)
		13C-OCDD		98.4	(17%-157%)
		13C-2,3,7,8-TCDF		87.1	(24%-169%)
		13C-1,2,3,7,8-PeCDF		89.6	(24%-185%)
		13C-2,3,4,7,8-PeCDF		87.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		79.4	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		72.0	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		78.9	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		84.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		77.0	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		82.6	(26%-138%)
		37Cl-2,3,7,8-TCDD		108	(35%-197%)
13235001	GP49-S-0.5	13C-2,3,7,8-TCDD		98.8	(25%-164%)

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: A8D0757

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
13235001	GP49-S-0.5	13C-1,2,3,7,8-PeCDD		88.8	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		85.9	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		79.7	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		88.0	(23%-140%)
		13C-OCDD		89.3	(17%-157%)
		13C-2,3,7,8-TCDF		84.6	(24%-169%)
		13C-1,2,3,7,8-PeCDF		84.6	(24%-185%)
		13C-2,3,4,7,8-PeCDF		83.1	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		77.0	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		67.5	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		74.8	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		78.4	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		72.7	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		75.9	(26%-138%)
		37Cl-2,3,7,8-TCDD		107	(35%-197%)
12021191	GP49-S-0.5(13235001MS)	13C-2,3,7,8-TCDD		93.0	(25%-164%)
		13C-1,2,3,7,8-PeCDD		86.6	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		81.1	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		77.2	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		85.6	(23%-140%)
		13C-OCDD		87.2	(17%-157%)
		13C-2,3,7,8-TCDF		84.9	(24%-169%)
		13C-1,2,3,7,8-PeCDF		84.7	(24%-185%)
		13C-2,3,4,7,8-PeCDF		81.8	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		73.3	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		64.1	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		72.3	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		74.9	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		71.4	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		74.1	(26%-138%)
37Cl-2,3,7,8-TCDD		112	(35%-197%)		
12021192	GP49-S-0.5(13235001MSD)	13C-2,3,7,8-TCDD		101	(25%-164%)
		13C-1,2,3,7,8-PeCDD		96.9	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		91.2	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		84.3	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		95.0	(23%-140%)
		13C-OCDD		97.3	(17%-157%)
		13C-2,3,7,8-TCDF		87.5	(24%-169%)
		13C-1,2,3,7,8-PeCDF		92.6	(24%-185%)
		13C-2,3,4,7,8-PeCDF		91.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		82.0	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		72.3	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		78.6	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		82.1	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		77.9	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		81.2	(26%-138%)
37Cl-2,3,7,8-TCDD		112	(35%-197%)		
13235002	GP52-S-0.5	13C-2,3,7,8-TCDD		95.4	(25%-164%)
		13C-1,2,3,7,8-PeCDD		93.8	(25%-181%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: A8D0757

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
13235002	GP52-S-0.5	13C-1,2,3,4,7,8-HxCDD		87.9	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		83.0	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		92.6	(23%-140%)
		13C-OCDD		94.0	(17%-157%)
		13C-2,3,7,8-TCDF		86.9	(24%-169%)
		13C-1,2,3,7,8-PeCDF		89.4	(24%-185%)
		13C-2,3,4,7,8-PeCDF		89.0	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		78.6	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		69.9	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		76.8	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		78.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		73.6	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		78.2	(26%-138%)
		37Cl-2,3,7,8-TCDD		103	(35%-197%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: A8D0757

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 37539

Matrix: SOIL

Lab Sample ID: 12021189

Instrument: HRP750

Analysis Date: 05/04/2018 20:02

Dilution: 1

Analyst: MJC

Prep Batch ID: 37539

Batch ID: 37541

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	20.7	103	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	99.6	99.6	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	96.5	96.5	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	92.4	92.4	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	100	100	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	89.5	89.5	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	192	96.2	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	16.3	81.5	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	87.1	87.1	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	84.0	84	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	90.4	90.4	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	93.6	93.6	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	89.9	89.9	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	91.6	91.6	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	95.2	95.2	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	95.3	95.3	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	166	82.9	63-170

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: A8D0757 **Sample Type:** Laboratory Control Sample Duplicate
Client ID: LCSD for batch 37539 **Matrix:** SOIL
Lab Sample ID: 12021190
Instrument: HRP750 **Analysis Date:** 05/04/2018 20:50 **Dilution:** 1
Analyst: MJC **Prep Batch ID:** 37539
Batch ID: 37541

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
1746-01-6	LCSD 2,3,7,8-TCDD	20.0	19.9	99.5	67-158	3.76	0-20
40321-76-4	LCSD 1,2,3,7,8-PeCDD	100	100	100	70-142	0.381	0-20
39227-28-6	LCSD 1,2,3,4,7,8-HxCDD	100	96.7	96.7	70-164	0.190	0-20
57653-85-7	LCSD 1,2,3,6,7,8-HxCDD	100	94.8	94.8	76-134	2.63	0-20
19408-74-3	LCSD 1,2,3,7,8,9-HxCDD	100	102	102	64-162	1.56	0-20
35822-46-9	LCSD 1,2,3,4,6,7,8-HpCDD	100	90.3	90.3	70-140	0.890	0-20
3268-87-9	LCSD 1,2,3,4,6,7,8,9-OCDD	200	194	97	78-144	0.789	0-20
51207-31-9	LCSD 2,3,7,8-TCDF	20.0	16.5	82.3	75-158	1.01	0-20
57117-41-6	LCSD 1,2,3,7,8-PeCDF	100	85.9	85.9	80-134	1.42	0-20
57117-31-4	LCSD 2,3,4,7,8-PeCDF	100	86.1	86.1	68-160	2.53	0-20
70648-26-9	LCSD 1,2,3,4,7,8-HxCDF	100	90.6	90.6	72-134	0.159	0-20
57117-44-9	LCSD 1,2,3,6,7,8-HxCDF	100	92.6	92.6	84-130	1.04	0-20
60851-34-5	LCSD 2,3,4,6,7,8-HxCDF	100	91.9	91.9	70-156	2.22	0-20
72918-21-9	LCSD 1,2,3,7,8,9-HxCDF	100	91.1	91.1	78-130	0.523	0-20
67562-39-4	LCSD 1,2,3,4,6,7,8-HpCDF	100	97.3	97.3	82-122	2.11	0-20
55673-89-7	LCSD 1,2,3,4,7,8,9-HpCDF	100	98.3	98.3	78-138	3.07	0-20
39001-02-0	LCSD 1,2,3,4,6,7,8,9-OCDF	200	168	83.8	63-170	1.01	0-20

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: A8D0757
Client ID: GP49-S-0.5(13235001MS)
Lab Sample ID: 12021191
Instrument: HRP750
Analyst: MJC

Sample Type: Matrix Spike
Matrix: SOIL
%Moisture: 27.9
Analysis Date: 05/04/2018 23:13
Prep Batch ID: 37539
Batch ID: 37541
Dilution: 1

CAS No.	Parmname	Amount Added		Spike Conc.	Recovery %	Acceptance Limits	
		pg/g		pg/g			
1746-01-6	MS	2,3,7,8-TCDD	19.9	U	20.7	104	70-130
40321-76-4	MS	1,2,3,7,8-PeCDD	99.3	J	104	105	70-130
39227-28-6	MS	1,2,3,4,7,8-HxCDD	99.3	JK	97.9	98.5	70-130
57653-85-7	MS	1,2,3,6,7,8-HxCDD	99.3	JK	98.9	99.2	70-130
19408-74-3	MS	1,2,3,7,8,9-HxCDD	99.3	J	105	105	70-130
35822-46-9	MS	1,2,3,4,6,7,8-HpCDD	99.3		102	96.5	70-130
3268-87-9	MS	1,2,3,4,6,7,8,9-OCDD	199		245	105	70-130
51207-31-9	MS	2,3,7,8-TCDF	19.9	JK	16.9	83.4	70-130
57117-41-6	MS	1,2,3,7,8-PeCDF	99.3	J	90.2	90.7	70-130
57117-31-4	MS	2,3,4,7,8-PeCDF	99.3	JK	91.2	91.6	70-130
70648-26-9	MS	1,2,3,4,7,8-HxCDF	99.3	J	96.2	96.7	70-130
57117-44-9	MS	1,2,3,6,7,8-HxCDF	99.3	JK	101	101	70-130
60851-34-5	MS	2,3,4,6,7,8-HxCDF	99.3	JK	95.9	96.4	70-130
72918-21-9	MS	1,2,3,7,8,9-HxCDF	99.3	U	96.6	97.3	70-130
67562-39-4	MS	1,2,3,4,6,7,8-HpCDF	99.3	J	101	100	70-130
55673-89-7	MS	1,2,3,4,7,8,9-HpCDF	99.3	U	101	102	70-130
39001-02-0	MS	1,2,3,4,6,7,8,9-OCDF	199	J	175	87.1	70-130

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: A8D0757

Sample Type: Matrix Spike Duplicate

Client ID: GP49-S-0.5(13235001MSD)

Matrix: SOIL

Lab Sample ID: 12021192

%Moisture: 27.9

Instrument: HRP750

Analysis Date: 05/05/2018 00:00

Dilution: 1

Analyst: MJC

Prep Batch ID:37539

Batch ID: 37541

CAS No.	Parmname	Amount Added		Spike Conc.	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
		pg/g	U					
1746-01-6	MSD 2,3,7,8-TCDD	19.8	U	20.6	104	70-130	0.633	0-20
40321-76-4	MSD 1,2,3,7,8-PeCDD	99.1	J	101	102	70-130	3.01	0-20
39227-28-6	MSD 1,2,3,4,7,8-HxCDD	99.1	JK	98.0	98.7	70-130	0.0554	0-20
57653-85-7	MSD 1,2,3,6,7,8-HxCDD	99.1	JK	96.9	97.4	70-130	1.98	0-20
19408-74-3	MSD 1,2,3,7,8,9-HxCDD	99.1	J	102	103	70-130	2.52	0-20
35822-46-9	MSD 1,2,3,4,6,7,8-HpCDD	99.1		101	95.3	70-130	1.27	0-20
3268-87-9	MSD 1,2,3,4,6,7,8,9-OCDD	198		243	104	70-130	0.939	0-20
51207-31-9	MSD 2,3,7,8-TCDF	19.8	JK	17.2	85.5	70-130	2.22	0-20
57117-41-6	MSD 1,2,3,7,8-PeCDF	99.1	J	88.4	88.9	70-130	2.09	0-20
57117-31-4	MSD 2,3,4,7,8-PeCDF	99.1	JK	89.3	89.9	70-130	2.10	0-20
70648-26-9	MSD 1,2,3,4,7,8-HxCDF	99.1	J	93.5	94.1	70-130	2.89	0-20
57117-44-9	MSD 1,2,3,6,7,8-HxCDF	99.1	JK	96.5	97.2	70-130	4.44	0-20
60851-34-5	MSD 2,3,4,6,7,8-HxCDF	99.1	JK	95.0	95.6	70-130	0.989	0-20
72918-21-9	MSD 1,2,3,7,8,9-HxCDF	99.1	U	93.5	94.3	70-130	3.32	0-20
67562-39-4	MSD 1,2,3,4,6,7,8-HpCDF	99.1	J	99.7	98.9	70-130	1.32	0-20
55673-89-7	MSD 1,2,3,4,7,8,9-HpCDF	99.1	U	98.9	99.8	70-130	2.07	0-20
39001-02-0	MSD 1,2,3,4,6,7,8,9-OCDF	198	J	170	84.6	70-130	3.04	0-20

Method Blank Summary

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SDG Number: A8D0757
Client ID: MB for batch 37539
Lab Sample ID: 12021188
Column:

Client: APEX001
Instrument ID: HRP750
Prep Date: 03-MAY-18

Matrix: SOIL
Data File: A03MAY18A_4-8
Analyzed: 05/04/18 21:38

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 37539	12021189	A03MAY18A_4-6	05/04/18	2002
02 LCSD for batch 37539	12021190	A03MAY18A_4-7	05/04/18	2050
03 GP49-S-0.5	13235001	A03MAY18A_4-9	05/04/18	2225
04 GP49-S-0.5(13235001MS)	12021191	A03MAY18A_4-10	05/04/18	2313
05 GP49-S-0.5(13235001MSD)	12021192	A03MAY18A_4-11	05/05/18	0000
06 GP52-S-0.5	13235002	A03MAY18A_4-12	05/05/18	0048

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

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SDG Number: A8D0757	Client: APEX001	Project: APEX00111
Lab Sample ID: 12021188		Matrix: SOIL
Client Sample: QC for batch 37539		
Client ID: MB for batch 37539		Prep Basis: As Received
Batch ID: 37541	Method: EPA Method 1613B	
Run Date: 05/04/2018 21:38	Analyst: MJC	Instrument: HRP750
Data File: A03MAY18A_4-8		Dilution: 1
Prep Batch: 37539	Prep Method: SW846 3540C	
Prep Date: 03-MAY-18	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.072	pg/g	0.072	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	0.0822	pg/g	0.0822	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.0976	pg/g	0.0976	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.0952	pg/g	0.0952	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.0988	pg/g	0.0988	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	0.115	pg/g	0.115	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	0.560	pg/g	0.214	10.0
51207-31-9	2,3,7,8-TCDF	U	0.0764	pg/g	0.0764	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	0.0572	pg/g	0.0572	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	0.0536	pg/g	0.0536	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.0618	pg/g	0.0618	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.0632	pg/g	0.0632	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.065	pg/g	0.065	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.0748	pg/g	0.0748	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	0.0762	pg/g	0.0762	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.108	pg/g	0.108	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	0.151	pg/g	0.151	10.0
41903-57-5	Total TeCDD	U	0.072	pg/g	0.072	1.00
36088-22-9	Total PeCDD	U	0.0822	pg/g	0.0822	5.00
34465-46-8	Total HxCDD	U	0.0952	pg/g	0.0952	5.00
37871-00-4	Total HpCDD	U	0.115	pg/g	0.115	5.00
30402-14-3	Total TeCDF	U	0.0764	pg/g	0.0764	1.00
30402-15-4	Total PeCDF	U	0.041	pg/g	0.041	5.00
55684-94-1	Total HxCDF	U	0.0618	pg/g	0.0618	5.00
38998-75-3	Total HpCDF	U	0.0762	pg/g	0.0762	5.00
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.000168	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.119	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		196	200	pg/g	98.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		188	200	pg/g	94.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		186	200	pg/g	93.0	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		173	200	pg/g	86.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		197	200	pg/g	98.4	(23%-140%)
13C-OCDD		394	400	pg/g	98.4	(17%-157%)
13C-2,3,7,8-TCDF		174	200	pg/g	87.1	(24%-169%)
13C-1,2,3,7,8-PeCDF		179	200	pg/g	89.6	(24%-185%)
13C-2,3,4,7,8-PeCDF		175	200	pg/g	87.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		159	200	pg/g	79.4	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		144	200	pg/g	72.0	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		158	200	pg/g	78.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		169	200	pg/g	84.7	(29%-147%)

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: A8D0757	Client: APEX001	Project: APEX00111
Lab Sample ID: 12021188		Matrix: SOIL
Client Sample: QC for batch 37539		
Client ID: MB for batch 37539		Prep Basis: As Received
Batch ID: 37541	Method: EPA Method 1613B	
Run Date: 05/04/2018 21:38	Analyst: MJC	Instrument: HRP750
Data File: A03MAY18A_4-8		Dilution: 1
Prep Batch: 37539	Prep Method: SW846 3540C	
Prep Date: 03-MAY-18	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
Surrogate/Tracer recovery						
		Qual	Result	Nominal	Units	Recovery% Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF			154	200	pg/g	77.0 (28%-143%)
13C-1,2,3,4,7,8,9-HpCDF			165	200	pg/g	82.6 (26%-138%)
37Cl-2,3,7,8-TCDD			21.6	20.0	pg/g	108 (35%-197%)

Comments:

- J** Value is estimated
- U** Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: A8D0757	Client: APEX001	Project: APEX00111
Lab Sample ID: 12021189		Matrix: SOIL
Client Sample: QC for batch 37539		
Client ID: LCS for batch 37539		Prep Basis: As Received
Batch ID: 37541	Method: EPA Method 1613B	
Run Date: 05/04/2018 20:02	Analyst: MJC	Instrument: HRP750
Data File: A03MAY18A_4-6		Dilution: 1
Prep Batch: 37539	Prep Method: SW846 3540C	
Prep Date: 03-MAY-18	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.7	pg/g	0.0482	1.00
40321-76-4	1,2,3,7,8-PeCDD		99.6	pg/g	0.0922	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		96.5	pg/g	0.173	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		92.4	pg/g	0.172	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		100	pg/g	0.177	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		89.5	pg/g	0.348	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		192	pg/g	0.204	10.0
51207-31-9	2,3,7,8-TCDF		16.3	pg/g	0.0654	1.00
57117-41-6	1,2,3,7,8-PeCDF		87.1	pg/g	0.0956	5.00
57117-31-4	2,3,4,7,8-PeCDF		84.0	pg/g	0.0876	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		90.4	pg/g	0.177	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		93.6	pg/g	0.187	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		89.9	pg/g	0.179	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		91.6	pg/g	0.226	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		95.2	pg/g	0.276	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		95.3	pg/g	0.390	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		166	pg/g	0.167	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		190	200	pg/g	95.2	(20%-175%)
13C-1,2,3,7,8-PeCDD		183	200	pg/g	91.6	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		181	200	pg/g	90.5	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		171	200	pg/g	85.6	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		190	200	pg/g	94.8	(22%-166%)
13C-OCDD		374	400	pg/g	93.4	(13%-199%)
13C-2,3,7,8-TCDF		167	200	pg/g	83.6	(22%-152%)
13C-1,2,3,7,8-PeCDF		173	200	pg/g	86.6	(21%-192%)
13C-2,3,4,7,8-PeCDF		173	200	pg/g	86.5	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		162	200	pg/g	80.8	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		142	200	pg/g	71.1	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		159	200	pg/g	79.5	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		162	200	pg/g	81.1	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		148	200	pg/g	73.8	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		159	200	pg/g	79.3	(20%-186%)
37Cl-2,3,7,8-TCDD		20.6	20.0	pg/g	103	(31%-191%)

Comments:
U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: A8D0757	Client: APEX001	Project: APEX00111
Lab Sample ID: 12021190		Matrix: SOIL
Client Sample: QC for batch 37539		
Client ID: LCSD for batch 37539		Prep Basis: As Received
Batch ID: 37541	Method: EPA Method 1613B	
Run Date: 05/04/2018 20:50	Analyst: MJC	Instrument: HRP750
Data File: A03MAY18A_4-7		Dilution: 1
Prep Batch: 37539	Prep Method: SW846 3540C	
Prep Date: 03-MAY-18	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		19.9	pg/g	0.0402	1.00
40321-76-4	1,2,3,7,8-PeCDD		100	pg/g	0.085	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		96.7	pg/g	0.117	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		94.8	pg/g	0.117	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		102	pg/g	0.120	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		90.3	pg/g	0.362	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		194	pg/g	0.222	10.0
51207-31-9	2,3,7,8-TCDF		16.5	pg/g	0.0638	1.00
57117-41-6	1,2,3,7,8-PeCDF		85.9	pg/g	0.099	5.00
57117-31-4	2,3,4,7,8-PeCDF		86.1	pg/g	0.0856	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		90.6	pg/g	0.148	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		92.6	pg/g	0.161	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		91.9	pg/g	0.168	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		91.1	pg/g	0.204	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		97.3	pg/g	0.272	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		98.3	pg/g	0.372	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		168	pg/g	0.186	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		196	200	pg/g	98.1	(20%-175%)
13C-1,2,3,7,8-PeCDD		185	200	pg/g	92.3	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		178	200	pg/g	89.2	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		172	200	pg/g	86.1	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		187	200	pg/g	93.5	(22%-166%)
13C-OCDD		368	400	pg/g	92.0	(13%-199%)
13C-2,3,7,8-TCDF		173	200	pg/g	86.3	(22%-152%)
13C-1,2,3,7,8-PeCDF		177	200	pg/g	88.6	(21%-192%)
13C-2,3,4,7,8-PeCDF		177	200	pg/g	88.5	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		159	200	pg/g	79.4	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		144	200	pg/g	71.9	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		157	200	pg/g	78.4	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		161	200	pg/g	80.6	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		146	200	pg/g	72.8	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		156	200	pg/g	78.2	(20%-186%)
37Cl-2,3,7,8-TCDD		20.9	20.0	pg/g	104	(31%-191%)

Comments:

U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: A8D0757	Client: APEX001	Project: APEX00111
Lab Sample ID: 12021191	Date Collected: 04/23/2018 17:20	Matrix: SOIL
Client Sample: QC for batch 37539	Date Received: 04/25/2018 09:36	%Moisture: 27.9
Client ID: GP49-S-0.5(13235001MS)		Prep Basis: Dry Weight
Batch ID: 37541	Method: EPA Method 1613B	
Run Date: 05/04/2018 23:13	Analyst: MJC	Instrument: HRP750
Data File: A03MAY18A_4-10		Dilution: 1
Prep Batch: 37539	Prep Method: SW846 3540C	
Prep Date: 03-MAY-18	Prep Aliquot: 13.97 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.7	pg/g	0.106	0.993
40321-76-4	1,2,3,7,8-PeCDD		104	pg/g	0.138	4.96
39227-28-6	1,2,3,4,7,8-HxCDD		97.9	pg/g	0.212	4.96
57653-85-7	1,2,3,6,7,8-HxCDD		98.9	pg/g	0.214	4.96
19408-74-3	1,2,3,7,8,9-HxCDD		105	pg/g	0.218	4.96
35822-46-9	1,2,3,4,6,7,8-HpCDD		102	pg/g	0.383	4.96
3268-87-9	1,2,3,4,6,7,8,9-OCDD		245	pg/g	0.383	9.93
51207-31-9	2,3,7,8-TCDF		16.9	pg/g	0.130	0.993
57117-41-6	1,2,3,7,8-PeCDF		90.2	pg/g	0.107	4.96
57117-31-4	2,3,4,7,8-PeCDF		91.2	pg/g	0.103	4.96
70648-26-9	1,2,3,4,7,8-HxCDF		96.2	pg/g	0.170	4.96
57117-44-9	1,2,3,6,7,8-HxCDF		101	pg/g	0.187	4.96
60851-34-5	2,3,4,6,7,8-HxCDF		95.9	pg/g	0.176	4.96
72918-21-9	1,2,3,7,8,9-HxCDF		96.6	pg/g	0.220	4.96
67562-39-4	1,2,3,4,6,7,8-HpCDF		101	pg/g	0.284	4.96
55673-89-7	1,2,3,4,7,8,9-HpCDF		101	pg/g	0.415	4.96
39001-02-0	1,2,3,4,6,7,8,9-OCDF		175	pg/g	0.234	9.93

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		185	199	pg/g	93.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		172	199	pg/g	86.6	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		161	199	pg/g	81.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		153	199	pg/g	77.2	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		170	199	pg/g	85.6	(23%-140%)
13C-OCDD		346	397	pg/g	87.2	(17%-157%)
13C-2,3,7,8-TCDF		169	199	pg/g	84.9	(24%-169%)
13C-1,2,3,7,8-PeCDF		168	199	pg/g	84.7	(24%-185%)
13C-2,3,4,7,8-PeCDF		162	199	pg/g	81.8	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		146	199	pg/g	73.3	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		127	199	pg/g	64.1	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		143	199	pg/g	72.3	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		149	199	pg/g	74.9	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		142	199	pg/g	71.4	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		147	199	pg/g	74.1	(26%-138%)
37Cl-2,3,7,8-TCDD		22.3	19.9	pg/g	112	(35%-197%)

Comments:

U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: A8D0757	Client: APEX001	Project: APEX00111
Lab Sample ID: 12021192	Date Collected: 04/23/2018 17:20	Matrix: SOIL
Client Sample: QC for batch 37539	Date Received: 04/25/2018 09:36	%Moisture: 27.9
Client ID: GP49-S-0.5(13235001MSD)		Prep Basis: Dry Weight
Batch ID: 37541	Method: EPA Method 1613B	
Run Date: 05/05/2018 00:00	Analyst: MJC	Instrument: HRP750
Data File: A03MAY18A_4-11		Dilution: 1
Prep Batch: 37539	Prep Method: SW846 3540C	
Prep Date: 03-MAY-18	Prep Aliquot: 13.99 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.6	pg/g	0.0981	0.991
40321-76-4	1,2,3,7,8-PeCDD		101	pg/g	0.120	4.96
39227-28-6	1,2,3,4,7,8-HxCDD		98.0	pg/g	0.176	4.96
57653-85-7	1,2,3,6,7,8-HxCDD		96.9	pg/g	0.175	4.96
19408-74-3	1,2,3,7,8,9-HxCDD		102	pg/g	0.180	4.96
35822-46-9	1,2,3,4,6,7,8-HpCDD		101	pg/g	0.371	4.96
3268-87-9	1,2,3,4,6,7,8,9-OCDD		243	pg/g	0.323	9.91
51207-31-9	2,3,7,8-TCDF		17.2	pg/g	0.129	0.991
57117-41-6	1,2,3,7,8-PeCDF		88.4	pg/g	0.103	4.96
57117-31-4	2,3,4,7,8-PeCDF		89.3	pg/g	0.102	4.96
70648-26-9	1,2,3,4,7,8-HxCDF		93.5	pg/g	0.168	4.96
57117-44-9	1,2,3,6,7,8-HxCDF		96.5	pg/g	0.154	4.96
60851-34-5	2,3,4,6,7,8-HxCDF		95.0	pg/g	0.172	4.96
72918-21-9	1,2,3,7,8,9-HxCDF		93.5	pg/g	0.206	4.96
67562-39-4	1,2,3,4,6,7,8-HpCDF		99.7	pg/g	0.262	4.96
55673-89-7	1,2,3,4,7,8,9-HpCDF		98.9	pg/g	0.379	4.96
39001-02-0	1,2,3,4,6,7,8,9-OCDF		170	pg/g	0.287	9.91

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		201	198	pg/g	101	(25%-164%)
13C-1,2,3,7,8-PeCDD		192	198	pg/g	96.9	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		181	198	pg/g	91.2	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		167	198	pg/g	84.3	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		188	198	pg/g	95.0	(23%-140%)
13C-OCDD		386	396	pg/g	97.3	(17%-157%)
13C-2,3,7,8-TCDF		174	198	pg/g	87.5	(24%-169%)
13C-1,2,3,7,8-PeCDF		184	198	pg/g	92.6	(24%-185%)
13C-2,3,4,7,8-PeCDF		182	198	pg/g	91.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		162	198	pg/g	82.0	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		143	198	pg/g	72.3	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		156	198	pg/g	78.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		163	198	pg/g	82.1	(29%-147%)
13C-1,2,3,4,6,7,8-HpCDF		154	198	pg/g	77.9	(28%-143%)
13C-1,2,3,4,7,8,9-HpCDF		161	198	pg/g	81.2	(26%-138%)
37Cl-2,3,7,8-TCDD		22.2	19.8	pg/g	112	(35%-197%)

Comments:

U Analyte was analyzed for, but not detected above the specified detection limit.



Apex Laboratories, LLC

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

AMENDED REPORT

Friday, May 25, 2018

Heather Good
Maul Foster & Alongi, INC-Bellingham
1329 North State Street, Suite 301
Bellingham, WA 98225

RE: A8D0903 - 0624.04.10-03--Northern State Hospital - 0624.04.10

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A8D0903, which was received by the laboratory on 4/28/2018 at 9:15:00AM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: ldomenighini@apex-labs.com, or by phone at 503-718-2323.

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.

All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.



Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GP53-S-0.5	A8D0903-01	Soil	04/24/18 09:20	04/28/18 09:15
GP53-S-1.0	A8D0903-02	Soil	04/24/18 09:25	04/28/18 09:15
GP53-S-2.0	A8D0903-03	Soil	04/24/18 09:30	04/28/18 09:15
GP54-S-0.5	A8D0903-04	Soil	04/24/18 09:40	04/28/18 09:15
GP54-S-5.5	A8D0903-05	Soil	04/24/18 09:45	04/28/18 09:15
DU06-S-0.5(As Received)	A8D0903-06	Soil	04/24/18 09:30	04/28/18 09:15
DU06-S-0.5(After Processing)	A8D0903-07	Soil	04/24/18 09:30	04/28/18 09:15
SS01-S-0.5	A8D0903-08	Soil	04/24/18 09:30	04/28/18 09:15
SS02-S-0.5	A8D0903-09	Soil	04/24/18 11:21	04/28/18 09:15
SS03-S-0.5	A8D0903-10	Soil	04/24/18 11:40	04/28/18 09:15
SS04-S-0.5	A8D0903-11	Soil	04/24/18 12:14	04/28/18 09:15
SS05-S-0.5	A8D0903-12	Soil	04/24/18 12:32	04/28/18 09:15
DU04-S-0.5(As Received)	A8D0903-13	Soil	04/24/18 13:30	04/28/18 09:15
DU04-S-0.5(After Processing)	A8D0903-14	Soil	04/24/18 13:30	04/28/18 09:15
SS06-S-0.5	A8D0903-15	Soil	04/24/18 13:30	04/28/18 09:15
SS07-S-0.5	A8D0903-16	Soil	04/24/18 13:52	04/28/18 09:15
SS08-S-0.5	A8D0903-17	Soil	04/24/18 14:20	04/28/18 09:15
SS09-S-0.5	A8D0903-18	Soil	04/24/18 14:30	04/28/18 09:15
SS10-S-0.5	A8D0903-19	Soil	04/24/18 14:55	04/28/18 09:15
DU07-S-0.5(As Received)	A8D0903-20	Soil	04/24/18 15:47	04/28/18 09:15
DU07-S-0.5(After Processing)	A8D0903-21	Soil	04/24/18 15:47	04/28/18 09:15
SS11-S-0.5	A8D0903-22	Soil	04/24/18 15:47	04/28/18 09:15
SS12-S-0.5	A8D0903-23	Soil	04/24/18 16:10	04/28/18 09:15
SS13-S-0.5	A8D0903-24	Soil	04/24/18 16:22	04/28/18 09:15
SS14-S-0.5	A8D0903-25	Soil	04/24/18 17:13	04/28/18 09:15
SS15-S-0.5	A8D0903-26	Soil	04/24/18 17:22	04/28/18 09:15
DU17-S-0.5(As Received)	A8D0903-27	Soil	04/25/18 07:45	04/28/18 09:15
DU17-S-0.5(After Processing)	A8D0903-28	Soil	04/25/18 07:45	04/28/18 09:15
SS16-S-0.5	A8D0903-29	Soil	04/25/18 08:12	04/28/18 09:15
SS17-S-0.5	A8D0903-30	Soil	04/25/18 08:50	04/28/18 09:15
SS18-S-0.5	A8D0903-31	Soil	04/25/18 09:50	04/28/18 09:15
SS19-S-0.5	A8D0903-32	Soil	04/25/18 11:05	04/28/18 09:15
SS20-S-0.5	A8D0903-33	Soil	04/25/18 11:20	04/28/18 09:15
DU15-S-0.5(As Received)	A8D0903-34	Soil	04/25/18 11:50	04/28/18 09:15

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
DU15-S-0.5(After Processing)	A8D0903-35	Soil	04/25/18 11:50	04/28/18 09:15
SS21-S-0.5	A8D0903-36	Soil	04/25/18 12:00	04/28/18 09:15
SS22-S-0.5	A8D0903-37	Soil	04/25/18 12:17	04/28/18 09:15
SS23-S-0.5	A8D0903-38	Soil	04/25/18 12:28	04/28/18 09:15
SS24-S-0.5	A8D0903-39	Soil	04/25/18 14:17	04/28/18 09:15
SS25-S-0.5	A8D0903-40	Soil	04/25/18 14:30	04/28/18 09:15
DU18-S-0.5(As Received)	A8D0903-41	Soil	04/25/18 15:20	04/28/18 09:15
DU18-S-0.5(After Processing)	A8D0903-42	Soil	04/25/18 15:20	04/28/18 09:15
SS26-S-0.5	A8D0903-43	Soil	04/25/18 15:20	04/28/18 09:15
SS27-S-0.5	A8D0903-44	Soil	04/25/18 15:35	04/28/18 09:15
SS28-S-0.5	A8D0903-45	Soil	04/25/18 15:45	04/28/18 09:15
SS29-S-0.5	A8D0903-46	Soil	04/25/18 16:00	04/28/18 09:15
SS30-S-0.5	A8D0903-47	Soil	04/25/18 16:05	04/28/18 09:15
DU02-S-0.5(As Received)	A8D0903-48	Soil	04/25/18 18:30	04/28/18 09:15
DU02-S-0.5(After Processing)	A8D0903-49	Soil	04/25/18 18:30	04/28/18 09:15
SS36-S-0.5	A8D0903-50	Soil	04/25/18 18:40	04/28/18 09:15
SS37-S-0.5	A8D0903-51	Soil	04/25/18 18:55	04/28/18 09:15
SS38-S-0.5	A8D0903-52	Soil	04/25/18 19:05	04/28/18 09:15
SS39-S-0.5	A8D0903-53	Soil	04/25/18 19:15	04/28/18 09:15
SS40-S-0.5	A8D0903-54	Soil	04/25/18 19:23	04/28/18 09:15
DU01-S-0.5(As Received)	A8D0903-55	Soil	04/25/18 17:05	04/28/18 09:15
DU01-S-0.5(After Processing)	A8D0903-56	Soil	04/25/18 17:05	04/28/18 09:15
SS31-S-0.5	A8D0903-57	Soil	04/25/18 17:05	04/28/18 09:15
SS32-S-0.5	A8D0903-58	Soil	04/25/18 17:20	04/28/18 09:15
SS33-S-0.5	A8D0903-59	Soil	04/25/18 17:30	04/28/18 09:15
SS34-S-0.5	A8D0903-60	Soil	04/25/18 17:55	04/28/18 09:15
SS35-S-0.5	A8D0903-61	Soil	04/25/18 18:05	04/28/18 09:15
DU13-S-0.5(As Received)	A8D0903-62	Soil	04/26/18 08:05	04/28/18 09:15
DU13-S-0.5(After Processing)	A8D0903-63	Soil	04/26/18 08:05	04/28/18 09:15
SS41-S-0.5	A8D0903-64	Soil	04/26/18 08:25	04/28/18 09:15
SS42-S-0.5	A8D0903-65	Soil	04/26/18 09:00	04/28/18 09:15
SS43-S-0.5	A8D0903-66	Soil	04/26/18 09:50	04/28/18 09:15
SS44-S-0.5	A8D0903-67	Soil	04/26/18 10:20	04/28/18 09:15
SS45-S-0.5	A8D0903-68	Soil	04/26/18 10:45	04/28/18 09:15



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
DU16-S-0.5(As Received)	A8D0903-69	Soil	04/26/18 12:45	04/28/18 09:15
DU16-S-0.5(After Processing)	A8D0903-70	Soil	04/26/18 12:45	04/28/18 09:15
SS46-S-0.5	A8D0903-71	Soil	04/26/18 13:00	04/28/18 09:15
SS47-S-0.5	A8D0903-72	Soil	04/26/18 13:25	04/28/18 09:15
SS48-S-0.5	A8D0903-73	Soil	04/26/18 13:50	04/28/18 09:15
SS49-S-0.5	A8D0903-74	Soil	04/26/18 14:30	04/28/18 09:15
SS50-S-0.5	A8D0903-75	Soil	04/26/18 14:50	04/28/18 09:15
DU11-S-0.5(As Received)	A8D0903-76	Soil	04/26/18 17:15	04/28/18 09:15
DU11-S-0.5(After Processing)	A8D0903-77	Soil	04/26/18 17:15	04/28/18 09:15
SS51-S-0.5	A8D0903-78	Soil	04/26/18 17:25	04/28/18 09:15
SS52-S-0.5	A8D0903-79	Soil	04/26/18 17:35	04/28/18 09:15
SS53-S-0.5	A8D0903-80	Soil	04/26/18 17:40	04/28/18 09:15
SS54-S-0.5	A8D0903-81	Soil	04/26/18 17:50	04/28/18 09:15
SS55-S-0.5	A8D0903-82	Soil	04/26/18 18:00	04/28/18 09:15
DU08-S-0.5(As Received)	A8D0903-83	Soil	04/26/18 18:15	04/28/18 09:15
DU08-S-0.5(After Processing)	A8D0903-84	Soil	04/26/18 18:15	04/28/18 09:15
SS56-S-0.5	A8D0903-85	Soil	04/26/18 18:25	04/28/18 09:15
SS57-S-0.5	A8D0903-86	Soil	04/26/18 18:50	04/28/18 09:15
SS58-S-0.5	A8D0903-87	Soil	04/26/18 19:00	04/28/18 09:15
SS59-S-0.5	A8D0903-88	Soil	04/26/18 19:10	04/28/18 09:15
SS60-S-0.5	A8D0903-89	Soil	04/26/18 19:30	04/28/18 09:15
DU05-S-0.5(As Received)	A8D0903-90	Soil	04/26/18 20:00	04/28/18 09:15
DU05-S-0.5(After Processing)	A8D0903-91	Soil	04/26/18 20:00	04/28/18 09:15
SS61-S-0.5	A8D0903-92	Soil	04/26/18 20:15	04/28/18 09:15
SS62-S-0.5	A8D0903-93	Soil	04/26/18 20:20	04/28/18 09:15
SS63-S-0.5	A8D0903-94	Soil	04/26/18 20:30	04/28/18 09:15
SS64-S-0.5	A8D0903-95	Soil	04/26/18 20:40	04/28/18 09:15
SS65-S-0.5	A8D0903-96	Soil	04/26/18 20:50	04/28/18 09:15
DU14-S-0.5(As Received)	A8D0903-97	Soil	04/27/18 08:05	04/28/18 09:15
DU14-S-0.5(After Processing)	A8D0903-98	Soil	04/27/18 08:05	04/28/18 09:15
SS66-S-0.5	A8D0903-99	Soil	04/27/18 08:05	04/28/18 09:15
SS67-S-0.5	A8D0903-AA	Soil	04/27/18 08:20	04/28/18 09:15
SS68-S-0.5	A8D0903-AB	Soil	04/27/18 08:45	04/28/18 09:15
SS69-S-0.5	A8D0903-AC	Soil	04/27/18 09:00	04/28/18 09:15



