

SUBMITTED TO:
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REVISED SOIL MANAGEMENT PLAN

13.4 Acres, 16720 Waller Road East
TACOMA, WASHINGTON

Submitted To: Bethel School District
516 176th Street East
Spanaway, WA 98387-8399
Attn: Ms. Catherine Carlson

Subject: REVISED SOIL MANAGEMENT PLAN, 13.4 ACRES, 16720 WALLER ROAD
EAST, TACOMA, WASHINGTON

Shannon & Wilson prepared this Soil Management Plan and participated in this project as a consultant for Bethel School District. Our scope of services was specified within the proposal dated July 8, 2019, and authorized July 14, 2019. This Soil Management Plan is intended to serve as a reference to Bethel School District's contractor(s) during development of the subject property and was prepared by the undersigned.

We appreciate the opportunity to be of service to you on this project. If you have questions concerning this report, or we may be of further service, please contact us.

Sincerely,

SHANNON & WILSON

Shoshana K. Howard, PE
Senior Engineer

Meg Strong, LG, LHG
Vice President

SKH:MJS/skh

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1 INTRODUCTION

Bethel School District will be establishing a school on a 13.4-acre property (the Property) located at 16720 Waller Road East, Tacoma, Washington (Pierce County parcel 0319262074). Based on activities completed at the Property to date, it is apparent that some dumping has occurred in the past that resulted in contamination to soil in isolated areas. Pierce County addressed the contaminated areas in advance of the purchase of the Property by Bethel School District; however, additional areas that have not been identified may be present. This Soil Management Plan has been prepared as a reference for Bethel School District's contractor(s) during the proposed development activities if additional areas are discovered.

2 BACKGROUND

The Property originally was part of a larger parcel owned by Pierce County (formerly parcel number 0319262004) and was segregated into two parcels in late 2019. The Property is approximately rectangular in shape (Figure 1) and is currently forested and/or heavily vegetated throughout with an unfinished access road running generally from south to north from the southern end of the Property to near the northern Property boundary and a newly created access road along the northern Property fence. A north-south-oriented trench and an east-west-oriented trench are located near the western and northwestern ends of the Property. Several raised berms were previously present adjacent to the trenches; some of the berms have been removed during recent remedial activities. The Property is fenced along its western, northern, and eastern boundaries with residential properties located to the west, north, and east (beyond Waller Road East).

The southern portion of the former parcel 0319262004 is currently operated by the Pierce County Planning and Public Works Road Operations Division (the Road Operations Division) as the Prairie Pit Maintenance Facility (Prairie Pit facility). The whole parcel was known as the Prairie Pit facility until late 2019. The Prairie Pit facility southern area was historically mined (between approximately 1931 and 1979) for sand and gravel and was subsequently used for storage of equipment and materials used for or generated by road maintenance activities.

In 2008, the Tacoma Pierce County Health Department (TPCHD) granted the Road Operations Division a Solid Waste Handling permit to allow for the facility to manage street sweeping waste material. While under TPCHD, the facility used street sweeping waste material as backfill within at least two areas of the southern Prairie Pit facility. Geotechnical excavations were undertaken in the Prairie Pit and "street sweeping" material was observed.

It is unknown if street sweeping materials were placed on the Bethel School District portion of the Property. No evidence of street sweepings have been identified on the Property to date.

Though bordered by residential properties, a racetrack known as the Spanaway Speedway was historically located approximately 500 feet to the west-northwest of the Property. The location of the racetrack has been redeveloped with a residential development. An historic landfill known as the Frederickson Dump (also known as the Spanaway Dump) was historically located adjacent to and south of the racetrack. The landfill was closed in 1953.

3 CONTAMINATION ENCOUNTERED AT THE PROPERTY

In February 2019, Shannon & Wilson completed reconnaissance at the Property. During the visit, no evidence of mining or street sweeping waste material was observed on the Property; however, scattered garbage and debris were noted across the Property as evidence that the Property has been accessed. A piece of metal debris was observed near the northern end of the Property approximately 15 feet south of the northern fence line (adjacent to one of the northern berms). The debris was partially buried and could not be removed for examination during the reconnaissance. Due to the heavy vegetation and forest cover, the ground surface could not be fully viewed throughout the Property, and other debris may be present.

In March 2019, Migizi Group, Inc. (Bethel School District's geotechnical consultant) completed nine test pits across the Property (TP-1 through TP-9). TP-9 was completed at the location of the metal debris observed in February 2019. Shannon & Wilson observed the test pit excavation activities and collected soil samples for environmental analysis from each test pit. Shannon & Wilson's observations and findings were summarized in a Limited Phase II Environmental Site Assessment report (Shannon & Wilson, 2019), provided in Appendix A.

No signs of dumping or contamination were observed within TP-1 through TP-8. Samples collected from the test pits did not contain detectable concentrations of petroleum hydrocarbons or polycyclic aromatic hydrocarbons (PAHs). Metals detected within the samples were within typical background levels. Remnants of an abandoned automobile body were observed above ground near TP-4. The metal debris observed at the surface of TP-9 was discovered to be a drum lid. TP-9 contained dumped items including tires, electrical wire, rusted metal (including what appeared to be a crushed and ripped 32-gallon drum), rubber, foam, concrete blocks, bricks, and treated wood. Stained soil (blue-gray in color) with a petroleum odor was observed. The pit was excavated through the berm to 8 feet below ground surface (bgs).

A soil sample taken at 2.5 feet bgs from TP-9 contained lube oil, carcinogenic PAHs (cPAHs), cadmium, and lead at concentrations above their respective Model Toxics Control Act (MTCA) Method A cleanup levels (CULs) for unrestricted land use. Follow-up Toxicity Characteristic Leachate Procedure (TCLP) testing for lead indicated that the material was hazardous due to the toxicity characteristic. A sample taken from 8 feet bgs within TP-9 contained lube oil and lead at lower concentrations than the 2.5 feet bgs sample, but still above their respective MTCA Method A CULs. The 8 feet bgs sample was not analyzed for follow-up TCLP testing. The excavated material was replaced within the test pit following sampling.

Pierce County decided to remove the contaminated soil at TP-9 and the automobile body remnants near TP-4. In June 2019, in advance of the excavation activities, Herrera Environmental Consultants, Inc. (Pierce County's consultant) completed several test pits within the western and northern berms, identified as TP-A through TP-K, collected soil samples from the test pits, and collected several samples from the adjacent trenches (referred to by Herrera as ditches). Their investigations identified additional areas of dumping. Household trash was prevalent within the berms and stained soil areas were encountered within the northern berm to the east and west of TP-9. An additional drum was encountered above grade sitting near TP-K and drum remnants were observed with TP-F. Soil samples revealed lube oil, cPAHs, and lead above CULs at TP-F. Pierce County decided to expand their excavation activities to include removal of identified impacted soils and debris.

Excavation activities to remove the berm material and beneath the berms where contamination was identified were completed in July and August 2019. During excavation activities, additional buried drums and stained soil in the berms were encountered to the west and east of TP-9. Pierce County continued excavation activities with the objective of removing impacted soils and debris. Herrera's report documenting their excavation activities and sampling results is provided in Appendix B.

Three groundwater monitoring wells were installed to enable samples to be collected. One monitoring well was installed to the south of the Property and two were installed to the north and northwest of the Property. Two of the three monitoring wells are finished above ground level and are surrounded by bollards. The remaining monitoring well in the northwest corner of the Property was finished with a flush monument. The location of the monitoring wells is shown in Figure 2.

4 POTENTIAL CONTAMINATION

Though Pierce County has removed a considerable volume of debris and impacted soil from the Property, additional areas may be identified during Property development. Based on investigations/remediation completed to date, potential debris and contaminated soils considered most likely to be encountered at the Property include:

- Additional dumping areas, including those with household debris or drums that may have contained waste oils. In these areas, stained soil and lube oil, cPAHs, and metal (primarily lead) impacts are considered most likely to be encountered. Polychlorinated biphenyls, other petroleum hydrocarbon ranges, volatile organic compounds, and/or other compounds, though not identified during activities to date, may be encountered in these areas.
- Additional aboveground debris that is currently obscured by the forest cover and heavy vegetation. Though this debris is considered most likely to be innocuous in nature (i.e., items such as discarded furniture or appliances), there is a potential that additional drums or other debris that may have resulted in contamination could be identified within interior areas of the Property.

5 HANDLING ENCOUNTERED CONTAMINATION

5.1 Field Screening and Observation

During Property development, workers should observe for indication of dumping and/or contamination such as:

- Debris observed on the surface or protruding from the ground. At this Property, buried areas with dumped debris have been encountered. Though some areas included only household debris, some included items such as drums or drum remnants and associated contaminated soils.
- Stained soil or soil with noticeable odor.

If dumping areas or indication of contaminated soil are identified the contractor should cease working within that area and inform Bethel School District. An environmental professional engaged by Bethel School District should be consulted to determine the appropriate next steps, which may include collection of samples to investigate the area of discovery and/or excavation and separate stockpiling of the materials. The environmental professional engaged by Bethel School District will also be responsible for reporting new contamination to Washington State Department of Ecology (Ecology) in accordance with Washington Administrative Code (WAC) 173-340-300.

5.2 Stockpiling and Sampling of Contaminated Soil

If stockpiling of the material is completed, the material should be placed on and be covered by plastic sheeting. All stockpiled soil with suspected contamination should be sampled prior to disposition at a frequency consistent with Ecology guidelines and/or the acceptance facility requirements. Exhibit 5-1 shows the minimum number of samples typically considered adequate to characterize stockpiled soil (Ecology, 2016). The selection of laboratory analyses should be determined by the environmental professional engaged by Bethel School District based on observed conditions with particular attention paid to the requirements in WAC 173-340-900 Table 830-1 since hydrocarbons were the predominate type of contamination previously observed.

Exhibit 5-1: Typical Number of Samples Needed to Adequately Characterize Stockpiled Soil

Cubic Yards of Soil	Minimum Number of Samples
0-100	3
101-500	5
501-1,000	7
1,001-2,000	10
>2,000	10 + 1 for each additional 500 cubic yards

5.3 Transportation

Transportation of contaminated soil should be in compliance with WAC 173-350-300. If dangerous waste is encountered, the material should be transported in accordance with WAC 173-303-240.

A flow chart summarizing the appropriate steps to be taken if dumping areas or contaminated soil are encountered is provided in Exhibit 5-2, below.

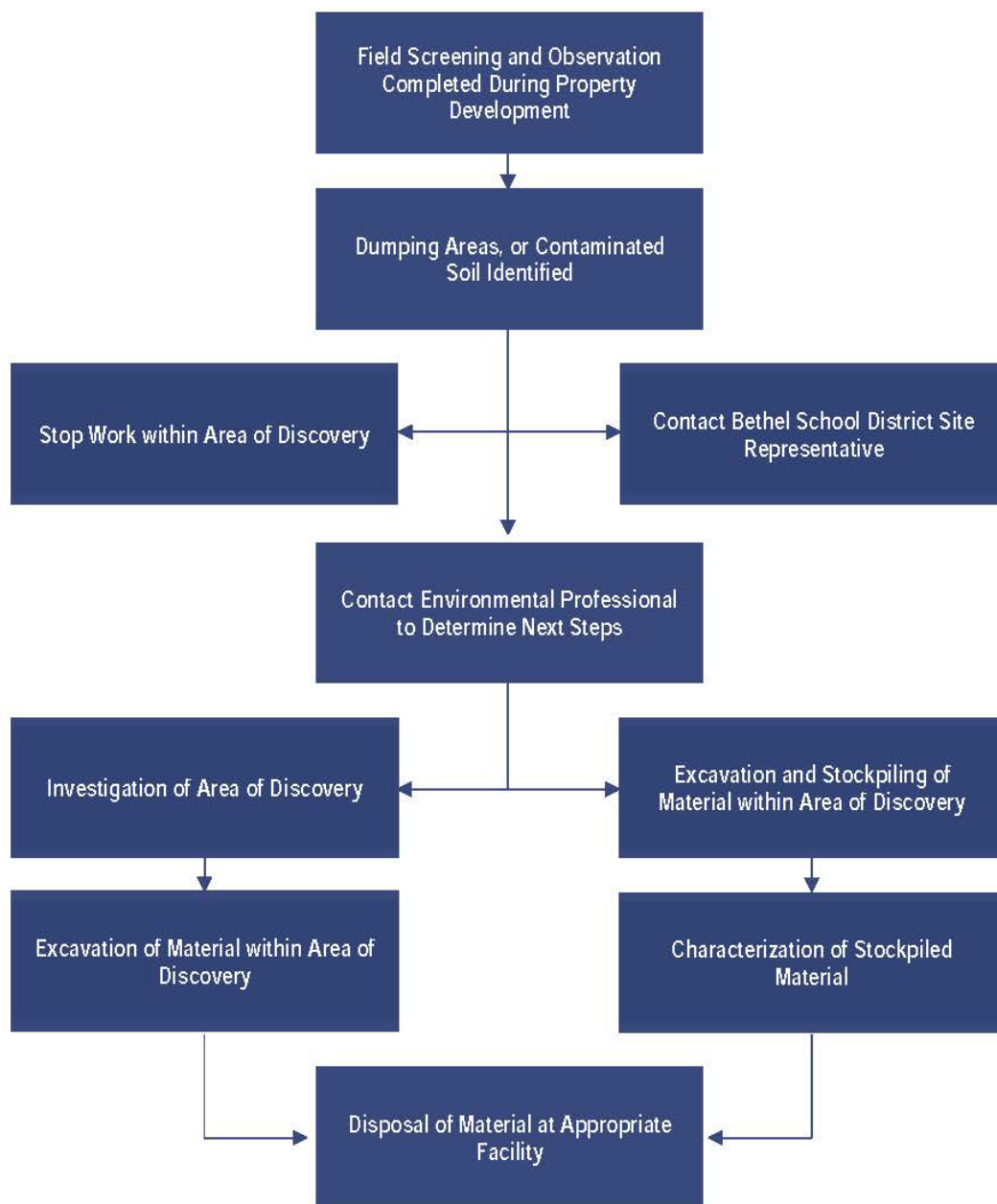


Exhibit 5-2: Handling Encountered Dumping Areas or Contaminated Soil

5.4 Disposal

Contaminated soil above the cleanup levels will be disposed off-site at a facility permitted and licensed to accept the material. Contaminated soil may not be reused on the Property.

5.5 Monitoring Wells

The existing monitoring wells are to be protected during construction work to prevent damage occurring to them. If the wells or monuments (either aboveground or flush) are damaged, a licensed driller must be used to decommission them in accordance with WAC 173-160. On completion of the excavation portion of the earthworks, and with approval from Bethel School District the three monitoring wells will be decommissioned in accordance with WAC 173-160.

6 CLOSING

Dumping areas and contaminated soil have been encountered at the Property. Though Pierce County has removed debris and contaminated soils, there is a potential for additional areas to be encountered during Property development.

The appropriate response will depend on the nature of the discovery. As such, an environmental professional engaged by Bethel School District should be consulted to determine the appropriate response, the sampling and analysis approach, and disposal procedures on a case-by-case basis.

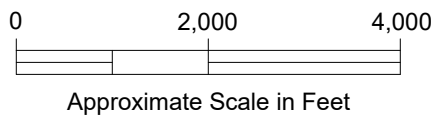
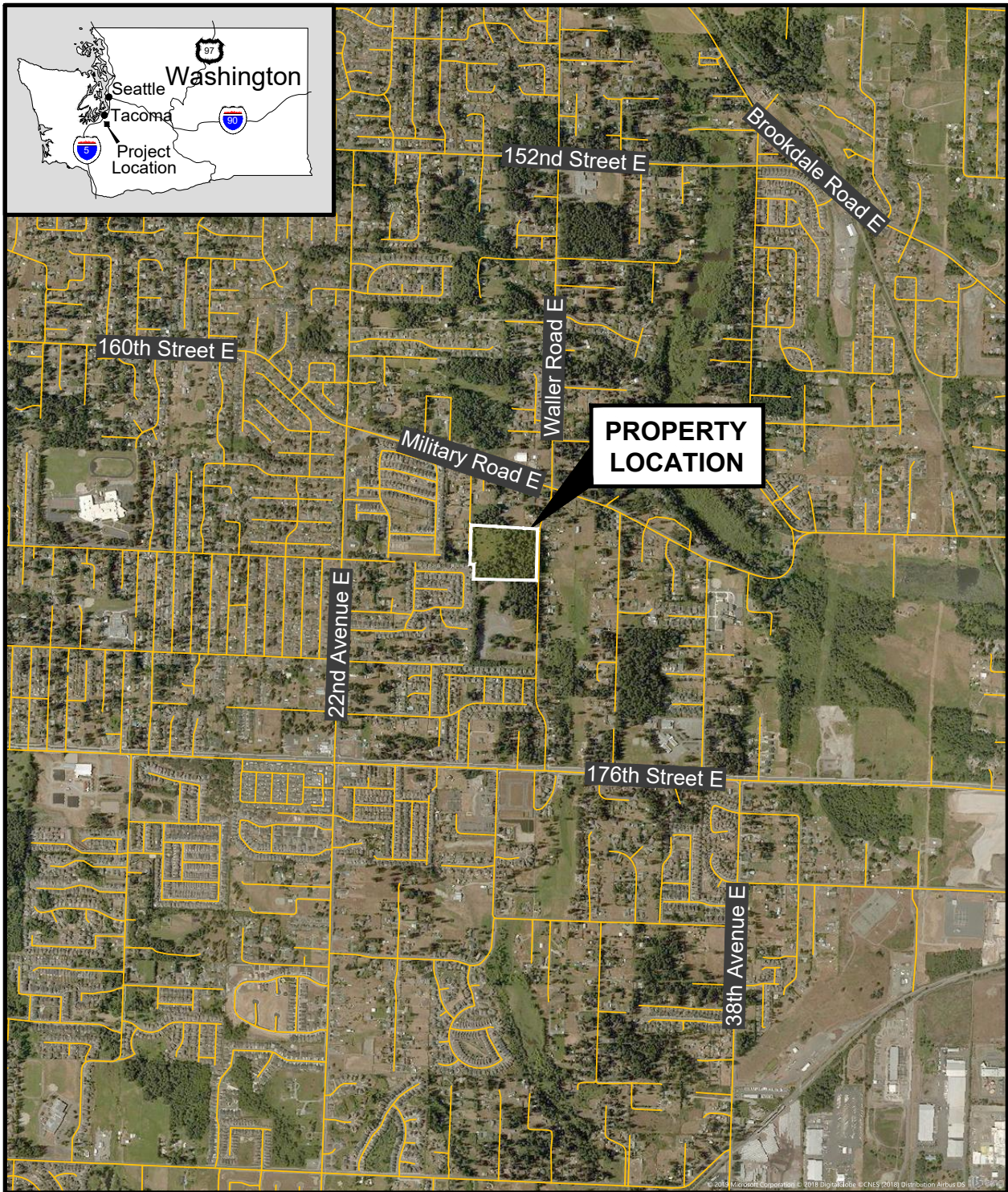
Shannon & Wilson has prepared the enclosure, "Important Information About Your Geotechnical/Environmental Report" to assist you and others in understanding the use and limitations of our report.