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS70-S-0.5	A8D0903-AD	Soil	04/27/18 09:45	04/28/18 09:15
DU10A-S-0.5(As Received)	A8D0903-AE	Soil	04/27/18 10:15	04/28/18 09:15
DU10A-S-0.5(After Processing)	A8D0903-AF	Soil	04/27/18 10:15	04/28/18 09:15
SS71-S-0.5	A8D0903-AG	Soil	04/27/18 10:30	04/28/18 09:15
SS72-S-0.5	A8D0903-AH	Soil	04/27/18 11:00	04/28/18 09:15
SS73-S-0.5	A8D0903-AI	Soil	04/27/18 11:20	04/28/18 09:15
SS74-S-0.5	A8D0903-AJ	Soil	04/27/18 11:40	04/28/18 09:15
SS75-S-0.5	A8D0903-AK	Soil	04/27/18 12:00	04/28/18 09:15
DU10C-S-0.5(As Received)	A8D0903-AL	Soil	04/27/18 13:00	04/28/18 09:15
DU10C-S-0.5(After Processing)	A8D0903-AM	Soil	04/27/18 13:00	04/28/18 09:15
SS81-S-0.5	A8D0903-AN	Soil	04/27/18 13:10	04/28/18 09:15
SS82-S-0.5	A8D0903-AO	Soil	04/27/18 13:20	04/28/18 09:15
SS83-S-0.5	A8D0903-AP	Soil	04/27/18 13:30	04/28/18 09:15
SS84-S-0.5	A8D0903-AQ	Soil	04/27/18 15:10	04/28/18 09:15
SS85-S-0.5	A8D0903-AR	Soil	04/27/18 15:30	04/28/18 09:15
DU10B-S-0.5(As Received)	A8D0903-AS	Soil	04/27/18 13:55	04/28/18 09:15
DU10B-S-0.5(After Processing)	A8D0903-AT	Soil	04/27/18 13:55	04/28/18 09:15
SS76-S-0.5	A8D0903-AU	Soil	04/27/18 13:55	04/28/18 09:15
SS77-S-0.5	A8D0903-AV	Soil	04/27/18 14:00	04/28/18 09:15
SS78-S-0.5	A8D0903-AW	Soil	04/27/18 14:05	04/28/18 09:15
SS79-S-0.5	A8D0903-AX	Soil	04/27/18 14:18	04/28/18 09:15
SS80-S-0.5	A8D0903-AY	Soil	04/27/18 14:30	04/28/18 09:15
DU03-S-0.5(As Received)	A8D0903-AZ	Soil	04/27/18 16:00	04/28/18 09:15
DU03-S-0.5(After Processing)	A8D0903-BA	Soil	04/27/18 16:00	04/28/18 09:15
SS86-S-0.5	A8D0903-BB	Soil	04/27/18 16:10	04/28/18 09:15
SS87-S-0.5	A8D0903-BC	Soil	04/27/18 16:15	04/28/18 09:15
SS88-S-0.5	A8D0903-BD	Soil	04/27/18 16:30	04/28/18 09:15
SS89-S-0.5	A8D0903-BE	Soil	04/27/18 16:40	04/28/18 09:15
SS90-S-0.5	A8D0903-BF	Soil	04/27/18 17:00	04/28/18 09:15
DU12-S-0.5(As Received)	A8D0903-BG	Soil	04/27/18 17:20	04/28/18 09:15
DU12-S-0.5(After Processing)	A8D0903-BH	Soil	04/27/18 17:20	04/28/18 09:15
SS91-S-0.5	A8D0903-BI	Soil	04/27/18 17:30	04/28/18 09:15
SS92-S-0.5	A8D0903-BJ	Soil	04/27/18 17:55	04/28/18 09:15
SS93-S-0.5	A8D0903-BK	Soil	04/27/18 18:20	04/28/18 09:15



Apex Laboratories, LLC

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AMENDED REPORT

<u>Maul Foster & Alongi, INC-Bellingham</u> 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: <u>0624.04.10-03--Northern State Hospital</u> Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS94-S-0.5	A8D0903-BL	Soil	04/27/18 18:40	04/28/18 09:15
SS95-S-0.5	A8D0903-BM	Soil	04/27/18 18:50	04/28/18 09:15

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The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham
1329 North State Street, Suite 301
Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**
Project Number: **0624.04.10**
Project Manager: **Heather Good**

Report ID:
A8D0903 - 05 25 18 1253

ANALYTICAL CASE NARRATIVE

Work Order: A8D0903

Amended Report: EPA 6020A Mercury in Soil

Revised Source Results and Recoveries for Matrix Spike Batch QC Samples:

Raw data showed interferences for Mercury in the samples and Batch QC due to sample preparation steps employing Tungsten. The Detection Limits for the samples and matrix spikes were raised above the Tungsten interference in the samples, resulting in high recoveries for the Matrix Spike compounds, as the interference was not being corrected for.

However, due to the fact that the Detection Limit for the Matrix Spike was set just equal to the hit in the source sample, the report showed a value for the source samples for both 8050598-MS3 and MS4. These are now correctly reported as Non Detect (ND).

In addition, the Recovery for 8050598-MS3 has now changed to 201% from 146%, due to these changes.

David Jack
Technical Manager
5/25/2018

Subcontract

This report is not complete without the attached subcontract laboratory report for Dioxins and Furans that was subcontracted to Cape Fear Analytical.

Lisa Domenighini
Client Services Manager
5/17/18



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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ANALYTICAL SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
GP53-S-0.5 (A8D0903-01)			Matrix: Soil			Batch: 8050452		
Diesel	ND	9.79	25.0	mg/kg dry	1	05/04/18	NWTPH-Dx	
Oil	82.0	19.6	50.0	mg/kg dry	1	05/04/18	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 84 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>05/04/18</i>	<i>NWTPH-Dx</i>
GP53-S-1.0 (A8D0903-02)			Matrix: Soil			Batch: 8050452		
Diesel	ND	10.3	25.0	mg/kg dry	1	05/04/18	NWTPH-Dx	
Oil	ND	20.6	50.0	mg/kg dry	1	05/04/18	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 62 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>05/04/18</i>	<i>NWTPH-Dx</i>
GP53-S-2.0 (A8D0903-03)			Matrix: Soil			Batch: 8050452		
Diesel	ND	13.6	27.3	mg/kg dry	1	05/04/18	NWTPH-Dx	
Oil	ND	27.3	54.5	mg/kg dry	1	05/04/18	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 79 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>05/04/18</i>	<i>NWTPH-Dx</i>
GP54-S-0.5 (A8D0903-04)			Matrix: Soil			Batch: 8050452		
Diesel	ND	11.2	25.0	mg/kg dry	1	05/04/18	NWTPH-Dx	
Oil	131	22.4	50.0	mg/kg dry	1	05/04/18	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 88 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>05/04/18</i>	<i>NWTPH-Dx</i>
GP54-S-5.5 (A8D0903-05)			Matrix: Soil			Batch: 8050452		
Diesel	ND	13.0	25.9	mg/kg dry	1	05/04/18	NWTPH-Dx	
Oil	ND	25.9	51.9	mg/kg dry	1	05/04/18	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 84 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>05/04/18</i>	<i>NWTPH-Dx</i>



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham
1329 North State Street, Suite 301
Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**
Project Number: **0624.04.10**
Project Manager: **Heather Good**

Report ID:
A8D0903 - 05 25 18 1253

ANALYTICAL SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
GP53-S-0.5 (A8D0903-01RE1)			Matrix: Soil			Batch: 8050382		
Benz(a)anthracene	15.0	5.16	10.3	ug/kg dry	1	05/03/18	EPA 8270D (SIM)	M-05
Benzo(a)pyrene	14.8	5.16	10.3	ug/kg dry	1	05/03/18	EPA 8270D (SIM)	
Benzo(b)fluoranthene	20.0	5.16	10.3	ug/kg dry	1	05/03/18	EPA 8270D (SIM)	M-05
Benzo(k)fluoranthene	6.11	5.16	10.3	ug/kg dry	1	05/03/18	EPA 8270D (SIM)	J, M-05
Chrysene	17.8	5.16	10.3	ug/kg dry	1	05/03/18	EPA 8270D (SIM)	M-05
Dibenz(a,h)anthracene	ND	5.16	10.3	ug/kg dry	1	05/03/18	EPA 8270D (SIM)	
Indeno(1,2,3-cd)pyrene	12.3	5.16	10.3	ug/kg dry	1	05/03/18	EPA 8270D (SIM)	
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 85 %</i>		<i>Limits: 44-120 %</i>		<i>1</i>	<i>05/03/18</i>	<i>EPA 8270D (SIM)</i>
<i>p-Terphenyl-d14 (Surr)</i>		<i>85 %</i>		<i>54-127 %</i>		<i>1</i>	<i>05/03/18</i>	<i>EPA 8270D (SIM)</i>
GP53-S-1.0 (A8D0903-02)			Matrix: Soil			Batch: 8050382		
Benz(a)anthracene	ND	5.43	10.9	ug/kg dry	1	05/02/18	EPA 8270D (SIM)	
Benzo(a)pyrene	ND	5.43	10.9	ug/kg dry	1	05/02/18	EPA 8270D (SIM)	
Benzo(b)fluoranthene	ND	5.43	10.9	ug/kg dry	1	05/02/18	EPA 8270D (SIM)	
Benzo(k)fluoranthene	ND	5.43	10.9	ug/kg dry	1	05/02/18	EPA 8270D (SIM)	
Chrysene	ND	5.43	10.9	ug/kg dry	1	05/02/18	EPA 8270D (SIM)	
Dibenz(a,h)anthracene	ND	5.43	10.9	ug/kg dry	1	05/02/18	EPA 8270D (SIM)	
Indeno(1,2,3-cd)pyrene	ND	5.43	10.9	ug/kg dry	1	05/02/18	EPA 8270D (SIM)	
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 86 %</i>		<i>Limits: 44-120 %</i>		<i>1</i>	<i>05/02/18</i>	<i>EPA 8270D (SIM)</i>
<i>p-Terphenyl-d14 (Surr)</i>		<i>86 %</i>		<i>54-127 %</i>		<i>1</i>	<i>05/02/18</i>	<i>EPA 8270D (SIM)</i>
GP53-S-2.0 (A8D0903-03)			Matrix: Soil			Batch: 8050382		
Benz(a)anthracene	ND	6.70	13.4	ug/kg dry	1	05/02/18	EPA 8270D (SIM)	
Benzo(a)pyrene	ND	6.70	13.4	ug/kg dry	1	05/02/18	EPA 8270D (SIM)	
Benzo(b)fluoranthene	ND	6.70	13.4	ug/kg dry	1	05/02/18	EPA 8270D (SIM)	
Benzo(k)fluoranthene	ND	6.70	13.4	ug/kg dry	1	05/02/18	EPA 8270D (SIM)	
Chrysene	ND	6.70	13.4	ug/kg dry	1	05/02/18	EPA 8270D (SIM)	
Dibenz(a,h)anthracene	ND	6.70	13.4	ug/kg dry	1	05/02/18	EPA 8270D (SIM)	
Indeno(1,2,3-cd)pyrene	ND	6.70	13.4	ug/kg dry	1	05/02/18	EPA 8270D (SIM)	
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 77 %</i>		<i>Limits: 44-120 %</i>		<i>1</i>	<i>05/02/18</i>	<i>EPA 8270D (SIM)</i>
<i>p-Terphenyl-d14 (Surr)</i>		<i>72 %</i>		<i>54-127 %</i>		<i>1</i>	<i>05/02/18</i>	<i>EPA 8270D (SIM)</i>
GP54-S-0.5 (A8D0903-04)			Matrix: Soil			Batch: 8050382		
Benz(a)anthracene	76.0	27.9	55.7	ug/kg dry	5	05/02/18	EPA 8270D (SIM)	M-05
Benzo(a)pyrene	52.9	27.9	55.7	ug/kg dry	5	05/02/18	EPA 8270D (SIM)	J
Benzo(b)fluoranthene	75.8	27.9	55.7	ug/kg dry	5	05/02/18	EPA 8270D (SIM)	M-05
Benzo(k)fluoranthene	ND	27.9	55.7	ug/kg dry	5	05/02/18	EPA 8270D (SIM)	
Chrysene	95.8	27.9	55.7	ug/kg dry	5	05/02/18	EPA 8270D (SIM)	M-05

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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ANALYTICAL SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes	
GP54-S-0.5 (A8D0903-04)			Matrix: Soil			Batch: 8050382			
Dibenz(a,h)anthracene	ND	27.9	55.7	ug/kg dry	5	05/02/18	EPA 8270D (SIM)		
Indeno(1,2,3-cd)pyrene	34.7	27.9	55.7	ug/kg dry	5	05/02/18	EPA 8270D (SIM)	J	
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 95 %</i>		<i>Limits: 44-120 %</i>		<i>5</i>	<i>05/02/18</i>	<i>EPA 8270D (SIM)</i>	
<i>p-Terphenyl-d14 (Surr)</i>				<i>97 %</i>		<i>54-127 %</i>	<i>5</i>	<i>05/02/18</i>	<i>EPA 8270D (SIM)</i>
GP54-S-5.5 (A8D0903-05)			Matrix: Soil			Batch: 8050382			
Benz(a)anthracene	ND	6.43	12.9	ug/kg dry	1	05/02/18	EPA 8270D (SIM)		
Benzo(a)pyrene	ND	6.43	12.9	ug/kg dry	1	05/02/18	EPA 8270D (SIM)		
Benzo(b)fluoranthene	ND	6.43	12.9	ug/kg dry	1	05/02/18	EPA 8270D (SIM)		
Benzo(k)fluoranthene	ND	6.43	12.9	ug/kg dry	1	05/02/18	EPA 8270D (SIM)		
Chrysene	ND	6.43	12.9	ug/kg dry	1	05/02/18	EPA 8270D (SIM)		
Dibenz(a,h)anthracene	ND	6.43	12.9	ug/kg dry	1	05/02/18	EPA 8270D (SIM)		
Indeno(1,2,3-cd)pyrene	ND	6.43	12.9	ug/kg dry	1	05/02/18	EPA 8270D (SIM)		
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 78 %</i>		<i>Limits: 44-120 %</i>		<i>1</i>	<i>05/02/18</i>	<i>EPA 8270D (SIM)</i>	
<i>p-Terphenyl-d14 (Surr)</i>				<i>75 %</i>		<i>54-127 %</i>	<i>1</i>	<i>05/02/18</i>	<i>EPA 8270D (SIM)</i>



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU06-S-0.5(After Processing) (A8D0903-07)		Matrix: Soil						
Batch: 8050598								
Arsenic	10.2	0.550	1.10	mg/kg dry	10	05/12/18	EPA 6020A	
Barium	122	0.550	1.10	mg/kg dry	10	05/12/18	EPA 6020A	
Cadmium	0.246	0.110	0.220	mg/kg dry	10	05/12/18	EPA 6020A	Q-42
Chromium	64.3	0.550	1.10	mg/kg dry	10	05/12/18	EPA 6020A	
Copper	45.6	1.10	2.20	mg/kg dry	10	05/12/18	EPA 6020A	
Lead	27.8	0.110	0.220	mg/kg dry	10	05/12/18	EPA 6020A	
Mercury	ND	0.594	0.594	mg/kg dry	10	05/12/18	EPA 6020A	R-01
Selenium	ND	0.550	1.10	mg/kg dry	10	05/12/18	EPA 6020A	Q-42
Silver	ND	0.550	1.10	mg/kg dry	10	05/12/18	EPA 6020A	
Zinc	113	2.20	4.40	mg/kg dry	10	05/12/18	EPA 6020A	
DU04-S-0.5(After Processing) (A8D0903-14)		Matrix: Soil						
Batch: 8050598								
Arsenic	10.4	0.566	1.13	mg/kg dry	10	05/12/18	EPA 6020A	
Barium	153	0.566	1.13	mg/kg dry	10	05/12/18	EPA 6020A	
Cadmium	0.282	0.113	0.226	mg/kg dry	10	05/12/18	EPA 6020A	
Chromium	80.8	0.566	1.13	mg/kg dry	10	05/12/18	EPA 6020A	
Copper	44.1	1.13	2.26	mg/kg dry	10	05/12/18	EPA 6020A	
Lead	128	0.113	0.226	mg/kg dry	10	05/12/18	EPA 6020A	
Selenium	0.567	0.566	1.13	mg/kg dry	10	05/12/18	EPA 6020A	J
Silver	ND	0.566	1.13	mg/kg dry	10	05/12/18	EPA 6020A	
Zinc	128	2.26	4.53	mg/kg dry	10	05/12/18	EPA 6020A	
DU04-S-0.5(After Processing) (A8D0903-14RE1)		Matrix: Soil						
Batch: 8050598								
Mercury	ND	1.25	1.25	mg/kg dry	10	05/15/18	EPA 6020A	R-01
DU07-S-0.5(After Processing) (A8D0903-21)		Matrix: Soil						
Batch: 8050598								
Arsenic	9.31	0.519	1.04	mg/kg dry	10	05/12/18	EPA 6020A	
Barium	124	0.519	1.04	mg/kg dry	10	05/12/18	EPA 6020A	
Cadmium	0.243	0.104	0.208	mg/kg dry	10	05/12/18	EPA 6020A	
Chromium	61.7	0.519	1.04	mg/kg dry	10	05/12/18	EPA 6020A	
Copper	45.6	1.04	2.08	mg/kg dry	10	05/12/18	EPA 6020A	
Lead	27.1	0.104	0.208	mg/kg dry	10	05/12/18	EPA 6020A	
Selenium	ND	0.519	1.04	mg/kg dry	10	05/12/18	EPA 6020A	
Silver	ND	0.519	1.04	mg/kg dry	10	05/12/18	EPA 6020A	
Zinc	108	2.08	4.15	mg/kg dry	10	05/12/18	EPA 6020A	

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU07-S-0.5(After Processing) (A8D0903-21RE1) Matrix: Soil								
Batch: 8050598								
Mercury	ND	2.12	2.12	mg/kg dry	10	05/15/18	EPA 6020A	R-01
DU17-S-0.5(After Processing) (A8D0903-28) Matrix: Soil								
Batch: 8050598								
Arsenic	10.6	0.579	1.16	mg/kg dry	10	05/12/18	EPA 6020A	
Barium	119	0.579	1.16	mg/kg dry	10	05/12/18	EPA 6020A	
Cadmium	0.216	0.116	0.232	mg/kg dry	10	05/12/18	EPA 6020A	J
Chromium	52.2	0.579	1.16	mg/kg dry	10	05/12/18	EPA 6020A	
Copper	42.7	1.16	2.32	mg/kg dry	10	05/12/18	EPA 6020A	
Lead	22.5	0.116	0.232	mg/kg dry	10	05/12/18	EPA 6020A	
Selenium	ND	0.579	1.16	mg/kg dry	10	05/12/18	EPA 6020A	
Silver	ND	0.579	1.16	mg/kg dry	10	05/12/18	EPA 6020A	
Zinc	90.4	2.32	4.63	mg/kg dry	10	05/12/18	EPA 6020A	
DU17-S-0.5(After Processing) (A8D0903-28RE1) Matrix: Soil								
Batch: 8050598								
Mercury	ND	0.776	0.776	mg/kg dry	10	05/15/18	EPA 6020A	R-01
SS16-S-0.5 (A8D0903-29) Matrix: Soil								
Batch: 8050484								
Arsenic	13.9	0.938	1.88	mg/kg dry	10	05/07/18	EPA 6020A	
Barium	531	0.938	1.88	mg/kg dry	10	05/07/18	EPA 6020A	
Cadmium	ND	0.938	1.88	mg/kg dry	10	05/07/18	EPA 6020A	
Chromium	71.1	0.938	1.88	mg/kg dry	10	05/07/18	EPA 6020A	
Copper	66.6	3.75	7.50	mg/kg dry	10	05/07/18	EPA 6020A	
Lead	96.2	0.188	0.375	mg/kg dry	10	05/07/18	EPA 6020A	
Mercury	ND	0.150	0.300	mg/kg dry	10	05/07/18	EPA 6020A	
Selenium	ND	0.938	1.88	mg/kg dry	10	05/07/18	EPA 6020A	
Silver	0.390	0.188	0.375	mg/kg dry	10	05/07/18	EPA 6020A	
Zinc	267	3.75	7.50	mg/kg dry	10	05/07/18	EPA 6020A	
SS17-S-0.5 (A8D0903-30) Matrix: Soil								
Batch: 8050484								
Arsenic	15.2	0.887	1.77	mg/kg dry	10	05/07/18	EPA 6020A	
Barium	118	0.887	1.77	mg/kg dry	10	05/07/18	EPA 6020A	
Cadmium	ND	0.887	1.77	mg/kg dry	10	05/07/18	EPA 6020A	
Chromium	56.5	0.887	1.77	mg/kg dry	10	05/07/18	EPA 6020A	

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
SS17-S-0.5 (A8D0903-30) Matrix: Soil								
Copper	28.9	3.55	7.10	mg/kg dry	10	05/07/18	EPA 6020A	
Lead	40.5	0.177	0.355	mg/kg dry	10	05/07/18	EPA 6020A	
Mercury	0.183	0.142	0.284	mg/kg dry	10	05/07/18	EPA 6020A	J
Selenium	ND	0.887	1.77	mg/kg dry	10	05/07/18	EPA 6020A	
Silver	0.406	0.177	0.355	mg/kg dry	10	05/07/18	EPA 6020A	
Zinc	108	3.55	7.10	mg/kg dry	10	05/07/18	EPA 6020A	
SS18-S-0.5 (A8D0903-31) Matrix: Soil								
Batch: 8050484								
Arsenic	8.01	0.942	1.88	mg/kg dry	10	05/07/18	EPA 6020A	
Barium	122	0.942	1.88	mg/kg dry	10	05/07/18	EPA 6020A	
Cadmium	ND	0.942	1.88	mg/kg dry	10	05/07/18	EPA 6020A	
Chromium	39.5	0.942	1.88	mg/kg dry	10	05/07/18	EPA 6020A	
Copper	27.8	3.77	7.54	mg/kg dry	10	05/07/18	EPA 6020A	
Lead	42.0	0.188	0.377	mg/kg dry	10	05/07/18	EPA 6020A	
Mercury	ND	0.151	0.301	mg/kg dry	10	05/07/18	EPA 6020A	
Selenium	ND	0.942	1.88	mg/kg dry	10	05/07/18	EPA 6020A	
Silver	0.191	0.188	0.377	mg/kg dry	10	05/07/18	EPA 6020A	J
Zinc	75.2	3.77	7.54	mg/kg dry	10	05/07/18	EPA 6020A	
SS19-S-0.5 (A8D0903-32) Matrix: Soil								
Batch: 8050484								
Arsenic	8.65	1.16	2.32	mg/kg dry	10	05/07/18	EPA 6020A	
Barium	147	1.16	2.32	mg/kg dry	10	05/07/18	EPA 6020A	
Cadmium	ND	1.16	2.32	mg/kg dry	10	05/07/18	EPA 6020A	
Chromium	67.8	1.16	2.32	mg/kg dry	10	05/07/18	EPA 6020A	
Copper	34.3	4.64	9.28	mg/kg dry	10	05/07/18	EPA 6020A	
Lead	39.9	0.232	0.464	mg/kg dry	10	05/07/18	EPA 6020A	
Mercury	ND	0.186	0.371	mg/kg dry	10	05/07/18	EPA 6020A	
Selenium	ND	1.16	2.32	mg/kg dry	10	05/07/18	EPA 6020A	
Silver	ND	0.232	0.464	mg/kg dry	10	05/07/18	EPA 6020A	
Zinc	87.8	4.64	9.28	mg/kg dry	10	05/07/18	EPA 6020A	
SS20-S-0.5 (A8D0903-33) Matrix: Soil								
Batch: 8050484								
Arsenic	15.1	0.790	1.58	mg/kg dry	10	05/07/18	EPA 6020A	
Barium	158	0.790	1.58	mg/kg dry	10	05/07/18	EPA 6020A	
Cadmium	ND	0.790	1.58	mg/kg dry	10	05/07/18	EPA 6020A	
Chromium	91.1	0.790	1.58	mg/kg dry	10	05/07/18	EPA 6020A	

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
SS20-S-0.5 (A8D0903-33)		Matrix: Soil						
Copper	54.7	3.16	6.32	mg/kg dry	10	05/07/18	EPA 6020A	
Lead	14.4	0.158	0.316	mg/kg dry	10	05/07/18	EPA 6020A	
Mercury	ND	0.126	0.253	mg/kg dry	10	05/07/18	EPA 6020A	
Silver	0.316	0.158	0.316	mg/kg dry	10	05/07/18	EPA 6020A	
Zinc	133	3.16	6.32	mg/kg dry	10	05/07/18	EPA 6020A	
SS20-S-0.5 (A8D0903-33RE1)		Matrix: Soil						
Batch: 8050484								
Selenium	ND	0.790	1.58	mg/kg dry	10	05/07/18	EPA 6020A	
DU15-S-0.5(After Processing) (A8D0903-35)		Matrix: Soil						
Batch: 8050598								
Arsenic	9.90	0.575	1.15	mg/kg dry	10	05/12/18	EPA 6020A	
Barium	100	0.575	1.15	mg/kg dry	10	05/12/18	EPA 6020A	
Cadmium	0.334	0.115	0.230	mg/kg dry	10	05/12/18	EPA 6020A	
Chromium	64.3	0.575	1.15	mg/kg dry	10	05/12/18	EPA 6020A	
Copper	32.5	1.15	2.30	mg/kg dry	10	05/12/18	EPA 6020A	
Lead	12.9	0.115	0.230	mg/kg dry	10	05/12/18	EPA 6020A	
Selenium	ND	0.575	1.15	mg/kg dry	10	05/12/18	EPA 6020A	
Silver	ND	0.575	1.15	mg/kg dry	10	05/12/18	EPA 6020A	
Zinc	88.4	2.30	4.60	mg/kg dry	10	05/12/18	EPA 6020A	
DU15-S-0.5(After Processing) (A8D0903-35RE1)		Matrix: Soil						
Batch: 8050598								
Mercury	ND	1.38	1.38	mg/kg dry	10	05/15/18	EPA 6020A	R-01
DU18-S-0.5(After Processing) (A8D0903-42)		Matrix: Soil						
Batch: 8050598								
Arsenic	8.12	0.530	1.06	mg/kg dry	10	05/12/18	EPA 6020A	
Barium	93.1	0.530	1.06	mg/kg dry	10	05/12/18	EPA 6020A	
Cadmium	0.188	0.106	0.212	mg/kg dry	10	05/12/18	EPA 6020A	J
Chromium	49.7	0.530	1.06	mg/kg dry	10	05/12/18	EPA 6020A	
Copper	35.2	1.06	2.12	mg/kg dry	10	05/12/18	EPA 6020A	
Lead	11.3	0.106	0.212	mg/kg dry	10	05/12/18	EPA 6020A	
Selenium	ND	0.530	1.06	mg/kg dry	10	05/12/18	EPA 6020A	
Silver	ND	0.530	1.06	mg/kg dry	10	05/12/18	EPA 6020A	
Zinc	72.2	2.12	4.24	mg/kg dry	10	05/12/18	EPA 6020A	

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AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU18-S-0.5(After Processing) (A8D0903-42RE1)		Matrix: Soil						
Batch: 8050598								
Mercury	ND	2.73	2.73	mg/kg dry	10	05/15/18	EPA 6020A	R-01
DU02-S-0.5(After Processing) (A8D0903-49)		Matrix: Soil						
Batch: 8050598								
Arsenic	14.7	0.521	1.04	mg/kg dry	10	05/12/18	EPA 6020A	
Barium	193	0.521	1.04	mg/kg dry	10	05/12/18	EPA 6020A	
Cadmium	0.342	0.104	0.208	mg/kg dry	10	05/12/18	EPA 6020A	
Chromium	82.7	0.521	1.04	mg/kg dry	10	05/12/18	EPA 6020A	
Copper	204	1.04	2.08	mg/kg dry	10	05/12/18	EPA 6020A	
Lead	89.0	0.104	0.208	mg/kg dry	10	05/12/18	EPA 6020A	
Selenium	ND	0.521	1.04	mg/kg dry	10	05/12/18	EPA 6020A	
Silver	ND	0.521	1.04	mg/kg dry	10	05/12/18	EPA 6020A	
Zinc	221	2.08	4.17	mg/kg dry	10	05/12/18	EPA 6020A	
DU02-S-0.5(After Processing) (A8D0903-49RE1)		Matrix: Soil						
Batch: 8050598								
Mercury	ND	2.46	2.46	mg/kg dry	10	05/15/18	EPA 6020A	R-01
DU01-S-0.5(After Processing) (A8D0903-56)		Matrix: Soil						
Batch: 8050598								
Arsenic	8.87	0.523	1.05	mg/kg dry	10	05/12/18	EPA 6020A	
Barium	154	0.523	1.05	mg/kg dry	10	05/12/18	EPA 6020A	
Cadmium	0.358	0.105	0.209	mg/kg dry	10	05/12/18	EPA 6020A	
Chromium	59.6	0.523	1.05	mg/kg dry	10	05/12/18	EPA 6020A	
Copper	60.5	1.05	2.09	mg/kg dry	10	05/12/18	EPA 6020A	
Lead	48.9	0.105	0.209	mg/kg dry	10	05/12/18	EPA 6020A	
Selenium	ND	0.523	1.05	mg/kg dry	10	05/12/18	EPA 6020A	
Silver	ND	0.523	1.05	mg/kg dry	10	05/12/18	EPA 6020A	
Zinc	121	2.09	4.18	mg/kg dry	10	05/12/18	EPA 6020A	
DU01-S-0.5(After Processing) (A8D0903-56RE1)		Matrix: Soil						
Batch: 8050598								
Mercury	ND	1.80	1.80	mg/kg dry	10	05/15/18	EPA 6020A	R-01
DU13-S-0.5(After Processing) (A8D0903-63)		Matrix: Soil						
Batch: 8050598								
Arsenic	9.11	0.496	0.992	mg/kg dry	10	05/12/18	EPA 6020A	

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham
 1329 North State Street, Suite 301
 Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**
 Project Number: **0624.04.10**
 Project Manager: **Heather Good**

Report ID:
A8D0903 - 05 25 18 1253

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU13-S-0.5(After Processing) (A8D0903-63)				Matrix: Soil				
Barium	93.7	0.496	0.992	mg/kg dry	10	05/12/18	EPA 6020A	
Cadmium	0.249	0.0992	0.198	mg/kg dry	10	05/12/18	EPA 6020A	
Chromium	92.4	0.496	0.992	mg/kg dry	10	05/12/18	EPA 6020A	
Copper	40.5	0.992	1.98	mg/kg dry	10	05/12/18	EPA 6020A	
Lead	14.7	0.0992	0.198	mg/kg dry	10	05/12/18	EPA 6020A	
Selenium	ND	0.496	0.992	mg/kg dry	10	05/12/18	EPA 6020A	
Silver	ND	0.496	0.992	mg/kg dry	10	05/12/18	EPA 6020A	
Zinc	82.4	1.98	3.97	mg/kg dry	10	05/12/18	EPA 6020A	
DU13-S-0.5(After Processing) (A8D0903-63RE1)				Matrix: Soil				
<u>Batch: 8050598</u>								
Mercury	ND	1.77	1.77	mg/kg dry	10	05/15/18	EPA 6020A	R-01
DU16-S-0.5(After Processing) (A8D0903-70)				Matrix: Soil				
<u>Batch: 8050598</u>								
Arsenic	8.67	0.572	1.14	mg/kg dry	10	05/12/18	EPA 6020A	
Barium	120	0.572	1.14	mg/kg dry	10	05/12/18	EPA 6020A	
Cadmium	0.182	0.114	0.229	mg/kg dry	10	05/12/18	EPA 6020A	J
Chromium	40.8	0.572	1.14	mg/kg dry	10	05/12/18	EPA 6020A	
Copper	26.7	1.14	2.29	mg/kg dry	10	05/12/18	EPA 6020A	
Lead	16.3	0.114	0.229	mg/kg dry	10	05/12/18	EPA 6020A	
Selenium	0.585	0.572	1.14	mg/kg dry	10	05/12/18	EPA 6020A	J
Silver	ND	0.572	1.14	mg/kg dry	10	05/12/18	EPA 6020A	
Zinc	77.7	2.29	4.57	mg/kg dry	10	05/12/18	EPA 6020A	
DU16-S-0.5(After Processing) (A8D0903-70RE1)				Matrix: Soil				
<u>Batch: 8050598</u>								
Mercury	ND	1.55	1.55	mg/kg dry	10	05/15/18	EPA 6020A	R-01
SS46-S-0.5 (A8D0903-71)				Matrix: Soil				
<u>Batch: 8050484</u>								
Arsenic	7.29	0.746	1.49	mg/kg dry	10	05/07/18	EPA 6020A	
Barium	160	0.746	1.49	mg/kg dry	10	05/07/18	EPA 6020A	
Cadmium	ND	0.746	1.49	mg/kg dry	10	05/07/18	EPA 6020A	
Chromium	51.2	0.746	1.49	mg/kg dry	10	05/07/18	EPA 6020A	
Copper	25.3	2.98	5.97	mg/kg dry	10	05/07/18	EPA 6020A	
Lead	20.7	0.149	0.298	mg/kg dry	10	05/07/18	EPA 6020A	
Mercury	ND	0.119	0.239	mg/kg dry	10	05/07/18	EPA 6020A	

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
SS46-S-0.5 (A8D0903-71)		Matrix: Soil						
Selenium	ND	0.746	1.49	mg/kg dry	10	05/07/18	EPA 6020A	
Silver	ND	0.149	0.298	mg/kg dry	10	05/07/18	EPA 6020A	
Zinc	64.4	2.98	5.97	mg/kg dry	10	05/07/18	EPA 6020A	
SS47-S-0.5 (A8D0903-72)		Matrix: Soil						
Batch: 8050484								
Arsenic	15.7	0.866	1.73	mg/kg dry	10	05/07/18	EPA 6020A	
Barium	345	0.866	1.73	mg/kg dry	10	05/07/18	EPA 6020A	
Cadmium	ND	0.866	1.73	mg/kg dry	10	05/07/18	EPA 6020A	
Chromium	25.9	0.866	1.73	mg/kg dry	10	05/07/18	EPA 6020A	
Copper	37.0	3.47	6.93	mg/kg dry	10	05/07/18	EPA 6020A	
Lead	37.4	0.173	0.347	mg/kg dry	10	05/07/18	EPA 6020A	
Mercury	ND	0.139	0.277	mg/kg dry	10	05/07/18	EPA 6020A	
Selenium	ND	0.866	1.73	mg/kg dry	10	05/07/18	EPA 6020A	
Silver	ND	0.173	0.347	mg/kg dry	10	05/07/18	EPA 6020A	
Zinc	157	3.47	6.93	mg/kg dry	10	05/07/18	EPA 6020A	
SS48-S-0.5 (A8D0903-73)		Matrix: Soil						
Batch: 8050484								
Arsenic	7.41	0.756	1.51	mg/kg dry	10	05/07/18	EPA 6020A	
Barium	105	0.756	1.51	mg/kg dry	10	05/07/18	EPA 6020A	
Cadmium	ND	0.756	1.51	mg/kg dry	10	05/07/18	EPA 6020A	
Chromium	37.4	0.756	1.51	mg/kg dry	10	05/07/18	EPA 6020A	
Copper	20.2	3.02	6.05	mg/kg dry	10	05/07/18	EPA 6020A	
Lead	13.9	0.151	0.302	mg/kg dry	10	05/07/18	EPA 6020A	
Mercury	0.143	0.121	0.242	mg/kg dry	10	05/07/18	EPA 6020A	J
Selenium	ND	0.756	1.51	mg/kg dry	10	05/07/18	EPA 6020A	
Silver	0.158	0.151	0.302	mg/kg dry	10	05/07/18	EPA 6020A	J
Zinc	83.3	3.02	6.05	mg/kg dry	10	05/07/18	EPA 6020A	
SS49-S-0.5 (A8D0903-74)		Matrix: Soil						
Batch: 8050484								
Arsenic	13.9	0.917	1.83	mg/kg dry	10	05/07/18	EPA 6020A	
Barium	138	0.917	1.83	mg/kg dry	10	05/07/18	EPA 6020A	
Cadmium	ND	0.917	1.83	mg/kg dry	10	05/07/18	EPA 6020A	
Chromium	73.6	0.917	1.83	mg/kg dry	10	05/07/18	EPA 6020A	
Copper	45.2	3.67	7.34	mg/kg dry	10	05/07/18	EPA 6020A	
Lead	25.4	0.183	0.367	mg/kg dry	10	05/07/18	EPA 6020A	
Mercury	0.183	0.147	0.294	mg/kg dry	10	05/07/18	EPA 6020A	J