7 REFERENCES

Herrera Environmental Consultants, Inc., 2019, Site closure report, 16621 Waller Road East, Tacoma, Washington: Report prepared for Pierce County Planning and Public Works, Tacoma, Wash., November 25.

Shannon & Wilson, 2019, Limited phase II environmental site assessment, approximate 13.4 acres – Waller Road, Frederickson, Washington: Report prepared by Shannon & Wilson, Seattle, Wash. for Ms. Mary Urback c/o Mary J. Urback, PLLC, Spanaway, Wash., May 2.

Washington State Department of Ecology (Ecology), 2016, Guidance for remediation of petroleum contaminated sites: Toxics Cleanup Program, Olympia, Wash., publication no. 10-09-057, June, available:
<https://fortress.wa.gov/ecy/publications/documents/1009057.pdf>



Soil Management Plan
16720 Waller Road East
Tacoma, Washington

VICINITY MAP

January 2020

102438-002

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 1

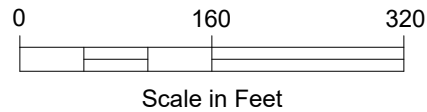


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FIG. 2

LEGEND

- Property Boundary
- MW-1 ● Monitoring Well Designation and Approximate Location (*Herrera*)



Soil Management Plan
16720 Waller Road East
Tacoma, Washington

**MONITORING WELLS
APPROXIMATE LOCATIONS**

January 2020

102438-002

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 2

Appendix A

Limited Phase II Environmental Site Assessment Report

May 2, 2019

Ms. Mary Urback
c/o Mary J. Urback PLLC
Bethel School District
516 176th Street East
Spanaway, WA 98387-8399

RE: LIMITED PHASE II ENVIRONMENTAL SITE ASSESSMENT, APPROXIMATE 13.4 ACRES
– WALLER ROAD, FREDERICKSON, WASHINGTON

Dear Ms. Urback:

Shannon & Wilson has completed a Limited Phase II Environmental Site Assessment (ESA) to support the Bethel School District's acquisition of the northern approximately 13.4-acre portion (the Property) of Pierce County parcel 0319262004, adjacent to and west of Waller Road East in Frederickson, Washington. This assessment was conducted in accordance with the scope of services presented within the revised proposal dated February 7, 2019.

BACKGROUND

The Property is approximately rectangular in shape (Figure 1) and is forested and/or heavily vegetated throughout with an unfinished access road running generally from south to north from the southern end of the Property to near the northern Property boundary. A north-south-oriented trench and an east-west-oriented trench are located near the western and northern ends of the property. The Property is fenced along its western, northern, and eastern boundaries with residential properties located to the west, north, and east (beyond Waller Road East).

The remaining portion of Pierce County parcel 0319262004, located to the south of the Property is operated by the Pierce County Planning and Public Works Road Operations Division (the Road Operations Division) as the Prairie Pit Maintenance Facility (Prairie Pit facility). The Prairie Pit facility was historically mined (between approximately 1931 and 1979) for sand and gravel and was subsequently used for storage of equipment and materials used for or generated by road maintenance activities.

In 2008, the Tacoma Pierce County Health Department (TPCHD) granted the Road Operations Division a Solid Waste Handling permit to allow for the facility to manage street sweeping waste material. The permit was obtained in response to changes in regulations;

the facility had previously handled street sweeping waste. While under TPCHD, the facility used street sweeping waste material as backfill within at least two areas of the Prairie Pit facility. There are records that the material was tested and approved by TPCHD. It is not known if street sweeping waste was used as backfill prior to TPCHD involvement; if so, it is not known if the material was tested prior to use. Geotechnical excavations were undertaken in the Prairie Pit and "street sweeping" material was observed. The Prairie Pit facility is believed to be upgradient of the Property and the subsurface is understood to be permeable; as such, if contaminated material was used as backfill within the Prairie Pit facility, groundwater contamination may be present below the Property.

Though bordered by residential properties, a racetrack known as the Spanaway Speedway was historically located approximately 500 feet to the west-northwest of the Property. The location of the racetrack has been redeveloped with a residential development. A historic landfill known as the Frederickson Dump (also known as the Spanaway Dump) was historically located adjacent to and south of the racetrack. The landfill was closed in 1953. Both locations are believed to be cross-gradient to the Property.

No evidence of mining or street sweeping waste material was observed during the reconnaissance at the Property. Scattered garbage was noted as evidence that the Property has been accessed. A piece of metal debris was observed near the northern end of the Property approximately 15 feet south of the northern fence line. The debris was partially buried and could not be removed for examination during the reconnaissance. The scattered garbage and the observed metal debris indicate that dumping may have occurred at the Property. Due to the heavy vegetation and forest cover, the ground surface could not be fully viewed, and other debris may be present.

SUMMARY OF FIELD ACTIVITIES

On March 19, 2019, Migizi Group, Inc. (Bethel School District's geotechnical consultant) completed nine test pits at the Property (TP-1 through TP-9, shown in Figure 2). TP-1 through TP-8 were placed randomly throughout the area to be developed on the Property. TP-9 was placed at the location of the metal debris observed during the Property reconnaissance. Shannon & Wilson observed the test pit excavation activities and collected soil samples for environmental analysis from each test pit.

Test pit logs generated by Migizi Group are provided in Appendix A. Photographs taken during the field activities are provided in Appendix B. At TP-1 through TP-8, observed geology included 1.5 to 2.5 feet of brown to black, silty sand with organics overlying

approximately 1 to 2 feet of weathered, medium dense outwash, which was comprised of a gravel with silts, sand, cobbles, and boulders and occasionally roots. Photograph 5 of Appendix B shows the transition between the upper two layers. A dense, unweathered outwash was observed below the weathered layer.

At TP-9, the top silty sand layer was approximately 7 feet thick. Between 7 and 8 feet, native, dense outwash was observed. The reason for the thicker top layer at TP-9 appears to be because the pit was completed within the raised area adjacent to the trench observed near the northern Property boundary. The thicker top layer likely included material, which had historically been excavated to from the trench.

Composite samples were taken from each of TP-1 through TP-8. No signs of dumping or indication of contamination (visual or olfactory) were observed within TP-1 through TP-8. Near TP-4, remnants of an abandoned automobile body were observed above ground (Photograph 12 of Appendix B).

Within TP-9, dumped items including tires, electrical wire, rusted metal (including a crushed and ripped drum of approximately 32-gallon capacity), rubber, foam, concrete block, bricks, and treated wood were observed (Photographs 6 through 9 of Appendix B). The metal debris observed during the Phase I ESA was discovered to be a drum lid and the surrounding soil was observed to be stained blue-gray and had a pungent petroleum odor. The pit was completed to a depth of 8 feet below ground surface (bgs) in an attempt to delineate the impacted depth. The excavation stopped when dense, unweathered outwash was encountered (Photograph 10 of Appendix B). A sample of the stained soil was taken from 2.5 feet bgs and a bottom sample was taken from 8 feet bgs. Following completion of the test pit, the removed soil was replaced in the test pit (Photograph 11 of Appendix B).

SAMPLE ANALYSES

The samples were submitted to Fremont Analytical of Seattle, Washington, under standard chain of custody procedures. All ten samples were analyzed for petroleum hydrocarbon identification using Northwest Total Petroleum Hydrocarbon (NWTPH) Hydrocarbon Identification and for polycyclic aromatic hydrocarbons (PAHs) using Environmental Protection Agency (EPA) Method 8270 SIM. The samples collected from TP-1, -3, -5, and -7 and the 2.5 feet bgs sample taken from TP-9 were analyzed for priority pollutant metals (antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc) using EPA Methods 6020 and 7471.

The results from the laboratory analyses are presented in Table 1 and the laboratory certificates are provided as Appendix C.

Petroleum Hydrocarbons

Total petroleum hydrocarbons were not detected within the samples taken from TP-1 through TP-8. Both samples taken from TP-9 (2.5 and 8 feet bgs) contained petroleum hydrocarbons identified as lube oil.

Follow-up analysis was requested on the TP-9 samples using NWTPH diesel extended. The 2.5 feet bgs sample contained lube oil at a concentration of 130,000 milligrams per kilogram (mg/kg) and the 8 feet bgs sample contained lube oil at 2,990 mg/kg. Both detections exceed the Model Toxics Control Act (MTCA) Method A Cleanup Level (CUL) for unrestricted land use of 2,000 mg/kg.

Polycyclic Aromatic Hydrocarbons (PAHs)

The samples taken from TP-1 through TP-8 did not contain detectable concentrations of PAHs. As shown in Table 1, the 2.5 feet bgs sample taken from TP-9 contained detectable concentrations of all analyzed PAHs. The 8 feet bgs sample contained detectable concentrations of benzo(g,h,i)perylene, pyrene, and chrysene. The concentrations detected within the deeper sample were one to two orders of magnitude lower than concentrations measured within the 2.5 feet bgs sample.