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
SS49-S-0.5 (A8D0903-74) Matrix: Soil								
Selenium	1.20	0.917	1.83	mg/kg dry	10	05/07/18	EPA 6020A	J
Silver	0.679	0.183	0.367	mg/kg dry	10	05/07/18	EPA 6020A	
Zinc	115	3.67	7.34	mg/kg dry	10	05/07/18	EPA 6020A	
SS50-S-0.5 (A8D0903-75) Matrix: Soil								
Batch: 8050484								
Arsenic	10.8	0.828	1.66	mg/kg dry	10	05/07/18	EPA 6020A	
Barium	141	0.828	1.66	mg/kg dry	10	05/07/18	EPA 6020A	
Cadmium	ND	0.828	1.66	mg/kg dry	10	05/07/18	EPA 6020A	
Chromium	74.7	0.828	1.66	mg/kg dry	10	05/07/18	EPA 6020A	
Copper	40.7	3.31	6.62	mg/kg dry	10	05/07/18	EPA 6020A	
Lead	22.8	0.166	0.331	mg/kg dry	10	05/07/18	EPA 6020A	
Mercury	0.168	0.132	0.265	mg/kg dry	10	05/07/18	EPA 6020A	J
Selenium	0.859	0.828	1.66	mg/kg dry	10	05/07/18	EPA 6020A	J
Silver	0.581	0.166	0.331	mg/kg dry	10	05/07/18	EPA 6020A	
Zinc	121	3.31	6.62	mg/kg dry	10	05/07/18	EPA 6020A	
DU11-S-0.5(After Processing) (A8D0903-77) Matrix: Soil								
Batch: 8050598								
Arsenic	16.8	0.524	1.05	mg/kg dry	10	05/12/18	EPA 6020A	
Barium	107	0.524	1.05	mg/kg dry	10	05/12/18	EPA 6020A	
Cadmium	0.517	0.105	0.210	mg/kg dry	10	05/12/18	EPA 6020A	
Chromium	159	0.524	1.05	mg/kg dry	10	05/12/18	EPA 6020A	
Copper	59.5	1.05	2.10	mg/kg dry	10	05/12/18	EPA 6020A	
Lead	25.3	0.105	0.210	mg/kg dry	10	05/12/18	EPA 6020A	
Selenium	0.716	0.524	1.05	mg/kg dry	10	05/12/18	EPA 6020A	J
Silver	ND	0.524	1.05	mg/kg dry	10	05/12/18	EPA 6020A	
Zinc	111	2.10	4.19	mg/kg dry	10	05/12/18	EPA 6020A	
DU11-S-0.5(After Processing) (A8D0903-77RE1) Matrix: Soil								
Batch: 8050598								
Mercury	ND	2.10	2.10	mg/kg dry	10	05/15/18	EPA 6020A	R-01
DU08-S-0.5(After Processing) (A8D0903-84) Matrix: Soil								
Batch: 8050598								
Arsenic	11.9	0.564	1.13	mg/kg dry	10	05/12/18	EPA 6020A	
Barium	122	0.564	1.13	mg/kg dry	10	05/12/18	EPA 6020A	
Cadmium	0.382	0.113	0.226	mg/kg dry	10	05/12/18	EPA 6020A	
Chromium	72.9	0.564	1.13	mg/kg dry	10	05/12/18	EPA 6020A	

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AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU08-S-0.5(After Processing) (A8D0903-84)		Matrix: Soil						
Copper	42.3	1.13	2.26	mg/kg dry	10	05/12/18	EPA 6020A	
Lead	20.5	0.113	0.226	mg/kg dry	10	05/12/18	EPA 6020A	
Selenium	ND	0.564	1.13	mg/kg dry	10	05/12/18	EPA 6020A	
Silver	ND	0.564	1.13	mg/kg dry	10	05/12/18	EPA 6020A	
Zinc	100	2.26	4.52	mg/kg dry	10	05/12/18	EPA 6020A	
DU08-S-0.5(After Processing) (A8D0903-84RE1)		Matrix: Soil						
Batch: 8050598								
Mercury	ND	1.17	1.17	mg/kg dry	10	05/15/18	EPA 6020A	R-01
DU05-S-0.5(After Processing) (A8D0903-91)		Matrix: Soil						
Batch: 8050598								
Arsenic	12.3	0.568	1.14	mg/kg dry	10	05/12/18	EPA 6020A	
Barium	134	0.568	1.14	mg/kg dry	10	05/12/18	EPA 6020A	
Cadmium	0.365	0.114	0.227	mg/kg dry	10	05/12/18	EPA 6020A	
Chromium	71.2	0.568	1.14	mg/kg dry	10	05/12/18	EPA 6020A	
Copper	52.3	1.14	2.27	mg/kg dry	10	05/12/18	EPA 6020A	
Lead	34.0	0.114	0.227	mg/kg dry	10	05/12/18	EPA 6020A	
Selenium	ND	0.568	1.14	mg/kg dry	10	05/12/18	EPA 6020A	
Silver	ND	0.568	1.14	mg/kg dry	10	05/12/18	EPA 6020A	
Zinc	127	2.27	4.55	mg/kg dry	10	05/12/18	EPA 6020A	
DU05-S-0.5(After Processing) (A8D0903-91RE1)		Matrix: Soil						
Batch: 8050598								
Mercury	ND	1.16	1.16	mg/kg dry	10	05/15/18	EPA 6020A	R-01
DU14-S-0.5(After Processing) (A8D0903-98)		Matrix: Soil						
Batch: 8050598								
Arsenic	12.3	0.528	1.06	mg/kg dry	10	05/12/18	EPA 6020A	
Barium	99.3	0.528	1.06	mg/kg dry	10	05/12/18	EPA 6020A	
Cadmium	0.579	0.106	0.211	mg/kg dry	10	05/12/18	EPA 6020A	
Chromium	117	0.528	1.06	mg/kg dry	10	05/12/18	EPA 6020A	
Copper	53.3	1.06	2.11	mg/kg dry	10	05/12/18	EPA 6020A	
Lead	84.1	0.106	0.211	mg/kg dry	10	05/12/18	EPA 6020A	
Selenium	ND	0.528	1.06	mg/kg dry	10	05/12/18	EPA 6020A	
Silver	ND	0.528	1.06	mg/kg dry	10	05/12/18	EPA 6020A	
Zinc	122	2.11	4.22	mg/kg dry	10	05/12/18	EPA 6020A	

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AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU14-S-0.5(After Processing) (A8D0903-98RE1)				Matrix: Soil				
<u>Batch: 8050598</u>								
Mercury	ND	1.91	1.91	mg/kg dry	10	05/15/18	EPA 6020A	R-01
DU10A-S-0.5(After Processing) (A8D0903-AF)				Matrix: Soil				
<u>Batch: 8050598</u>								
Arsenic	11.0	0.528	1.06	mg/kg dry	10	05/12/18	EPA 6020A	
Barium	147	0.528	1.06	mg/kg dry	10	05/12/18	EPA 6020A	
Cadmium	0.288	0.106	0.211	mg/kg dry	10	05/12/18	EPA 6020A	
Chromium	68.7	0.528	1.06	mg/kg dry	10	05/12/18	EPA 6020A	
Copper	45.5	1.06	2.11	mg/kg dry	10	05/12/18	EPA 6020A	
Lead	41.2	0.106	0.211	mg/kg dry	10	05/12/18	EPA 6020A	
Selenium	0.622	0.528	1.06	mg/kg dry	10	05/12/18	EPA 6020A	J
Silver	ND	0.528	1.06	mg/kg dry	10	05/12/18	EPA 6020A	
Zinc	144	2.11	4.22	mg/kg dry	10	05/12/18	EPA 6020A	
DU10A-S-0.5(After Processing) (A8D0903-AFRE1)				Matrix: Soil				
<u>Batch: 8050598</u>								
Mercury	ND	0.813	0.813	mg/kg dry	10	05/15/18	EPA 6020A	R-01
DU10C-S-0.5(After Processing) (A8D0903-AM)				Matrix: Soil				
<u>Batch: 8050598</u>								
Arsenic	10.7	0.543	1.09	mg/kg dry	10	05/12/18	EPA 6020A	
Barium	129	0.543	1.09	mg/kg dry	10	05/12/18	EPA 6020A	
Cadmium	0.390	0.109	0.217	mg/kg dry	10	05/12/18	EPA 6020A	
Chromium	72.0	0.543	1.09	mg/kg dry	10	05/12/18	EPA 6020A	
Copper	41.5	1.09	2.17	mg/kg dry	10	05/12/18	EPA 6020A	
Lead	14.7	0.109	0.217	mg/kg dry	10	05/12/18	EPA 6020A	
Selenium	0.699	0.543	1.09	mg/kg dry	10	05/12/18	EPA 6020A	J
Silver	ND	0.543	1.09	mg/kg dry	10	05/12/18	EPA 6020A	
Zinc	105	2.17	4.34	mg/kg dry	10	05/12/18	EPA 6020A	
DU10C-S-0.5(After Processing) (A8D0903-AMRE1)				Matrix: Soil				
<u>Batch: 8050598</u>								
Mercury	ND	0.402	0.402	mg/kg dry	10	05/15/18	EPA 6020A	R-01
DU10B-S-0.5(After Processing) (A8D0903-AT)				Matrix: Soil				
<u>Batch: 8050598</u>								
Arsenic	10.4	0.563	1.13	mg/kg dry	10	05/12/18	EPA 6020A	

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AMENDED REPORT

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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU10B-S-0.5(After Processing) (A8D0903-AT)		Matrix: Soil						
Barium	120	0.563	1.13	mg/kg dry	10	05/12/18	EPA 6020A	
Cadmium	0.185	0.113	0.225	mg/kg dry	10	05/12/18	EPA 6020A	J
Chromium	82.7	0.563	1.13	mg/kg dry	10	05/12/18	EPA 6020A	
Copper	38.2	1.13	2.25	mg/kg dry	10	05/12/18	EPA 6020A	
Lead	15.0	0.113	0.225	mg/kg dry	10	05/12/18	EPA 6020A	
Selenium	0.575	0.563	1.13	mg/kg dry	10	05/12/18	EPA 6020A	J
Silver	ND	0.563	1.13	mg/kg dry	10	05/12/18	EPA 6020A	
Zinc	102	2.25	4.50	mg/kg dry	10	05/12/18	EPA 6020A	
DU10B-S-0.5(After Processing) (A8D0903-ATRE1)		Matrix: Soil						
<u>Batch: 8050598</u>								
Mercury	ND	0.484	0.484	mg/kg dry	10	05/15/18	EPA 6020A	R-01
DU03-S-0.5(After Processing) (A8D0903-BA)		Matrix: Soil						
<u>Batch: 8050598</u>								
Arsenic	11.6	0.537	1.07	mg/kg dry	10	05/12/18	EPA 6020A	
Barium	127	0.537	1.07	mg/kg dry	10	05/12/18	EPA 6020A	
Cadmium	0.425	0.107	0.215	mg/kg dry	10	05/12/18	EPA 6020A	
Chromium	67.7	0.537	1.07	mg/kg dry	10	05/12/18	EPA 6020A	
Copper	48.9	1.07	2.15	mg/kg dry	10	05/12/18	EPA 6020A	
Lead	30.2	0.107	0.215	mg/kg dry	10	05/12/18	EPA 6020A	
Selenium	ND	0.537	1.07	mg/kg dry	10	05/12/18	EPA 6020A	
Silver	ND	0.537	1.07	mg/kg dry	10	05/12/18	EPA 6020A	
Zinc	123	2.15	4.29	mg/kg dry	10	05/12/18	EPA 6020A	
DU03-S-0.5(After Processing) (A8D0903-BARE1)		Matrix: Soil						
<u>Batch: 8050598</u>								
Mercury	ND	1.54	1.54	mg/kg dry	10	05/15/18	EPA 6020A	R-01
DU12-S-0.5(After Processing) (A8D0903-BH)		Matrix: Soil						
<u>Batch: 8050598</u>								
Arsenic	9.69	0.501	1.00	mg/kg dry	10	05/12/18	EPA 6020A	
Barium	142	0.501	1.00	mg/kg dry	10	05/12/18	EPA 6020A	
Cadmium	0.227	0.100	0.200	mg/kg dry	10	05/12/18	EPA 6020A	
Chromium	74.6	0.501	1.00	mg/kg dry	10	05/12/18	EPA 6020A	
Copper	50.2	1.00	2.00	mg/kg dry	10	05/12/18	EPA 6020A	
Lead	58.4	0.100	0.200	mg/kg dry	10	05/12/18	EPA 6020A	
Selenium	ND	0.501	1.00	mg/kg dry	10	05/12/18	EPA 6020A	
Silver	ND	0.501	1.00	mg/kg dry	10	05/12/18	EPA 6020A	

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

<u>Maul Foster & Alongi, INC-Bellingham</u> 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: <u>0624.04.10-03--Northern State Hospital</u> Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU12-S-0.5(After Processing) (A8D0903-BH)				Matrix: Soil				
Zinc	125	2.00	4.01	mg/kg dry	10	05/12/18	EPA 6020A	
DU12-S-0.5(After Processing) (A8D0903-BHRE1)				Matrix: Soil				
<u>Batch: 8050598</u>								
Mercury	ND	1.35	1.35	mg/kg dry	10	05/15/18	EPA 6020A	R-01



AMENDED REPORT

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ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
GP53-S-0.5 (A8D0903-01)				Matrix: Soil				Batch: 8050381
% Solids	92.9	1.00	1.00	% by Weight	1	05/03/18	EPA 8000C	
GP53-S-1.0 (A8D0903-02)				Matrix: Soil				Batch: 8050381
% Solids	88.8	1.00	1.00	% by Weight	1	05/03/18	EPA 8000C	
GP53-S-2.0 (A8D0903-03)				Matrix: Soil				Batch: 8050381
% Solids	71.1	1.00	1.00	% by Weight	1	05/03/18	EPA 8000C	
GP54-S-0.5 (A8D0903-04)				Matrix: Soil				Batch: 8050381
% Solids	86.4	1.00	1.00	% by Weight	1	05/03/18	EPA 8000C	
GP54-S-5.5 (A8D0903-05)				Matrix: Soil				Batch: 8050381
% Solids	75.4	1.00	1.00	% by Weight	1	05/03/18	EPA 8000C	
DU06-S-0.5(After Processing) (A8D0903-07)				Matrix: Soil				Batch: 8050631
% Solids	96.8	1.00	1.00	% by Weight	1	05/11/18	EPA 8000C	
DU04-S-0.5(After Processing) (A8D0903-14)				Matrix: Soil				Batch: 8050631
% Solids	96.4	1.00	1.00	% by Weight	1	05/11/18	EPA 8000C	
DU07-S-0.5(After Processing) (A8D0903-21)				Matrix: Soil				Batch: 8050631
% Solids	97.5	1.00	1.00	% by Weight	1	05/11/18	EPA 8000C	
DU17-S-0.5(After Processing) (A8D0903-28)				Matrix: Soil				Batch: 8050631
% Solids	95.3	1.00	1.00	% by Weight	1	05/11/18	EPA 8000C	
SS16-S-0.5 (A8D0903-29)				Matrix: Soil				Batch: 8050381
% Solids	53.2	1.00	1.00	% by Weight	1	05/03/18	EPA 8000C	
SS17-S-0.5 (A8D0903-30)				Matrix: Soil				Batch: 8050381
% Solids	58.2	1.00	1.00	% by Weight	1	05/03/18	EPA 8000C	
SS18-S-0.5 (A8D0903-31)				Matrix: Soil				Batch: 8050381
% Solids	56.9	1.00	1.00	% by Weight	1	05/03/18	EPA 8000C	
SS19-S-0.5 (A8D0903-32)				Matrix: Soil				Batch: 8050381
% Solids	44.6	1.00	1.00	% by Weight	1	05/03/18	EPA 8000C	

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AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
SS20-S-0.5 (A8D0903-33)				Matrix: Soil				Batch: 8050381
% Solids	64.5	1.00	1.00	% by Weight	1	05/03/18	EPA 8000C	
DU15-S-0.5(After Processing) (A8D0903-35)				Matrix: Soil				Batch: 8050631
% Solids	96.3	1.00	1.00	% by Weight	1	05/11/18	EPA 8000C	
DU18-S-0.5(After Processing) (A8D0903-42)				Matrix: Soil				Batch: 8050631
% Solids	97.9	1.00	1.00	% by Weight	1	05/11/18	EPA 8000C	
DU02-S-0.5(After Processing) (A8D0903-49)				Matrix: Soil				Batch: 8050631
% Solids	98.3	1.00	1.00	% by Weight	1	05/11/18	EPA 8000C	
DU01-S-0.5(After Processing) (A8D0903-56)				Matrix: Soil				Batch: 8050631
% Solids	97.6	1.00	1.00	% by Weight	1	05/11/18	EPA 8000C	
DU13-S-0.5(After Processing) (A8D0903-63)				Matrix: Soil				Batch: 8050631
% Solids	97.7	1.00	1.00	% by Weight	1	05/11/18	EPA 8000C	
DU16-S-0.5(After Processing) (A8D0903-70)				Matrix: Soil				Batch: 8050631
% Solids	95.3	1.00	1.00	% by Weight	1	05/11/18	EPA 8000C	
SS46-S-0.5 (A8D0903-71)				Matrix: Soil				Batch: 8050381
% Solids	67.7	1.00	1.00	% by Weight	1	05/03/18	EPA 8000C	
SS47-S-0.5 (A8D0903-72)				Matrix: Soil				Batch: 8050381
% Solids	59.4	1.00	1.00	% by Weight	1	05/03/18	EPA 8000C	
SS48-S-0.5 (A8D0903-73)				Matrix: Soil				Batch: 8050381
% Solids	65.0	1.00	1.00	% by Weight	1	05/03/18	EPA 8000C	
SS49-S-0.5 (A8D0903-74)				Matrix: Soil				Batch: 8050381
% Solids	55.8	1.00	1.00	% by Weight	1	05/03/18	EPA 8000C	
SS50-S-0.5 (A8D0903-75)				Matrix: Soil				Batch: 8050381
% Solids	60.7	1.00	1.00	% by Weight	1	05/03/18	EPA 8000C	
DU11-S-0.5(After Processing) (A8D0903-77)				Matrix: Soil				Batch: 8050631
% Solids	98.3	1.00	1.00	% by Weight	1	05/11/18	EPA 8000C	

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU08-S-0.5(After Processing) (A8D0903-84)			Matrix: Soil		Batch: 8050631			
% Solids	96.5	1.00	1.00	% by Weight	1	05/11/18	EPA 8000C	
DU05-S-0.5(After Processing) (A8D0903-91)			Matrix: Soil		Batch: 8050631			
% Solids	97.1	1.00	1.00	% by Weight	1	05/11/18	EPA 8000C	
DU14-S-0.5(After Processing) (A8D0903-98)			Matrix: Soil		Batch: 8050631			
% Solids	98.4	1.00	1.00	% by Weight	1	05/11/18	EPA 8000C	
DU10A-S-0.5(After Processing) (A8D0903-AF)			Matrix: Soil		Batch: 8050631			
% Solids	95.3	1.00	1.00	% by Weight	1	05/11/18	EPA 8000C	
DU10C-S-0.5(After Processing) (A8D0903-AM)			Matrix: Soil		Batch: 8050631			
% Solids	95.7	1.00	1.00	% by Weight	1	05/11/18	EPA 8000C	
DU10B-S-0.5(After Processing) (A8D0903-AT)			Matrix: Soil		Batch: 8050631			
% Solids	96.1	1.00	1.00	% by Weight	1	05/11/18	EPA 8000C	
DU03-S-0.5(After Processing) (A8D0903-BA)			Matrix: Soil		Batch: 8050631			
% Solids	97.2	1.00	1.00	% by Weight	1	05/11/18	EPA 8000C	
DU12-S-0.5(After Processing) (A8D0903-BH)			Matrix: Soil		Batch: 8050631			
% Solids	96.8	1.00	1.00	% by Weight	1	05/11/18	EPA 8000C	

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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QUALITY CONTROL (QC) SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050452 - EPA 3546 (Fuels)						Soil						
Blank (8050452-BLK1)						Prepared: 05/03/18 13:33 Analyzed: 05/03/18 21:55						
NWTPH-Dx												
Diesel	ND	8.33	25.0	mg/kg wet	1	---	---	---	---	---	---	
Oil	ND	16.7	50.0	mg/kg wet	1	---	---	---	---	---	---	
Mineral Oil	ND	16.7	33.3	mg/kg wet	1	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 98 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
LCS (8050452-BS1)						Prepared: 05/03/18 13:33 Analyzed: 05/03/18 22:15						
NWTPH-Dx												
Diesel	107	10.0	25.0	mg/kg wet	1	125	---	85	76-115%	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 95 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
Duplicate (8050452-DUP2)						Prepared: 05/03/18 13:33 Analyzed: 05/04/18 07:31						
QC Source Sample: Non-SDG (A8E0104-03)												
Diesel	ND	13.2	26.4	mg/kg dry	1	---	ND	---	---	---	30%	
Oil	ND	26.4	52.9	mg/kg dry	1	---	ND	---	---	---	30%	
Mineral Oil	ND	26.4	52.9	mg/kg dry	1	---	ND	---	---	---	30%	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 86 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
Duplicate (8050452-DUP3)						Prepared: 05/03/18 13:33 Analyzed: 05/04/18 11:21						
QC Source Sample: Non-SDG (A8D0863-01RE1)												
Diesel	3260	122	243	mg/kg dry	10	---	3710	---	---	13	30%	
Oil	ND	243	487	mg/kg dry	10	---	ND	---	---	---	30%	
Mineral Oil	ND	243	487	mg/kg dry	10	---	ND	---	---	---	30%	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 88 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 10x</i>						S-05



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham
1329 North State Street, Suite 301
Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**
Project Number: **0624.04.10**
Project Manager: **Heather Good**

Report ID:
A8D0903 - 05 25 18 1253

QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050382 - EPA 3546												
Soil												
Blank (8050382-BLK2)												
Prepared: 05/02/18 09:21 Analyzed: 05/03/18 13:07												
EPA 8270D (SIM)												
Acenaphthene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Acenaphthylene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Anthracene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Benz(a)anthracene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Benzo(a)pyrene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Benzo(b)fluoranthene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Benzo(k)fluoranthene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Benzo(g,h,i)perylene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Chrysene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Dibenz(a,h)anthracene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Dibenzofuran	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Fluoranthene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Fluorene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Indeno(1,2,3-cd)pyrene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
1-Methylnaphthalene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
2-Methylnaphthalene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Naphthalene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Phenanthrene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Pyrene	ND	4.55	9.09	ug/kg wet	1	---	---	---	---	---	---	
Surr: 2-Fluorobiphenyl (Surr) Recovery: 93% Limits: 44-120% Dilution: 1x												
p-Terphenyl-d14 (Surr) 95% 54-127% "												

LCS (8050382-BS2)												
Prepared: 05/02/18 09:21 Analyzed: 05/03/18 13:33												
EPA 8270D (SIM)												
Acenaphthene	699	5.00	10.0	ug/kg wet	1	800	---	87	40-122%	---	---	
Acenaphthylene	712	5.00	10.0	ug/kg wet	1	800	---	89	32-132%	---	---	
Anthracene	666	5.00	10.0	ug/kg wet	1	800	---	83	47-123%	---	---	
Benz(a)anthracene	685	5.00	10.0	ug/kg wet	1	800	---	86	49-126%	---	---	
Benzo(a)pyrene	688	5.00	10.0	ug/kg wet	1	800	---	86	45-129%	---	---	
Benzo(b)fluoranthene	658	5.00	10.0	ug/kg wet	1	800	---	82	45-132%	---	---	
Benzo(k)fluoranthene	644	5.00	10.0	ug/kg wet	1	800	---	81	47-132%	---	---	
Benzo(g,h,i)perylene	651	5.00	10.0	ug/kg wet	1	800	---	81	43-134%	---	---	
Chrysene	710	5.00	10.0	ug/kg wet	1	800	---	89	50-124%	---	---	
Dibenz(a,h)anthracene	674	5.00	10.0	ug/kg wet	1	800	---	84	45-134%	---	---	

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050382 - EPA 3546												
Soil												
LCS (8050382-BS2)												
Prepared: 05/02/18 09:21 Analyzed: 05/03/18 13:33												
Dibenzofuran	683	5.00	10.0	ug/kg wet	1	800	---	85	44-120%	---	---	
Fluoranthene	674	5.00	10.0	ug/kg wet	1	800	---	84	50-127%	---	---	
Fluorene	674	5.00	10.0	ug/kg wet	1	800	---	84	43-125%	---	---	
Indeno(1,2,3-cd)pyrene	644	5.00	10.0	ug/kg wet	1	800	---	80	45-133%	---	---	
1-Methylnaphthalene	672	5.00	10.0	ug/kg wet	1	800	---	84	40-120%	---	---	
2-Methylnaphthalene	683	5.00	10.0	ug/kg wet	1	800	---	85	38-122%	---	---	
Naphthalene	685	5.00	10.0	ug/kg wet	1	800	---	86	35-123%	---	---	
Phenanthrene	684	5.00	10.0	ug/kg wet	1	800	---	85	50-121%	---	---	
Pyrene	671	5.00	10.0	ug/kg wet	1	800	---	84	47-127%	---	---	
Surr: 2-Fluorobiphenyl (Surr) Recovery: 92 % Limits: 44-120 % Dilution: 1x												
p-Terphenyl-d14 (Surr) 91 % 54-127 % "												

Duplicate (8050382-DUP1)												
Prepared: 05/02/18 09:21 Analyzed: 05/02/18 15:43												
QC Source Sample: Non-SDG (A8D0902-01)												
Acenaphthene	ND	228	228	ug/kg dry	20	---	ND	---	---	---	30%	
Acenaphthylene	ND	114	228	ug/kg dry	20	---	ND	---	---	---	30%	
Anthracene	ND	365	365	ug/kg dry	20	---	ND	---	---	---	30%	R-02
Benz(a)anthracene	ND	342	342	ug/kg dry	20	---	355	---	---	***	30%	R-02
Benzo(a)pyrene	ND	114	228	ug/kg dry	20	---	ND	---	---	---	30%	
Benzo(b)fluoranthene	ND	114	228	ug/kg dry	20	---	ND	---	---	---	30%	
Benzo(k)fluoranthene	ND	114	228	ug/kg dry	20	---	ND	---	---	---	30%	
Benzo(g,h,i)perylene	ND	114	228	ug/kg dry	20	---	ND	---	---	---	30%	
Chrysene	ND	388	388	ug/kg dry	20	---	388	---	---	***	30%	R-02
Dibenz(a,h)anthracene	ND	114	228	ug/kg dry	20	---	ND	---	---	---	30%	
Dibenzofuran	ND	251	251	ug/kg dry	20	---	255	---	---	***	30%	R-02
Fluoranthene	231	114	228	ug/kg dry	20	---	239	---	---	3	30%	
Fluorene	ND	228	228	ug/kg dry	20	---	ND	---	---	---	30%	
Indeno(1,2,3-cd)pyrene	ND	114	228	ug/kg dry	20	---	ND	---	---	---	30%	
1-Methylnaphthalene	ND	456	456	ug/kg dry	20	---	ND	---	---	---	30%	R-02
2-Methylnaphthalene	ND	228	228	ug/kg dry	20	---	ND	---	---	---	30%	
Naphthalene	ND	342	342	ug/kg dry	20	---	ND	---	---	---	30%	R-02
Phenanthrene	425	114	228	ug/kg dry	20	---	431	---	---	1	30%	
Pyrene	2150	114	228	ug/kg dry	20	---	2260	---	---	5	30%	
Surr: 2-Fluorobiphenyl (Surr) Recovery: 91 % Limits: 44-120 % Dilution: 20x												

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AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050382 - EPA 3546												
Soil												
Duplicate (8050382-DUP1)			Prepared: 05/02/18 09:21 Analyzed: 05/02/18 15:43									
QC Source Sample: Non-SDG (A8D0902-01)												
Surr: <i>p-Terphenyl-d14 (Surr)</i> Recovery: 97 % Limits: 54-127 % Dilution: 20x												
Matrix Spike (8050382-MS1)												
Prepared: 05/02/18 09:21 Analyzed: 05/02/18 16:09												
QC Source Sample: Non-SDG (A8E0039-04)												
EPA 8270D (SIM)												
Acenaphthene	785	6.25	12.5	ug/kg dry	1	1000	ND	78	40-122%	---	---	
Acenaphthylene	804	6.25	12.5	ug/kg dry	1	1000	ND	80	32-132%	---	---	
Anthracene	734	6.25	12.5	ug/kg dry	1	1000	ND	73	47-123%	---	---	
Benz(a)anthracene	745	6.25	12.5	ug/kg dry	1	1000	ND	74	49-126%	---	---	
Benzo(a)pyrene	751	6.25	12.5	ug/kg dry	1	1000	ND	75	45-129%	---	---	
Benzo(b)fluoranthene	731	6.25	12.5	ug/kg dry	1	1000	ND	73	45-132%	---	---	
Benzo(k)fluoranthene	718	6.25	12.5	ug/kg dry	1	1000	ND	72	47-132%	---	---	
Benzo(g,h,i)perylene	701	6.25	12.5	ug/kg dry	1	1000	ND	70	43-134%	---	---	
Chrysene	773	6.25	12.5	ug/kg dry	1	1000	ND	77	50-124%	---	---	
Dibenz(a,h)anthracene	726	6.25	12.5	ug/kg dry	1	1000	ND	73	45-134%	---	---	
Dibenzofuran	767	6.25	12.5	ug/kg dry	1	1000	ND	77	44-120%	---	---	
Fluoranthene	756	6.25	12.5	ug/kg dry	1	1000	ND	76	50-127%	---	---	
Fluorene	776	6.25	12.5	ug/kg dry	1	1000	ND	78	43-125%	---	---	
Indeno(1,2,3-cd)pyrene	688	6.25	12.5	ug/kg dry	1	1000	ND	69	45-133%	---	---	
1-Methylnaphthalene	751	6.25	12.5	ug/kg dry	1	1000	ND	75	40-120%	---	---	
2-Methylnaphthalene	764	6.25	12.5	ug/kg dry	1	1000	ND	76	38-122%	---	---	
Naphthalene	756	6.25	12.5	ug/kg dry	1	1000	ND	76	35-123%	---	---	
Phenanthrene	744	6.25	12.5	ug/kg dry	1	1000	ND	74	50-121%	---	---	
Pyrene	745	6.25	12.5	ug/kg dry	1	1000	ND	74	47-127%	---	---	
Surr: <i>2-Fluorobiphenyl (Surr)</i> Recovery: 76 % Limits: 44-120 % Dilution: 1x												
<i>p-Terphenyl-d14 (Surr)</i> Recovery: 78 % Limits: 54-127 % Dilution: "												



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050484 - EPA 3051A												
Soil												
Blank (8050484-BLK1) Prepared: 05/04/18 12:54 Analyzed: 05/07/18 20:43												
EPA 6020A												
Arsenic	ND	0.481	0.962	mg/kg wet	10	---	---	---	---	---	---	
Barium	ND	0.481	0.962	mg/kg wet	10	---	---	---	---	---	---	
Cadmium	ND	0.481	0.962	mg/kg wet	10	---	---	---	---	---	---	
Chromium	ND	0.481	0.962	mg/kg wet	10	---	---	---	---	---	---	
Copper	ND	1.92	3.85	mg/kg wet	10	---	---	---	---	---	---	
Lead	ND	0.0962	0.192	mg/kg wet	10	---	---	---	---	---	---	
Mercury	ND	0.0769	0.154	mg/kg wet	10	---	---	---	---	---	---	
Selenium	ND	0.481	0.962	mg/kg wet	10	---	---	---	---	---	---	
Silver	ND	0.0962	0.192	mg/kg wet	10	---	---	---	---	---	---	
Zinc	ND	1.92	3.85	mg/kg wet	10	---	---	---	---	---	---	

LCS (8050484-BS1) Prepared: 05/04/18 12:54 Analyzed: 05/07/18 20:46												
EPA 6020A												
Arsenic	52.4	0.500	1.00	mg/kg wet	10	50.0	---	105	80-120%	---	---	
Barium	53.0	0.500	1.00	mg/kg wet	10	50.0	---	106	80-120%	---	---	
Cadmium	50.1	0.500	1.00	mg/kg wet	10	50.0	---	100	80-120%	---	---	
Chromium	50.0	0.500	1.00	mg/kg wet	10	50.0	---	100	80-120%	---	---	
Copper	51.3	2.00	4.00	mg/kg wet	10	50.0	---	103	80-120%	---	---	
Lead	51.1	0.100	0.200	mg/kg wet	10	50.0	---	102	80-120%	---	---	
Mercury	0.949	0.0800	0.160	mg/kg wet	10	1.00	---	95	80-120%	---	---	
Selenium	25.2	0.500	1.00	mg/kg wet	10	25.0	---	101	80-120%	---	---	
Silver	25.8	0.100	0.200	mg/kg wet	10	25.0	---	103	80-120%	---	---	
Zinc	50.8	2.00	4.00	mg/kg wet	10	50.0	---	102	80-120%	---	---	

Matrix Spike (8050484-MS1) Prepared: 05/04/18 12:54 Analyzed: 05/07/18 21:37												
QC Source Sample: Non-SDG (A8E0023-04)												
EPA 6020A												
Arsenic	69.1	0.577	1.15	mg/kg dry	10	57.7	3.82	113	75-125%	---	---	
Barium	149	0.577	1.15	mg/kg dry	10	57.7	89.3	103	75-125%	---	---	
Cadmium	65.9	0.577	1.15	mg/kg dry	10	57.7	ND	114	75-125%	---	---	
Chromium	72.3	0.577	1.15	mg/kg dry	10	57.7	12.5	104	75-125%	---	---	
Copper	94.8	2.31	4.62	mg/kg dry	10	57.7	27.8	116	75-125%	---	---	
Lead	119	0.115	0.231	mg/kg dry	10	57.7	50.2	119	75-125%	---	---	

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050484 - EPA 3051A												
Soil												
Matrix Spike (8050484-MS1) Prepared: 05/04/18 12:54 Analyzed: 05/07/18 21:37												
QC Source Sample: Non-SDG (A8E0023-04)												
Mercury	3.41	0.0924	0.185	mg/kg dry	10	1.15	2.40	87	75-125%	---	---	
Selenium	30.8	0.577	1.15	mg/kg dry	10	28.9	ND	107	75-125%	---	---	
Silver	32.6	0.115	0.231	mg/kg dry	10	28.9	ND	113	75-125%	---	---	
Zinc	161	2.31	4.62	mg/kg dry	10	57.7	100	105	75-125%	---	---	
Matrix Spike (8050484-MS2) Prepared: 05/04/18 12:54 Analyzed: 05/07/18 22:04												
QC Source Sample: Non-SDG (A8E0121-02)												
EPA 6020A												
Arsenic	68.1	0.607	1.21	mg/kg dry	10	60.7	8.24	99	75-125%	---	---	
Barium	204	0.607	1.21	mg/kg dry	10	60.7	154	82	75-125%	---	---	
Cadmium	60.7	0.607	1.21	mg/kg dry	10	60.7	ND	100	75-125%	---	---	
Chromium	70.2	0.607	1.21	mg/kg dry	10	60.7	19.6	83	75-125%	---	---	
Copper	82.4	2.43	4.86	mg/kg dry	10	60.7	21.7	100	75-125%	---	---	
Lead	69.3	0.121	0.243	mg/kg dry	10	60.7	11.1	96	75-125%	---	---	
Mercury	1.26	0.0971	0.194	mg/kg dry	10	1.21	ND	104	75-125%	---	---	Q-41
Selenium	30.0	0.607	1.21	mg/kg dry	10	30.3	ND	99	75-125%	---	---	
Silver	31.0	0.121	0.243	mg/kg dry	10	30.3	ND	102	75-125%	---	---	
Zinc	127	2.43	4.86	mg/kg dry	10	60.7	75.7	84	75-125%	---	---	
Matrix Spike Dup (8050484-MSD1) Prepared: 05/04/18 12:54 Analyzed: 05/07/18 21:40												
QC Source Sample: Non-SDG (A8E0023-04)												
Arsenic	63.9	0.541	1.08	mg/kg dry	10	54.1	3.82	111	75-125%	2	40%	
Barium	158	0.541	1.08	mg/kg dry	10	54.1	89.3	127	75-125%	21	40%	Q-04
Cadmium	61.0	0.541	1.08	mg/kg dry	10	54.1	ND	113	75-125%	1	40%	
Chromium	68.2	0.541	1.08	mg/kg dry	10	54.1	12.5	103	75-125%	0.4	40%	
Copper	87.2	2.16	4.32	mg/kg dry	10	54.1	27.8	110	75-125%	6	40%	
Lead	109	0.108	0.216	mg/kg dry	10	54.1	50.2	109	75-125%	9	40%	
Mercury	3.43	0.0865	0.173	mg/kg dry	10	1.08	2.40	95	75-125%	8	40%	
Selenium	28.4	0.541	1.08	mg/kg dry	10	27.0	ND	105	75-125%	2	40%	
Silver	30.3	0.108	0.216	mg/kg dry	10	27.0	ND	112	75-125%	0.7	40%	
Zinc	160	2.16	4.32	mg/kg dry	10	54.1	100	111	75-125%	5	40%	