The total carcinogenic PAH (cPAH) toxic equivalent concentration (TEQ) was calculated for both TP-9 samples. The 2.5 feet bgs sample total cPAH TEQ was calculated at 3,385 micrograms per kilogram ($\mu\text{g/kg}$), exceeding the MTCA Method A CUL of 100 $\mu\text{g/kg}$. The 8 feet bgs sample total cPAH TEQ was calculated at 32 $\mu\text{g/kg}$, below the MTCA Method A CUL.

Priority Pollutant Metals

The TP-1, -3, -5, -7, and -9 (2.5 feet bgs) samples contained detectable concentrations of arsenic, beryllium, chromium, copper, lead, nickel, selenium, and zinc. The TP-9 (2.5 feet bgs) sample also contained detectable concentrations of antimony, cadmium, and silver.

Metal detections within the TP-1, -3, -5, and -7 samples were below MTCA Method A or B (when Method A was not available) CULs. With the exception of selenium, the metal detections (within TP-1, -3, -5, and -7 samples) were within natural background ranges

provided within the *Natural Background Soil Metals Concentrations in Washington State* study prepared by the Department of Ecology (Ecology) in 1994¹. Selenium was detected at concentrations ranging from 1.32 to 1.71 mg/kg. It should be noted that the background level established within the Ecology study (0.78 mg/kg) was based on a limited dataset and other sources suggest concentrations of up to 2.0 mg/kg as typical for surficial soils.

The 2.5 feet bgs sample from TP-9 contained cadmium, copper, lead, selenium, and zinc at concentrations above natural background ranges. Cadmium and lead were detected at 14.5 and 7,950 mg/kg, respectively, above the MTCA Method A CULs of 2.0 and 250 mg/kg. Shannon & Wilson requested that the laboratory analyze the 8 feet bgs sample from TP- 9 for cadmium and lead. The 8 feet bgs sample contained cadmium at 0.694 mg/kg, below the MTCA Method A CUL, and lead at 1,680 mg/kg, above the MTCA Method A CUL.

According to the “Rule of 20”, soil concentrations (in mg/kg) at above 20 times the Toxicity Characteristic Leaching Procedure (TCLP) limit (in milligram per liter [mg/L]) can result in TCLP limit exceedance (and therefore would be considered hazardous waste). For example, the TCLP limit for cadmium is 1 mg/L. Using the “Rule of 20”, soil concentrations below 20 mg/kg (1 x 20) are not generally expected to exceed the TCLP limit. TCLP testing was not requested for cadmium because the detection was below 20 mg/kg. The TCLP limit for lead is 5 mg/L. Soil concentrations below 100 mg/kg (5 x 20) are not generally expected to exceed the TCLP limit. Because lead was detected at 7,950 mg/kg, follow-up analysis on the 2.5 feet bgs sample from TP-9 was requested using the TCLP extraction method. The sample contained lead at 6.01 mg/L, above the TCLP limit of 5 mg/L indicating that the material is hazardous waste due to the toxicity characteristic.

CONCLUSION AND RECOMMENDATIONS

Field observations and the results of environmental analyses performed on samples taken from TP-1 through TP-8 did not suggest the presence of soil contamination at these locations.

At TP-9, soil contaminated with lube oil, PAHs, and metals (specifically cadmium and lead) is present. The full depth of contamination was not identified; a sample taken from the base

¹ Washington State Department of Ecology, Toxics Cleanup Program, 1994, Natural background soil metals concentrations in Washington State, Publication No. 94-115, October.

of the test pit (8 feet bgs) contained lube oil and lead at concentrations above MTCA Method A CULs; however, the concentrations were significantly lower than detected values in the sample from 2.5 feet bgs. Based on the analytical results and observations made in the field, it appears that the contamination may be from a dumped drum (possibly an approximately 32-gallon drum) that contained waste oil.

Shannon & Wilson recommends that the Bethel School District request that the material encountered at TP-9 be removed by the Road Operations Division prior to the purchase of the Property. Based on the results of the lead TCLP analysis, the material encountered at 2.5 feet bgs is hazardous waste. Further TCLP testing was not completed to determine the extent at which lead was present at hazardous waste levels. Following excavation of the test pit, the material was replaced within the pit. Additional analyses including, but not limited to, polychlorinated biphenyls, volatile organic compounds (full list), and gasoline-range petroleum hydrocarbons may be necessary to support waste disposal characterization.

Confirmation sampling (base and sidewall) should be completed to verify that the full extent of contamination has been removed at TP-9 to below MTCA Method A CULs. It is unknown if groundwater has been contaminated by the detected hydrocarbons and metals.

Shannon & Wilson recommends that the Bethel School District request that the abandoned automobile body remnants observed near TP-4 be removed prior to purchasing the Property. A surface and/or near-surface soil sample should be collected following removal to evaluate for contamination (hydrocarbon identification, PAHs, and priority pollutant metals) resulting from fluids potentially left present within the vehicle at the time of dumping. If contaminated soil is detected at the abandoned car location, we recommend the soil is also excavated, disposed off-site, and confirmation samples tested.

Though no other impacted areas were encountered during the field investigation, other similar areas may be present at the Property. Shannon & Wilson recommends that Bethel School District have a Soil Management Plan in place during construction to inform actions to take in the occurrence of encountered contamination.

Shannon & Wilson has prepared the enclosure, "Important Information About Your Environmental Site Assessment/Evaluation Report," to assist you and others in understanding the use and limitations of our report.

Sincerely,

SHANNON & WILSON

Meg Strong, LG, LHG
Vice President

SKH:MJS/skh

Enc. Table 1 – Summary of Soil Analytical Results (2 pages)
 Table 2 – Total cPAH TEQ Calculations
 Figure 1 – Vicinity Map
 Figure 2 – Property Plan
 Appendix A – Test Pit Logs
 Appendix B – Photographs
 Appendix C – Laboratory Certificates
 Important Information About Your Environmental Site Assessment/Evaluation
 Report

Table 1 - Summary of Soil Analytical Results

Boring/Well Number:	Sample Results										Regulatory Criteria			
	Test Pit 1	Test Pit 2	Test Pit 3	Test Pit 4	Test Pit 5	Test Pit 6	Test Pit 7	Test Pit 8	Test Pit 9		MTCA Method A CUL for Unrestricted Land Use	MTCA Method B CUL for Direct Contact ¹	Natural Background Levels ²	Toxicity Characteristic Regulatory Limit (mg/L) ³
	TP1:C	TP2:C	TP3:C	TP4:C	TP5:C	TP6:C	TP7:C	TP8:C	TP9:2.5	TP9:8				
	--	--	--	--	--	--	--	--	2.5	8				
Sample Depth:														
Sample Date:	03/19/19	03/19/19	03/19/19	03/19/19	03/19/19	03/19/19	03/19/19	03/19/19	03/19/19	03/19/19				
Metals (mg/kg)														
Antimony	< 0.192	--	< 0.224	--	< 0.195	--	< 0.184	--	0.552	--	--	32	5	--
Arsenic	3.56	--	3.69	--	3.75	--	3.96	--	5.98	--	20.0	--	7	--
Beryllium	0.286	--	0.332	--	0.317	--	0.276	--	0.267	--	--	160	2	--
Cadmium	< 0.192	--	< 0.224	--	< 0.195	--	< 0.184	--	14.5	0.694	2.00	--	1	--
Chromium	16.1	--	16.4	--	14	--	27.1	--	19	--	2,000	--	42	--
Copper	16.3	--	13.7	--	13.7	--	18.1	--	68.8	--	--	3,200	36	--
Lead	3.29	--	5.11	--	5.28	--	3.44	--	7,950	1,680	250	--	17	--
Mercury	< 0.285	--	< 0.329	--	< 0.284	--	< 0.277	--	< 0.306	--	2.00	--	0.07	--
Nickel	19.9	--	17	--	16.6	--	23.9	--	15.2	--	1,600	--	38	--
Selenium	1.44	--	1.71	--	1.46	--	1.32	--	1.37	--	--	400	0.78/2*	--
Silver	< 0.0959	--	< 0.112	--	< 0.0976	--	< 0.0921	--	0.179	--	--	400	0.61	--
Thallium	< 0.192	--	< 0.224	--	< 0.195	--	< 0.184	--	< 0.194	--	--	0.80	--	--
Zinc	30.7	--	33.3	--	37.8	--	39.0	--	2,450	--	--	24,000	86	--
Toxicity Characteristic Leaching Procedure (mg/L)														
Lead	--	--	--	--	--	--	--	--	6.01	--	--	--	--	5
Hydrocarbon Identification (mg/kg)														
#2 Diesel	< 55.3	< 66.3	< 69	< 61.9	< 57.2	< 53.1	< 53.3	< 60.1	< 62.6	< 53.1	2,000	--	--	--
Gasoline	< 22.1	< 26.5	< 27.6	< 24.7	< 22.9	< 21.3	< 21.3	< 24	< 25	< 21.3	30/100*	--	--	--
Kerosene	< 55.3	< 66.3	< 69	< 61.9	< 57.2	< 53.1	< 53.3	< 60.1	< 62.6	< 53.1	--	--	--	--
Lube Oil	< 111	< 133	< 138	< 124	< 114	< 106	< 107	< 120	DETECT	DETECT	2,000	--	--	--
Mineral Spirits	< 33.2	< 39.8	< 41.4	< 37.1	< 34.3	< 31.9	< 32	< 36	< 37.6	< 31.9	--	--	--	--
Paraffin oils	< 111	< 133	< 138	< 124	< 114	< 106	< 107	< 120	< 125	< 106	--	--	--	--
Total Petroleum Hydrocarbons (mg/kg)														
#2 Diesel	--	--	--	--	--	--	--	--	< 2,500	< 213	2,000	--	--	--
Lube Oil	--	--	--	--	--	--	--	--	130,000	2,990	2,000	--	--	--
Polycyclic Aromatic Hydrocarbons (µg/kg)														
1-Methylnaphthalene	< 47.5	< 53.4	< 54.3	< 48.7	< 48.2	< 41.4	< 46.7	< 48.5	3,780	< 41.3	--	--	--	--
2-Methylnaphthalene	< 47.5	< 53.4	< 54.3	< 48.7	< 48.2	< 41.4	< 46.7	< 48.5	5,280	< 41.3	--	--	--	--
Acenaphthene	< 47.5	< 53.4	< 54.3	< 48.7	< 48.2	< 41.4	< 46.7	< 48.5	312	< 41.3	--	4,800,000	--	--
Acenaphthylene	< 47.5	< 53.4	< 54.3	< 48.7	< 48.2	< 41.4	< 46.7	< 48.5	88	< 41.3	--	--	--	--
Anthracene	< 47.5	< 53.4	< 54.3	< 48.7	< 48.2	< 41.4	< 46.7	< 48.5	456	< 41.3	--	24,000,000	--	--
Benzo[g,h,i]perylene	< 47.5	< 53.4	< 54.3	< 48.7	< 48.2	< 41.4	< 46.7	< 48.5	945	56.3	--	--	--	--