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050598 - EPA 3051A												
Soil												
Blank (8050598-BLK1) Prepared: 05/09/18 11:58 Analyzed: 05/12/18 02:26												
EPA 6020A												
Arsenic	ND	0.481	0.962	mg/kg wet	10	---	---	---	---	---	---	
Barium	ND	0.481	0.962	mg/kg wet	10	---	---	---	---	---	---	
Cadmium	ND	0.0962	0.192	mg/kg wet	10	---	---	---	---	---	---	
Chromium	ND	0.481	0.962	mg/kg wet	10	---	---	---	---	---	---	
Copper	ND	0.962	1.92	mg/kg wet	10	---	---	---	---	---	---	
Lead	ND	0.0962	0.192	mg/kg wet	10	---	---	---	---	---	---	
Mercury	ND	0.0385	0.0769	mg/kg wet	10	---	---	---	---	---	---	
Selenium	ND	0.481	0.962	mg/kg wet	10	---	---	---	---	---	---	
Silver	ND	0.481	0.962	mg/kg wet	10	---	---	---	---	---	---	
Zinc	ND	1.92	3.85	mg/kg wet	10	---	---	---	---	---	---	

LCS (8050598-BS1) Prepared: 05/09/18 11:58 Analyzed: 05/12/18 02:35												
EPA 6020A												
Arsenic	49.6	0.500	1.00	mg/kg wet	10	50.0	---	99	80-120%	---	---	
Barium	53.5	0.500	1.00	mg/kg wet	10	50.0	---	107	80-120%	---	---	
Cadmium	49.4	0.100	0.200	mg/kg wet	10	50.0	---	99	80-120%	---	---	
Chromium	52.9	0.500	1.00	mg/kg wet	10	50.0	---	106	80-120%	---	---	
Copper	53.6	1.00	2.00	mg/kg wet	10	50.0	---	107	80-120%	---	---	
Lead	48.9	0.100	0.200	mg/kg wet	10	50.0	---	98	80-120%	---	---	
Mercury	1.02	0.0400	0.0800	mg/kg wet	10	1.00	---	102	80-120%	---	---	
Selenium	23.6	0.500	1.00	mg/kg wet	10	25.0	---	95	80-120%	---	---	
Silver	24.8	0.500	1.00	mg/kg wet	10	25.0	---	99	80-120%	---	---	
Zinc	49.1	2.00	4.00	mg/kg wet	10	50.0	---	98	80-120%	---	---	

Duplicate (8050598-DUP1) Prepared: 05/09/18 11:58 Analyzed: 05/12/18 02:44												
QC Source Sample: DU06-S-0.5(After Processing) (A8D0903-07)												
EPA 6020A												
Arsenic	9.51	0.565	1.13	mg/kg dry	10	---	10.2	---	---	7	40%	
Barium	122	0.565	1.13	mg/kg dry	10	---	122	---	---	0.6	40%	
Cadmium	0.511	0.113	0.226	mg/kg dry	10	---	0.246	---	---	70	40%	Q-05
Chromium	67.8	0.565	1.13	mg/kg dry	10	---	64.3	---	---	5	40%	
Copper	41.6	1.13	2.26	mg/kg dry	10	---	45.6	---	---	9	40%	
Lead	27.2	0.113	0.226	mg/kg dry	10	---	27.8	---	---	2	40%	

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050598 - EPA 3051A												
Soil												
Duplicate (8050598-DUP1)			Prepared: 05/09/18 11:58 Analyzed: 05/12/18 02:44									
QC Source Sample: DU06-S-0.5(After Processing) (A8D0903-07)												
Mercury	ND	0.712	0.712	mg/kg dry	10	---	ND	---	---	---	40%	R-01
Selenium	ND	0.565	1.13	mg/kg dry	10	---	ND	---	---	---	40%	
Silver	ND	0.565	1.13	mg/kg dry	10	---	ND	---	---	---	40%	
Zinc	110	2.26	4.52	mg/kg dry	10	---	113	---	---	2	40%	
Duplicate (8050598-DUP2)			Prepared: 05/09/18 11:58 Analyzed: 05/12/18 02:49									
QC Source Sample: DU06-S-0.5(After Processing) (A8D0903-07)												
EPA 6020A												
Arsenic	9.89	0.530	1.06	mg/kg dry	10	---	10.2	---	---	3	40%	
Barium	118	0.530	1.06	mg/kg dry	10	---	122	---	---	4	40%	
Cadmium	0.276	0.106	0.212	mg/kg dry	10	---	0.246	---	---	12	40%	
Chromium	63.9	0.530	1.06	mg/kg dry	10	---	64.3	---	---	0.7	40%	
Copper	42.5	1.06	2.12	mg/kg dry	10	---	45.6	---	---	7	40%	
Lead	27.9	0.106	0.212	mg/kg dry	10	---	27.8	---	---	0.5	40%	
Mercury	0.594	0.594	0.594	mg/kg dry	10	---	ND	---	---		40%	R-01
Selenium	0.570	0.530	1.06	mg/kg dry	10	---	ND	---	---		40%	Q-05, J
Silver	ND	0.530	1.06	mg/kg dry	10	---	ND	---	---	---	40%	
Zinc	107	2.12	4.24	mg/kg dry	10	---	113	---	---	6	40%	
Matrix Spike (8050598-MS1)			Prepared: 05/09/18 11:58 Analyzed: 05/12/18 03:03									
QC Source Sample: DU06-S-0.5(After Processing) (A8D0903-07)												
EPA 6020A												
Arsenic	59.6	0.536	1.07	mg/kg dry	10	53.6	10.2	92	75-125%	---	---	
Barium	167	0.536	1.07	mg/kg dry	10	53.6	122	83	75-125%	---	---	
Cadmium	50.3	0.107	0.214	mg/kg dry	10	53.6	0.246	93	75-125%	---	---	
Chromium	106	0.536	1.07	mg/kg dry	10	53.6	64.3	78	75-125%	---	---	
Copper	92.8	1.07	2.14	mg/kg dry	10	53.6	45.6	88	75-125%	---	---	
Lead	74.5	0.107	0.214	mg/kg dry	10	53.6	27.8	87	75-125%	---	---	
Selenium	24.8	0.536	1.07	mg/kg dry	10	26.8	ND	93	75-125%	---	---	
Silver	24.3	0.536	1.07	mg/kg dry	10	26.8	ND	91	75-125%	---	---	
Zinc	156	2.14	4.29	mg/kg dry	10	53.6	113	80	75-125%	---	---	
Matrix Spike (8050598-MS2)			Prepared: 05/09/18 11:58 Analyzed: 05/12/18 04:42									

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050598 - EPA 3051A												
Soil												
Matrix Spike (8050598-MS2)			Prepared: 05/09/18 11:58 Analyzed: 05/12/18 04:42									
QC Source Sample: DU12-S-0.5(After Processing) (A8D0903-BH)												
EPA 6020A												
Arsenic	57.4	0.499	0.999	mg/kg dry	10	50.0	9.69	96	75-125%	---	---	
Barium	194	0.499	0.999	mg/kg dry	10	50.0	142	105	75-125%	---	---	
Cadmium	47.8	0.0999	0.200	mg/kg dry	10	50.0	0.227	95	75-125%	---	---	
Chromium	120	0.499	0.999	mg/kg dry	10	50.0	74.6	90	75-125%	---	---	
Copper	102	0.999	2.00	mg/kg dry	10	50.0	50.2	103	75-125%	---	---	
Lead	102	0.0999	0.200	mg/kg dry	10	50.0	58.4	87	75-125%	---	---	
Selenium	23.6	0.499	0.999	mg/kg dry	10	24.9	ND	95	75-125%	---	---	
Silver	24.3	0.499	0.999	mg/kg dry	10	24.9	ND	98	75-125%	---	---	
Zinc	173	2.00	3.99	mg/kg dry	10	50.0	125	97	75-125%	---	---	

Matrix Spike (8050598-MS3)			Prepared: 05/09/18 11:58 Analyzed: 05/15/18 19:24									
QC Source Sample: DU06-S-0.5(After Processing) (A8D0903-07)												
EPA 6020A												
Mercury	2.15	0.600	0.600	mg/kg dry	10	1.07	ND	201	75-125%	---	---	AMEND, Q-02, Q-16, R-01

Matrix Spike (8050598-MS4)			Prepared: 05/09/18 11:58 Analyzed: 05/15/18 21:12									
QC Source Sample: DU12-S-0.5(After Processing) (A8D0903-BHRE1)												
EPA 6020A												
Mercury	2.25	1.40	1.40	mg/kg dry	10	0.999	ND	226	75-125%	---	---	AMEND, Q-02, Q-16, R-01

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050381 - Total Solids (Dry Weight)						Soil						
Duplicate (8050381-DUP1)			Prepared: 05/02/18 09:19 Analyzed: 05/03/18 07:10									
<u>QC Source Sample: GP53-S-0.5 (A8D0903-01)</u>												
<u>EPA 8000C</u>												
% Solids	92.7	1.00	1.00	% by Weight	1	---	92.9	---	---	0.2	10%	
Duplicate (8050381-DUP2)			Prepared: 05/02/18 09:19 Analyzed: 05/03/18 07:10									
<u>QC Source Sample: SS46-S-0.5 (A8D0903-71)</u>												
<u>EPA 8000C</u>												
% Solids	69.4	1.00	1.00	% by Weight	1	---	67.7	---	---	3	10%	
Duplicate (8050381-DUP3)			Prepared: 05/02/18 09:19 Analyzed: 05/03/18 07:10									
<u>QC Source Sample: Non-SDG (A8E0010-01)</u>												
% Solids	57.8	1.00	1.00	% by Weight	1	---	60.3	---	---	4	10%	
Duplicate (8050381-DUP4)			Prepared: 05/02/18 09:19 Analyzed: 05/03/18 07:10									
<u>QC Source Sample: Non-SDG (A8E0039-04)</u>												
% Solids	77.2	1.00	1.00	% by Weight	1	---	77.5	---	---	0.4	10%	
Duplicate (8050381-DUP5)			Prepared: 05/02/18 18:57 Analyzed: 05/03/18 07:10									
<u>QC Source Sample: Non-SDG (A8E0082-01)</u>												
% Solids	75.5	1.00	1.00	% by Weight	1	---	74.6	---	---	1	10%	
Duplicate (8050381-DUP6)			Prepared: 05/02/18 18:57 Analyzed: 05/03/18 07:10									
<u>QC Source Sample: Non-SDG (A8E0087-02)</u>												
% Solids	82.9	1.00	1.00	% by Weight	1	---	83.3	---	---	0.5	10%	
Duplicate (8050381-DUP7)			Prepared: 05/02/18 19:36 Analyzed: 05/03/18 07:10									
<u>QC Source Sample: Non-SDG (A8E0093-05)</u>												
% Solids	73.8	1.00	1.00	% by Weight	1	---	73.8	---	---	0.09	10%	

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

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AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050631 - Total Solids (Dry Weight) Soil												
Duplicate (8050631-DUP1) Prepared: 05/10/18 09:02 Analyzed: 05/11/18 08:45												
<u>QC Source Sample: Non-SDG (A8D0867-17)</u>												
% Solids	90.4	1.00	1.00	% by Weight	1	---	89.5	---	---	0.9	10%	
Duplicate (8050631-DUP2) Prepared: 05/10/18 09:02 Analyzed: 05/11/18 08:45												
<u>QC Source Sample: Non-SDG (A8E0265-11)</u>												
% Solids	70.6	1.00	1.00	% by Weight	1	---	70.5	---	---	0.2	10%	
Duplicate (8050631-DUP3) Prepared: 05/10/18 09:02 Analyzed: 05/11/18 08:45												
<u>QC Source Sample: Non-SDG (A8E0304-03)</u>												
% Solids	86.3	1.00	1.00	% by Weight	1	---	83.4	---	---	3	10%	
Duplicate (8050631-DUP4) Prepared: 05/10/18 12:26 Analyzed: 05/11/18 08:45												
<u>QC Source Sample: Non-SDG (A8E0130-20)</u>												
% Solids	96.6	1.00	1.00	% by Weight	1	---	96.8	---	---	0.2	10%	
Duplicate (8050631-DUP5) Prepared: 05/10/18 12:26 Analyzed: 05/11/18 08:45												
<u>QC Source Sample: DU06-S-0.5(After Processing) (A8D0903-07)</u>												
<u>EPA 8000C</u>												
% Solids	96.7	1.00	1.00	% by Weight	1	---	96.8	---	---	0.1	10%	
Duplicate (8050631-DUP6) Prepared: 05/10/18 19:56 Analyzed: 05/11/18 08:45												
<u>QC Source Sample: Non-SDG (A8E0342-01)</u>												
% Solids	78.8	1.00	1.00	% by Weight	1	---	78.8	---	---	0.004	10%	
Duplicate (8050631-DUP7) Prepared: 05/10/18 19:56 Analyzed: 05/11/18 08:45												
<u>QC Source Sample: Non-SDG (A8E0346-01)</u>												
% Solids	75.5	1.00	1.00	% by Weight	1	---	75.7	---	---	0.3	10%	
Duplicate (8050631-DUP8) Prepared: 05/10/18 19:56 Analyzed: 05/11/18 08:45												
<u>QC Source Sample: Non-SDG (A8E0354-01)</u>												
% Solids	76.0	1.00	1.00	% by Weight	1	---	76.7	---	---	1	10%	

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Lisa Domenighini, Client Services Manager



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AMENDED REPORT

<u>Maul Foster & Alongi, INC-Bellingham</u> 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: <u>0624.04.10-03--Northern State Hospital</u> Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
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No Client related Batch QC samples analyzed for this batch. See notes page for more information.

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AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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SAMPLE PREPARATION INFORMATION

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Prep: EPA 3546 (Fuels)					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
Batch: 8050452							
A8D0903-01	Soil	NWTPH-Dx	04/24/18 09:20	05/03/18 13:33	10.99g/5mL	10g/5mL	0.91
A8D0903-02	Soil	NWTPH-Dx	04/24/18 09:25	05/03/18 13:33	10.95g/5mL	10g/5mL	0.91
A8D0903-03	Soil	NWTPH-Dx	04/24/18 09:30	05/03/18 13:33	10.32g/5mL	10g/5mL	0.97
A8D0903-04	Soil	NWTPH-Dx	04/24/18 09:40	05/03/18 13:33	10.34g/5mL	10g/5mL	0.97
A8D0903-05	Soil	NWTPH-Dx	04/24/18 09:45	05/03/18 13:33	10.22g/5mL	10g/5mL	0.98

Polyaromatic Hydrocarbons (PAHs) by EPA 8270D SIM

Prep: EPA 3546					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
Batch: 8050382							
A8D0903-01RE1	Soil	EPA 8270D (SIM)	04/24/18 09:20	05/02/18 09:21	10.43g/5mL	10g/5mL	0.96
A8D0903-02	Soil	EPA 8270D (SIM)	04/24/18 09:25	05/02/18 09:21	10.37g/5mL	10g/5mL	0.96
A8D0903-03	Soil	EPA 8270D (SIM)	04/24/18 09:30	05/02/18 09:21	10.49g/5mL	10g/5mL	0.95
A8D0903-04	Soil	EPA 8270D (SIM)	04/24/18 09:40	05/02/18 09:21	10.38g/5mL	10g/5mL	0.96
A8D0903-05	Soil	EPA 8270D (SIM)	04/24/18 09:45	05/02/18 09:21	10.31g/5mL	10g/5mL	0.97

Total Metals by EPA 6020 (ICPMS)

Prep: EPA 3051A					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
Batch: 8050484							
A8D0903-29	Soil	EPA 6020A	04/25/18 08:12	05/04/18 12:54	0.501g/50mL	0.5g/50mL	1.00
A8D0903-30	Soil	EPA 6020A	04/25/18 08:50	05/04/18 12:54	0.484g/50mL	0.5g/50mL	1.03
A8D0903-31	Soil	EPA 6020A	04/25/18 09:50	05/04/18 12:54	0.466g/50mL	0.5g/50mL	1.07
A8D0903-32	Soil	EPA 6020A	04/25/18 11:05	05/04/18 12:54	0.483g/50mL	0.5g/50mL	1.04
A8D0903-33	Soil	EPA 6020A	04/25/18 11:20	05/04/18 12:54	0.491g/50mL	0.5g/50mL	1.02
A8D0903-33RE1	Soil	EPA 6020A	04/25/18 11:20	05/04/18 12:54	0.491g/50mL	0.5g/50mL	1.02
A8D0903-71	Soil	EPA 6020A	04/26/18 13:00	05/04/18 12:54	0.495g/50mL	0.5g/50mL	1.01
A8D0903-72	Soil	EPA 6020A	04/26/18 13:25	05/04/18 12:54	0.486g/50mL	0.5g/50mL	1.03
A8D0903-73	Soil	EPA 6020A	04/26/18 13:50	05/04/18 12:54	0.509g/50mL	0.5g/50mL	0.98
A8D0903-74	Soil	EPA 6020A	04/26/18 14:30	05/04/18 12:54	0.488g/50mL	0.5g/50mL	1.02
A8D0903-75	Soil	EPA 6020A	04/26/18 14:50	05/04/18 12:54	0.497g/50mL	0.5g/50mL	1.01

Apex Laboratories

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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SAMPLE PREPARATION INFORMATION

Total Metals by EPA 6020 (ICPMS)

Prep: EPA 3051A					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
Batch: 8050598							
A8D0903-07	Soil	EPA 6020A	04/24/18 09:30	05/09/18 11:58	0.47g/50mL	0.5g/50mL	1.06
A8D0903-14	Soil	EPA 6020A	04/24/18 13:30	05/09/18 11:58	0.458g/50mL	0.5g/50mL	1.09
A8D0903-14RE1	Soil	EPA 6020A	04/24/18 13:30	05/09/18 11:58	0.458g/50mL	0.5g/50mL	1.09
A8D0903-21	Soil	EPA 6020A	04/24/18 15:47	05/09/18 11:58	0.494g/50mL	0.5g/50mL	1.01
A8D0903-21RE1	Soil	EPA 6020A	04/24/18 15:47	05/09/18 11:58	0.494g/50mL	0.5g/50mL	1.01
A8D0903-28	Soil	EPA 6020A	04/25/18 07:45	05/09/18 11:58	0.453g/50mL	0.5g/50mL	1.10
A8D0903-28RE1	Soil	EPA 6020A	04/25/18 07:45	05/09/18 11:58	0.453g/50mL	0.5g/50mL	1.10
A8D0903-35	Soil	EPA 6020A	04/25/18 11:50	05/09/18 11:58	0.451g/50mL	0.5g/50mL	1.11
A8D0903-35RE1	Soil	EPA 6020A	04/25/18 11:50	05/09/18 11:58	0.451g/50mL	0.5g/50mL	1.11
A8D0903-42	Soil	EPA 6020A	04/25/18 15:20	05/09/18 11:58	0.482g/50mL	0.5g/50mL	1.04
A8D0903-42RE1	Soil	EPA 6020A	04/25/18 15:20	05/09/18 11:58	0.482g/50mL	0.5g/50mL	1.04
A8D0903-49	Soil	EPA 6020A	04/25/18 18:30	05/09/18 11:58	0.488g/50mL	0.5g/50mL	1.02
A8D0903-49RE1	Soil	EPA 6020A	04/25/18 18:30	05/09/18 11:58	0.488g/50mL	0.5g/50mL	1.02
A8D0903-56	Soil	EPA 6020A	04/25/18 17:05	05/09/18 11:58	0.49g/50mL	0.5g/50mL	1.02
A8D0903-56RE1	Soil	EPA 6020A	04/25/18 17:05	05/09/18 11:58	0.49g/50mL	0.5g/50mL	1.02
A8D0903-63	Soil	EPA 6020A	04/26/18 08:05	05/09/18 11:58	0.516g/50mL	0.5g/50mL	0.97
A8D0903-63RE1	Soil	EPA 6020A	04/26/18 08:05	05/09/18 11:58	0.516g/50mL	0.5g/50mL	0.97
A8D0903-70	Soil	EPA 6020A	04/26/18 12:45	05/09/18 11:58	0.459g/50mL	0.5g/50mL	1.09
A8D0903-70RE1	Soil	EPA 6020A	04/26/18 12:45	05/09/18 11:58	0.459g/50mL	0.5g/50mL	1.09
A8D0903-77	Soil	EPA 6020A	04/26/18 17:15	05/09/18 11:58	0.485g/50mL	0.5g/50mL	1.03
A8D0903-77RE1	Soil	EPA 6020A	04/26/18 17:15	05/09/18 11:58	0.485g/50mL	0.5g/50mL	1.03
A8D0903-84	Soil	EPA 6020A	04/26/18 18:15	05/09/18 11:58	0.459g/50mL	0.5g/50mL	1.09
A8D0903-84RE1	Soil	EPA 6020A	04/26/18 18:15	05/09/18 11:58	0.459g/50mL	0.5g/50mL	1.09
A8D0903-91	Soil	EPA 6020A	04/26/18 20:00	05/09/18 11:58	0.453g/50mL	0.5g/50mL	1.10
A8D0903-91RE1	Soil	EPA 6020A	04/26/18 20:00	05/09/18 11:58	0.453g/50mL	0.5g/50mL	1.10
A8D0903-98	Soil	EPA 6020A	04/27/18 08:05	05/09/18 11:58	0.481g/50mL	0.5g/50mL	1.04
A8D0903-98RE1	Soil	EPA 6020A	04/27/18 08:05	05/09/18 11:58	0.481g/50mL	0.5g/50mL	1.04
A8D0903-AF	Soil	EPA 6020A	04/27/18 10:15	05/09/18 11:58	0.497g/50mL	0.5g/50mL	1.01
A8D0903-AFRE1	Soil	EPA 6020A	04/27/18 10:15	05/09/18 11:58	0.497g/50mL	0.5g/50mL	1.01
A8D0903-AM	Soil	EPA 6020A	04/27/18 13:00	05/09/18 11:58	0.481g/50mL	0.5g/50mL	1.04
A8D0903-AMRE1	Soil	EPA 6020A	04/27/18 13:00	05/09/18 11:58	0.481g/50mL	0.5g/50mL	1.04
A8D0903-AT	Soil	EPA 6020A	04/27/18 13:55	05/09/18 11:58	0.462g/50mL	0.5g/50mL	1.08
A8D0903-ATRE1	Soil	EPA 6020A	04/27/18 13:55	05/09/18 11:58	0.462g/50mL	0.5g/50mL	1.08
A8D0903-BA	Soil	EPA 6020A	04/27/18 16:00	05/09/18 11:58	0.479g/50mL	0.5g/50mL	1.04
A8D0903-BARE1	Soil	EPA 6020A	04/27/18 16:00	05/09/18 11:58	0.479g/50mL	0.5g/50mL	1.04
A8D0903-BH	Soil	EPA 6020A	04/27/18 17:20	05/09/18 11:58	0.515g/50mL	0.5g/50mL	0.97

Apex Laboratories

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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SAMPLE PREPARATION INFORMATION

Total Metals by EPA 6020 (ICPMS)

Prep: EPA 3051A					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
A8D0903-BHRE1	Soil	EPA 6020A	04/27/18 17:20	05/09/18 11:58	0.515g/50mL	0.5g/50mL	0.97

Percent Dry Weight

Prep: Total Solids (Dry Weight)					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
Batch: 8050381							
A8D0903-01	Soil	EPA 8000C	04/24/18 09:20	05/02/18 09:19	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-02	Soil	EPA 8000C	04/24/18 09:25	05/02/18 09:19	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-03	Soil	EPA 8000C	04/24/18 09:30	05/02/18 09:19	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-04	Soil	EPA 8000C	04/24/18 09:40	05/02/18 09:19	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-05	Soil	EPA 8000C	04/24/18 09:45	05/02/18 09:19	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-29	Soil	EPA 8000C	04/25/18 08:12	05/02/18 09:19	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-30	Soil	EPA 8000C	04/25/18 08:50	05/02/18 09:19	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-31	Soil	EPA 8000C	04/25/18 09:50	05/02/18 09:19	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-32	Soil	EPA 8000C	04/25/18 11:05	05/02/18 09:19	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-33	Soil	EPA 8000C	04/25/18 11:20	05/02/18 09:19	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-71	Soil	EPA 8000C	04/26/18 13:00	05/02/18 09:19	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-72	Soil	EPA 8000C	04/26/18 13:25	05/02/18 09:19	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-73	Soil	EPA 8000C	04/26/18 13:50	05/02/18 09:19	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-74	Soil	EPA 8000C	04/26/18 14:30	05/02/18 09:19	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-75	Soil	EPA 8000C	04/26/18 14:50	05/02/18 09:19	1N/A/1N/A	1N/A/1N/A	NA
Batch: 8050631							
A8D0903-07	Soil	EPA 8000C	04/24/18 09:30	05/10/18 12:26	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-14	Soil	EPA 8000C	04/24/18 13:30	05/10/18 12:26	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-21	Soil	EPA 8000C	04/24/18 15:47	05/10/18 12:26	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-28	Soil	EPA 8000C	04/25/18 07:45	05/10/18 12:26	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-35	Soil	EPA 8000C	04/25/18 11:50	05/10/18 12:26	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-42	Soil	EPA 8000C	04/25/18 15:20	05/10/18 12:26	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-49	Soil	EPA 8000C	04/25/18 18:30	05/10/18 12:26	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-56	Soil	EPA 8000C	04/25/18 17:05	05/10/18 12:26	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-63	Soil	EPA 8000C	04/26/18 08:05	05/10/18 12:26	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-70	Soil	EPA 8000C	04/26/18 12:45	05/10/18 12:26	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-77	Soil	EPA 8000C	04/26/18 17:15	05/10/18 12:26	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-84	Soil	EPA 8000C	04/26/18 18:15	05/10/18 12:26	1N/A/1N/A	1N/A/1N/A	NA

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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SAMPLE PREPARATION INFORMATION

Percent Dry Weight

Prep: Total Solids (Dry Weight)					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
A8D0903-91	Soil	EPA 8000C	04/26/18 20:00	05/10/18 12:26	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-98	Soil	EPA 8000C	04/27/18 08:05	05/10/18 12:26	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-AF	Soil	EPA 8000C	04/27/18 10:15	05/10/18 12:26	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-AM	Soil	EPA 8000C	04/27/18 13:00	05/10/18 12:26	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-AT	Soil	EPA 8000C	04/27/18 13:55	05/10/18 12:26	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-BA	Soil	EPA 8000C	04/27/18 16:00	05/10/18 12:26	1N/A/1N/A	1N/A/1N/A	NA
A8D0903-BH	Soil	EPA 8000C	04/27/18 17:20	05/10/18 12:26	1N/A/1N/A	1N/A/1N/A	NA



AMENDED REPORT

<u>Maul Foster & Alongi, INC-Bellingham</u> 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: <u>0624.04.10-03--Northern State Hospital</u> Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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QUALIFIER DEFINITIONS

Client Sample and Quality Control (QC) Sample Qualifier Definitions:

- AMEND** Result for this sample or analyte has been amended from the original report. See Case Narrative for details.
- J** Estimated Result. Result detected below the lowest point of the calibration curve, but above the specified MDL.
- M-05** Estimated results. Peak separation for structural isomers is insufficient for accurate quantification.
- Q-02** Spike recovery is outside of established control limits due to matrix interference.
- Q-05** Analyses are not controlled on RPD values from sample and duplicate concentrations that are below 5 times the reporting level.
- Q-16** Reanalysis of an original Batch QC sample.
- Q-41** Estimated Results. Recovery of Continuing Calibration Verification sample above upper control limit for this analyte. Results are likely biased high.
- Q-42** Matrix Spike and/or Duplicate analysis was performed on this sample. % Recovery or RPD for this analyte is outside laboratory control limits. (Refer to the QC Section of Analytical Report.)
- R-01** The Reporting Limit for this analyte has been raised to account for matrix interference.
- R-02** The Reporting Limit for this analyte has been raised to account for interference from coeluting organic compounds present in the sample.
- S-05** Surrogate recovery is estimated due to sample dilution required for high analyte concentration and/or matrix interference.



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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REPORTING NOTES AND CONVENTIONS:

Abbreviations:

- DET Analyte DETECTED at or above the detection or reporting limit.
- ND Analyte NOT DETECTED at or above the detection or reporting limit.
- NR Result Not Reported
- RPD Relative Percent Difference

Detection Limits: Limit of Detection (LOD)

Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).
If no value is listed ('----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

Reporting Conventions:

- Basis:** Results for soil samples are generally reported on a 100% dry weight basis. The Result Basis is listed following the units as "dry", "wet", or "" (blank) designation.
 - "dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")
See Percent Solids section for details of dry weight analysis.
 - "wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.
 - " " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

- " --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
- " *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to 1/2 the Reporting Limit (RL).
-For Blank hits falling between 1/2 the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
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REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks (Cont.):

Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the blank results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met. Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham
1329 North State Street, Suite 301
Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**
Project Number: **0624.04.10**
Project Manager: **Heather Good**

Report ID:
A8D0903 - 05 25 18 1253

LABORATORY ACCREDITATION INFORMATION

TNI Certification ID: OR100062 (Primary Accreditation) - EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Cert?
<u>All reported analytes are included in Apex Laboratories' current ORELAP scope.</u>					

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation. Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provided by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

Apex Laboratories

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Apex Laboratories, LLC

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Maul Foster & Alongi, INC-Bellingham
1329 North State Street, Suite 301
Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**
Project Number: **0624.04.10**
Project Manager: **Heather Good**

Report ID:
A8D0903 - 05 25 18 1253

APEX LABS

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

CHAIN OF CUSTODY

Lab # A8D0903

coc 1 of 12

Company: Maul Foster Alongi Project Mgr: Heather Good Project Name: Swift Center PO# _____
 Address: 1329 N. State St. Ste 301, Bham, WA Phone: _____ Project # 0624.04.10
 Sampled by: C. Wise / B. Paulik Email: hgood@mfaulfooster.com

LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	ANALYSIS REQUEST															
					NWTRH-HCID	NWTRH-DX	NWTRH-GX	8260 VOCs Full List	8260 RBDM VOCs	8260 HVOCS	8260 BTEX VOCs	8270 SVOC	8270 SIM PARTS (CRA)	8082 PCBs	600 TTO	RCRA Metals (8)	TCLP Metals (8)	AL, Sb, As, Ba, Be, Bi, Cd, Cr, Cu, Fe, Pb, Hg, Mn, Mo, Ni, Zn, SS, Ag, Na, TL, V, Zn	1200-DISS TCLP	1200-COLS
1 GP53-S-0.5	4/27/18	920 S	S	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2 GP53-S-1.0		925 S	S	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3 GP53-S-2.0		930 S	S	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4 GP54-S-0.5		940 S	S	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
5 GP54-S-5.5		945 S	S	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
6 D406-S-0.5		930 S	S	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
7 SS01-S-0.5		930 S	S	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
8 SS02-S-0.5		1121 S	S	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
9 SS03-S-0.5		1140 S	S	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
10 SS04-S-0.5		1214 S	S	1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Normal Turn Around Time (TAT) = 10 Business Days

YES NO

TAT Requested (circle): 1 Day 2 Day 3 Day 4 DAY 5 DAY Other: _____

SPECIAL INSTRUCTIONS:
Archive remaining samples. Contact PM for further information.

RELINQUISHED BY: Carelynn Wise Date: 4-27-18
 Signature: _____ Time: _____
 Printed Name: Carelynn Wise Date: 4-27-18 Time: 1900
 Company: MFA

RECEIVED BY: Jan W. H. R. O. E. 0915 Date: 4-28-18
 Signature: _____ Time: _____
 Printed Name: Jan W. H. R. O. E. 0915 Date: 4-28-18 Time: 915
 Company: Apex

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Lisa Domenighini, Client Services Manager

AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham
1329 North State Street, Suite 301
Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**
Project Number: **0624.04.10**
Project Manager: **Heather Good**

Report ID:
A8D0903 - 05 25 18 1253

APEX LABS										CHAIN OF CUSTODY																																																											
12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333					Lab # <u>A8D0903</u> COC <u>3</u> of <u>12</u>					PO# <u> </u>					Project # <u>0624.04.10</u>																																																						
Company: <u>Maul Foster Alongi</u>					Project Mgr: <u>H. Good</u>					Project Name: <u>Swift Center</u>					Email: <u>hgood@maulfoster.com</u>																																																						
Address: <u>1329 N State St Ste 301, Bham, WA</u>					Phone: <u> </u>					Fax: <u> </u>					Email: <u> </u>																																																						
Stamped by: <u>C. Wise - B. Paulik</u>					LAB ID #					DATE					TIME																																																						
Site Location: OR (WA)					SAMPLE ID																																																																
					1 SS13-S-0.5					4/24/18					1622 S																																																						
					2 SS14-S-0.5					↓					1713 S																																																						
					3 SS15-S-0.5										1722 S																																																						
					4 DW17-S-0.5					4/25/18					745 S																																																						
					5 SS16-S-0.5										812 S																																																						
					6 SS17-S-0.5										850 S																																																						
					7 SS18-S-0.5										950 S																																																						
					8 SS19-S-0.5										1105 S																																																						
					9 SS20-S-0.5										1120 S																																																						
					10 DW15-S-0.5										1150 S																																																						
Normal Turn Around Time (TAT) = 10 Business Days										YES										NO																																																	
TAT Requested (circle)										1 Day										2 Day										3 Day										4 DAY										5 DAY										Other: _____									
RELINQUISHED BY:										SIGNED BY:										RECEIVED BY:										SPECIAL INSTRUCTIONS:																																							
Signature: <u>Carolyn Wise</u>										Signature: <u>[Signature]</u>										Signature: <u>[Signature]</u>										Archive remaining samples. Contact PM for further information.																																							
Date: <u>4/27/18</u>										Date: <u>4-27-18</u>										Date: <u>4/28/18</u>																																																	
Printed Name: <u>Carolyn Wise</u>										Printed Name: <u>[Name]</u>										Printed Name: <u>[Name]</u>																																																	
Time: <u>1900</u>										Time: <u>1900</u>										Time: <u>9:15</u>																																																	
Company: <u>MFA</u>										Company: <u>ESS NW</u>										Company: <u>ESS NW</u>										Company: <u>Apex</u>																																							

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.





AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham
1329 North State Street, Suite 301
Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**
Project Number: **0624.04.10**
Project Manager: **Heather Good**

Report ID:
A8D0903 - 05 25 18 1253

CHAIN OF CUSTODY

Lab # A8D0903 PO# 4 of 12

Company: Maul Foster & Alongi Project Mgr: Heather Good Project Name: Swift Center Project # 0624.04.10
Address: 1329 N. State St. Ste 301, Bham, WA Phone: _____ Email: hegood@maulfoster.com
Sampled by: C. Wise & B. Paulik

Site Location: OR (WA) Other: _____

SAMPLE ID	LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	ANALYSIS REQUEST			
						AT, Sb, As, Ba, Be, Bi, Br, Cd, Cr, Cs, Cu, Fe, Pb, P, Zn	TC:P Metals (8)	RCRA Metals (8)	600 TTO
SS21-S-0.5		4/29/18	1200	S	1				
SS22-S-0.5		1217	1217	S	1				
SS23-S-0.5		1228	1228	S	1				
SS24-S-0.5		1417	1417	S	1				
SS25-S-0.5		1430	1430	S	1				
DW18-S-0.5		1520	1520	S	1				X
SS26-S-0.5		1520	1520	S	1				
SS27-S-0.5		1535	1535	S	1				
SS28-S-0.5		1545	1545	S	1				
SS29-S-0.5		1600	1600	S	1				

Normal Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 1 Day 2 Day 3 Day 4 DAY 5 DAY Other: _____

SPECIAL INSTRUCTIONS: Archive remaining samples. Contact RM for more information.