Table 1 - Summary of Soil Analytical Results

Boring/Well Number:	Sample Results										Regulatory Criteria			
	Test Pit 1	Test Pit 2	Test Pit 3	Test Pit 4	Test Pit 5	Test Pit 6	Test Pit 7	Test Pit 8	Test Pit 9		MTCA Method A CUL for Unrestricted	MTCA Method B CUL for Direct	Natural Background	Toxicity Characteristic Regulatory
	Sample Number: TP1:C	Sample Number: TP2:C	Sample Number: TP3:C	Sample Number: TP4:C	Sample Number: TP5:C	Sample Number: TP6:C	Sample Number: TP7:C	Sample Number: TP8:C	Sample Number: TP9:2.5	Sample Number: TP9:8				
Sample Depth:	--	--	--	--	--	--	--	--	2.5	8				
Fluoranthene	< 47.5	< 53.4	< 54.3	< 48.7	< 48.2	< 41.4	< 46.7	< 48.5	5,010	< 41.3	--	3,200,000	--	--
Fluorene	< 47.5	< 53.4	< 54.3	< 48.7	< 48.2	< 41.4	< 46.7	< 48.5	606	< 41.3	--	3,200,000	--	--
Naphthalene	< 47.5	< 53.4	< 54.3	< 48.7	< 48.2	< 41.4	< 46.7	< 48.5	2,070	< 41.3	5,000	--	--	--
Phenanthrene	< 47.5	< 53.4	< 54.3	< 48.7	< 48.2	< 41.4	< 46.7	< 48.5	3,640	< 41.3	--	--	--	--
Pyrene	< 47.5	< 53.4	< 54.3	< 48.7	< 48.2	< 41.4	< 46.7	< 48.5	7,370	56.1	--	2,400,000	--	--
Carcinogenic Polycyclic Aromatic Hydrocarbons (µg/kg)														
benzo(a)pyrene	< 47.5	< 53.4	< 54.3	< 48.7	< 48.2	< 41.4	< 46.7	< 48.5	2,680	< 41.3	100	--	--	--
benzo(a)anthracene	< 47.5	< 53.4	< 54.3	< 48.7	< 48.2	< 41.4	< 46.7	< 48.5	3,530	< 41.3	--	1,370	--	--
benzo(b)fluoranthene	< 47.5	< 53.4	< 54.3	< 48.7	< 48.2	< 41.4	< 46.7	< 48.5	1,650	< 41.3	--	1,370	--	--
benzo(k)fluoranthene	< 47.5	< 53.4	< 54.3	< 48.7	< 48.2	< 41.4	< 46.7	< 48.5	978	< 41.3	--	137	--	--
chrysene	< 47.5	< 53.4	< 54.3	< 48.7	< 48.2	< 41.4	< 46.7	< 48.5	4,670	57.9	--	137,000	--	--
dibenzo[a,h]anthracene	< 47.5	< 53.4	< 54.3	< 48.7	< 48.2	< 41.4	< 46.7	< 48.5	128	< 41.3	--	137	--	--
indeno[1,2,3-cd]pyrene	< 47.5	< 53.4	< 54.3	< 48.7	< 48.2	< 41.4	< 46.7	< 48.5	294	< 41.3	--	1,370	--	--
Total cPAH TEQ (See Table 2)									3,384.7	31.6	100	--	--	--

NOTES:

1 MTCA Method B CUL included when Method A CUL was not available.

2 Natural background soil metals concentrations (90th percentile values) established by Ecology in 1994.

3 Regulatory limit corresponding to hazardous waste due to toxicity characteristic.

* 0.78 mg/kg concentration established by Ecology (in 1994) was based on limited dataset. Other sources indicate levels up to 2 mg/kg as typical for surficial soil.

Bold text indicates detected analyte.

Shaded text indicates concentrations exceeds cleanup criterion.

< indicates that the compound was not detected above the indicated laboratory reporting limit.

-- indicates not analyzed or not applicable.

DETECT indicates a positive identification by Hydrocarbon Identification method; method does not produce concentration result.

µg/kg = micrograms per kilogram; mg/kg = milligrams per kilogram; mg/L = milligrams per liter; cPAH = carcinogenic polycyclic aromatic hydrocarbon; CUL = cleanup level; MTCA = Model Toxics Control Act; TEQ = toxic equivalent concentration.

Table 2 - Total cPAH TEQ Calculations

Total cPAH TEQ Calculation for Sample TP9:2.5				
Analyte	Result (µg/kg)	Method Detection Limit (µg/kg)	Toxicity Equivalency Factor	Adjusted Concentration ¹ (µg/kg)
benzo(a)pyrene	2,680	--	1	2,680
benzo(a)anthracene	3,530	--	0.1	353
benzo(b)fluoranthene	1,650	--	0.1	165
benzo(k)fluoranthene	978	--	0.1	97.8
chrysene	4,670	--	0.01	46.7
dibenzo[a,h]anthracene	128	--	0.1	12.8
indeno[1,2,3-cd]pyrene	294	--	0.1	29.4
Total cPAH TEQ ²				3,384.7
MTCA Method A Cleanup Level for Unrestricted Land Use				100

Total cPAH TEQ Calculation for Sample TP-9:8				
Analyte	Result (µg/kg)	Method Detection Limit (µg/kg)	Toxicity Equivalency Factor	Adjusted Concentration ¹ (µg/kg)
benzo(a)pyrene	ND	41.3	1	20.65
benzo(a)anthracene	ND	41.3	0.1	2.065
benzo(b)fluoranthene	ND	41.3	0.1	2.065
benzo(k)fluoranthene	ND	41.3	0.1	2.065
chrysene	57.9	--	0.01	0.579
dibenzo[a,h]anthracene	ND	41.3	0.1	2.065
indeno[1,2,3-cd]pyrene	ND	41.3	0.1	2.065
Total cPAH TEQ ²				31.6
MTCA Method A Cleanup Level for Unrestricted Land Use				100

NOTES:

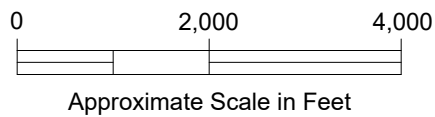
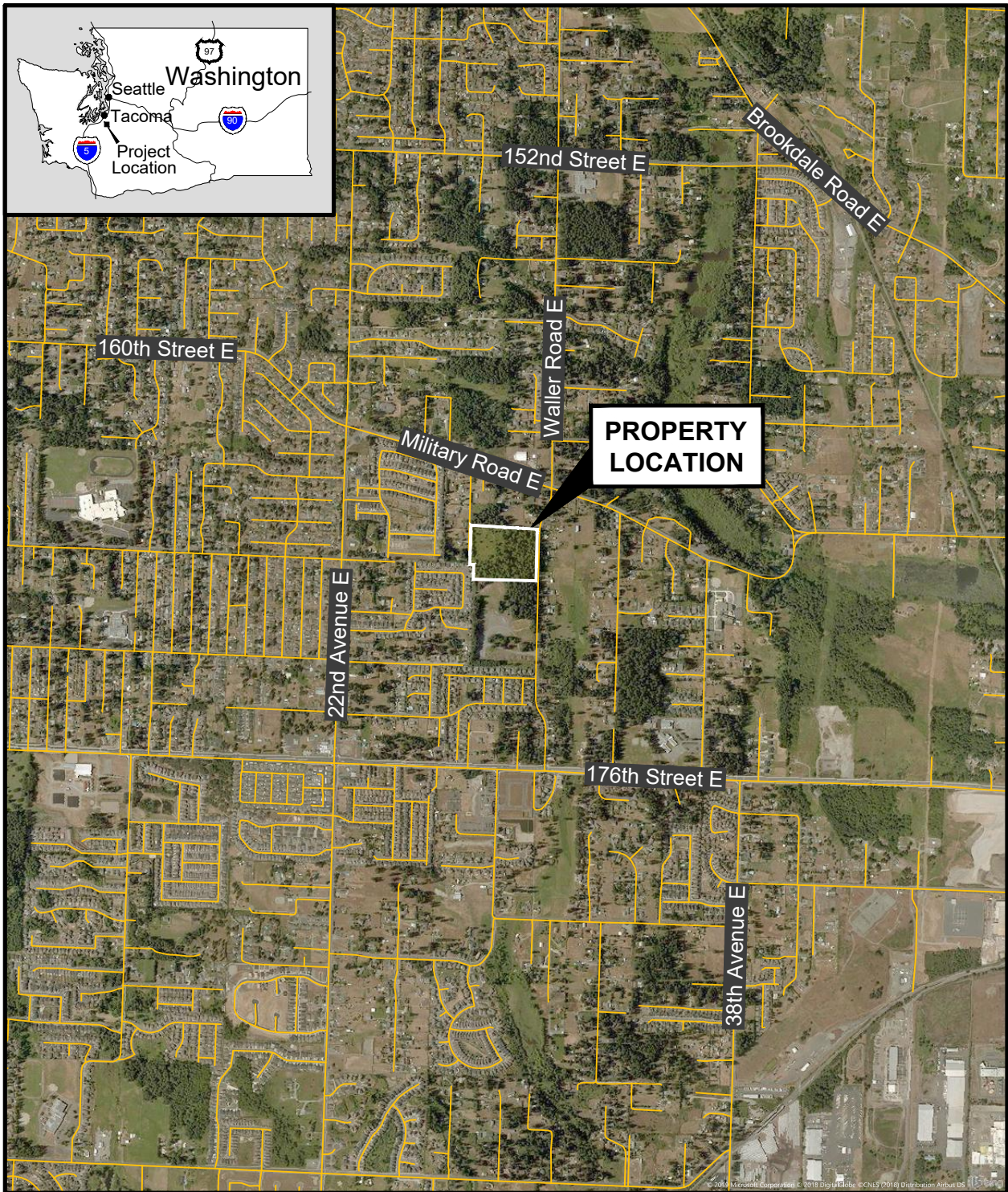
1 For detected compounds, calculated as the detected concentration multiplied by the compound's TEF.

For compounds that are ND, calculated as 1/2 of the MDL multiplied by the compound's TEF.

2 Sum of the TEF adjusted concentration for each cPAH.

Shaded text indicates a concentration exceeding the MTCA Cleanup Level.

< = ND = not detected above the MDL; µg/kg = microgram per kilogram; cPAH = carcinogenic polycyclic aromatic hydrocarbon; MDL = Method Detection Limit; MTCA = Model Toxics Control Act; TEF = toxicity equivalency factor; TEQ = toxic equivalent concentration



NOTE

Bing Map Image adapted from aerial imagery provided by Autodesk Live Maps and Microsoft Bing Maps reprinted with permission from Microsoft Corporation.

Limited Phase II Environmental Site Assessment, 13.4 Acres - Waller Road
Frederickson, Washington

VICINITY MAP

May 2019

102438-001

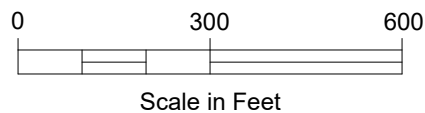
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FIG. 1



LEGEND

- Property Boundary
- Pierce County Parcel 0319262004
- B-1** ---- Pierce County Parcel 0319262004



Limited Phase II Environmental Site
Assessment, 13.4 Acres - Waller Road
Frederickson, Washington

INVESTIGATION LOCATIONS

May 2019

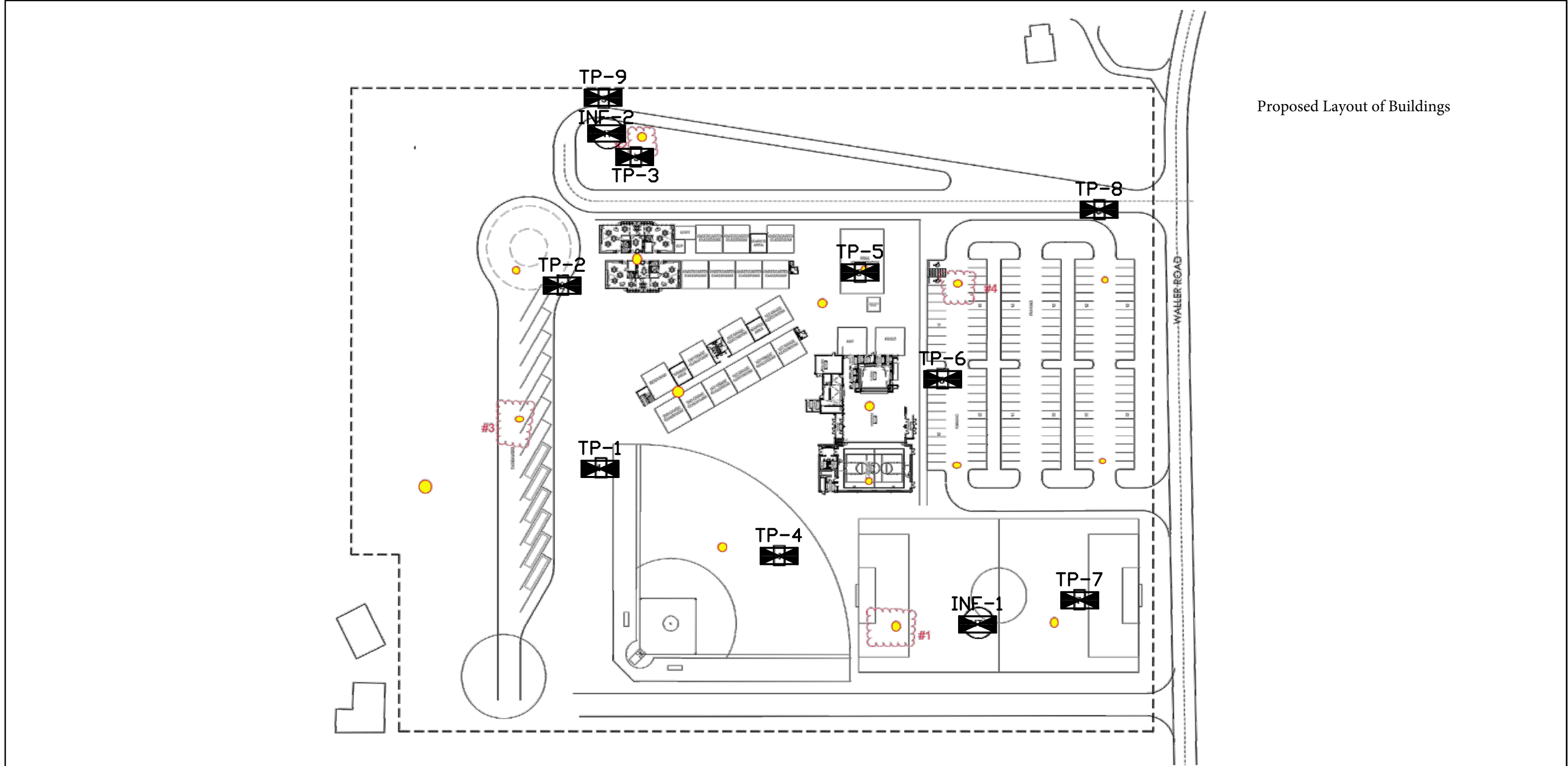
102438-001

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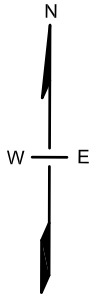
FIG. 2

Appendix A

Test Pit Logs



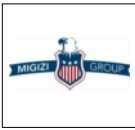
Proposed Layout of Buildings



TEST PIT LOCATION
TP-1
INFILTRATION TEST LOCATION
INF-1

NOTE:
BOUNDARY AND TOPOGRAPHY ARE BASED ON MAPPING
PROVIDED TO MIGIZI OBSERVATIONS MADE IN THE FIELD.
THE INFORMATION SHOWN DOES NOT CONSTITUTE A
FIELD SURVEY BY MIGIZI.