RECEIVED BY: [Signature] Date: 4/22/18
Signature: [Signature] Date: 4/22/18
Printed Name: Cam O'Brien Printed Name: Cam O'Brien
Company: ESJ-NW Company: Apex

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Lisa Domenighini

AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham Project: **0624.04.10-03--Northern State Hospital**
 1329 North State Street, Suite 301 Project Number: **0624.04.10**
 Bellingham, WA 98225 Project Manager: **Heather Good** Report ID: **A8D0903 - 05 25 18 1253**

CHAIN OF CUSTODY

APEX LABS Lab # A8D0903 PO# 0624.04.10 COC 5 of 12

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

Company: Maul Foster Alongi Project Mgr: Heather Good Project Name: Swift Center Project # 0624.04.10
 Address: 1329 N. State St. Ste 301, Bham WA Phone: _____ Email: hgood@maulfoster
 Sampled by: C. Wise & B. Paulik

LAB ID #	DATE	TIME	# OF CONTAINERS	ANALYSIS REQUEST	
				RCRA Metals (8)	TCLP Metals (8)
1 SS30-S-0.5	4/27/18	1605	1		
2 DU02-S-0.5	4/27/18	1830	1	X	
3 SS36-S-0.5	4/27/18	1840	1		X
4 SS37-S-0.5	4/27/18	1855	1		
5 SS38-S-0.5	4/27/18	1905	1		
6 SS39-S-0.5	4/27/18	1915	1		
7 SS40-S-0.5	4/27/18	1923	1	X	
8 DU01-S-0.5	4/27/18	1705	1		X
9 SS31-S-0.5	4/27/18	1705	1		
10 SS32-S-0.5	4/27/18	1720	1		

Site Location: WA
 Other: _____

SPECIAL INSTRUCTIONS:
 Archive remaining samples. Contact PNY for more information.

RECEIVED BY: Caroleyn Wise Date: 4/27/18
 Signature: _____ Printed Name: Caroleyn Wise Time: _____
 Signature: John Wagoner Date: 4/28/18
 Printed Name: John Wagoner Time: _____

RECEIVED BY: ESS-NN Date: _____
 Signature: _____ Printed Name: ESS-NN Time: _____

RECEIVED BY: Apex Date: 4/28/18
 Signature: _____ Printed Name: Apex Time: _____

Caroleyn Wise



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham

Project: 0624.04.10-03--Northern State Hospital

1329 North State Street, Suite 301
Bellingham, WA 98225

Project Number: 0624.04.10
Project Manager: Heather Good

Report ID:
A8D0903 - 05 25 18 1253

CHAIN OF CUSTODY

Lab # AD00913 PO# _____ COC Ge of 12

Company: Maul Foster Alongi Project Mgr: Heather Good Project Name: Swift Center Project #: 0624.04.10

Address: 1329 N. State St. Ste 301 Bham, WA 98229 Phone: _____ Email: hgood@maulfoster.com

Sampled by: C. Wise ; B. Paulik

Site Location: OR WA Other: _____

SAMPLE ID	LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	ANALYSIS REQUEST	
						YES	NO
SS33-S-0.5		4/25/18	1730	S	1		
SS34-S-0.5		1755	S	1			
SS35-S-0.5		1805	S	1			
DU13-S-0.5		4/25/18	805	S	1		
SS41-S-0.5		825	S	1		X	
SS42-S-0.5		900	S	1			
SS43-S-0.5		950	S	1			
SS44-S-0.5		1020	S	1			
SS45-S-0.5		1045	S	1			
DU16-S-0.5		1245	S	1		X	

Normal Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 1 Day 2 Day 3 Day 4 DAY 5 DAY Other: _____

SPECIAL INSTRUCTIONS: Archive remaining samples. Contact PM for more information.

RELINQUISHED BY: Carolyn Wike Date: 4/27/18 Signature: _____ Date: _____

RECEIVED BY: ESS NW Date: _____ Signature: _____ Date: _____

Printed Name: Carolyn Wike Time: 1:00 Printed Name: ESS NW Time: _____

Company: MFA Company: ESS NW

Lisa Domenighini



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham
1329 North State Street, Suite 301
Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**
Project Number: **0624.04.10**
Project Manager: **Heather Good**

Report ID:
A8D0903 - 05 25 18 1253

CHAIN OF CUSTODY

APEX LABS 12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

Lab # A8D0903 PO# 7 of 12

Company: Maul Foster Alongi Project Mgr: Heather Good Project Name: Swift Center Project # 0624.04.10

Address: 1329 N. State St. Ste 301 Bellingham, WA Email: hgood@maulfoster.com

Sampled by: C. Wise; B. Paulik Phone: _____

SAMPLE ID	LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	ANALYSIS REQUEST	
						RCRA Metals (8)	TCLP Metals (8)
SS46-S-0.5		4/28/18	1300 S		1		
SS47-S-0.5		1325 S			1		
SS48-S-0.5		1350 S			1	X	
SS49-S-0.5		1430 S			1	X	
SS50-S-0.5		1450 S			1	X	
Du11-S-0.5		1715 S			1	X	
SS51-S-0.5		1725 S			1	X	
SS52-S-0.5		1735 S			1	X	
SS53-S-0.5		1740 S			1	X	
SS54-S-0.5		1750 S			1	X	

Site Location: OR (WA) Other: _____

1200-Z 18m Sample X

600 TTO X

8082 PCBs X

8270 SIM PAHs X

8260 BTEX VOCs X

8260 HVOCS X

8260 RDM VOCs X

8260 VOCs Full List X

NWTFH-Gx X

NWTFH-Dx X

NWTFH-HCID X

SPECIAL INSTRUCTIONS: Archive remaining samples. Contact PM for more information.

TAT Requested (circle): 1 Day, 2 Day, 3 Day, 4 DAY, 5 DAY, Other: _____

RECEIVED BY: Carolyn Wise Date: 4/27/18 Signature: [Signature] Time: 1900

RECEIVED BY: [Signature] Date: 4-28-18 Signature: CAZ Time: 9:28:18

RECEIVED BY: [Signature] Date: 4-28-18 Signature: [Signature] Time: 9:00

Company: MFA Company: ESS-NW Company: Apex



AMENDED REPORT

Apex Laboratories, LLC

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Maul Foster & Alongi, INC-Bellingham
1329 North State Street, Suite 301
Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**

Project Number: **0624.04.10**
Project Manager: **Heather Good**

Report ID:
A8D0903 - 05 25 18 1253

CHAIN OF CUSTODY

Lab # A8D0903 PO# 8 of 12

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

Company: Maul Foster Alongi Project Mgr: Heather Good Project Name: Swift Center Project # 0624.04.10
Address: 1329 N. State St. Ste. 301, Bham, WA Phone: _____ Email: hgood@maulfoster.com

Sampled by: C. Wise : B. Pasalik

LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	ANALYSIS REQUEST	
					TCRP Metals (8)	RCRA Metals (8)
SS55-S-0.5	4/20/18	1800	S	1		
Du08-S-0.5	1815	S	S	1		X
SS56-S-0.5	1925	S	S	1		
SS57-S-0.5	1820	S	S	1		
SS58-S-0.5	1900	S	S	1		
SS59-S-0.5	1910	S	S	1		
SS60-S-0.5	1930	S	S	1		
Du05-S-0.5	2000	S	S	1		X
SS61-S-0.5	2015	S	S	1		
SS62-S-0.5	2020	S	S	1		

Site Location: OR WA
Other: _____

Normal Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 1 Day 2 Day 3 Day 4 DAY 5 DAY Other: _____

SPECIAL INSTRUCTIONS: Archive remaining samples. Contact PM for more information.

RECEIVED BY: Carolyne Date: 4/27/18
Signature: _____ Date: _____
Printed Name: Carolyne Wise Time: 1900
Company: MFA

RECEIVED BY: SS Date: 4-28-18
Signature: _____ Date: _____
Printed Name: SS Time: _____
Company: ESS-NW

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Lisa Domenighini

Lisa Domenighini, Client Services Manager

AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham
1329 North State Street, Suite 301
Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**

Project Number: **0624.04.10**

Project Manager: **Heather Good**

Report ID:

A8D0903 - 05 25 18 1253

SAMPLE CHAIN OF CUSTODY

Report To: Heather Good
Company: Maul Foster Alongi
Address: 1329 N. State St. Ste 301
City, State, ZIP: Bellingham, WA 98229
Phone: _____ Email: hgood@maulfoster.com

SAMPLERS (signature): C. Wise : B. Paulik
PROJECT NAME: Swift Center
REMARKS: _____

PO #: 0624.04.10
INVOICE TO: H. Good
MFA

Page # 9 of 12
TURNAROUND TIME: _____
 Standard Turnaround
 RUSH
Rush charges authorized by: _____

SAMPLE DISPOSAL:
 Dispose after 30 days
 Archive Samples
 Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	KC12H 8	ISM Sample	Notes
SS63-S-0.5		4/26/18	2030	S	1										
SS64-S-0.5		4/26/18	2040	S	1										
SS65-S-0.5		4/26/18	2050	S	1										
DW14-S-0.5		4/27/18	805	S	1								X		
SS66-S-0.5			805	S	1								X		
SS67-S-0.5			820	S	1										
SS68-S-0.5			845	S	1										
SS69-S-0.5			900	S	1										
SS70-S-0.5			945	S	1										
DW14A-S-0.5			1015	S	1								X		

ANALYSES REQUESTED

Signature: _____
Relinquished by: _____
Received by: _____
Relinquished by: _____
Received by: _____

PRINT NAME: _____
COMPANY: _____
DATE: _____
TIME: _____

Friedman & Braya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

Lisa Domenighini

AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham	Project: 0624.04.10-03--Northern State Hospital	
1329 North State Street, Suite 301	Project Number: 0624.04.10	Report ID:
Bellingham, WA 98225	Project Manager: Heather Good	A8D0903 - 05 25 18 1253

Page # 10 of 10
TURNAROUND TIME

Standard Turnaround
 RUSH
 Rush charges authorized by:

SAMPLE DISPOSAL
 Dispose after 30 days
 Archive Samples
 Other

A9D0903

SAMPLE CHAIN OF CUSTODY

SAMPLERS (signature) <i>Carolyn Wise</i>	PO #	INVOICE TO
PROJECT NAME <i>Swift Center</i>	<i>0624-04-10</i>	<i>H. Good</i>
REMARKS <i>Archive 14 samples. Contact Paul Foster.</i>		

Report To: *Heather Good*
 Company: *Maul Foster Alongi*
 Address: *1329 N State St Ste 301*
 City, State, ZIP: *Bellingham, WA 98229*
 Phone: _____ Email: *hgood@maulfoster.com*

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED	Notes
SS71-S-0.5		4/27/18	1030	S	1	TPH-HC/D TPH-Diesel TPH-Gasoline BTEX by 8021B VOCs by 8260C SVOCs by 8270D PAHs 8270D SIM <i>ISM Sample</i>	
SS72-S-0.5			1100	S	1		
SS73-S-0.5			1120	S	1		
SS74-S-0.5			1140	S	1		
SS75-S-0.5			1200	S	1		
DWPC-S-0.5			1300	S	1		
SS81-S-0.5			1310	S	1		
SS82-S-0.5			1320	S	1		
SS83-S-0.5			1330	S	1		
SS84-S-0.5			1510	S	1		

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
<i>Carolyn Wise</i>	<i>Carolyn Wise</i>	<i>MFA</i>	<i>4/27/18</i>	<i>1900</i>
<i>Jon Warricide</i>	<i>Jon Warricide</i>	<i>ESS-NW</i>	<i>4/27/18</i>	<i>1900</i>
<i>Jan Warricide</i>	<i>Jan Warricide</i>	<i>ESS-NW</i>	<i>4/28/18</i>	<i>0915</i>
<i>Cam Obrien</i>	<i>Cam Obrien</i>	<i>MFA</i>	<i>4/28/18</i>	<i>905</i>

Lisa Domenighini

AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham
 1329 North State Street, Suite 301
 Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**

Project Number: **0624.04.10**
 Project Manager: **Heather Good**

Report ID:
A8D0903 - 05 25 18 1253

Page # 11 of 12
 TURNAROUND TIME

A8D0903

SAMPLE CHAIN OF CUSTODY

SAMPLERS (signature) Carolyn Wise PO# 0624.04.10

PROJECT NAME DWA Center INVOICE TO H. Good

REMARKS Arch. vs. TMA. by samples. Contact pm for more info.

Report To: Heather Good

Company: Maul Foster Alongi

Address: 1329 N. State St. Ste 301

City, State, ZIP: Bellingham, WA 98229

Phone: Email: hgood@maulalongi.com

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED								Notes		
						TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	13X Sample			
SS85-S-0.5		4/27/18	1530	S	1											
DW10B-S-0.5		4/27/18	1355	S	1							X				
SS76-S-0.5			1355	S	1											
SS77-S-0.5			1400	S	1											
SS78-S-0.5			1405	S	1											
SS79-S-0.5			1418	S	1											
SS80-S-0.5			1430	S	1											
DW03-S-0.5			1600	S	1											
SS86-S-0.5			1610	S	1											
SS87-S-0.5			1615	S	1											

Relinquished by: Carolyn Wise PRINT NAME: Carolyn Wise COMPANY: MFA DATE: 4/27/18 TIME: 1900

Received by: [Signature] PRINT NAME: JON WARRIBLE COMPANY: ES-NW DATE: 4/27/18 TIME: 1900

Relinquished by: [Signature] PRINT NAME: JON WARRIBLE COMPANY: ES-NW DATE: 4/28/18 TIME: 0915

Received by: [Signature] PRINT NAME: Dan O'Brien COMPANY: Apex DATE: 4/28/18 TIME: 708

Friedman & Bruya, Inc.
 3012 16th Avenue West
 Seattle, WA 98119-2029
 Ph. (206) 285-8282

Lisa Domenighini



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham
1329 North State Street, Suite 301
Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**
Project Number: **0624.04.10**
Project Manager: **Heather Good**

Report ID:
A8D0903 - 05 25 18 1253

Page # 12 of 12

TURNAROUND TIME

Standard Turnaround
 RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
 Dispose after 30 days
 Archive Samples
 Other

A8D0903

SAMPLERS (signature) *Carolyn Wise*

PROJECT NAME: *Swift Center*

PO #: *0624.04.10*

INVOICE TO: *H. Good*

REMARKS:

Report To: *Maul Foster Alongi*

Company: *Heather Good*

Address: *1329 N State St Ste 301*

City, State, ZIP: *Bellingham, WA 98225*

Phone: _____ Email: *hgood@maulalongi.com*

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	Notes
SS88-S-0.5		4/27/18	1630	S	1								
SS89-S-0.5			1640	S	1								
SS90-S-0.5			1700 1700	S	1								
D112-S-0.5			1720	S	1								
SS91-S-0.5			1730	S	1								
SS92-S-0.5			1755	S	1								
SS93-S-0.5			1820	S	1								
SS94-S-0.5			1840	S	1								
SS95-S-0.5			1850	S	1								

ANALYSES REQUESTED

Relinquished by: *Carolyn Wise*

Received by: *John Warrick*

Relinquished by: *John Warrick*

Received by: *Carla Brown*

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

PRINT NAME: *Carolyn Wise*

COMPANY: *MFA*

DATE: *4/27/18* TIME: *1900*

DATE: *4/27/18* TIME: *1900*

DATE: *4/28/18* TIME: *0915*

DATE: *4/28/18* TIME: *9:15*

Lisa Domenighini



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: 0624.04.10 Project Manager: Heather Good	Report ID: A8D0903 - 05 25 18 1253
---	---	--

APEX LABS COOLER RECEIPT FORM

Client: MFA Element WO#: A8 D0903

Project/Project #: Swift Center

Delivery info:
Date/Time Received: 4/29/18 @ 9:15 By: COB

Delivered by: Apex Client ESS FedEx UPS Swift Senvoy SDS Other

Cooler Inspection Inspected by: COB : 4/29/18 @ 9:15

Chain of Custody Included? Yes No Custody Seals? Yes No

Signed/Dated by Client? Yes No

Signed/Dated by Apex? Yes No

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (deg. C)	<u>1.1</u>	<u>1.2</u>	<u>2.6</u>	<u>1.2</u>	<u>2.8</u>		
Received on Ice? (Y/N)	<u>(Y)</u>						
Temp. Blanks? (Y/N)							
Ice Type: (Gel/Real/Other)							
Condition:	<u>good</u>						

Cooler out of temp? (Y/N) Possible reason why: _____

If some coolers are in temp and some out, were green dot applied to out of temperature samples? Yes/No/NA (NA)

Samples Inspection: Inspected by: MS : 4/25/18 @ 10:00

All Samples Intact? Yes No Comments: _____

Bottle Labels/COCs agree? Yes No Comments: No T on ^{lots} 5515-5-0.5, 5525-5-0.5, 5545-5-0.5, 5551-5-0.5 No D on lots 5461, No T on

Containers/Volumes Received Appropriate for Analysis? Yes No Comments: lots 5569, DV10B-5-0.5, DV12, Subsampled: MS Witnessed:

Do VOA Vials have Visible Headspace? Yes No NA

Comments: Label reads DV06-5-0.5, lol reads DV06-5-0.5, matched by T.

Water Samples: pH Checked and Appropriate (except VOAs): Yes No NA

Comments: _____

Additional Information: D on labels read 4/25/18 on 5541, 5542, 5543, 5544, 5545, 5547, 5548, 5549, 5550, 5551, DV08, lol reads 4/26/18

Labeled by: MS Witness: MS Cooler Inspected by: COB See Project Contact Form: Y

Lisa Domenighini

May 11, 2018

Ms. Lisa Domenighini
Apex Laboratories
12232 S.W. Garden Place
Portland, Oregon 97223

Re: Dioxin & PCB's subcontract
Work Order: 13267
SDG: A8D0903

Dear Ms. Domenighini:

Cape Fear Analytical LLC (CFA) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on April 24, 2018. This original data report has been prepared and reviewed in accordance with CFA's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at 910-795-0421.

Sincerely,



Andrea Scarpello
Project Manager

Enclosures

SUBCONTRACT ORDER

Apex Laboratories

A8D0903

CFA WO#13207

SENDING LABORATORY:

Apex Laboratories
12232 S.W. Garden Place
Tigard, OR 97223
Phone: (503) 718-2323
Fax: (503) 718-0333
Project Manager: Lisa Domenighini

RECEIVING LABORATORY:

Cape Fear Analytical, LLC
3306 Kitty Hawk Rd Suite 120
Wilmington, NC 28405
Phone : (910) 795-0421
Fax: -

Sample Name: GP53-S-0.5 Soil Sampled: 04/24/18 09:20 (A8D0903-01)

Analysis	Due	Expires	Comments
1613B Dioxins and Furans (SUB) <i>Containers Supplied:</i> (B)4 oz Glass Jar	05/11/18 17:00	10/21/18 09:20	

*Standard
TAT*

Released By *[Signature]* Date *4/30/18 14:44* Received By *[Signature]* Date *5/2/18 @0942*

Released By *[Signature]* Date *4/30/18 14:44* Received By *[Signature]* Date *5/2/18 @0942*

Fed Ex (Shipper)

Fed Ex (Shipper)

SAMPLE RECEIPT CHECKLIST
Cape Fear Analytical

Client: <u>Apex Laboratories</u>	Work Order: <u>13207</u>
Shipping Company: <u>FedEx</u>	Date/Time Received: <u>5/2/18 9:42</u>

Suspected Hazard Information	Yes	NA	No
Shipped as DOT Hazardous?			✓
Samples identified as Foreign Soil?			✓

DOE Site Sample Packages	Yes	NA	No*
Screened <0.5 mR/hr?		✓	
Samples < 2x background?		✓	

* Notify RSO of any responses in this column immediately.

Air Sample Receipt Specifics	Yes	NA	No
Air sample in shipment?			✓

Air Witness: _____

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	✓			Circle Applicable: seals broken damaged container leaking container other(describe)
2 Chain of Custody documents included with shipment?	✓			
3 Samples requiring cold preservation within 0-6°C?	✓			Preservation Method: <u>ice bags</u> blue ice dry ice none other (describe) <u>4.9-0.6 = 4.3°</u>
4 Aqueous samples found to have visible solids?		✓		Sample IDs, containers affected:
5 Samples requiring chemical preservation at proper pH?		✓		Sample IDs, containers affected and pH observed: If preservative added, Lot#:
6 Samples requiring preservation have no residual chlorine?		✓		Sample IDs, containers affected: If preservative added, Lot#:
7 Samples received within holding time?	✓			Sample IDs, tests affected:
8 Sample IDs on COC match IDs on containers?	✓			Sample IDs, containers affected:
9 Date & time of COC match date & time on containers?	✓			Sample IDs, containers affected:
10 Number of containers received match number indicated on COC?	✓			List type and number of containers / Sample IDs, containers affected: <u>1- 4oz clear glass</u>
11 COC form is properly signed in relinquished/received sections?	✓			

Comments:

trip blank included

Sample has water in jar and appears to have leaked in the bubble wrap bag slightly. The sample does not appear compromised.

Checklist performed by: Initials: RW Date: 5/2/18

High Resolution Dioxins and Furans Analysis

Case Narrative

**HDOX Case Narrative
Apex Laboratories (APEX)
SDG A8D0903
Work Order 13267**

Method/Analysis Information

Product: Dioxins/Furans by EPA Method 1613B in Solids
Analytical Method: EPA Method 1613B
Extraction Method: SW846 3540C
Analytical Batch Number: 37541
Clean Up Batch Number: 37540
Extraction Batch Number: 37539

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA Method 1613B:

Sample ID	Client ID
12021188	Method Blank (MB)
12021189	Laboratory Control Sample (LCS)
12021190	Laboratory Control Sample Duplicate (LCSD)
13267001	GP53-S-0.5

The samples in this SDG were analyzed on a "dry weight" basis.

SOP Reference

Procedure for preparation, analysis and reporting of analytical data are controlled by Cape Fear Analytical LLC (CFA) as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with CF-OA-E-002 REV# 15.

Raw data reports are processed and reviewed by the analyst using the TargetLynx software package.

Calibration Information

Initial Calibration

All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification (CCV) Requirements

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Certification Statement

The test results presented in this document are certified to meet all requirements of the 2009 TNI Standard.

Method Blank (MB) Statement

The MB(s) analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries

All surrogate recoveries were within the established acceptance criteria for this SDG.

Laboratory Control Sample (LCS) Recovery

The LCS spike recoveries met the acceptance limits.

Laboratory Control Sample Duplicate (LCSD) Recovery

The LCSD spike recoveries met the acceptance limits.

LCS/LCSD Relative Percent Difference (RPD) Statement

The RPD(s) between the LCS and LCSD met the acceptance limits.

QC Sample Designation

A matrix spike and matrix spike duplicate analysis was not required for this SDG.

Technical Information

Holding Time Specifications

CFA assigns holding times based on the associated methodology, which assigns the date and time from sample collection. Those holding times expressed in hours are calculated in the AlphaLIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Preparation/Analytical Method Verification

All procedures were performed as stated in the SOP.

Sample Dilutions

The samples in this SDG did not require dilutions.

Sample Re-extraction/Re-analysis

Re-extractions or re-analyses were not required in this SDG.

Miscellaneous Information

Nonconformance (NCR) Documentation

A NCR was not required for this SDG.

Manual Integrations

Certain standards and QC samples required manual integrations to correctly position the baseline as set in the calibration standard injections. Where manual integrations were performed, copies of all manual integration peak profiles are included in the raw data section of this fraction. Manual integrations were required for data files in this SDG.

Sample preparation

No difficulties were encountered during sample preparation.

Electronic Packaging Comment

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Sample Data Summary

Cape Fear Analytical, LLC

3306 Kitty Hawk Road Suite 120, Wilmington, NC 28405 - (910) 795-0421 - www.capefearanalytical.com

Qualifier Definition Report for

APEX001 Apex Laboratories

Client SDG: A8D0903 CFA Work Order: 13267

The Qualifiers in this report are defined as follows:

- * A quality control analyte recovery is outside of specified acceptance criteria
- ** Analyte is a surrogate compound
- J Value is estimated
- K Estimated Maximum Possible Concentration
- U Analyte was analyzed for, but not detected above the specified detection limit.
- DL Indicates that sample is diluted.
- RA Indicates that sample is re-analyzed without re-extraction.
- RE Indicates that sample is re-extracted.

Review/Validation

Cape Fear Analytical requires all analytical data to be verified by a qualified data reviewer.

The following data validator verified the information presented in this case narrative:

Signature: 

Name: Heather Patterson

Date: 11 MAY 2018

Title: Group Leader

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: A8D0903	Client: APEX001	Project: APEX00111
Lab Sample ID: 13267001	Date Collected: 04/24/2018 09:20	Matrix: SOIL
Client Sample: 1613B Soil	Date Received: 05/02/2018 09:42	%Moisture: 17.8
Client ID: GP53-S-0.5		Prep Basis: Dry Weight
Batch ID: 37541	Method: EPA Method 1613B	
Run Date: 05/05/2018 01:36	Analyst: MJC	Instrument: HRP750
Data File: A03MAY18A_4-13		Dilution: 1
Prep Batch: 37539	Prep Method: SW846 3540C	
Prep Date: 03-MAY-18	Prep Aliquot: 16.77 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	J	0.115	pg/g	0.0678	0.726
40321-76-4	1,2,3,7,8-PeCDD	JK	0.210	pg/g	0.0633	3.63
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.0842	pg/g	0.0842	3.63
57653-85-7	1,2,3,6,7,8-HxCDD	J	0.264	pg/g	0.0959	3.63
19408-74-3	1,2,3,7,8,9-HxCDD	J	0.131	pg/g	0.0925	3.63
35822-46-9	1,2,3,4,6,7,8-HpCDD		4.36	pg/g	0.157	3.63
3268-87-9	1,2,3,4,6,7,8,9-OCDD		38.7	pg/g	0.222	7.26
51207-31-9	2,3,7,8-TCDF	J	0.219	pg/g	0.090	0.726
57117-41-6	1,2,3,7,8-PeCDF	J	0.578	pg/g	0.128	3.63
57117-31-4	2,3,4,7,8-PeCDF	J	0.395	pg/g	0.114	3.63
70648-26-9	1,2,3,4,7,8-HxCDF	J	2.05	pg/g	0.057	3.63
57117-44-9	1,2,3,6,7,8-HxCDF	J	0.482	pg/g	0.0591	3.63
60851-34-5	2,3,4,6,7,8-HxCDF	J	0.354	pg/g	0.0588	3.63
72918-21-9	1,2,3,7,8,9-HxCDF	JK	0.190	pg/g	0.0707	3.63
67562-39-4	1,2,3,4,6,7,8-HpCDF	J	3.60	pg/g	0.0943	3.63
55673-89-7	1,2,3,4,7,8,9-HpCDF	J	0.421	pg/g	0.127	3.63
39001-02-0	1,2,3,4,6,7,8,9-OCDF	J	2.03	pg/g	0.142	7.26
41903-57-5	Total TeCDD		0.836	pg/g	0.0678	0.726
36088-22-9	Total PeCDD	JK	1.75	pg/g	0.0633	3.63
34465-46-8	Total HxCDD	J	2.58	pg/g	0.0842	3.63
37871-00-4	Total HpCDD		7.73	pg/g	0.157	3.63
30402-14-3	Total TeCDF	K	1.09	pg/g	0.090	0.726
30402-15-4	Total PeCDF	K	4.76	pg/g	0.0399	3.63
55684-94-1	Total HxCDF	K	7.89	pg/g	0.057	3.63
38998-75-3	Total HpCDF		7.94	pg/g	0.0943	3.63
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.925	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.930	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		122	145	pg/g	83.8	(25%-164%)
13C-1,2,3,7,8-PeCDD		119	145	pg/g	82.0	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		116	145	pg/g	80.1	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		108	145	pg/g	74.6	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		122	145	pg/g	83.9	(23%-140%)
13C-OCDD		244	290	pg/g	83.9	(17%-157%)
13C-2,3,7,8-TCDF		111	145	pg/g	76.7	(24%-169%)
13C-1,2,3,7,8-PeCDF		112	145	pg/g	77.2	(24%-185%)
13C-2,3,4,7,8-PeCDF		113	145	pg/g	77.6	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		102	145	pg/g	70.4	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		92.4	145	pg/g	63.7	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		101	145	pg/g	69.6	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		103	145	pg/g	70.8	(29%-147%)

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: A8D0903	Client: APEX001	Project: APEX00111
Lab Sample ID: 13267001	Date Collected: 04/24/2018 09:20	Matrix: SOIL
Client Sample: 1613B Soil	Date Received: 05/02/2018 09:42	%Moisture: 17.8
Client ID: GP53-S-0.5		Prep Basis: Dry Weight
Batch ID: 37541	Method: EPA Method 1613B	
Run Date: 05/05/2018 01:36	Analyst: MJC	Instrument: HRP750
Data File: A03MAY18A_4-13		Dilution: 1
Prep Batch: 37539	Prep Method: SW846 3540C	
Prep Date: 03-MAY-18	Prep Aliquot: 16.77 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
Surrogate/Tracer recovery						
		Qual	Result	Nominal	Units	Recovery%
						Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF			96.8	145	pg/g	66.7 (28%-143%)
13C-1,2,3,4,7,8,9-HpCDF			103	145	pg/g	70.8 (26%-138%)
37Cl-2,3,7,8-TCDD			15.0	14.5	pg/g	104 (35%-197%)

Comments:
J Value is estimated
K Estimated Maximum Possible Concentration
U Analyte was analyzed for, but not detected above the specified detection limit.

Quality Control Summary

Hi-Res Dioxins/Furans
Surrogate Recovery Report

SDG Number: A8D0903

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
12021189	LCS for batch 37539	13C-2,3,7,8-TCDD		95.2	(20%-175%)
		13C-1,2,3,7,8-PeCDD		91.6	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		90.5	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		85.6	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		94.8	(22%-166%)
		13C-OCDD		93.4	(13%-199%)
		13C-2,3,7,8-TCDF		83.6	(22%-152%)
		13C-1,2,3,7,8-PeCDF		86.6	(21%-192%)
		13C-2,3,4,7,8-PeCDF		86.5	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		80.8	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		71.1	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		79.5	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		81.1	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		73.8	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		79.3	(20%-186%)
		37Cl-2,3,7,8-TCDD		103	(31%-191%)
12021190	LCSD for batch 37539	13C-2,3,7,8-TCDD		98.1	(20%-175%)
		13C-1,2,3,7,8-PeCDD		92.3	(21%-227%)
		13C-1,2,3,4,7,8-HxCDD		89.2	(21%-193%)
		13C-1,2,3,6,7,8-HxCDD		86.1	(25%-163%)
		13C-1,2,3,4,6,7,8-HpCDD		93.5	(22%-166%)
		13C-OCDD		92.0	(13%-199%)
		13C-2,3,7,8-TCDF		86.3	(22%-152%)
		13C-1,2,3,7,8-PeCDF		88.6	(21%-192%)
		13C-2,3,4,7,8-PeCDF		88.5	(13%-328%)
		13C-1,2,3,4,7,8-HxCDF		79.4	(19%-202%)
		13C-1,2,3,6,7,8-HxCDF		71.9	(21%-159%)
		13C-2,3,4,6,7,8-HxCDF		78.4	(22%-176%)
		13C-1,2,3,7,8,9-HxCDF		80.6	(17%-205%)
		13C-1,2,3,4,6,7,8-HpCDF		72.8	(21%-158%)
		13C-1,2,3,4,7,8,9-HpCDF		78.2	(20%-186%)
		37Cl-2,3,7,8-TCDD		104	(31%-191%)
12021188	MB for batch 37539	13C-2,3,7,8-TCDD		98.0	(25%-164%)
		13C-1,2,3,7,8-PeCDD		94.2	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		93.0	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		86.5	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		98.4	(23%-140%)
		13C-OCDD		98.4	(17%-157%)
		13C-2,3,7,8-TCDF		87.1	(24%-169%)
		13C-1,2,3,7,8-PeCDF		89.6	(24%-185%)
		13C-2,3,4,7,8-PeCDF		87.7	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		79.4	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		72.0	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		78.9	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		84.7	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		77.0	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		82.6	(26%-138%)
		37Cl-2,3,7,8-TCDD		108	(35%-197%)
13267001	GP53-S-0.5	13C-2,3,7,8-TCDD		83.8	(25%-164%)

**Hi-Res Dioxins/Furans
Surrogate Recovery Report**

SDG Number: A8D0903

Matrix Type: SOLID

Sample ID	Client ID	Surrogate	QUAL	Recovery (%)	Acceptance Limits
13267001	GP53-S-0.5	13C-1,2,3,7,8-PeCDD		82.0	(25%-181%)
		13C-1,2,3,4,7,8-HxCDD		80.1	(32%-141%)
		13C-1,2,3,6,7,8-HxCDD		74.6	(28%-130%)
		13C-1,2,3,4,6,7,8-HpCDD		83.9	(23%-140%)
		13C-OCDD		83.9	(17%-157%)
		13C-2,3,7,8-TCDF		76.7	(24%-169%)
		13C-1,2,3,7,8-PeCDF		77.2	(24%-185%)
		13C-2,3,4,7,8-PeCDF		77.6	(21%-178%)
		13C-1,2,3,4,7,8-HxCDF		70.4	(26%-152%)
		13C-1,2,3,6,7,8-HxCDF		63.7	(26%-123%)
		13C-2,3,4,6,7,8-HxCDF		69.6	(28%-136%)
		13C-1,2,3,7,8,9-HxCDF		70.8	(29%-147%)
		13C-1,2,3,4,6,7,8-HpCDF		66.7	(28%-143%)
		13C-1,2,3,4,7,8,9-HpCDF		70.8	(26%-138%)
		37Cl-2,3,7,8-TCDD		104	(35%-197%)

* Recovery outside Acceptance Limits

Column to be used to flag recovery values

D Sample Diluted

Hi-Res Dioxins/Furans
Quality Control Summary
Spike Recovery Report

SDG Number: A8D0903

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 37539

Matrix: SOIL

Lab Sample ID: 12021189

Instrument: HRP750

Analysis Date: 05/04/2018 20:02

Dilution: 1

Analyst: MJC

Prep Batch ID: 37539

Batch ID: 37541

CAS No.	Parmname	Amount Added pg/g	Spike Conc. pg/g	Recovery %	Acceptance Limits
1746-01-6	LCS 2,3,7,8-TCDD	20.0	20.7	103	67-158
40321-76-4	LCS 1,2,3,7,8-PeCDD	100	99.6	99.6	70-142
39227-28-6	LCS 1,2,3,4,7,8-HxCDD	100	96.5	96.5	70-164
57653-85-7	LCS 1,2,3,6,7,8-HxCDD	100	92.4	92.4	76-134
19408-74-3	LCS 1,2,3,7,8,9-HxCDD	100	100	100	64-162
35822-46-9	LCS 1,2,3,4,6,7,8-HpCDD	100	89.5	89.5	70-140
3268-87-9	LCS 1,2,3,4,6,7,8,9-OCDD	200	192	96.2	78-144
51207-31-9	LCS 2,3,7,8-TCDF	20.0	16.3	81.5	75-158
57117-41-6	LCS 1,2,3,7,8-PeCDF	100	87.1	87.1	80-134
57117-31-4	LCS 2,3,4,7,8-PeCDF	100	84.0	84	68-160
70648-26-9	LCS 1,2,3,4,7,8-HxCDF	100	90.4	90.4	72-134
57117-44-9	LCS 1,2,3,6,7,8-HxCDF	100	93.6	93.6	84-130
60851-34-5	LCS 2,3,4,6,7,8-HxCDF	100	89.9	89.9	70-156
72918-21-9	LCS 1,2,3,7,8,9-HxCDF	100	91.6	91.6	78-130
67562-39-4	LCS 1,2,3,4,6,7,8-HpCDF	100	95.2	95.2	82-122
55673-89-7	LCS 1,2,3,4,7,8,9-HpCDF	100	95.3	95.3	78-138
39001-02-0	LCS 1,2,3,4,6,7,8,9-OCDF	200	166	82.9	63-170

Method Blank Summary

Page 1 of 1

SDG Number: A8D0903
Client ID: MB for batch 37539
Lab Sample ID: 12021188
Column:

Client: APEX001
Instrument ID: HRP750
Prep Date: 03-MAY-18

Matrix: SOIL
Data File: A03MAY18A_4-8
Analyzed: 05/04/18 21:38

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 37539	12021189	A03MAY18A_4-6	05/04/18	2002
02 LCSD for batch 37539	12021190	A03MAY18A_4-7	05/04/18	2050
03 GP53-S-0.5	13267001	A03MAY18A_4-13	05/05/18	0136

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: A8D0903	Client: APEX001	Project: APEX00111
Lab Sample ID: 12021188		Matrix: SOIL
Client Sample: QC for batch 37539		
Client ID: MB for batch 37539		Prep Basis: As Received
Batch ID: 37541	Method: EPA Method 1613B	
Run Date: 05/04/2018 21:38	Analyst: MJC	Instrument: HRP750
Data File: A03MAY18A_4-8		Dilution: 1
Prep Batch: 37539	Prep Method: SW846 3540C	
Prep Date: 03-MAY-18	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD	U	0.072	pg/g	0.072	1.00
40321-76-4	1,2,3,7,8-PeCDD	U	0.0822	pg/g	0.0822	5.00
39227-28-6	1,2,3,4,7,8-HxCDD	U	0.0976	pg/g	0.0976	5.00
57653-85-7	1,2,3,6,7,8-HxCDD	U	0.0952	pg/g	0.0952	5.00
19408-74-3	1,2,3,7,8,9-HxCDD	U	0.0988	pg/g	0.0988	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD	U	0.115	pg/g	0.115	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD	J	0.560	pg/g	0.214	10.0
51207-31-9	2,3,7,8-TCDF	U	0.0764	pg/g	0.0764	1.00
57117-41-6	1,2,3,7,8-PeCDF	U	0.0572	pg/g	0.0572	5.00
57117-31-4	2,3,4,7,8-PeCDF	U	0.0536	pg/g	0.0536	5.00
70648-26-9	1,2,3,4,7,8-HxCDF	U	0.0618	pg/g	0.0618	5.00
57117-44-9	1,2,3,6,7,8-HxCDF	U	0.0632	pg/g	0.0632	5.00
60851-34-5	2,3,4,6,7,8-HxCDF	U	0.065	pg/g	0.065	5.00
72918-21-9	1,2,3,7,8,9-HxCDF	U	0.0748	pg/g	0.0748	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF	U	0.0762	pg/g	0.0762	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF	U	0.108	pg/g	0.108	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF	U	0.151	pg/g	0.151	10.0
41903-57-5	Total TeCDD	U	0.072	pg/g	0.072	1.00
36088-22-9	Total PeCDD	U	0.0822	pg/g	0.0822	5.00
34465-46-8	Total HxCDD	U	0.0952	pg/g	0.0952	5.00
37871-00-4	Total HpCDD	U	0.115	pg/g	0.115	5.00
30402-14-3	Total TeCDF	U	0.0764	pg/g	0.0764	1.00
30402-15-4	Total PeCDF	U	0.041	pg/g	0.041	5.00
55684-94-1	Total HxCDF	U	0.0618	pg/g	0.0618	5.00
38998-75-3	Total HpCDF	U	0.0762	pg/g	0.0762	5.00
3333-30-2	TEQ WHO2005 ND=0 with EMPCs		0.000168	pg/g		
3333-30-3	TEQ WHO2005 ND=0.5 with EMPCs		0.119	pg/g		

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		196	200	pg/g	98.0	(25%-164%)
13C-1,2,3,7,8-PeCDD		188	200	pg/g	94.2	(25%-181%)
13C-1,2,3,4,7,8-HxCDD		186	200	pg/g	93.0	(32%-141%)
13C-1,2,3,6,7,8-HxCDD		173	200	pg/g	86.5	(28%-130%)
13C-1,2,3,4,6,7,8-HpCDD		197	200	pg/g	98.4	(23%-140%)
13C-OCDD		394	400	pg/g	98.4	(17%-157%)
13C-2,3,7,8-TCDF		174	200	pg/g	87.1	(24%-169%)
13C-1,2,3,7,8-PeCDF		179	200	pg/g	89.6	(24%-185%)
13C-2,3,4,7,8-PeCDF		175	200	pg/g	87.7	(21%-178%)
13C-1,2,3,4,7,8-HxCDF		159	200	pg/g	79.4	(26%-152%)
13C-1,2,3,6,7,8-HxCDF		144	200	pg/g	72.0	(26%-123%)
13C-2,3,4,6,7,8-HxCDF		158	200	pg/g	78.9	(28%-136%)
13C-1,2,3,7,8,9-HxCDF		169	200	pg/g	84.7	(29%-147%)

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

SDG Number: A8D0903	Client: APEX001	Project: APEX00111
Lab Sample ID: 12021188		Matrix: SOIL
Client Sample: QC for batch 37539		
Client ID: MB for batch 37539		Prep Basis: As Received
Batch ID: 37541	Method: EPA Method 1613B	
Run Date: 05/04/2018 21:38	Analyst: MJC	Instrument: HRP750
Data File: A03MAY18A_4-8		Dilution: 1
Prep Batch: 37539	Prep Method: SW846 3540C	
Prep Date: 03-MAY-18	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
Surrogate/Tracer recovery						
		Qual	Result	Nominal	Units	Recovery% Acceptable Limits
13C-1,2,3,4,6,7,8-HpCDF			154	200	pg/g	77.0 (28%-143%)
13C-1,2,3,4,7,8,9-HpCDF			165	200	pg/g	82.6 (26%-138%)
37Cl-2,3,7,8-TCDD			21.6	20.0	pg/g	108 (35%-197%)

Comments:
J Value is estimated
U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: A8D0903	Client: APEX001	Project: APEX00111
Lab Sample ID: 12021189		Matrix: SOIL
Client Sample: QC for batch 37539		
Client ID: LCS for batch 37539		Prep Basis: As Received
Batch ID: 37541	Method: EPA Method 1613B	
Run Date: 05/04/2018 20:02	Analyst: MJC	Instrument: HRP750
Data File: A03MAY18A_4-6		Dilution: 1
Prep Batch: 37539	Prep Method: SW846 3540C	
Prep Date: 03-MAY-18	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		20.7	pg/g	0.0482	1.00
40321-76-4	1,2,3,7,8-PeCDD		99.6	pg/g	0.0922	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		96.5	pg/g	0.173	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		92.4	pg/g	0.172	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		100	pg/g	0.177	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		89.5	pg/g	0.348	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		192	pg/g	0.204	10.0
51207-31-9	2,3,7,8-TCDF		16.3	pg/g	0.0654	1.00
57117-41-6	1,2,3,7,8-PeCDF		87.1	pg/g	0.0956	5.00
57117-31-4	2,3,4,7,8-PeCDF		84.0	pg/g	0.0876	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		90.4	pg/g	0.177	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		93.6	pg/g	0.187	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		89.9	pg/g	0.179	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		91.6	pg/g	0.226	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		95.2	pg/g	0.276	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		95.3	pg/g	0.390	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		166	pg/g	0.167	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		190	200	pg/g	95.2	(20%-175%)
13C-1,2,3,7,8-PeCDD		183	200	pg/g	91.6	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		181	200	pg/g	90.5	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		171	200	pg/g	85.6	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		190	200	pg/g	94.8	(22%-166%)
13C-OCDD		374	400	pg/g	93.4	(13%-199%)
13C-2,3,7,8-TCDF		167	200	pg/g	83.6	(22%-152%)
13C-1,2,3,7,8-PeCDF		173	200	pg/g	86.6	(21%-192%)
13C-2,3,4,7,8-PeCDF		173	200	pg/g	86.5	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		162	200	pg/g	80.8	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		142	200	pg/g	71.1	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		159	200	pg/g	79.5	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		162	200	pg/g	81.1	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		148	200	pg/g	73.8	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		159	200	pg/g	79.3	(20%-186%)
37Cl-2,3,7,8-TCDD		20.6	20.0	pg/g	103	(31%-191%)

Comments:

U Analyte was analyzed for, but not detected above the specified detection limit.

**Hi-Res Dioxins/Furans
Certificate of Analysis
Sample Summary**

Page 1 of 1

SDG Number: A8D0903	Client: APEX001	Project: APEX00111
Lab Sample ID: 12021190		Matrix: SOIL
Client Sample: QC for batch 37539		
Client ID: LCSD for batch 37539		Prep Basis: As Received
Batch ID: 37541	Method: EPA Method 1613B	
Run Date: 05/04/2018 20:50	Analyst: MJC	Instrument: HRP750
Data File: A03MAY18A_4-7		Dilution: 1
Prep Batch: 37539	Prep Method: SW846 3540C	
Prep Date: 03-MAY-18	Prep Aliquot: 10 g	

CAS No.	Parmname	Qual	Result	Units	EDL	PQL
1746-01-6	2,3,7,8-TCDD		19.9	pg/g	0.0402	1.00
40321-76-4	1,2,3,7,8-PeCDD		100	pg/g	0.085	5.00
39227-28-6	1,2,3,4,7,8-HxCDD		96.7	pg/g	0.117	5.00
57653-85-7	1,2,3,6,7,8-HxCDD		94.8	pg/g	0.117	5.00
19408-74-3	1,2,3,7,8,9-HxCDD		102	pg/g	0.120	5.00
35822-46-9	1,2,3,4,6,7,8-HpCDD		90.3	pg/g	0.362	5.00
3268-87-9	1,2,3,4,6,7,8,9-OCDD		194	pg/g	0.222	10.0
51207-31-9	2,3,7,8-TCDF		16.5	pg/g	0.0638	1.00
57117-41-6	1,2,3,7,8-PeCDF		85.9	pg/g	0.099	5.00
57117-31-4	2,3,4,7,8-PeCDF		86.1	pg/g	0.0856	5.00
70648-26-9	1,2,3,4,7,8-HxCDF		90.6	pg/g	0.148	5.00
57117-44-9	1,2,3,6,7,8-HxCDF		92.6	pg/g	0.161	5.00
60851-34-5	2,3,4,6,7,8-HxCDF		91.9	pg/g	0.168	5.00
72918-21-9	1,2,3,7,8,9-HxCDF		91.1	pg/g	0.204	5.00
67562-39-4	1,2,3,4,6,7,8-HpCDF		97.3	pg/g	0.272	5.00
55673-89-7	1,2,3,4,7,8,9-HpCDF		98.3	pg/g	0.372	5.00
39001-02-0	1,2,3,4,6,7,8,9-OCDF		168	pg/g	0.186	10.0

Surrogate/Tracer recovery	Qual	Result	Nominal	Units	Recovery%	Acceptable Limits
13C-2,3,7,8-TCDD		196	200	pg/g	98.1	(20%-175%)
13C-1,2,3,7,8-PeCDD		185	200	pg/g	92.3	(21%-227%)
13C-1,2,3,4,7,8-HxCDD		178	200	pg/g	89.2	(21%-193%)
13C-1,2,3,6,7,8-HxCDD		172	200	pg/g	86.1	(25%-163%)
13C-1,2,3,4,6,7,8-HpCDD		187	200	pg/g	93.5	(22%-166%)
13C-OCDD		368	400	pg/g	92.0	(13%-199%)
13C-2,3,7,8-TCDF		173	200	pg/g	86.3	(22%-152%)
13C-1,2,3,7,8-PeCDF		177	200	pg/g	88.6	(21%-192%)
13C-2,3,4,7,8-PeCDF		177	200	pg/g	88.5	(13%-328%)
13C-1,2,3,4,7,8-HxCDF		159	200	pg/g	79.4	(19%-202%)
13C-1,2,3,6,7,8-HxCDF		144	200	pg/g	71.9	(21%-159%)
13C-2,3,4,6,7,8-HxCDF		157	200	pg/g	78.4	(22%-176%)
13C-1,2,3,7,8,9-HxCDF		161	200	pg/g	80.6	(17%-205%)
13C-1,2,3,4,6,7,8-HpCDF		146	200	pg/g	72.8	(21%-158%)
13C-1,2,3,4,7,8,9-HpCDF		156	200	pg/g	78.2	(20%-186%)
37Cl-2,3,7,8-TCDD		20.9	20.0	pg/g	104	(31%-191%)

Comments:

U Analyte was analyzed for, but not detected above the specified detection limit.



Apex Laboratories, LLC

12232 S.W. Garden Place
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

AMENDED REPORT

Thursday, May 24, 2018

Heather Good
Maul Foster & Alongi, INC-Bellingham
1329 North State Street, Suite 301
Bellingham, WA 98225

RE: A8E0130 - 0624.04.10-03--Northern State Hospital - [none]

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A8E0130, which was received by the laboratory on 5/3/2018 at 3:43:00PM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: ldomenighini@apex-labs.com, or by phone at 503-718-2323.

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.

All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.



Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: [none] Project Manager: Heather Good	Report ID: A8E0130 - 05 24 18 1120
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ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
HA30-S-0.5	A8E0130-01	Soil	04/30/18 10:50	05/03/18 15:43
HA30-S-1.0	A8E0130-02	Soil	04/30/18 11:00	05/03/18 15:43
HA31-S-0.5	A8E0130-03	Soil	04/30/18 11:20	05/03/18 15:43
HA31-S-1.0	A8E0130-04	Soil	04/30/18 11:30	05/03/18 15:43
HA32-S-0.5	A8E0130-05	Soil	04/30/18 12:00	05/03/18 15:43
HA32-S-1.0	A8E0130-06	Soil	04/30/18 12:05	05/03/18 15:43
HA21-S-1.5	A8E0130-07	Soil	04/30/18 12:20	05/03/18 15:43
HA33-S-0.5	A8E0130-08	Soil	04/30/18 12:35	05/03/18 15:43
HA33-S-1.0	A8E0130-09	Soil	04/30/18 12:40	05/03/18 15:43
HA33-S-1.5	A8E0130-10	Soil	04/30/18 12:45	05/03/18 15:43
HA34-S-0.5	A8E0130-11	Soil	04/30/18 13:30	05/03/18 15:43
HA34-S-1.0	A8E0130-12	Soil	04/30/18 13:35	05/03/18 15:43
HA34-S-1.5	A8E0130-13	Soil	04/30/18 13:40	05/03/18 15:43
HA28-S-1.5	A8E0130-14	Soil	04/30/18 13:20	05/03/18 15:43
HA26-S-1.5	A8E0130-15	Soil	04/30/18 14:15	05/03/18 15:43
HA35-S-0.5	A8E0130-16	Soil	04/30/18 14:40	05/03/18 15:43
HA35-S-1.0	A8E0130-17	Soil	04/30/18 14:45	05/03/18 15:43
HA35-S-1.5	A8E0130-18	Soil	04/30/18 14:50	05/03/18 15:43
DU09-S-0.5 (As Received)	A8E0130-19	Soil	04/30/18 15:00	05/03/18 15:43
DU09-S-0.5 (After Processing)	A8E0130-20	Soil	04/30/18 15:00	05/03/18 15:43
SS96-S-0.5	A8E0130-21	Soil	04/30/18 15:30	05/03/18 15:43
SS97-S-0.5	A8E0130-22	Soil	04/30/18 15:35	05/03/18 15:43
SS98-S-0.5	A8E0130-23	Soil	04/30/18 15:50	05/03/18 15:43
SS99-S-0.5	A8E0130-24	Soil	04/30/18 16:20	05/03/18 15:43
SS100-S-0.5	A8E0130-25	Soil	04/30/18 16:30	05/03/18 15:43
MW09-GW-050118	A8E0130-26	Water	05/01/18 12:50	05/03/18 15:43
MW10-GW-050118	A8E0130-27	Water	05/01/18 14:15	05/03/18 15:43
MWDUP-GW-050118	A8E0130-28	Water	05/01/18 14:15	05/03/18 15:43
MW11-GW-050118	A8E0130-29	Water	05/01/18 15:20	05/03/18 15:43



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham
1329 North State Street, Suite 301
Bellingham, WA 98225

Project: 0624.04.10-03--Northern State Hospital
Project Number: [none]
Project Manager: Heather Good

Report ID:
A8E0130 - 05 24 18 1120

ANALYTICAL CASE NARRATIVE

Work Order: A8E0130

Amended Report

Missing Analyte-

This report has been amended due to not reporting vinyl chloride on the original report.

Lisa Domenighini
Client Services Manager
5-24-18

Amended Report

MDL reporting-

This report has been amended to reflect MDL reporting.

Lisa Domenighini
Client Services Manager
5-23-18



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: [none] Project Manager: Heather Good	Report ID: A8E0130 - 05 24 18 1120
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ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW09-GW-050118 (A8E0130-26)			Matrix: Water			Batch: 8050444		
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	05/04/18	EPA 8260C	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	05/04/18	EPA 8260C	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	05/04/18	EPA 8260C	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	05/04/18	EPA 8260C	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	05/04/18	EPA 8260C	
Vinyl chloride	ND	0.200	0.400	ug/L	1	05/04/18	EPA 8260C	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 97 %</i>		<i>Limits: 80-120 %</i>		<i>1</i>	<i>05/04/18</i>	<i>EPA 8260C</i>
<i>Toluene-d8 (Surr)</i>		<i>98 %</i>		<i>80-120 %</i>		<i>1</i>	<i>05/04/18</i>	<i>EPA 8260C</i>
<i>4-Bromofluorobenzene (Surr)</i>		<i>102 %</i>		<i>80-120 %</i>		<i>1</i>	<i>05/04/18</i>	<i>EPA 8260C</i>
MW10-GW-050118 (A8E0130-27)			Matrix: Water			Batch: 8050444		
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	05/04/18	EPA 8260C	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	05/04/18	EPA 8260C	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	05/04/18	EPA 8260C	
Tetrachloroethene (PCE)	22.8	0.200	0.400	ug/L	1	05/04/18	EPA 8260C	
Trichloroethene (TCE)	1.34	0.200	0.400	ug/L	1	05/04/18	EPA 8260C	
Vinyl chloride	ND	0.200	0.400	ug/L	1	05/04/18	EPA 8260C	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 98 %</i>		<i>Limits: 80-120 %</i>		<i>1</i>	<i>05/04/18</i>	<i>EPA 8260C</i>
<i>Toluene-d8 (Surr)</i>		<i>98 %</i>		<i>80-120 %</i>		<i>1</i>	<i>05/04/18</i>	<i>EPA 8260C</i>
<i>4-Bromofluorobenzene (Surr)</i>		<i>101 %</i>		<i>80-120 %</i>		<i>1</i>	<i>05/04/18</i>	<i>EPA 8260C</i>
MWDUP-GW-050118 (A8E0130-28)			Matrix: Water			Batch: 8050444		
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	05/04/18	EPA 8260C	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	05/04/18	EPA 8260C	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	05/04/18	EPA 8260C	
Tetrachloroethene (PCE)	23.0	0.200	0.400	ug/L	1	05/04/18	EPA 8260C	
Trichloroethene (TCE)	1.38	0.200	0.400	ug/L	1	05/04/18	EPA 8260C	
Vinyl chloride	ND	0.200	0.400	ug/L	1	05/04/18	EPA 8260C	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 101 %</i>		<i>Limits: 80-120 %</i>		<i>1</i>	<i>05/04/18</i>	<i>EPA 8260C</i>
<i>Toluene-d8 (Surr)</i>		<i>98 %</i>		<i>80-120 %</i>		<i>1</i>	<i>05/04/18</i>	<i>EPA 8260C</i>
<i>4-Bromofluorobenzene (Surr)</i>		<i>100 %</i>		<i>80-120 %</i>		<i>1</i>	<i>05/04/18</i>	<i>EPA 8260C</i>
MW11-GW-050118 (A8E0130-29)			Matrix: Water			Batch: 8050444		
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	05/04/18	EPA 8260C	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	05/04/18	EPA 8260C	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	05/04/18	EPA 8260C	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	05/04/18	EPA 8260C	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	05/04/18	EPA 8260C	

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AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: [none] Project Manager: Heather Good	Report ID: A8E0130 - 05 24 18 1120
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ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
MW11-GW-050118 (A8E0130-29)			Matrix: Water		Batch: 8050444			
Vinyl chloride	ND	0.200	0.400	ug/L	1	05/04/18	EPA 8260C	
<i>Surrogate: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 101 %</i>		<i>Limits: 80-120 %</i>	<i>1</i>	<i>05/04/18</i>	<i>EPA 8260C</i>	
<i>Toluene-d8 (Surr)</i>				<i>98 %</i>	<i>80-120 %</i>	<i>1</i>	<i>05/04/18</i>	<i>EPA 8260C</i>
<i>4-Bromofluorobenzene (Surr)</i>				<i>99 %</i>	<i>80-120 %</i>	<i>1</i>	<i>05/04/18</i>	<i>EPA 8260C</i>



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: [none] Project Manager: Heather Good	Report ID: A8E0130 - 05 24 18 1120
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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
HA30-S-0.5 (A8E0130-01)		Matrix: Soil						
<u>Batch: 8050684</u>								
Lead	141	0.186	0.372	mg/kg dry	10	05/14/18	EPA 6020A	
HA30-S-1.0 (A8E0130-02)		Matrix: Soil						
<u>Batch: 8050684</u>								
Lead	50.8	0.130	0.261	mg/kg dry	10	05/14/18	EPA 6020A	
HA31-S-0.5 (A8E0130-03)		Matrix: Soil						
<u>Batch: 8050684</u>								
Lead	15.8	0.114	0.229	mg/kg dry	10	05/14/18	EPA 6020A	
HA31-S-1.0 (A8E0130-04)		Matrix: Soil						
<u>Batch: 8050684</u>								
Lead	17.5	0.112	0.225	mg/kg dry	10	05/14/18	EPA 6020A	
HA32-S-0.5 (A8E0130-05)		Matrix: Soil						
<u>Batch: 8050684</u>								
Lead	105	0.154	0.307	mg/kg dry	10	05/14/18	EPA 6020A	
HA32-S-1.0 (A8E0130-06)		Matrix: Soil						
<u>Batch: 8050684</u>								
Lead	16.9	0.133	0.266	mg/kg dry	10	05/14/18	EPA 6020A	
HA21-S-1.5 (A8E0130-07)		Matrix: Soil						
<u>Batch: 8050684</u>								
Lead	257	0.129	0.258	mg/kg dry	10	05/14/18	EPA 6020A	
HA33-S-0.5 (A8E0130-08)		Matrix: Soil						
<u>Batch: 8050684</u>								
Lead	29.4	0.172	0.345	mg/kg dry	10	05/14/18	EPA 6020A	
HA33-S-1.0 (A8E0130-09)		Matrix: Soil						
<u>Batch: 8050684</u>								
Lead	10.9	0.108	0.216	mg/kg dry	10	05/14/18	EPA 6020A	
HA33-S-1.5 (A8E0130-10)		Matrix: Soil						
<u>Batch: 8050684</u>								
Lead	7.21	0.110	0.220	mg/kg dry	10	05/14/18	EPA 6020A	

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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
HA34-S-0.5 (A8E0130-11) Matrix: Soil								
Batch: 8050684								
Lead	107	0.162	0.323	mg/kg dry	10	05/14/18	EPA 6020A	
HA34-S-1.0 (A8E0130-12) Matrix: Soil								
Batch: 8050684								
Lead	71.7	0.144	0.288	mg/kg dry	10	05/14/18	EPA 6020A	
HA34-S-1.5 (A8E0130-13) Matrix: Soil								
Batch: 8050684								
Lead	53.2	0.148	0.295	mg/kg dry	10	05/14/18	EPA 6020A	
HA28-S-1.5 (A8E0130-14) Matrix: Soil								
Batch: 8050684								
Lead	159	0.143	0.286	mg/kg dry	10	05/14/18	EPA 6020A	
HA26-S-1.5 (A8E0130-15) Matrix: Soil								
Batch: 8050684								
Lead	307	0.126	0.253	mg/kg dry	10	05/14/18	EPA 6020A	
HA35-S-0.5 (A8E0130-16) Matrix: Soil								
Batch: 8050684								
Lead	112	0.159	0.318	mg/kg dry	10	05/14/18	EPA 6020A	
HA35-S-1.0 (A8E0130-17) Matrix: Soil								
Batch: 8050727								
Lead	46.4	0.138	0.276	mg/kg dry	10	05/14/18	EPA 6020A	
HA35-S-1.5 (A8E0130-18) Matrix: Soil								
Batch: 8050727								
Lead	42.1	0.135	0.269	mg/kg dry	10	05/14/18	EPA 6020A	
DU09-S-0.5 (After Processing) (A8E0130-20) Matrix: Soil								
Batch: 8050640								
Arsenic	13.1	0.537	1.07	mg/kg dry	10	05/12/18	EPA 6020A	
Barium	140	0.537	1.07	mg/kg dry	10	05/12/18	EPA 6020A	Q-42
Cadmium	0.408	0.107	0.215	mg/kg dry	10	05/12/18	EPA 6020A	Q-42
Chromium	73.0	0.537	1.07	mg/kg dry	10	05/12/18	EPA 6020A	

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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
DU09-S-0.5 (After Processing) (A8E0130-20)		Matrix: Soil						
Copper	49.6	1.07	2.15	mg/kg dry	10	05/12/18	EPA 6020A	
Lead	26.2	0.107	0.215	mg/kg dry	10	05/12/18	EPA 6020A	
Mercury	ND	0.473	0.473	mg/kg dry	10	05/12/18	EPA 6020A	R-01
Selenium	ND	0.537	1.07	mg/kg dry	10	05/12/18	EPA 6020A	Q-42
Silver	ND	0.537	1.07	mg/kg dry	10	05/12/18	EPA 6020A	
Zinc	112	2.15	4.30	mg/kg dry	10	05/12/18	EPA 6020A	Q-42



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ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
			Matrix: Soil			Batch: 8050539		
HA30-S-0.5 (A8E0130-01)								
% Solids	59.4	1.00	1.00	% by Weight	1	05/09/18	EPA 8000C	
			Matrix: Soil			Batch: 8050539		
HA30-S-1.0 (A8E0130-02)								
% Solids	78.5	1.00	1.00	% by Weight	1	05/09/18	EPA 8000C	
			Matrix: Soil			Batch: 8050539		
HA31-S-0.5 (A8E0130-03)								
% Solids	88.6	1.00	1.00	% by Weight	1	05/09/18	EPA 8000C	
			Matrix: Soil			Batch: 8050539		
HA31-S-1.0 (A8E0130-04)								
% Solids	88.5	1.00	1.00	% by Weight	1	05/09/18	EPA 8000C	
			Matrix: Soil			Batch: 8050539		
HA32-S-0.5 (A8E0130-05)								
% Solids	70.9	1.00	1.00	% by Weight	1	05/09/18	EPA 8000C	
			Matrix: Soil			Batch: 8050539		
HA32-S-1.0 (A8E0130-06)								
% Solids	78.1	1.00	1.00	% by Weight	1	05/09/18	EPA 8000C	
			Matrix: Soil			Batch: 8050539		
HA21-S-1.5 (A8E0130-07)								
% Solids	75.0	1.00	1.00	% by Weight	1	05/09/18	EPA 8000C	
			Matrix: Soil			Batch: 8050539		
HA33-S-0.5 (A8E0130-08)								
% Solids	60.2	1.00	1.00	% by Weight	1	05/09/18	EPA 8000C	
			Matrix: Soil			Batch: 8050539		
HA33-S-1.0 (A8E0130-09)								
% Solids	90.8	1.00	1.00	% by Weight	1	05/09/18	EPA 8000C	
			Matrix: Soil			Batch: 8050539		
HA33-S-1.5 (A8E0130-10)								
% Solids	92.0	1.00	1.00	% by Weight	1	05/09/18	EPA 8000C	
			Matrix: Soil			Batch: 8050539		
HA34-S-0.5 (A8E0130-11)								
% Solids	68.2	1.00	1.00	% by Weight	1	05/09/18	EPA 8000C	
			Matrix: Soil			Batch: 8050539		
HA34-S-1.0 (A8E0130-12)								
% Solids	72.4	1.00	1.00	% by Weight	1	05/09/18	EPA 8000C	
			Matrix: Soil			Batch: 8050539		
HA34-S-1.5 (A8E0130-13)								
% Solids	72.2	1.00	1.00	% by Weight	1	05/09/18	EPA 8000C	

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AMENDED REPORT

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ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
			Matrix: Soil					
					Batch: 8050539			
HA28-S-1.5 (A8E0130-14)								
% Solids	75.2	1.00	1.00	% by Weight	1	05/09/18	EPA 8000C	
			Matrix: Soil					
					Batch: 8050539			
HA26-S-1.5 (A8E0130-15)								
% Solids	78.2	1.00	1.00	% by Weight	1	05/09/18	EPA 8000C	
			Matrix: Soil					
					Batch: 8050539			
HA35-S-0.5 (A8E0130-16)								
% Solids	67.7	1.00	1.00	% by Weight	1	05/09/18	EPA 8000C	
			Matrix: Soil					
					Batch: 8050539			
HA35-S-1.0 (A8E0130-17)								
% Solids	75.3	1.00	1.00	% by Weight	1	05/09/18	EPA 8000C	
			Matrix: Soil					
					Batch: 8050539			
HA35-S-1.5 (A8E0130-18)								
% Solids	79.3	1.00	1.00	% by Weight	1	05/09/18	EPA 8000C	
			Matrix: Soil					
					Batch: 8050631			
DU09-S-0.5 (After Processing) (A8E0130-20)								
% Solids	96.8	1.00	1.00	% by Weight	1	05/11/18	EPA 8000C	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050444 - EPA 5030B												
Water												
Blank (8050444-BLK1)												
Prepared: 05/04/18 09:11 Analyzed: 05/04/18 10:32												
EPA 8260C												
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Vinyl chloride	ND	0.200	0.400	ug/L	1	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr) Recovery: 102 % Limits: 80-120 % Dilution: 1x												
Toluene-d8 (Surr) 100 % 80-120 % "												
4-Bromofluorobenzene (Surr) 101 % 80-120 % "												
LCS (8050444-BS1)												
Prepared: 05/04/18 09:11 Analyzed: 05/04/18 09:38												
EPA 8260C												
1,1-Dichloroethene	24.1	0.200	0.400	ug/L	1	20.0	---	120	80-120%	---	---	
cis-1,2-Dichloroethene	19.0	0.200	0.400	ug/L	1	20.0	---	95	80-120%	---	---	
trans-1,2-Dichloroethene	18.4	0.200	0.400	ug/L	1	20.0	---	92	80-120%	---	---	
Tetrachloroethene (PCE)	20.0	0.200	0.400	ug/L	1	20.0	---	100	80-120%	---	---	
Trichloroethene (TCE)	18.5	0.200	0.400	ug/L	1	20.0	---	92	80-120%	---	---	
Vinyl chloride	17.4	0.200	0.400	ug/L	1	20.0	---	87	80-120%	---	---	
Surr: 1,4-Difluorobenzene (Surr) Recovery: 93 % Limits: 80-120 % Dilution: 1x												
Toluene-d8 (Surr) 99 % 80-120 % "												
4-Bromofluorobenzene (Surr) 101 % 80-120 % "												
Duplicate (8050444-DUP1)												
Prepared: 05/04/18 10:23 Analyzed: 05/04/18 12:49												
QC Source Sample: MW09-GW-050118 (A8E0130-26)												
EPA 8260C												
1,1-Dichloroethene	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
Vinyl chloride	ND	0.200	0.400	ug/L	1	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr) Recovery: 98 % Limits: 80-120 % Dilution: 1x												
Toluene-d8 (Surr) 99 % 80-120 % "												

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QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050444 - EPA 5030B												
Water												
Duplicate (8050444-DUP1) Prepared: 05/04/18 10:23 Analyzed: 05/04/18 12:49												
QC Source Sample: MW09-GW-050118 (A8E0130-26)												
Surr: 4-Bromofluorobenzene (Surr) Recovery: 101 % Limits: 80-120 % Dilution: 1x												
Matrix Spike (8050444-MS1) Prepared: 05/04/18 10:23 Analyzed: 05/04/18 15:12												
QC Source Sample: MW11-GW-050118 (A8E0130-29)												
EPA 8260C												
1,1-Dichloroethene	17.1	0.200	0.400	ug/L	1	20.0	ND	86	71-131%	---	---	
cis-1,2-Dichloroethene	20.6	0.200	0.400	ug/L	1	20.0	ND	103	78-123%	---	---	
trans-1,2-Dichloroethene	20.2	0.200	0.400	ug/L	1	20.0	ND	101	75-124%	---	---	
Tetrachloroethene (PCE)	20.9	0.200	0.400	ug/L	1	20.0	ND	104	74-129%	---	---	
Trichloroethene (TCE)	19.1	0.200	0.400	ug/L	1	20.0	ND	95	79-123%	---	---	
Vinyl chloride	18.7	0.200	0.400	ug/L	1	20.0	ND	94	58-137%	---	---	
Surr: 1,4-Difluorobenzene (Surr) Recovery: 96 % Limits: 80-120 % Dilution: 1x												
Toluene-d8 (Surr) 98 % 80-120 % "												
4-Bromofluorobenzene (Surr) 101 % 80-120 % "												
Matrix Spike (8050444-MS2) Prepared: 05/04/18 10:23 Analyzed: 05/04/18 17:08												
QC Source Sample: Non-SDG (A8E0146-01)												
EPA 8260C												
1,1-Dichloroethene	17.0	0.200	0.400	ug/L	1	20.0	ND	85	71-131%	---	---	
cis-1,2-Dichloroethene	19.9	0.200	0.400	ug/L	1	20.0	ND	99	78-123%	---	---	
trans-1,2-Dichloroethene	20.0	0.200	0.400	ug/L	1	20.0	ND	100	75-124%	---	---	
Tetrachloroethene (PCE)	20.2	0.200	0.400	ug/L	1	20.0	ND	101	74-129%	---	---	
Trichloroethene (TCE)	18.8	0.200	0.400	ug/L	1	20.0	ND	94	79-123%	---	---	
Vinyl chloride	18.7	0.200	0.400	ug/L	1	20.0	ND	94	58-137%	---	---	
Surr: 1,4-Difluorobenzene (Surr) Recovery: 95 % Limits: 80-120 % Dilution: 1x												
Toluene-d8 (Surr) 97 % 80-120 % "												
4-Bromofluorobenzene (Surr) 101 % 80-120 % "												
Matrix Spike (8050444-MS3) Prepared: 05/04/18 17:00 Analyzed: 05/04/18 20:23												
QC Source Sample: Non-SDG (A8E0156-01)												
EPA 8260C												
1,1-Dichloroethene	222	2.00	4.00	ug/L	10	200	ND	111	71-131%	---	---	
cis-1,2-Dichloroethene	198	2.00	4.00	ug/L	10	200	ND	99	78-123%	---	---	

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: [none] Project Manager: Heather Good	Report ID: A8E0130 - 05 24 18 1120
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QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050444 - EPA 5030B						Water						
Matrix Spike (8050444-MS3)			Prepared: 05/04/18 17:00 Analyzed: 05/04/18 20:23									
QC Source Sample: Non-SDG (A8E0156-01)												
trans-1,2-Dichloroethene	195	2.00	4.00	ug/L	10	200	ND	98	75-124%	---	---	
Tetrachloroethene (PCE)	203	2.00	4.00	ug/L	10	200	ND	101	74-129%	---	---	
Trichloroethene (TCE)	187	2.00	4.00	ug/L	10	200	ND	94	79-123%	---	---	
Vinyl chloride	188	2.00	4.00	ug/L	10	200	ND	94	58-137%	---	---	
<i>Surr: 1,4-Difluorobenzene (Surr)</i>		<i>Recovery: 95 %</i>		<i>Limits: 80-120 %</i>		<i>Dilution: 1x</i>						
<i>Toluene-d8 (Surr)</i>		<i>97 %</i>		<i>80-120 %</i>		<i>"</i>						
<i>4-Bromofluorobenzene (Surr)</i>		<i>101 %</i>		<i>80-120 %</i>		<i>"</i>						



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: [none] Project Manager: Heather Good	Report ID: A8E0130 - 05 24 18 1120
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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050640 - EPA 3051A												
Soil												
Blank (8050640-BLK1)												
Prepared: 05/10/18 09:58 Analyzed: 05/11/18 23:32												
EPA 6020A												
Arsenic	ND	0.481	0.962	mg/kg wet	10	---	---	---	---	---	---	
Barium	ND	0.481	0.962	mg/kg wet	10	---	---	---	---	---	---	
Cadmium	ND	0.0962	0.192	mg/kg wet	10	---	---	---	---	---	---	
Chromium	ND	0.481	0.962	mg/kg wet	10	---	---	---	---	---	---	
Copper	ND	0.962	1.92	mg/kg wet	10	---	---	---	---	---	---	
Lead	ND	0.0962	0.192	mg/kg wet	10	---	---	---	---	---	---	
Mercury	ND	0.0385	0.0769	mg/kg wet	10	---	---	---	---	---	---	
Selenium	ND	0.481	0.962	mg/kg wet	10	---	---	---	---	---	---	
Silver	ND	0.481	0.962	mg/kg wet	10	---	---	---	---	---	---	
Zinc	ND	1.92	3.85	mg/kg wet	10	---	---	---	---	---	---	

LCS (8050640-BS1)												
Prepared: 05/10/18 09:58 Analyzed: 05/12/18 00:00												
EPA 6020A												
Arsenic	51.6	0.500	1.00	mg/kg wet	10	50.0	---	103	80-120%	---	---	
Barium	52.4	0.500	1.00	mg/kg wet	10	50.0	---	105	80-120%	---	---	
Cadmium	48.9	0.100	0.200	mg/kg wet	10	50.0	---	98	80-120%	---	---	
Chromium	49.9	0.500	1.00	mg/kg wet	10	50.0	---	100	80-120%	---	---	
Copper	55.1	1.00	2.00	mg/kg wet	10	50.0	---	110	80-120%	---	---	
Lead	52.5	0.100	0.200	mg/kg wet	10	50.0	---	105	80-120%	---	---	
Mercury	1.09	0.0400	0.0800	mg/kg wet	10	1.00	---	109	80-120%	---	---	
Selenium	25.2	0.500	1.00	mg/kg wet	10	25.0	---	101	80-120%	---	---	
Silver	25.6	0.500	1.00	mg/kg wet	10	25.0	---	102	80-120%	---	---	
Zinc	51.7	2.00	4.00	mg/kg wet	10	50.0	---	103	80-120%	---	---	