Migizi Group, Inc. PO Box 44840 Tacoma, WA 98448 253-537-9400 253-537-9401 fax www.migizigroup.com	PROJECT: XXX Waller Road East Tacoma, Washington 98445	
	SHEET TITLE: Site and Exploration Plan	
	DESIGNER: JRB	JOB NO.P1614-T19
	DRAWN BY: JRB	SCALE: NTS
	CHECKED BY: JEB	FIGURE: 2
DATE: April 1, 2019		FILE: Fig2.dwg



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TEST PIT NUMBER TP-1

PAGE 1 OF 1
Figure A-2

DRAFT

CLIENT	Bethel School District	PROJECT NAME	Proposed Elementary School #18
PROJECT NUMBER	P1614-T19	PROJECT LOCATION	XXX Waller Road East, Spanaway, Washington
DATE STARTED	3/19/19	COMPLETED	3/19/19
EXCAVATION CONTRACTOR	Leonard and Company	GROUND ELEVATION	
EXCAVATION METHOD	Steel Tracked Excavator	TEST PIT SIZE	
LOGGED BY	LBB	CHECKED BY	JEB
NOTES			
		GROUND WATER LEVELS:	
		AT TIME OF EXCAVATION	---
		AT END OF EXCAVATION	---
		AFTER EXCAVATION	---

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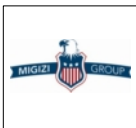
DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0				
		SM		(SM) Black silty sand with gravel (medium dense, moist)
1.5				
		GP- GM		(GP-GM) Tan gravel with silt, sand and some cobbles (medium dense, moist) (Weathered Recessional Outwash)
3.5				
				(GP-GM) Light gray gravel with sand, silt and cobbles (dense, moist) (Unweathered Recessional Outwash)
5				
		GP- GM		
				Boulders observed from 8 to 13 feet
10				
	GB S-1			
13.0				

Test pit terminated at 13 feet due to excessive caving

Caving observed throughout
No groundwater seepage observed

The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to 0.5 foot.

Bottom of test pit at 13.0 feet.



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TEST PIT NUMBER TP-2

PAGE 1 OF 1
Figure A-3

DRAFT

CLIENT Bethel School District	PROJECT NAME Proposed Elementary School #18
PROJECT NUMBER P1614-T19	PROJECT LOCATION XXX Waller Road East, Spanaway, Washington
DATE STARTED 3/19/19 COMPLETED 3/19/19	GROUND ELEVATION _____ TEST PIT SIZE _____
EXCAVATION CONTRACTOR Leonard and Company	GROUND WATER LEVELS:
EXCAVATION METHOD Steel Tracked Excavator	AT TIME OF EXCAVATION ---
LOGGED BY LBB CHECKED BY JEB	AT END OF EXCAVATION ---
NOTES _____	AFTER EXCAVATION ---

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DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0				
		SM		(SM) Black silty sand with gravel, cobbles and boulders (medium dense, moist)
1.5		GP-GM		(GP-GM) Tan gravel with silt, sand, cobbles and boulders (medium dense, moist) (Weathered Recessional Outwash)
3.0		GP-GM		(GP-GM) Light gray gravel with sand, silt, cobbles and boulders (dense, moist) (Unweathered Recessional Outwash)
5	GB S-1	GP-GM		
10				
14.0				

Caving observed from 3.5 to 5 feet
No groundwater seepage observed

The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to 0.5 foot.

Bottom of test pit at 14.0 feet.



PAGE 1 OF 1
Figure A-4

DRAFT

CLIENT Bethel School District **PROJECT NAME** Proposed Elementary School #18

PROJECT NUMBER P1614-T19 **PROJECT LOCATION** XXX Waller Road East, Spanaway, Washington

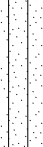

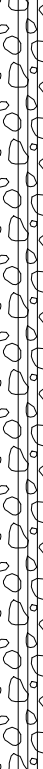
DATE STARTED 3/19/19 **COMPLETED** 3/19/19 **GROUND ELEVATION** _____ **TEST PIT SIZE** _____

EXCAVATION CONTRACTOR Leonard and Company **GROUND WATER LEVELS:**

EXCAVATION METHOD Steel Tracked Excavator **AT TIME OF EXCAVATION** ---

LOGGED BY LBB **CHECKED BY** JEB **AT END OF EXCAVATION** ---

NOTES _____ **AFTER EXCAVATION** ---

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0				
	GB S-1	SM		(SM) Black silty sand with gravel, cobbles, boulders and some roots (medium dense, moist)
2.0		GP- GM		(GP-GM) Tan gravel with silt, sand, cobbles, boulders and some roots (medium dense, moist) (Weathered Recessional Outwash)
3.5		GP- GM		(GP-GM) Light gray gravel with sand, silt, cobbles and boulders (dense, moist) (Unweathered Recessional Outwash)
5				
10				
14.0				

No caving observed
No groundwater seepage observed

The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to 0.5 foot.

Bottom of test pit at 14.0 feet.

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TEST PIT NUMBER TP-4

PAGE 1 OF 1
Figure A-6

DRAFT

CLIENT	Bethel School District	PROJECT NAME	Proposed Elementary School #18
PROJECT NUMBER	P1614-T19	PROJECT LOCATION	XXX Waller Road East, Spanaway, Washington
DATE STARTED	3/19/19	COMPLETED	3/19/19
EXCAVATION CONTRACTOR	Leonard and Company	GROUND ELEVATION	
EXCAVATION METHOD	Steel Tracked Excavator	TEST PIT SIZE	
LOGGED BY	LBB	CHECKED BY	JEB
NOTES			
		GROUND WATER LEVELS:	
		AT TIME OF EXCAVATION	---
		AT END OF EXCAVATION	---
		AFTER EXCAVATION	---

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DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0				
		SM		(SM) Black silty sand with gravel, cobbles, boulders, and tree roots (medium dense, moist)
1.5		GP-GM		(GP-GM) Tan gravel with silt, sand, and cobbles (medium dense, moist) (Weathered Recessional Outwash)
3.0		GP-GM		(GP-GM) Light gray gravel with sand, silt, cobbles and some boulders (dense, moist) (Unweathered Recessional Outwash)
5		GP-GM		
10	GB S-1			
13.0				

Test pit terminated at 13 feet due to excessive caving

Caving observed from 1.5 to 13 feet
No groundwater seepage observed

The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to 0.5 foot.

Bottom of test pit at 13.0 feet.



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TEST PIT NUMBER TP-5

PAGE 1 OF 1
Figure A-7

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CLIENT	Bethel School District	PROJECT NAME	Proposed Elementary School #18
PROJECT NUMBER	P1614-T19	PROJECT LOCATION	XXX Waller Road East, Spanaway, Washington
DATE STARTED	3/19/19	COMPLETED	3/19/19
EXCAVATION CONTRACTOR	Leonard and Company	GROUND ELEVATION	
EXCAVATION METHOD	Steel Tracked Excavator	TEST PIT SIZE	
LOGGED BY	LBB	CHECKED BY	JEB
NOTES			
		GROUND WATER LEVELS:	
		AT TIME OF EXCAVATION	---
		AT END OF EXCAVATION	---
		AFTER EXCAVATION	---

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DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0				
		SM		(SM) Black silty sand with gravel, cobbles, boulders, and thick roots (medium dense, moist)
			2.0	
		GP-GM		(GP-GM) Tan gravel with silt, sand, cobbles, boulders and some roots (medium dense, moist) (Weathered Recessional Outwash)
			3.5	
	GB S-1			(GP-GM) Light gray gravel with sand, silt, cobbles and boulders (dense, moist) (Unweathered Recessional Outwash)
5				
		GP-GM		
10				
			14.0	

No caving observed
No groundwater seepage observed

The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to 0.5 foot.

Bottom of test pit at 14.0 feet.



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TEST PIT NUMBER TP-6

PAGE 1 OF 1
Figure A-8

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CLIENT	Bethel School District	PROJECT NAME	Proposed Elementary School #18
PROJECT NUMBER	P1614-T19	PROJECT LOCATION	XXX Waller Road East, Spanaway, Washington
DATE STARTED	3/19/19	COMPLETED	3/19/19
EXCAVATION CONTRACTOR	Leonard and Company	GROUND ELEVATION	TEST PIT SIZE
EXCAVATION METHOD	Steel Tracked Excavator	GROUND WATER LEVELS:	
LOGGED BY	LBB	CHECKED BY	JEB
NOTES			
	AT TIME OF EXCAVATION	---	
	AT END OF EXCAVATION	---	
	AFTER EXCAVATION	---	

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DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0				
		SM		(SM) Black silty sand with gravel, cobbles, boulders, and thick roots (medium dense, moist)
2.0				
		GP-GM		(GP-GM) Tan gravel with silt, sand, cobbles, boulders and some roots (medium dense, moist) (Weathered Recessional Outwash)
4.0				
	GB S-1			(GP-GM) Light gray gravel with sand, silt, cobbles and boulders (dense, moist) (Unweathered Recessional Outwash)
5				
10		GP-GM		
15				
15.5				
Caving observed from 10 to 15.5 feet No groundwater seepage observed The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to 0.5 foot. Bottom of test pit at 15.5 feet.				



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TEST PIT NUMBER TP-7

PAGE 1 OF 1
Figure A-9

DRAFT

CLIENT	Bethel School District	PROJECT NAME	Proposed Elementary School #18
PROJECT NUMBER	P1614-T19	PROJECT LOCATION	XXX Waller Road East, Spanaway, Washington
DATE STARTED	3/19/19	COMPLETED	3/19/19
EXCAVATION CONTRACTOR	Leonard and Company	GROUND ELEVATION	
EXCAVATION METHOD	Steel Tracked Excavator	TEST PIT SIZE	
LOGGED BY	LBB	CHECKED BY	JEB
NOTES			
		GROUND WATER LEVELS:	
		AT TIME OF EXCAVATION	---
		AT END OF EXCAVATION	---
		AFTER EXCAVATION	---

COPY OF GENERAL BH / TP LOGS - FIGURE.GDT - 4/3/19 11:31 - C:\USERS\JESSICA\DESKTOP\TEST PITS AND BORINGS - GINT\1614-T19\1614-T19 TEST PITS.GPJ

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0				
		SM		(SM) Black silty sand with gravel, cobbles, boulders, and tree roots (loose to medium dense, moist)
2.5		GP-GM		(GP-GM) Tan gravel with silt, sand, cobbles, boulders and some roots (medium dense, moist) (Weathered Recessional Outwash)
3.5		GP-GM		(GP-GM) Light gray gravel with sand, silt, cobbles and boulders (dense, moist) (Unweathered Recessional Outwash)
5	GB S-1			
10		GP-GM		
14.5				

No caving observed
No groundwater seepage observed

The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to 0.5 foot.