Duplicate (8050640-DUP1)												
Prepared: 05/10/18 09:58 Analyzed: 05/12/18 02:12												
QC Source Sample: DU09-S-0.5 (After Processing) (A8E0130-20)												
EPA 6020A												
Arsenic	16.0	0.541	1.08	mg/kg dry	10	---	13.1	---	---	20	40%	
Barium	176	0.541	1.08	mg/kg dry	10	---	140	---	---	22	40%	
Cadmium	ND	0.108	0.216	mg/kg dry	10	---	0.408	---	---	***	40%	Q-05
Chromium	89.0	0.541	1.08	mg/kg dry	10	---	73.0	---	---	20	40%	
Copper	61.5	1.08	2.16	mg/kg dry	10	---	49.6	---	---	21	40%	
Lead	30.9	0.108	0.216	mg/kg dry	10	---	26.2	---	---	16	40%	

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: [none] Project Manager: Heather Good	Report ID: A8E0130 - 05 24 18 1120
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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050640 - EPA 3051A												
Soil												
Duplicate (8050640-DUP1)			Prepared: 05/10/18 09:58 Analyzed: 05/12/18 02:12									
QC Source Sample: DU09-S-0.5 (After Processing) (A8E0130-20)												
Mercury	ND	0.605	0.605	mg/kg dry	10	---	ND	---	---	---	40%	R-01
Selenium	0.582	0.541	1.08	mg/kg dry	10	---	ND	---	---	---	40%	J, Q-05
Silver	ND	0.541	1.08	mg/kg dry	10	---	ND	---	---	---	40%	
Zinc	143	2.16	4.32	mg/kg dry	10	---	112	---	---	24	40%	
Duplicate (8050640-DUP2)			Prepared: 05/10/18 09:58 Analyzed: 05/12/18 02:16									
QC Source Sample: DU09-S-0.5 (After Processing) (A8E0130-20)												
EPA 6020A												
Arsenic	12.2	0.532	1.06	mg/kg dry	10	---	13.1	---	---	7	40%	
Barium	134	0.532	1.06	mg/kg dry	10	---	140	---	---	5	40%	
Cadmium	0.405	0.106	0.213	mg/kg dry	10	---	0.408	---	---	0.9	40%	
Chromium	73.3	0.532	1.06	mg/kg dry	10	---	73.0	---	---	0.4	40%	
Copper	46.8	1.06	2.13	mg/kg dry	10	---	49.6	---	---	6	40%	
Lead	23.8	0.106	0.213	mg/kg dry	10	---	26.2	---	---	10	40%	
Mercury	ND	0.478	0.478	mg/kg dry	10	---	ND	---	---	---	40%	R-01
Selenium	ND	0.532	1.06	mg/kg dry	10	---	ND	---	---	---	40%	
Silver	ND	0.532	1.06	mg/kg dry	10	---	ND	---	---	---	40%	
Zinc	104	2.13	4.25	mg/kg dry	10	---	112	---	---	8	40%	
Matrix Spike (8050640-MS1)			Prepared: 05/10/18 09:58 Analyzed: 05/12/18 02:21									
QC Source Sample: DU09-S-0.5 (After Processing) (A8E0130-20)												
EPA 6020A												
Arsenic	71.9	0.562	1.12	mg/kg dry	10	56.2	13.1	105	75-125%	---	---	
Barium	224	0.562	1.12	mg/kg dry	10	56.2	140	149	75-125%	---	---	Q-03
Cadmium	56.8	0.112	0.225	mg/kg dry	10	56.2	0.408	100	75-125%	---	---	
Chromium	136	0.562	1.12	mg/kg dry	10	56.2	73.0	113	75-125%	---	---	
Copper	115	1.12	2.25	mg/kg dry	10	56.2	49.6	117	75-125%	---	---	
Lead	82.1	0.112	0.225	mg/kg dry	10	56.2	26.2	99	75-125%	---	---	
Mercury	1.69	0.494	0.494	mg/kg dry	10	1.12	ND	150	75-125%	---	---	R-01
Selenium	27.4	0.562	1.12	mg/kg dry	10	28.1	ND	98	75-125%	---	---	
Silver	28.8	0.562	1.12	mg/kg dry	10	28.1	ND	103	75-125%	---	---	
Zinc	191	2.25	4.49	mg/kg dry	10	56.2	112	141	75-125%	---	---	Q-03

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: [none] Project Manager: Heather Good	Report ID: A8E0130 - 05 24 18 1120
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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050640 - EPA 3051A						Soil						
Matrix Spike (8050640-MS2)			Prepared: 05/10/18 09:58 Analyzed: 05/12/18 00:33									
QC Source Sample: Non-SDG (A8E0073-04)												
EPA 6020A												
Arsenic	96.2	0.688	1.38	mg/kg dry	10	68.8	24.5	104	75-125%	---	---	
Barium	198	0.688	1.38	mg/kg dry	10	68.8	126	105	75-125%	---	---	
Cadmium	67.6	0.138	0.275	mg/kg dry	10	68.8	0.362	98	75-125%	---	---	
Chromium	88.9	0.688	1.38	mg/kg dry	10	68.8	26.1	91	75-125%	---	---	
Copper	109	1.38	2.75	mg/kg dry	10	68.8	35.0	107	75-125%	---	---	
Lead	84.5	0.138	0.275	mg/kg dry	10	68.8	19.8	94	75-125%	---	---	
Mercury	1.50	0.0550	0.110	mg/kg dry	10	1.38	0.0642	104	75-125%	---	---	
Selenium	32.8	0.688	1.38	mg/kg dry	10	34.3	ND	96	75-125%	---	---	
Silver	35.3	0.688	1.38	mg/kg dry	10	34.3	ND	103	75-125%	---	---	
Zinc	147	2.75	5.50	mg/kg dry	10	68.8	75.4	104	75-125%	---	---	

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AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: [none] Project Manager: Heather Good	Report ID: A8E0130 - 05 24 18 1120
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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050684 - EPA 3051A						Soil						
Blank (8050684-BLK1)			Prepared: 05/11/18 09:42 Analyzed: 05/14/18 20:53									
<u>EPA 6020A</u>												
Lead	ND	0.0962	0.192	mg/kg wet	10	---	---	---	---	---	---	
LCS (8050684-BS1)			Prepared: 05/11/18 09:42 Analyzed: 05/14/18 20:57									
<u>EPA 6020A</u>												
Lead	54.1	0.100	0.200	mg/kg wet	10	50.0	---	108	80-120%	---	---	
Duplicate (8050684-DUP1)			Prepared: 05/11/18 09:42 Analyzed: 05/14/18 21:24									
<u>QC Source Sample: HA30-S-0.5 (A8E0130-01)</u>												
<u>EPA 6020A</u>												
Lead	146	0.173	0.347	mg/kg dry	10	---	141	---	---	3	40%	
Matrix Spike (8050684-MS1)			Prepared: 05/11/18 09:42 Analyzed: 05/14/18 21:28									
<u>QC Source Sample: HA30-S-0.5 (A8E0130-01)</u>												
<u>EPA 6020A</u>												
Lead	225	0.165	0.330	mg/kg dry	10	82.5	141	102	75-125%	---	---	
Matrix Spike (8050684-MS2)			Prepared: 05/11/18 09:42 Analyzed: 05/14/18 22:56									
<u>QC Source Sample: HA35-S-0.5 (A8E0130-16)</u>												
<u>EPA 6020A</u>												
Lead	202	0.156	0.312	mg/kg dry	10	78.1	112	114	75-125%	---	---	

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AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: [none] Project Manager: Heather Good	Report ID: A8E0130 - 05 24 18 1120
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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050727 - EPA 3051A						Soil						
Blank (8050727-BLK1)			Prepared: 05/14/18 09:58 Analyzed: 05/14/18 17:40									
<u>EPA 6020A</u>												
Lead	ND	0.0962	0.192	mg/kg wet	10	---	---	---	---	---	---	
LCS (8050727-BS1)			Prepared: 05/14/18 09:58 Analyzed: 05/14/18 17:35									
<u>EPA 6020A</u>												
Lead	49.5	0.100	0.200	mg/kg wet	10	50.0	---	99	80-120%	---	---	
Duplicate (8050727-DUP1)			Prepared: 05/14/18 09:58 Analyzed: 05/14/18 18:15									
<u>QC Source Sample: Non-SDG (A8E0190-02)</u>												
Lead	59.3	0.118	0.237	mg/kg dry	10	---	68.6	---	---	15	40%	
Matrix Spike (8050727-MS1)			Prepared: 05/14/18 09:58 Analyzed: 05/14/18 18:20									
<u>QC Source Sample: Non-SDG (A8E0190-02)</u>												
<u>EPA 6020A</u>												
Lead	114	0.116	0.233	mg/kg dry	10	58.1	68.6	79	75-125%	---	---	
Matrix Spike (8050727-MS2)			Prepared: 05/14/18 09:58 Analyzed: 05/14/18 18:31									
<u>QC Source Sample: Non-SDG (A8E0396-02)</u>												
<u>EPA 6020A</u>												
Lead	101	0.129	0.258	mg/kg dry	10	64.6	32.7	105	75-125%	---	---	



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: [none] Project Manager: Heather Good	Report ID: A8E0130 - 05 24 18 1120
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QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050539 - Total Solids (Dry Weight)						Soil						
Duplicate (8050539-DUP1)			Prepared: 05/08/18 09:26 Analyzed: 05/09/18 08:49									
<u>QC Source Sample: HA30-S-0.5 (A8E0130-01)</u>												
<u>EPA 8000C</u>												
% Solids	63.6	1.00	1.00	% by Weight	1	---	59.4	---	---	7	10%	
Duplicate (8050539-DUP2)			Prepared: 05/08/18 09:26 Analyzed: 05/09/18 08:49									
<u>QC Source Sample: HA34-S-0.5 (A8E0130-11)</u>												
<u>EPA 8000C</u>												
% Solids	64.2	1.00	1.00	% by Weight	1	---	68.2	---	---	6	10%	
Duplicate (8050539-DUP3)			Prepared: 05/08/18 09:26 Analyzed: 05/09/18 08:49									
<u>QC Source Sample: Non-SDG (A8E0189-01)</u>												
% Solids	92.7	1.00	1.00	% by Weight	1	---	93.1	---	---	0.4	10%	
Duplicate (8050539-DUP4)			Prepared: 05/08/18 09:26 Analyzed: 05/09/18 08:49									
<u>QC Source Sample: Non-SDG (A8E0190-09)</u>												
% Solids	94.9	1.00	1.00	% by Weight	1	---	94.6	---	---	0.3	10%	
Duplicate (8050539-DUP5)			Prepared: 05/08/18 09:26 Analyzed: 05/09/18 08:49									
<u>QC Source Sample: Non-SDG (A8E0194-03)</u>												
% Solids	83.3	1.00	1.00	% by Weight	1	---	84.0	---	---	0.9	10%	
Duplicate (8050539-DUP6)			Prepared: 05/08/18 17:54 Analyzed: 05/09/18 08:49									
<u>QC Source Sample: Non-SDG (A8E0231-06)</u>												
% Solids	88.9	1.00	1.00	% by Weight	1	---	89.0	---	---	0.2	10%	
Duplicate (8050539-DUP7)			Prepared: 05/08/18 17:54 Analyzed: 05/09/18 08:49									
<u>QC Source Sample: Non-SDG (A8E0244-02)</u>												
% Solids	82.9	1.00	1.00	% by Weight	1	---	82.1	---	---	1	10%	
Duplicate (8050539-DUP8)			Prepared: 05/08/18 18:43 Analyzed: 05/09/18 08:49									
<u>QC Source Sample: Non-SDG (A8E0250-02)</u>												
% Solids	92.9	1.00	1.00	% by Weight	1	---	92.3	---	---	0.7	10%	

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AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: [none] Project Manager: Heather Good	Report ID: A8E0130 - 05 24 18 1120
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QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050539 - Total Solids (Dry Weight)						Soil						
Duplicate (8050539-DUP9)			Prepared: 05/08/18 20:07 Analyzed: 05/09/18 08:49									
QC Source Sample: Non-SDG (A8E0258-02)												
% Solids	80.6	1.00	1.00	% by Weight	1	---	79.9	---	---	0.9	10%	
<u>No Client related Batch QC samples analyzed for this batch. See notes page for more information.</u>												
Batch 8050631 - Total Solids (Dry Weight)						Soil						
Duplicate (8050631-DUP1)			Prepared: 05/10/18 09:02 Analyzed: 05/11/18 08:45									
QC Source Sample: Non-SDG (A8D0867-17)												
% Solids	90.4	1.00	1.00	% by Weight	1	---	89.5	---	---	0.9	10%	
Duplicate (8050631-DUP2)			Prepared: 05/10/18 09:02 Analyzed: 05/11/18 08:45									
QC Source Sample: Non-SDG (A8E0265-11)												
% Solids	70.6	1.00	1.00	% by Weight	1	---	70.5	---	---	0.2	10%	
Duplicate (8050631-DUP3)			Prepared: 05/10/18 09:02 Analyzed: 05/11/18 08:45									
QC Source Sample: Non-SDG (A8E0304-03)												
% Solids	86.3	1.00	1.00	% by Weight	1	---	83.4	---	---	3	10%	
Duplicate (8050631-DUP4)			Prepared: 05/10/18 12:26 Analyzed: 05/11/18 08:45									
QC Source Sample: DU09-S-0.5 (After Processing) (A8E0130-20)												
EPA 8000C												
% Solids	96.6	1.00	1.00	% by Weight	1	---	96.8	---	---	0.2	10%	
Duplicate (8050631-DUP5)			Prepared: 05/10/18 12:26 Analyzed: 05/11/18 08:45									
QC Source Sample: Non-SDG (A8D0903-07)												
% Solids	96.7	1.00	1.00	% by Weight	1	---	96.8	---	---	0.1	10%	
Duplicate (8050631-DUP6)			Prepared: 05/10/18 19:56 Analyzed: 05/11/18 08:45									
QC Source Sample: Non-SDG (A8E0342-01)												
% Solids	78.8	1.00	1.00	% by Weight	1	---	78.8	---	---	0.004	10%	

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Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: [none] Project Manager: Heather Good	Report ID: A8E0130 - 05 24 18 1120
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QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 8050631 - Total Solids (Dry Weight)						Soil						
Duplicate (8050631-DUP7)			Prepared: 05/10/18 19:56 Analyzed: 05/11/18 08:45									
QC Source Sample: Non-SDG (A8E0346-01)												
% Solids	75.5	1.00	1.00	% by Weight	1	---	75.7	---	---	0.3	10%	
Duplicate (8050631-DUP8)			Prepared: 05/10/18 19:56 Analyzed: 05/11/18 08:45									
QC Source Sample: Non-SDG (A8E0354-01)												
% Solids	76.0	1.00	1.00	% by Weight	1	---	76.7	---	---	1	10%	

No Client related Batch QC samples analyzed for this batch. See notes page for more information.



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: [none] Project Manager: Heather Good	Report ID: A8E0130 - 05 24 18 1120
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SAMPLE PREPARATION INFORMATION

Halogenated Volatile Organic Compounds by EPA 8260C

Prep: EPA 5030B					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 8050444</u>							
A8E0130-26	Water	EPA 8260C	05/01/18 12:50	05/04/18 10:23	5mL/5mL	5mL/5mL	1.00
A8E0130-27	Water	EPA 8260C	05/01/18 14:15	05/04/18 10:23	5mL/5mL	5mL/5mL	1.00
A8E0130-28	Water	EPA 8260C	05/01/18 14:15	05/04/18 10:23	5mL/5mL	5mL/5mL	1.00
A8E0130-29	Water	EPA 8260C	05/01/18 15:20	05/04/18 10:23	5mL/5mL	5mL/5mL	1.00

Total Metals by EPA 6020 (ICPMS)

Prep: EPA 3051A					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 8050640</u>							
A8E0130-20	Soil	EPA 6020A	04/30/18 15:00	05/10/18 09:58	0.481g/50mL	0.5g/50mL	1.04
<u>Batch: 8050684</u>							
A8E0130-01	Soil	EPA 6020A	04/30/18 10:50	05/11/18 09:42	0.452g/50mL	0.5g/50mL	1.11
A8E0130-02	Soil	EPA 6020A	04/30/18 11:00	05/11/18 09:42	0.489g/50mL	0.5g/50mL	1.02
A8E0130-03	Soil	EPA 6020A	04/30/18 11:20	05/11/18 09:42	0.493g/50mL	0.5g/50mL	1.01
A8E0130-04	Soil	EPA 6020A	04/30/18 11:30	05/11/18 09:42	0.503g/50mL	0.5g/50mL	0.99
A8E0130-05	Soil	EPA 6020A	04/30/18 12:00	05/11/18 09:42	0.459g/50mL	0.5g/50mL	1.09
A8E0130-06	Soil	EPA 6020A	04/30/18 12:05	05/11/18 09:42	0.481g/50mL	0.5g/50mL	1.04
A8E0130-07	Soil	EPA 6020A	04/30/18 12:20	05/11/18 09:42	0.517g/50mL	0.5g/50mL	0.97
A8E0130-08	Soil	EPA 6020A	04/30/18 12:35	05/11/18 09:42	0.482g/50mL	0.5g/50mL	1.04
A8E0130-09	Soil	EPA 6020A	04/30/18 12:40	05/11/18 09:42	0.509g/50mL	0.5g/50mL	0.98
A8E0130-10	Soil	EPA 6020A	04/30/18 12:45	05/11/18 09:42	0.495g/50mL	0.5g/50mL	1.01
A8E0130-11	Soil	EPA 6020A	04/30/18 13:30	05/11/18 09:42	0.453g/50mL	0.5g/50mL	1.10
A8E0130-12	Soil	EPA 6020A	04/30/18 13:35	05/11/18 09:42	0.479g/50mL	0.5g/50mL	1.04
A8E0130-13	Soil	EPA 6020A	04/30/18 13:40	05/11/18 09:42	0.469g/50mL	0.5g/50mL	1.07
A8E0130-14	Soil	EPA 6020A	04/30/18 13:20	05/11/18 09:42	0.464g/50mL	0.5g/50mL	1.08
A8E0130-15	Soil	EPA 6020A	04/30/18 14:15	05/11/18 09:42	0.506g/50mL	0.5g/50mL	0.99
A8E0130-16	Soil	EPA 6020A	04/30/18 14:40	05/11/18 09:42	0.464g/50mL	0.5g/50mL	1.08
<u>Batch: 8050727</u>							
A8E0130-17	Soil	EPA 6020A	04/30/18 14:45	05/14/18 09:58	0.481g/50mL	0.5g/50mL	1.04
A8E0130-18	Soil	EPA 6020A	04/30/18 14:50	05/14/18 09:58	0.469g/50mL	0.5g/50mL	1.07

Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Lisa Domenighini, Client Services Manager



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: [none] Project Manager: Heather Good	Report ID: A8E0130 - 05 24 18 1120
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SAMPLE PREPARATION INFORMATION

Percent Dry Weight

<u>Prep: Total Solids (Dry Weight)</u>					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 8050539</u>							
A8E0130-01	Soil	EPA 8000C	04/30/18 10:50	05/08/18 09:26	1N/A/1N/A	1N/A/1N/A	NA
A8E0130-02	Soil	EPA 8000C	04/30/18 11:00	05/08/18 09:26	1N/A/1N/A	1N/A/1N/A	NA
A8E0130-03	Soil	EPA 8000C	04/30/18 11:20	05/08/18 09:26	1N/A/1N/A	1N/A/1N/A	NA
A8E0130-04	Soil	EPA 8000C	04/30/18 11:30	05/08/18 09:26	1N/A/1N/A	1N/A/1N/A	NA
A8E0130-05	Soil	EPA 8000C	04/30/18 12:00	05/08/18 09:26	1N/A/1N/A	1N/A/1N/A	NA
A8E0130-06	Soil	EPA 8000C	04/30/18 12:05	05/08/18 09:26	1N/A/1N/A	1N/A/1N/A	NA
A8E0130-07	Soil	EPA 8000C	04/30/18 12:20	05/08/18 09:26	1N/A/1N/A	1N/A/1N/A	NA
A8E0130-08	Soil	EPA 8000C	04/30/18 12:35	05/08/18 09:26	1N/A/1N/A	1N/A/1N/A	NA
A8E0130-09	Soil	EPA 8000C	04/30/18 12:40	05/08/18 09:26	1N/A/1N/A	1N/A/1N/A	NA
A8E0130-10	Soil	EPA 8000C	04/30/18 12:45	05/08/18 09:26	1N/A/1N/A	1N/A/1N/A	NA
A8E0130-11	Soil	EPA 8000C	04/30/18 13:30	05/08/18 09:26	1N/A/1N/A	1N/A/1N/A	NA
A8E0130-12	Soil	EPA 8000C	04/30/18 13:35	05/08/18 09:26	1N/A/1N/A	1N/A/1N/A	NA
A8E0130-13	Soil	EPA 8000C	04/30/18 13:40	05/08/18 09:26	1N/A/1N/A	1N/A/1N/A	NA
A8E0130-14	Soil	EPA 8000C	04/30/18 13:20	05/08/18 09:26	1N/A/1N/A	1N/A/1N/A	NA
A8E0130-15	Soil	EPA 8000C	04/30/18 14:15	05/08/18 09:26	1N/A/1N/A	1N/A/1N/A	NA
A8E0130-16	Soil	EPA 8000C	04/30/18 14:40	05/08/18 09:26	1N/A/1N/A	1N/A/1N/A	NA
A8E0130-17	Soil	EPA 8000C	04/30/18 14:45	05/08/18 09:26	1N/A/1N/A	1N/A/1N/A	NA
A8E0130-18	Soil	EPA 8000C	04/30/18 14:50	05/08/18 09:26	1N/A/1N/A	1N/A/1N/A	NA
<u>Batch: 8050631</u>							
A8E0130-20	Soil	EPA 8000C	04/30/18 15:00	05/10/18 12:26	1N/A/1N/A	1N/A/1N/A	NA



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham

1329 North State Street, Suite 301
Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**

Project Number: [none]

Project Manager: **Heather Good**

Report ID:

A8E0130 - 05 24 18 1120

QUALIFIER DEFINITIONS

Client Sample and Quality Control (QC) Sample Qualifier Definitions:

- J** Estimated Result. Result detected below the lowest point of the calibration curve, but above the specified MDL.
- Q-03** Spike recovery and/or RPD is outside control limits due to the high concentration of analyte present in the sample.
- Q-05** Analyses are not controlled on RPD values from sample and duplicate concentrations that are below 5 times the reporting level.
- Q-42** Matrix Spike and/or Duplicate analysis was performed on this sample. % Recovery or RPD for this analyte is outside laboratory control limits. (Refer to the QC Section of Analytical Report.)
- R-01** The Reporting Limit for this analyte has been raised to account for matrix interference.



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham
1329 North State Street, Suite 301
Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**
Project Number: [none]
Project Manager: **Heather Good**

Report ID:
A8E0130 - 05 24 18 1120

REPORTING NOTES AND CONVENTIONS:

Abbreviations:

- DET Analyte DETECTED at or above the detection or reporting limit.
- ND Analyte NOT DETECTED at or above the detection or reporting limit.
- NR Result Not Reported
- RPD Relative Percent Difference

Detection Limits: Limit of Detection (LOD)

Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).
If no value is listed ('----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

Reporting Conventions:

- Basis:** Results for soil samples are generally reported on a 100% dry weight basis. The Result Basis is listed following the units as "dry", "wet", or "" (blank) designation.
 - "dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")
See Percent Solids section for details of dry weight analysis.
 - "wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.
 - " " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

- " --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
- " *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to 1/2 the Reporting Limit (RL).
-For Blank hits falling between 1/2 the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: [none] Project Manager: Heather Good	Report ID: A8E0130 - 05 24 18 1120
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REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks (Cont.):

Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the blank results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met. Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: [none] Project Manager: Heather Good	Report ID: A8E0130 - 05 24 18 1120
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LABORATORY ACCREDITATION INFORMATION

TNI Certification ID: OR100062 (Primary Accreditation) - EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Cert?
<u>All reported analytes are included in Apex Laboratories' current ORELAP scope.</u>					

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation. Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provided by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham	Project: 0624.04.10-03--Northern State Hospital	
1329 North State Street, Suite 301	Project Number: [none]	Report ID:
Bellingham, WA 98225	Project Manager: Heather Good	A8E0130 - 05 24 18 1120

Report To: Heather Good

Company: Maul Foster Alongi

Address: 1329 N. State St. Ste 301

City, State, ZIP: Bellingham, WA 98229

Phone: Email: hgood@maulfoster.com

SAMPLE CHAIN OF CUSTODY

SAMPLERS (signature): Carolyn Wise

PROJECT NAME: South Center

REMARKS: Archive samples, contact PM before disposal.

Page # 1 of 3

TURNAROUND TIME:

Standard Turnaround

RUSH

Rush charges authorized by:

SAMPLE DISPOSAL:

Dispose after 30 days

Archive Samples

Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED							Notes		
						TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM			
HA30-S-0.5		4/30/18	1050	S	1										
HA30-S-1.0			1100	S	1										
HA31-S-0.5			1120	S	1										
HA31-S-1.0			1130	S	1										
HA32-S-0.5			1200	S	1										
HA32-S-1.0			1205	S	1										
HA21-S-1.5			1220	S	1										
HA33-S-0.5			1235	S	1										
HA33-S-1.0			1240	S	1										
HA33-S-1.5			1245	S	1										

Relinquished by: *Carolyn Wise* (Signature)

Received by: *Heather Good* (Signature)

Relinquished by: *Kirsten Skarnoz* (Signature)

Received by:

PRINT NAME	COMPANY	DATE	TIME
Carolyn Wise	MFA	5/8/18	1300
Kirsten Skarnoz	Apex	5/13/18	15:43

Lisa Domenighini

AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham Project: **0624.04.10-03--Northern State Hospital**
 1329 North State Street, Suite 301 Project Number: [none] Report ID:
 Bellingham, WA 98225 Project Manager: Heather Good A8E0130 - 05 24 18 1120

SAMPLE CHAIN OF CUSTODY A8E0130 Page # 2 of 3

Report To: Heather Good TURNAROUND TIME

Company: Maul Foster Alongi Standard Turnaround

Address: 1329 N. State St. Ste 301 RUSH

City, State, ZIP: Bellingham, WA 98229 Rush charges authorized by:

Phone: Email: hgood@maulfoster.com SAMPLE DISPOSAL

INVOICE TO: South Center PO #: 06240410 Dispose after 30 days

REMARKS: Archive samples, request PM confirmation H. Good Archive Samples Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED										Notes				
						TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	PCBs 8	ISM Sample						
HA34-S-0.5		4/30/18	1330	S	1															
HA34-S-1.0			1335	S	1															
HA34-S-1.5			1340	S	1															
HA28-S-1.5			1320	S	1															
HA20-S-1.5			1415	S	1															
HA35-S-0.5			1440	S	1															
HA35-S-1.0			1445	S	1															
HA35-S-1.5			1450	S	1															
DU09-S-0.5			1500	S	1															
SS90-S-0.5			1530	S	1															

Relinquished by: Carolyn Wise SIGNATURE PRINT NAME COMPANY DATE TIME

Received by: Heather Good MFA 5/18/18 1300

Relinquished by: Kshenard Apex 5/21/18 1543

Received by:

Friedman & Bruya, Inc.
 3012 16th Avenue West
 Seattle, WA 98119-2029
 Ph. (206) 285-8282

Lisa Domenighini

AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham
1329 North State Street, Suite 301
Bellingham, WA 98225

Project: **0624.04.10-03--Northern State Hospital**
Project Number: [none]
Project Manager: **Heather Good**

Report ID:
A8E0130 - 05 24 18 1120

Chain of Custody

Company: **OnSite Environmental Inc.**
Analytical Laboratory Testing Services
14646 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Project Number: **0624.04.10**

Project Name: **Star H Center**

Project Manager: **Heather Good**

Sampled by: **Carolyn Wise**

Laboratory Number: **A8E0130** Page **3** of **3**

Turnaround Request (in working days):
 Same Day 1 Day
 2 Days 3 Days
 Standard (7 Days) (TPH analysis 5 Days)
 Standard TAT (other)

Number of Containers

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix
SS97-S-0.5		7/18	1535	S
SS98-S-0.5			1550	S
SS99-S-0.5			1620	S
SS100-S-0.5			1630	S
M109-GW-050118		7/18	1250	W
M110-GW-050118		7/18	1415	W
M110P-GW-050118		7/18	1415	W
M111-GW-050118		7/18	1520	W

Signature	Company	Date	Time	Comments/Special Instructions
	MFA	5/18	1300	Please archive samples and notify project manager before disposal.
	Kristin Starnard	5/18	15:43	

Signature	Date	Time	Comments/Special Instructions

Signature	Date	Time	Comments/Special Instructions

Signature	Date	Time	Comments/Special Instructions

Signature	Date	Time	Comments/Special Instructions

Signature	Date	Time	Comments/Special Instructions

Signature	Date	Time	Comments/Special Instructions

Signature	Date	Time	Comments/Special Instructions

Signature	Date	Time	Comments/Special Instructions



AMENDED REPORT

Maul Foster & Alongi, INC-Bellingham 1329 North State Street, Suite 301 Bellingham, WA 98225	Project: 0624.04.10-03--Northern State Hospital Project Number: [none] Project Manager: Heather Good	Report ID: A8E0130 - 05 24 18 1120
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APEX LABS COOLER RECEIPT FORM

Client: MFA Element WO#: A8 ED180

Project/Project #: SWRPE Center / 0624-04.10

Delivery info:
Date/Time Received: 15:43 @ 5/3/18 By: WJ
Delivered by: Apex Client ESS FedEx UPS Swift Senvoy SDS Other

Cooler Inspection Inspected by: WJ : 5/3/18 @ 15:44
Chain of Custody Included? Yes No Custody Seals? Yes No
Signed/Dated by Client? Yes No wjg/3
Signed/Dated by Apex? Yes No

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (deg. C)	<u>3.2</u>						
Received on Ice? (Y/N)	<u>Y</u>						
Temp. Blanks? (Y/N)	<u>N</u>						
Ice Type: (Gel/ <u>Real</u> /Other)							
Condition:	<u>good</u>						

Cooler out of temp? (Y/N) N Possible reason why: _____
If some coolers are in temp and some out, were green dot applied to out of temperature samples? Yes/No/NA NA

Samples Inspection: Inspected by: WJ : 5/4/18 @ 8:48

All Samples Intact? Yes No Comments: _____

Bottle Labels/COCs agree? Yes No Comments: NO T ON CONTS HA30-5-1.0
NO D ON ^{CONT} HA35-5-0.5.

Containers/Volumes Received Appropriate for Analysis? Yes No Comments: _____

Do VOA Vials have Visible Headspace? Yes No NA
Comments: _____

Water Samples: pH Checked and Appropriate (except VOAs): Yes No NA
Comments: _____

Additional Information: _____

Labeled by: WJ Witness: WJ Cooler Inspected by: WJ See Project Contact Form: Y

Lisa Domenighini

APPENDIX D

DATA VALIDATION MEMORANDUM



DATA QUALITY ASSURANCE/QUALITY CONTROL REVIEW

PROJECT NO. 0624.04.10 | OCTOBER 29, 2018 | PORT OF SKAGIT

Maul Foster & Alongi, Inc. (MFA) conducted an independent review of the quality of analytical results for soil and groundwater samples collected in April and May 2018 at the former Northern State Hospital property, located at 2070 Northern State Road in Sedro-Woolley, Washington.

Apex Laboratories, LLC (Apex) performed the analyses. Apex report numbers A8D0754, A8D0757, A8D0903, A8E0130, and A8H0102 were reviewed. Incremental sampling methodology (ISM) samples were collected and named according to decision units (DUs). Apex processed and composited ISM samples prior to analysis consistent with industry standard procedures. Selected discrete soil boring samples from reports A8D0757 and A8D0903 were subcontracted to Cape Fear Analytical, LLC (CFA) for dioxin/furan analysis; the subcontract laboratory reports (WO13235 and WO13267) are appended to the Apex reports. Sample results reported in A8H0102 were originally received with sample delivery group A8D0903 and were relogged to A8H0102 for follow-up analyses. The analyses performed and samples analyzed are listed below.

Analysis	Reference
Carcinogenic Polycyclic Aromatic Hydrocarbons	USEPA 8270D-SIM
Diesel- and Lube-Oil-Range Hydrocarbons	NWTPH-Dx
Dioxins/Furans	USEPA 1613B
Halogenated Volatile Organic Compounds	USEPA 8260C
Percent Dry Weight	USEPA 8000C
Total Metals	USEPA 6020A

NWTPH = Northwest Total Petroleum Hydrocarbons.

SIM = selected ion monitoring.

USEPA = U.S. Environmental Protection Agency.

Samples					
Report A8D0754		Report A8D0903/WO13267			
HA16-S-0.5	HA23-S-0.5	GP53-S-0.5	SS21-S-0.5 (hold)	SS46-S-0.5	SS71-S-0.5 (hold)
HA16-S-1.0	HA23-S-1.0	GP53-S-1.0	SS22-S-0.5 (hold)	SS47-S-0.5	SS72-S-0.5 (hold)
HA17-S-0.5	HA24-S-0.5	GP53-S-2.0	SS23-S-0.5 (hold)	SS48-S-0.5	SS73-S-0.5 (hold)
HA17-S-1.0	HA24-S-1.0	GP54-S-0.5	SS24-S-0.5 (hold)	SS49-S-0.5	SS74-S-0.5 (hold)
HA18-S-0.5	HA25-S-0.5	GP54-S-5.5	SS25-S-0.5 (hold)	SS50-S-0.5	SS75-S-0.5 (hold)
HA18-S-1.0	HA25-S-1.0	DU06-S-0.5	DU18-S-0.5	DU11-S-0.5	DU10C-S-0.5
HA19-S-0.5	HA26-S-0.5	SS01-S-0.5 (hold)	SS26-S-0.5 (hold)	SS51-S-0.5 (hold)	SS81-S-0.5 (hold)
HA19-S-1.0	HA26-S-1.0	SS02-S-0.5 (hold)	SS27-S-0.5 (hold)	SS52-S-0.5 (hold)	SS82-S-0.5 (hold)
HA20-S-0.5	HA27-S-0.5	SS03-S-0.5 (hold)	SS28-S-0.5 (hold)	SS53-S-0.5 (hold)	SS83-S-0.5 (hold)

Samples					
Report A8D0754		Report A8D0903/WO13267			
HA20-S-1.0	HA27-S-1.0	SS04-S-0.5 (hold)	SS29-S-0.5 (hold)	SS54-S-0.5 (hold)	SS84-S-0.5 (hold)
HA21-S-0.5	HA28-S-0.5	SS05-S-0.5 (hold)	SS30-S-0.5 (hold)	SS55-S-0.5 (hold)	SS85-S-0.5 (hold)
HA21-S-1.0	HA28-S-1.0	DU04-S-0.5	DU02-S-0.5	DU08-S-0.5	DU10B-S-0.5
HA22-S-0.5	HA29-S-1.0-CS	SS06-S-0.5 (hold)	SS36-S-0.5 (hold)	SS56-S-0.5 (hold)	SS76-S-0.5 (hold)
HA22-S-1.0	-	SS07-S-0.5 (hold)	SS37-S-0.5 (hold)	SS57-S-0.5 (hold)	SS77-S-0.5 (hold)
Report A8E0130		SS08-S-0.5 (hold)	SS38-S-0.5 (hold)	SS58-S-0.5 (hold)	SS78-S-0.5 (hold)
HA30-S-0.5	HA35-S-0.5	SS09-S-0.5 (hold)	SS39-S-0.5 (hold)	SS59-S-0.5 (hold)	SS79-S-0.5 (hold)
HA30-S-1.0	HA35-S-1.0	SS10-S-0.5 (hold)	SS40-S-0.5 (hold)	SS60-S-0.5 (hold)	SS80-S-0.5 (hold)
HA31-S-0.5	HA35-S-1.5	DU07-S-0.5	DU01-S-0.5	DU05-S-0.5	DU03-S-0.5
HA31-S-1.0	DU09-S-0.5	SS11-S-0.5 (hold)	SS31-S-0.5 (hold)	SS61-S-0.5 (hold)	SS86-S-0.5 (hold)
HA32-S-0.5	SS96-S-0.5 (hold)	SS12-S-0.5 (hold)	SS32-S-0.5 (hold)	SS62-S-0.5 (hold)	SS87-S-0.5 (hold)
HA32-S-1.0	SS97-S-0.5 (hold)	SS13-S-0.5 (hold)	SS33-S-0.5 (hold)	SS63-S-0.5 (hold)	SS89-S-0.5 (hold)
HA21-S-1.5	SS98-S-0.5 (hold)	SS14-S-0.5 (hold)	SS34-S-0.5 (hold)	SS64-S-0.5 (hold)	SS90-S-0.5 (hold)
HA33-S-0.5	SS99-S-0.5 (hold)	SS15-S-0.5 (hold)	SS35-S-0.5 (hold)	SS65-S-0.5 (hold)	DU12-S-0.5
HA33-S-1.0	SS100-S-0.5	DU17-S-0.5	DU13-S-0.5	DU14-S-0.5	SS91-S-0.5 (hold)
HA33-S-1.5	MW09-GW-	SS16-S-0.5	SS41-S-0.5 (hold)	SS66-S-0.5 (hold)	SS92-S-0.5 (hold)
HA34-S-0.5	MW10-GW-	SS17-S-0.5	SS42-S-0.5 (hold)	SS67-S-0.5 (hold)	SS93-S-0.5 (hold)
HA34-S-1.0	MWDUP-GW-	SS18-S-0.5	SS43-S-0.5 (hold)	SS68-S-0.5 (hold)	SS94-S-0.5 (hold)
HA34-S-1.5	MW11-GW-	SS19-S-0.5	SS44-S-0.5 (hold)	SS69-S-0.5 (hold)	SS95-S-0.5 (hold)
HA28-S-1.5	-	SS20-S-0.5	SS45-S-0.5 (hold)	SS70-S-0.5 (hold)	-
HA26-S-1.5	-	DU15-S-0.5	DU16-S-0.5	DU10A-S-0.5	-
Report A8D0757/ WO13235					
MW10-S-1.0	MW09-S-0.5	GP49-S-0.5	GP50-S-0.5	GP51-S-1.0	GP52-S-7.5
MW10-S-13.5	MW09-S-6.0	GP49-S-7.0	GP50-S-1.5	GP52-S-0.5	-
MW10-S-24.5	MW09-S-19.0	GP49-S-10.0	GP51-S-0.5	GP52-S-6.0	
Report A8H0102					
SS06-S-0.5	SS10-S-0.5	SS39-S-0.5	SS53-S-0.5	SS67-S-0.5	-
SS07-S-0.5	SS36-S-0.5	SS40-S-0.5	SS54-S-0.5	SS68-S-0.5	-
SS08-S-0.5	SS37-S-0.5	SS51-S-0.5	SS55-S-0.5	SS69-S-0.5	-
SS09-S-0.5	SS38-S-0.5	SS52-S-0.5	SS66-S-0.5	SS70-S-0.5	-

DATA QUALIFICATIONS

Analytical results were evaluated according to applicable sections of USEPA procedures (USEPA, 2014, 2016, 2017a,b) and appropriate laboratory and method-specific guidelines (Apex, 2016; CFA, 2016; USEPA, 1986).

In report A8D0757, Apex noted that the NWTPH-Dx diesel-range hydrocarbon chromatographic pattern for sample GP50-S-0.5 did not resemble a fuel. The results are

reported from carbon range C12 to C24 as diesel-range hydrocarbons; thus, qualification was not required.

In reports A8D0757 and A8D0903, Apex flagged some USEPA Method 8270D-SIM results because of insufficient chromatographic peak separation. The results are considered estimated and have been qualified by the reviewer with “J” as estimated:

Report	Sample	Component	Original Result (ug/kg)	Qualified Result (ug/kg)
A8D0757	GP49-S-0.5	Benz(a)anthracene	23.0	23.0 J
		Benzo(b)fluoranthene	23.4	23.4 J
		Chrysene	23.3	23.3 J
	GP50-S-0.5	Benz(a)anthracene	25.2	25.2 J
		Benzo(b)fluoranthene	18.5	18.5 J
		Chrysene	25.7	25.7 J
A8D0903	GP53-S-0.5	Benz(a)anthracene	15.0	15.0 J
		Benzo(b)fluoranthene	20.0	20.0 J
		Chrysene	17.8	17.8 J
	GP54-S-0.5	Benz(a)anthracene	76.0	76.0 J
		Benzo(b)fluoranthene	75.8	75.8 J
		Chrysene	95.8	95.8 J

NOTES:

J = result is estimated.

ug/kg = micrograms per kilogram.

USEPA Method 8270D-SIM results detected below the method reporting limit (MRL) were not qualified by the reviewer, as Apex had already flagged the results as estimated.

The reviewer confirmed that USEPA Method 1613B 2,3,7,8-TCDF confirmation analysis was not required for results detected below the MRL, as the results were considered estimated.

USEPA Method 1613B estimated maximum potential concentrations (EMPCs) results were qualified by the reviewer as estimated, not detected, at the reported concentration, in accordance with USEPA guidance (USEPA, 2014, 2016).

USEPA Method 1613B EMPC results that were also associated with method blank detections requiring qualification are discussed in the method blank section of this validation report and thus are not discussed in the EMPC qualification tables below.

USEPA Method 1613B total homolog EMPC results were qualified by the reviewer as estimated, not detected, at the reported concentration when all associated congeners were reported as EMPCs or non-detect. However, when one or more associated congeners was reported as a detection without an EMPC qualifier, the total homolog result was qualified by the reviewer with “J” as estimated, except for results already flagged with “J” because of detection below the MRL.

USEPA Method 1613B EMPC results were qualified by the reviewer as follows:

Report	Sample	Component	Original Result (pg/g)	Qualified Result (pg/g)
A8D0757/ WO13235	GP49-S-0.5	1,2,3,4,7,8-HxCDD	0.212 JK	0.212 UJ
		1,2,3,6,7,8-HxCDD	0.397 JK	0.397 UJ
		2,3,7,8-TCDF	0.306 JK	0.306 UJ
		2,3,4,7,8-PeCDF	0.238 JK	0.238 UJ
		1,2,3,6,7,8-HxCDF	0.193 JK	0.193 UJ
		2,3,4,6,7,8-HxCDF	0.202 JK	0.202 UJ
		Total TeCDD	3.86 K	3.86 U
		Total PeCDD	4.20 JK	4.20 J
		Total HxCDD	6.32 K	6.32 J
		Total TeCDF	3.20 K	3.20 U
		Total PeCDF	3.09 JK	3.09 J
	Total HxCDF	2.74 JK	2.74 J	
	GP52-S-0.5	1,2,3,6,7,8-HxCDF	0.166 JK	0.166 UJ
		2,3,4,6,7,8-HxCDF	0.220 JK	0.220 UJ
Total PeCDF		4.02 JK	4.02 J	
Total HxCDF		2.83 JK	2.83 J	
A8D0903/ WO13267	GP53-S-0.5	1,2,3,7,8-PeCDD	0.210 JK	0.210 UJ
		1,2,3,7,8,9-HxCDF	0.190 JK	0.190 UJ
		Total PeCDD	1.75 JK	1.75 UJ
		Total TeCDF	1.09 K	1.09 J
		Total HxCDF	7.89 K	7.89 J

NOTES:

EMPC = estimated maximum potential concentration.

J = Result is an estimated value.

JK = Result is estimated value (detected below the MRL and an EMPC).

K = Result is an EMPC.

pg/g = picograms per gram.

UJ = Result is not detected and is an estimated value.

UJK = Result is non-detect, an estimated value, and an EMPC.

UK = Result is not detected and is an EMPC.

The data are considered acceptable for their intended use, with the appropriate data qualifiers assigned.

HOLDING TIMES, PRESERVATION, AND SAMPLE STORAGE

Holding Times

Extractions and analyses were performed within the recommended holding time criteria.

Preservation and Sample Storage

The samples were preserved and stored appropriately.

BLANKS

Method Blanks

Laboratory method blank analyses were performed at the required frequencies. For purposes of data qualification, the method blanks were associated with all samples prepared in the analytical batch. Where an analyte was detected in a sample and in the associated method blank, the sample result was qualified if the concentration was less than ten times the method blank concentration for USEPA Method 6020A results and less than ten times the method blank concentration for remaining results.

USEPA Method 1613B sample results were qualified by the reviewer with “U” as not detected at the sample result value when the result was less than five times the associated method blank EMPC concentration. For methods other than USEPA 1613B, if an analyte was detected between the method detection limit (MDL) and MRL in both the sample and the associated method blank, the sample result was qualified “U” as not detected at the MRL. If an analyte was detected above the MRL and at less than ten times the method blank concentration (for USEPA Method 6020A) or less than five times the method blank concentration (for all other methods), the result was qualified “U” as not detected at the sample value.

In reports A8D0757 (appended CFA report WO13235) and A8D0903 (appended report WO13267) the USEPA Method 1613B batch 37539 method blank had a detection of 1,2,3,4,6,7,8,9-OCDD between the estimated detection limit (EDL) and the MRL, at 0.560 picogram per gram. The associated sample results were greater than five times the method blank concentration; thus, no results were qualified.

The remaining laboratory method blanks were non-detect to MDLs.

Trip Blanks

Trip blanks were not required for this sampling event, as volatile organic compounds were not analyzed.

Equipment Rinse Blanks

Equipment rinse blanks were not submitted for analysis.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

Matrix spike (MS)/matrix spike duplicate (MSD) results are used to evaluate laboratory precision and accuracy. All MS/MSD samples were extracted and analyzed at the required frequency. When MS/MSD percent recoveries were outside acceptance limits because of high concentrations of analyte in the sample, and MS/MSD exceedances were flagged by the laboratory because of high concentrations of analyte, no qualifications were made by the reviewer.

In report A8D0754, the MS sample (8041095-MS1) for USEPA Method 6020 had a result of total lead above the upper percent recovery limit of 125 percent, at 145 percent, because of

high concentration of analyte present in the sample and a nonhomogenous sample matrix. No qualifications were made by the reviewer.

In report A8D0903, the USEPA Method 6020A batch 8050484 MSD (8050484-MSD1) exceeded the upper percent recovery acceptance limit of 125 percent for barium, at 127 percent. The associated MS had acceptable percent recovery and the MS/MSD relative percent difference (RPD) met control limits; thus, no results were qualified.

In report A8D0903, two USEPA Method 6020A batch 805098 MSs (8050598-MS3 and 8050598-MS4) exceeded the upper percent recovery acceptance limit of 125 percent for mercury, at 201 percent and 226 percent, respectively. The reviewer confirmed that both samples used to prepare the MSs had been reported as non-detect with raised reporting limits because of tungsten interference. All associated sample results were non-detect; based on the high percent recovery exceedances, qualification was not required.

In report A8E0130, the USEPA Method 6020A batch 8050640 MS (8050640-MS1) exceeded the upper percent recovery acceptance limit of 125 percent for barium, at 149 percent, and for zinc, at 141 percent. The sample used to prepare the MS was qualified by the reviewer with “J” as estimated.

Report	Sample	Component	Original Result (mg/kg)	Qualified Result (mg/kg)
A8E0130	DU09-S-0.5	Barium	140	140 J
		Zinc	112	112 J

NOTES:

J = Result is an estimated value.
mg/kg = milligrams per kilogram.

All remaining recoveries were within acceptance limits for percent recovery.

LABORATORY DUPLICATE RESULTS

Duplicate results are used to evaluate laboratory precision. All duplicate samples were extracted and analyzed at the required frequency. Laboratory duplicate results within five times the MRL were not evaluated for precision.

In report A8D0903, the USEPA Method 6020A cadmium and selenium results for sample DU09-S-0.5 were flagged by Apex because of association with a batch laboratory duplicate (8050640-DUP1) that had exceeded RPD control limits. The laboratory duplicate and sample results were either less than five times the MRL or were non-detect; thus, no results were qualified.

In report A8E0130, the USEPA Method 6020A cadmium and selenium results for sample DU09-S-0.5 were flagged by Apex because of association with a batch laboratory duplicate (8050640-DUP1) that exceeded RPD control limits. The laboratory duplicate and sample results were either less than five times the MRL or were non-detect; thus, no results were qualified.

All laboratory duplicate RPDs were within acceptance limits.

LABORATORY CONTROL SAMPLE RESULTS

A laboratory control sample (LCS) is spiked with target analytes to provide information on laboratory precision and accuracy. The LCS samples were extracted and analyzed at the required frequency. All LCS analytes were within acceptance limits for percent recovery.

CONTINUING CALIBRATION VERIFICATION RESULTS

Continuing calibration verification (CCV) results are used to demonstrate instrument precision and accuracy through the end of the sample batch. CCV results were not reported. If quality control results met acceptance criteria, quality control flags for CCV exceedances required no action from the reviewer.

FIELD DUPLICATE RESULTS

Field duplicate samples measure both field and laboratory precision. Report A8E0130 states that one field duplicate was submitted for analysis (MW10-GW-050118/MWDUP-GW-050118). MFA uses acceptance criteria of 100 percent RPD for results that are less than five times the MRL, or 50 percent RPD for results that are greater than five times the MRL. Non-detect data are not used in the evaluation of field duplicate results. All analytes were within the acceptance criteria.

ISM REPLICATE EVALUATION

According to report A8D0903, triplicate ISM samples were collected and submitted to Apex for metals analysis (DU10A-S-0.5, DU10B-S-0.5, and DU10C-S-0.5). The relative standard deviations (RSDs) of the replicate sets of metals results were calculated. RSDs were not calculated when results were non-detect or qualified "U" because of EMPCs.

RSDs ranged from 2.80 percent to 64.4 percent. ISM replicate results were qualified as estimates when RSDs exceeded 35 percent. The reviewer qualified non-detect results with "UJ" and detected results with "J," as estimated. A summary of ISM RSDs with associated exceedances and qualifiers added is shown below:

Analyte	DU10A-S-0.5 (mg/kg)	DU10B-S-0.5 (mg/kg)	DU10C-S-0.5 (mg/kg)	Percent RSD
Arsenic	11	10.4	10.7	2.80
Barium	147	120	129	10.4
Cadmium	0.288	0.185 J	0.39	35.6
Chromium	68.7	82.7	72	9.83
Copper	45.5	38.2	41.5	8.76
Lead	41.2	15	14.7	64.4
Mercury	0.813 U	0.484 U	0.402 U	38.4
Selenium	0.622 J	0.575 J	0.699 J	9.91
Silver	0.528 U	0.563 U	0.543 U	3.22
Zinc	144	102	105	20.0

NOTES:

J = Result is an estimated value.
mg/kg = milligrams per kilogram.
RSD = relative standard deviation.
U = Result is non-detect.

Sample ID	Analyte	Percent RSD	Qualifier Added
DU10A-S-0.5	Cadmium	35.6	J
DU10B-S-0.5	Lead	64.4	J
DU10C-S-0.5	Mercury	38.4	UJ

NOTES:

J = Result is an estimated value.
RSD = relative standard deviation.
UJ = Result is non-detect and an estimated value.

REPORTING LIMITS

Apex reported routine MDLs for non-detect results. CFA reported results to EDLs. Results between the MDL or EDL and the MRL were flagged by the laboratories with “J” as estimated. Samples requiring dilutions because of high analyte concentrations and/or matrix interferences were reported with raised EDLs or MDLs, and MRLs.

The reviewer confirmed that USEPA Method 8260C soil results were reported with a base dilution factor of 1:50 that was necessary for analysis.

In report A8D0903, USEPA Method 6020A mercury reporting limits were raised for all ISM samples because of interference from tungsten, which was introduced during ISM sample processing. No additional action was required.

In report A8E0130, the USEPA Method 6020A mercury MDL and MRL were raised for sample DU09-S-0.5 because of matrix interference. No qualification was required.

DATA PACKAGE

The data packages were reviewed for transcription errors, omissions, and anomalies.

In report A8D0757, Apex noted on the cooler receipt form that containers for sample MW09-S-0.5 had been labeled as MW09-S-1.0. After confirming that, based on the original boring log, the correct sample name was MW09-S-0.5, the reviewer notified the samplers. No additional action was required.

In report A8D0757, Apex noted on the cooler receipt form that trip blank containers had been submitted with samples for that report; however, the trip blank was not recorded on the chain of custody. The reviewer confirmed that analysis had not been requested and then notified the samplers. No additional action was required.

All ISM sample names reported by Apex were appended with “(After Processing)” to indicate sample processing, or with “(As Received)” to indicate the unprocessed aliquot analyzed for percent moisture. For brevity, samples are referenced in this validation memorandum by the original sample name.

In report A8D0903, Apex noted on the cooler receipt form that sample collection time had not been recorded on sample containers for SS15-S-0.5, SS25-S-0.5, DU11-S-0.5, SS51-S-0.5, SS69-S-0.5, DU10B-S-0.5, and DU12-S-0.5. The sample collection date was not recorded on sample containers for SS61-S-0.5. The sample collection date on the following containers was 4/25/2018 and did not match the sample collection date of 4/26/2018 on the chain of custody: SS41-S-0.5, SS42-S-0.5, SS43-S-0.5, SS44-S-0.5, SS45-S-0.5, SS47-S-0.5, SS48-S-0.5, SS49-S-0.5, SS50-S-0.5, SS51-S-0.5, and DU08-S-0.5. The reviewer confirmed that the sample dates recorded on the chain of custody were correct, based on comparison with field sampling data sheets. The samplers were notified. Samples were logged in and reported with the correct sample collection dates and times.

In report A8D0903, sample DU06-S-0.5 was recorded on the chain of custody with sample name D406-S-0.5. Apex noted on the cooler receipt form that the sample name recorded on the container was DU06-S-0.5. The sample name was corrected by the MFA project manager and the correct sample name, DU06-S-0.5, was reported.

In reports A8D0903 and A8E0130, copper and zinc were added to all requested USEPA Method 6020A analyses after samples were received by Apex. No action was required by the reviewer.

In report A8D0903, subcontract report WO13267, CFA noted on the sample receipt checklist that the sample jar contained water and appeared to have slightly leaked into the packing material. CFA noted that the sample did not appear to be compromised. Apex was notified, and at the MFA project manager’s request, the reviewer qualified associated sample results with “J” as estimated. Results already flagged as estimated because of detection below the MRL were not additionally qualified.

Report	Sample	Component	Original Result (pg/g)	Qualified Result (pg/g)
A8D0903/ WO13267	GP53-S-0.5	1,2,3,4,7,8-HxCDD	0.0842 U	0.0842 UJ
		1,2,3,4,6,7,8-HpCDD	4.36	4.36 J
		1,2,3,4,6,7,8,9-OCDD	38.7	38.7 J
		Total TeCDD	0.836	0.836 J
		Total HpCDD	7.73	7.73 J
		Total HpCDF	7.94	7.94 J

NOTES:

J = Result is an estimated value.

pg/g = picograms per gram.

U = Result is non-detect.

UJ = Result is non-detect and an estimated value.

In report A8H0102, Apex stated in the case narrative that the MFA project manager requested analysis of archived samples after the original report, A8D0903, was issued. A record of the follow-up analysis request was not provided with report A8H0102. The reviewer confirmed with the MFA project manager that the analyses performed and samples analyzed were correct.

No additional issues were found.

REFERENCES

Apex. 2016. Quality systems manual. Rev. 5. Apex Laboratories, LLC, Tigard, Oregon. April 1.

CFA. 2016. Quality assurance plan. Rev. 14. Cape Fear Analytical, LLC, Wilmington, North Carolina. April.

USEPA. 1986. Test methods for evaluating solid waste: physical/chemical methods. EPA-530/SW-846. Update VI. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. September (phase II, July 2018).

USEPA. 2014. R10 data validation and review guidelines for polychlorinated dibenzo-p-dioxin and polychlorinated dibenzofuran data (PCDD/PCDF) using Method 1613B and SW846 Method 8290A. EPA-910-R-14-003. U.S. Environmental Protection Agency, Office of Environmental Assessment. May.

USEPA. 2016. USEPA contract laboratory program, national functional guidelines for high resolution Superfund methods data review. EPA 542-B-16-001. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. April.

USEPA. 2017a. USEPA contract laboratory program, national functional guidelines for inorganic Superfund methods data review. EPA 540-R-2017-001. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. January.

USEPA. 2017b. USEPA contract laboratory program, national functional guidelines for Superfund organic methods data review. EPA 540-R-2017-002. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. January.

APPENDIX E

NATURAL BACKGROUND MEMORANDUM



NATURAL BACKGROUND CONCENTRATION DEVELOPMENT

PROJECT NO. 0624.04.10 | OCTOBER 29, 2018 | PORT OF SKAGIT

Maul Foster & Alongi, Inc. calculated natural background values of metals in soil at the Former Northern State Hospital property (the Property), in accordance with Washington Model Toxics Control Act (MTCA) guidance (Washington Administrative Code 173-340-709). Natural background value development and calculation methods were finalized after consultation with representatives of the Washington State Department of Ecology (Ecology).

NATURAL BACKGROUND DATASET

In the Phase II Environmental Site Assessment Work Plan, two decision units (DUs), DUs 16 and 17 (Figure 3-6), were identified as having minimal known anthropogenic impacts.¹ These two DUs were therefore chosen to represent natural background conditions for the Property. Five discrete samples were collected in each of these DUs, yielding ten discrete samples, which were analyzed for arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver, and zinc. These data comprise the background dataset presented in Table E-1.

NATURAL BACKGROUND VALUE CALCULATIONS

Natural background values were initially calculated for all metals in this assessment using USEPA ProUCL, in accordance with Ecology's ProUCL Guidelines as suggested through consultation with Arthur Buchan of Ecology.² Supporting information used to develop natural background values, including natural background datasets for each metal, results of outlier tests, results of goodness of fit tests, and natural background values are presented in Table E-2.

Goodness-of-fit tests were performed using ProUCL to determine whether the natural background dataset for each metal fit a normal, gamma, or lognormal distribution. If the dataset for a metal fit multiple distributions, the distribution with the highest correlation coefficient (R) was used. Then, a 90% upper tolerance limit (UTL) with 90% coverage was calculated based on the appropriate distribution for the background dataset for each metal. This approach was used to calculate natural background values for arsenic, chromium, copper, lead, and zinc. If goodness-of-fit tests indicated that the data did not fit a normal, gamma, or lognormal distribution, then a nonparametric 90% UTL with 90% coverage was calculated. Barium was found to not fit a distribution, and therefore a nonparametric UTL was calculated as the natural background value for barium.

In cases where >0% and <50% of the observations in the background dataset for a metal were non-detect, a Kaplan-Meier 90% UTL with 90% coverage with the appropriate distribution

¹ MFA. Phase II environmental site assessment work plan, former Northern State Hospital, Sedro-Woolley, Washington. Maul Foster & Alongi, Inc., Bellingham, Washington, March 1, 2018.

²A. Buchan. ProUCL draft guidelines. Washington State Department of Ecology, January 17, 2017.

was chosen, as recommended in MTCA guidance. This approach was used to determine the natural background value for silver.

In cases where more than 50% of the observations in the background dataset for a metal were non-detect, goodness-of-fit tests were not calculated and the nonparametric 90% UTL with 90% coverage was automatically used as the natural background value. This approach was used to calculate initial natural background values for cadmium, mercury, and selenium.

TREATMENT OF NONDETECTS

Full method detection limits were used in ProUCL data assessments and calculations in all cases where concentrations were below detection limits. These cases were denoted with the “0” identifier before being input into ProUCL for analysis and natural background determination.

TREATMENT OF OUTLIERS

During sampling, one of ten sampling locations was identified as having some evidence of anthropogenic impact. That location had concentrations twofold higher than the rest of the background locations for barium, lead, and zinc. Further, outlier tests conducted in ProUCL identified concentrations of these three metals at this sampling location as outliers in their natural background datasets. Therefore, data from this sample were excluded from natural background calculations for barium, lead, and zinc. Natural background values for barium, lead, and zinc were therefore calculated with data from the remaining nine samples in the natural background dataset. Data from this sample were retained for all metals for which this sample was not an outlier according to outlier tests conducted using ProUCL. Natural background values for arsenic, cadmium, copper, lead, mercury, selenium, silver, and zinc were therefore calculated with data from all ten samples in the natural background dataset.

SELECTION OF FINAL NATURAL BACKGROUND VALUES

The calculation approach described above yielded the final natural background values for most of the metals in this assessment (specifically: arsenic, silver, chromium, barium, copper, lead, and zinc).

Alternative approaches were used to identify final natural background values for cadmium, mercury and selenium for use in this assessment. Specifically, the statewide 90th percentile natural background concentrations developed by the Washington Department of Ecology were used as the final natural background values for cadmium and selenium.³ Additionally, MTCA Stat 97 was used to generate the natural background value for mercury.⁴ The final chosen natural background value for mercury was the 90th percentile background value recommended by MTCA Stat based on a normal distribution.

³ C. San Juan. Natural background soil metals concentrations in Washington state, Toxics Cleanup Program Department of Ecology, Olympia, Washington. October 1994.

⁴ Ecology. MTCA Stat97 background module. <https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Contamination-clean-up-tools> (accessed September 7, 2018)

RESULTS

Results of the evaluations described above, as well as the recommended site-specific natural background values for all metals, are presented in Table E-2. The resulting natural background values are also shown in Tables 4-5 and 4-6 of the main text.

Please note that natural background values presented here are subject to change if additional guidance is received in the future.

Table E-1
Soil Analytical Results—Discrete Decision Unit Soil
Former Northern State Hospital Phase II ESA
Port of Skagit
Sedro-Woolley, Washington

Location: Sample Name: Collection Date:	DU17 SS16-S-0.5 04/25/2018		DU17 SS17-S-0.5 04/25/2018		DU17 SS18-S-0.5 04/25/2018		DU17 SS19-S-0.5 04/25/2018		DU17 SS20-S-0.5 04/25/2018		DU16 SS46-S-0.5 04/26/2018		DU16 SS47-S-0.5 04/26/2018		DU16 SS48-S-0.5 04/26/2018		DU16 SS49-S-0.5 04/26/2018		DU16 SS50-S-0.5 04/26/2018	
Metals (mg/kg)	MDL		MDL		MDL		MDL		MDL		MDL		MDL		MDL		MDL		MDL	
Arsenic	13.9	0.938	15.2	0.887	8.01	0.942	8.65	1.16	15.1	0.79	7.29	0.746	15.7	0.866	7.41	0.756	13.9	0.917	10.8	0.828
Barium	531	0.938	118	0.887	122	0.942	147	1.16	158	0.79	160	0.746	345	0.866	105	0.756	138	0.917	141	0.828
Cadmium	0.938 U	0.938	0.887 U	0.887	0.942 U	0.942	1.16 U	1.16	0.79 U	0.79	0.746 U	0.746	0.866 U	0.866	0.756 U	0.756	0.917 U	0.917	0.828 U	0.828
Chromium	71.1	0.938	56.5	0.887	39.5	0.942	67.8	1.16	91.1	0.79	51.2	0.746	25.9	0.866	37.4	0.756	73.6	0.917	74.7	0.828
Copper	66.6	3.75	28.9	3.55	27.8	3.77	34.3	4.64	54.7	3.16	25.3	2.98	37	3.47	20.2	3.02	45.2	3.67	40.7	3.31
Lead	96.2	0.188	40.5	0.177	42	0.188	39.9	0.232	14.4	0.158	20.7	0.149	37.4	0.173	13.9	0.151	25.4	0.183	22.8	0.166
Mercury	0.15 U	0.15	0.183 J	0.142	0.151 U	0.151	0.186 U	0.186	0.126 U	0.126	0.119 U	0.119	0.139 U	0.139	0.143 J	0.121	0.183 J	0.147	0.168 J	0.132
Selenium	0.938 U	0.938	0.887 U	0.887	0.942 U	0.942	1.16 U	1.16	0.79 U	0.79	0.746 U	0.746	0.866 U	0.866	0.756 U	0.756	1.2 J	0.917	0.859 J	0.828
Silver	0.39	0.188	0.406	0.177	0.191 J	0.188	0.232 U	0.232	0.316	0.158	0.149 U	0.149	0.173 U	0.173	0.158 J	0.151	0.679	0.183	0.581	0.166
Zinc	267	3.75	108	3.55	75.2	3.77	87.8	4.64	133	3.16	64.4	2.98	157	3.47	83.3	3.02	115	3.67	121	3.31

NOTES:
Detected results are shown in **bold** font.
ESA = environmental site assessment.
J = Result is an estimated value.
MDL = method detection limit.
mg/kg = milligrams per kilogram.
U = Result not detected at MDL.

Table E-2
Natural Background Supporting Information
Former Northern State Hospital Phase II ESA
Port of Skagit
Sedro-Woolley, Washington

Metals	Arsenic		Silver		Barium		Cadmium	
	Data (mg/kg)	Detection (0=N and 1=Y)	Data (mg/kg)	Detection (0=N and 1=Y)	Data (mg/kg)	Detection (0=N and 1=Y)	Data (mg/kg)	Detection (0=N and 1=Y)
Data	13.9	1	0.39	1	531	1	0.938	0
	15.2	1	0.406	1	118	1	0.888	0
	8.01	1	0.188	1	122	1	0.942	0
	8.65	1	0.232	0	147	1	1.16	0
	15.1	1	0.316	1	158	1	0.79	0
	7.29	1	0.149	0	160	1	0.746	0
	15.7	1	0.173	0	345	1	0.866	0
	7.41	1	0.151	1	105	1	0.756	0
	13.9	1	0.679	1	138	1	0.918	0
	10.8	1	0.581	1	141	1	0.828	0
Percent Censored Data	0%		30%		0%		100%	
Outlier Observed?	No		No		Yes (531 is an outlier at 10% significance level)		NA	
Normal Correlation Coefficient (R)	R = 0.936		R = 0.981		R = 0.781 ^a		Over 50% of data are censored; natural background value calculated based on nonparametric distribution ^b	
Gamma Correlation Coefficient (R)	R = 0.9184		R = 0.9796		R = 0.845 ^a			
Lognormal Correlation Coefficient (R)	R = 0.9328		R = 0.978		R = 0.868 ^a			
Distribution Used	Normal		Normal		Nonparametric		Nonparametric	
Calculated Natural Background Value (mg/kg)	18.9		0.7		345 ^a		1.16	
Recommended Natural Background Value (mg/kg)	18.9		0.7		345 ^a		1.00 ^d	
Natural Background Source	Calculated (90% UTL with 90% Coverage Assuming Normal Distribution)		Calculated (Kaplan-Meier 90% UTL with 90% Coverage Assuming Normal Distribution ^c)		Calculated (90% Percentile Bootstrap UTL with 90% Coverage Assuming Nonparametric Distribution)		Washington State Natural Background Concentrations	

Table E-2
Natural Background Supporting Information
Former Northern State Hospital Phase II ESA
Port of Skagit
Sedro-Woolley, Washington

Metals	Copper		Chromium		Mercury		Lead	
	Data (mg/kg)	Detection (0=N and 1=Y)	Data (mg/kg)	Detection (0=N and 1=Y)	Data (mg/kg)	Detection (0=N and 1=Y)	Data (mg/kg)	Detection (0=N and 1=Y)
Data	66.6	1	71.1	1	0.15	0	96.2	1
	28.9	1	56.5	1	0.142	1	40.5	1
	27.8	1	39.5	1	0.151	0	42	1
	34.3	1	67.8	1	0.186	0	39.9	1
	54.7	1	91.1	1	0.126	0	14.4	1
	25.3	1	51.2	1	0.119	0	20.7	1
	37	1	25.9	1	0.139	0	37.4	1
	20.2	1	37.4	1	0.121	1	13.9	1
	45.2	1	73.6	1	0.147	1	25.4	1
	40.7	1	74.7	1	0.132	1	22.8	1
Percent Censored Data	0%		0%		60%		0%	
Outlier Observed?	No		No		NA		Yes (96.2 is an outlier at 1% significance level)	
Normal Correlation Coefficient (R)	R = 0.971		R = 0.984		Over 50% of data are censored; natural background value calculated based on nonparametric distribution ^b		R = 0.948 ^a	
Gamma Correlation Coefficient (R)	R = 0.994		R = 0.9653				R = 0.9228 ^a	
Lognormal Correlation Coefficient (R)	R = 0.9959		R = 0.965				R = 0.948 ^a	
Distribution Used	Lognormal		Normal		Nonparametric		Normal	
Calculated Natural Background Value (mg/kg)	76.1		101		0.19		53 ^a	
Recommended Natural Background Value (mg/kg)	76.1		101		0.14 ^e		53 ^a	
Natural Background Source	Calculated (90% UTL with 90% Coverage Assuming Lognormal Distribution)		Calculated (90% UTL with 90% Coverage Assuming Normal Distribution)		90% Background Value Assuming Normal Distribution, Calculated with MTCA Stat ^e		Calculated (90% UTL with 90% Coverage Assuming Normal Distribution)	

Table E-2
Natural Background Supporting Information
Former Northern State Hospital Phase II ESA
Port of Skagit
Sedro-Woolley, Washington

Metals	Selenium		Zinc	
	Data (mg/kg)	Detection (0=N and 1=Y)	Data (mg/kg)	Detection (0=N and 1=Y)
Data	0.78	0	267	1
	0.812	0	108	1
	0.376	0	75.2	1
	0.232	0	87.8	1
	0.632	0	133	1
	0.149	0	64.4	1
	0.173	0	157	1
	0.302	0	83.3	1
	0.917	1	115	1
	0.828	1	121	1
Percent Censored Data	80%		0%	
Outlier Observed?	NA		Yes (267 is an outlier at 5% significance level)	
Normal Correlation Coefficient (R)	Over 50% of data are censored; natural background value calculated based on nonparametric distribution ^b		R = 0.988 ^a	
Gamma Correlation Coefficient (R)			R = 0.9927 ^a	
Lognormal Correlation Coefficient (R)			R = 0.9921 ^a	
Distribution Used	Nonparametric		Gamma	
Calculated Natural Background Value (mg/kg)	0.92		179 ^a	
Recommended Natural Background Value (mg/kg)	0.78 ^d		179 ^a	
Natural Background Source	Washington State Natural Background Concentrations		Calculated (90% WH Approx. Gamma UTL with 90% Coverage Assuming Gamma Distribution)	

Table E-2
Natural Background Supporting Information
Former Northern State Hospital Phase II ESA
Port of Skagit
Sedro-Woolley, Washington

Notes

^a An outlier was identified through outlier testing in ProUCL; that outlier was excluded from all subsequent natural background calculations.

^b Where over 50% of background data were censored, natural background statistics were calculated based on nonparametric distributions as directed in the ProUCL guidance for MTCA authored by Arthur Buchan in 2017.

^c Where between 0% and 50% of background data were censored, a Kaplan-Meier 90% UTL with 90% coverage was chosen for the natural background value, as directed in the ProUCL guidance for MTCA authored by Arthur Buchan in 2017.

^d Statewide 90th percentile natural background concentration developed by the Washington Department of Ecology, obtained from: <https://fortress.wa.gov/ecy/publications/documents/94115.pdf>.

^e Calculated using normal distribution in MTCA Stat program downloaded from: <https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Contamination-clean-up-tools>.

APPENDIX F

ECOLOGICAL SCREENING LEVEL MEMORANDUM



SITE-SPECIFIC ECOLOGICAL SCREENING LEVEL DEVELOPMENT

PROJECT NO. 0624.04.10 | OCTOBER 29, 2018 | PORT OF SKAGIT

Maul Foster & Alongi, Inc., developed site-specific ecological screening levels (SLs) for metals in soil at the Former Northern State Hospital property (the Property), in support of a potential future site-specific Terrestrial Ecological Evaluation (TEE) per Washington Model Toxics Control Act (MTCA) guidance (Washington Administrative Code [WAC] 173-340-7493). Site-specific ecological SLs were finalized per MTCA guidance (WAC 173-340-7493) and after consultation with representatives of the Washington State Department of Ecology.

MTCA ECOLOGICAL INDICATOR CONCENTRATIONS

The Phase II environmental site assessment (ESA) work plan established that site-specific ecological SLs would be developed for the Property as part of the Phase II ESA. Default MTCA ecological indicator concentrations (EICs) were used for most site-specific ecological SLs (WAC 173-340-7493, Table 749-3).

SUBSTITUTIONS OF SCREENING LEVELS

There were a few cases where alternative ecological SLs were substituted for MTCA EICs. In a few additional cases the MTCA EIC list was supplemented with ecological SLs from alternative sources, in accordance with MTCA TEE guidance (WAC 170-340-7493(3)(a)). Specifically:

- The U.S. Environmental Protection Agency (USEPA) ecological soil SL of 120 milligrams per kilogram (mg/kg)¹ for lead toxicity to plants was substituted for the EIC for lead toxicity to plants.
- No MTCA EIC is provided in WAC Table 749-3 for exposure of soil biota to barium. The USEPA ecological soil SL for exposure of soil invertebrates to barium of 330 mg/kg was used for this value.²
- No MTCA EIC is provided in WAC Table 749-3 for exposure of wildlife to silver. The USEPA ecological soil SL for exposure of mammals to silver of 14 mg/kg was used for this value.³
- No MTCA EIC is provided in WAC Table 749-3 for exposure of soil biota to silver. Additionally, there is no USEPA ecological soil SL for exposure of soil invertebrates to silver. A screening benchmark concentration of 50 mg/kg was developed by the

¹ USEPA. Ecological soil screening levels for lead. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, DC, March 2005.

² USEPA. Ecological soil screening levels for barium. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, DC, February 2005.

³ USEPA. Ecological soil screening levels for silver. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, DC, September 2006.

Oak Ridge National Laboratory based on the toxicity of silver to soil microorganisms and microbial processes.⁴ This value was used as the ecological SLV for exposure of soil biota to silver.

RESULTS

The chosen site-specific ecological SLs are presented in Tables 4-5 and 4-6 of the of the main text.

Please note that site-specific ecological SLs presented here are subject to change if additional guidance is received in the future.

⁴ Oak Ridge National Laboratory screening benchmark concentration for the toxicity of chemicals to soil microorganisms and microbial processes: <https://info.ornl.gov/sites/publications/Files/Pub57854.pdf>.