Bottom of test pit at 14.5 feet.



Migizi Group, Inc.
PO Box 44840
Tacoma, WA 98448
Telephone: 253-537-9400
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TEST PIT NUMBER TP-8

PAGE 1 OF 1
Figure A-10

DRAFT

CLIENT	Bethel School District	PROJECT NAME	Proposed Elementary School #18
PROJECT NUMBER	P1614-T19	PROJECT LOCATION	XXX Waller Road East, Spanaway, Washington
DATE STARTED	3/19/19	COMPLETED	3/19/19
EXCAVATION CONTRACTOR	Leonard and Company	GROUND ELEVATION	
EXCAVATION METHOD	Steel Tracked Excavator	TEST PIT SIZE	
LOGGED BY	LBB	CHECKED BY	JEB
NOTES			
		GROUND WATER LEVELS:	
		AT TIME OF EXCAVATION	---
		AT END OF EXCAVATION	---
		AFTER EXCAVATION	---

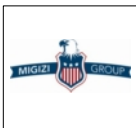
COPY OF GENERAL BH / TP LOGS - FIGURE.GDT - 4/3/19 11:31 - C:\USERS\JESSICA\DESKTOP\TEST PITS AND BORINGS - GINT\1614-T19\1614-T19 TEST PITS.GPJ

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0				
		SM		(SM) Black silty sand with gravel, cobbles, and thick roots (loose to medium dense, moist)
			2.0	
		GP-GM		(GP-GM) Tan gravel with silt, sand, cobbles and boulders (medium dense, moist) (Weathered Recessional Outwash)
			3.5	
	GB S-1			(GP-GM) Light gray gravel with sand, silt, cobbles and boulders (dense, moist) (Unweathered Recessional Outwash)
5				
		GP-GM		
10				
15			15.0	

Caving observed from 8 to 13 feet
No groundwater seepage observed

The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to 0.5 foot.

Bottom of test pit at 15.0 feet.



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TEST PIT NUMBER TP-9

PAGE 1 OF 1
Figure A-11

DRAFT

CLIENT	Bethel School District	PROJECT NAME	Proposed Elementary School #18
PROJECT NUMBER	P1614-T19	PROJECT LOCATION	XXX Waller Road East, Spanaway, Washington
DATE STARTED	3/19/19	COMPLETED	3/19/19
EXCAVATION CONTRACTOR	Leonard and Company	GROUND ELEVATION	
EXCAVATION METHOD	Steel Tracked Excavator	TEST PIT SIZE	
LOGGED BY	LBB	CHECKED BY	JEB
NOTES			
GROUND WATER LEVELS:			
AT TIME OF EXCAVATION		---	
AT END OF EXCAVATION		---	
AFTER EXCAVATION		---	

COPY OF GENERAL BH / TP LOGS - FIGURE.GDT - 4/3/19 11:31 - C:\USERS\JESSICA\DESKTOP\TEST PITS AND BORINGS - GINT\1614-T19\1614-T19 TEST PITS.GPJ

DEPTH (ft)	SAMPLE TYPE NUMBER	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION
0				
5		SM		(SM) Black silty sand with gravel, cobbles and abundant trash including tire inner tubes, oil and oil drum lids, rusted metal, wires, rubber, foam, concrete blocks, bricks, treated wood and miscellaneous debris (loose to medium dense, moist) (Fill)
7.0		GP-GM		(GP-GM) Rust-stained light gray gravel with sand, silt, cobbles and boulders (dense, moist) (Native Outwash)
8.0				

No caving observed
No groundwater seepage observed

The depths on the test pit logs are based on an average of measurements across the test pit and should be considered accurate to 0.5 foot.

Bottom of test pit at 8.0 feet.

Appendix B

Photographs



Photograph 1: Excavation of Test Pit 7 (TP-7).



Photograph 2: Excavation of Test Pit 6 (TP-6).



Photograph 3: Excavation of Infiltration Trench 1 (INF-1).



Photograph 4: Excavation of Test Pit 8 (TP-8). Approximately 2 feet of brown, poorly graded sand with organics over a foot of weathered outwash over unweathered outwash, extending the bottom of excavation.



Photograph 5: Transition from brown sand with organics to weathered outwash.



Photograph 6: Beginning excavation of Test Pit 9 (TP-9). Electrical wire was uncovered.



Photograph 7: Rubber tube-tire uncovered at TP-9. Blue-gray soil staining with a pungent petroleum odor.



Photograph 8: Steel object uncovered at TP-9. Object appeared to be a drum lid with heavy petroleum odor.



Photograph 9: Rubber tire uncovered at TP-9.



Photograph 10: TP-9 was excavated to 8 feet below ground surface. This is when outwash was observed.



Photograph 11: TP-9 was filled in and can be seen in photo as the dark brown soil in the trees shadows. The northern boundary fence is present on the left side of the photo.



Photograph 12: Remnants of a vehicle were found above-ground near TP-4.

Appendix C

Laboratory Certificates



Fremont
Analytical

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Shannon & Wilson
Meg Strong
400 N. 34th Street, Suite 100
Seattle, WA 98103

RE: Waller Rd
Work Order Number: 1903289

April 11, 2019

Attention Meg Strong:

Fremont Analytical, Inc. received 11 sample(s) on 3/19/2019 for the analyses presented in the following report.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.
Hydrocarbon Identification by NWTPH-HCID
Mercury by EPA Method 7471
Metals (EPA 200.8) with TCLP Extraction (EPA 1311)
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)
Sample Moisture (Percent Moisture)
Total Metals by EPA Method 6020

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Mike Ridgeway
Laboratory Director

DoD/ELAP Certification #L 17-135, ISO/IEC 17025:2005
ORELAP Certification: WA 100009-007 (NELAP Recognized)

CLIENT: Shannon & Wilson
Project: Waller Rd
Work Order: 1903289

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1903289-001	TP1:C	03/19/2019 1:20 PM	03/19/2019 4:45 PM
1903289-002	TP2:C	03/19/2019 1:00 PM	03/19/2019 4:45 PM
1903289-003	TP3:C	03/19/2019 12:30 PM	03/19/2019 4:45 PM
1903289-004	TP4:C	03/19/2019 2:10 PM	03/19/2019 4:45 PM
1903289-005	TP5:C	03/19/2019 11:15 AM	03/19/2019 4:45 PM
1903289-006	TP6:C	03/19/2019 10:40 AM	03/19/2019 4:45 PM
1903289-007	TP7:C	03/19/2019 8:50 AM	03/19/2019 4:45 PM
1903289-008	TP8:C	03/19/2019 9:55 AM	03/19/2019 4:45 PM
1903289-009	TP9:2.5	03/19/2019 12:10 PM	03/19/2019 4:45 PM
1903289-010	TP9:8	03/19/2019 2:25 PM	03/19/2019 4:45 PM
1903289-011	Trip Blank	03/18/2019 1:00 PM	03/19/2019 4:45 PM

CLIENT: Shannon & Wilson
Project: Waller Rd

I. SAMPLE RECEIPT:

Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

- * - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below Reporting Limit
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit
- R - High relative percent difference observed

Acronyms:

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



Analytical Report

Work Order: 1903289
Date Reported: 4/11/2019

Client: Shannon & Wilson

Collection Date: 3/19/2019 1:20:00 PM

Project: Waller Rd

Lab ID: 1903289-001

Matrix: Soil

Client Sample ID: TP1:C

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Hydrocarbon Identification by NWTPH-HCID

Batch ID: 23918

Analyst: DW

Gasoline	ND	22.1		mg/Kg-dry	1	3/21/2019 8:56:09 PM
Mineral Spirits	ND	33.2		mg/Kg-dry	1	3/21/2019 8:56:09 PM
Kerosene	ND	55.3		mg/Kg-dry	1	3/21/2019 8:56:09 PM
Diesel (Fuel Oil)	ND	55.3		mg/Kg-dry	1	3/21/2019 8:56:09 PM
Heavy Oil	ND	111		mg/Kg-dry	1	3/21/2019 8:56:09 PM
Mineral Oil	ND	111		mg/Kg-dry	1	3/21/2019 8:56:09 PM
Surr: 2-Fluorobiphenyl	99.1	50 - 150		%Rec	1	3/21/2019 8:56:09 PM
Surr: o-Terphenyl	103	50 - 150		%Rec	1	3/21/2019 8:56:09 PM

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 23919

Analyst: IH

Naphthalene	ND	47.5		µg/Kg-dry	1	3/21/2019 10:48:16 PM
2-Methylnaphthalene	ND	47.5		µg/Kg-dry	1	3/21/2019 10:48:16 PM
1-Methylnaphthalene	ND	47.5		µg/Kg-dry	1	3/21/2019 10:48:16 PM
Acenaphthylene	ND	47.5		µg/Kg-dry	1	3/21/2019 10:48:16 PM
Acenaphthene	ND	47.5		µg/Kg-dry	1	3/21/2019 10:48:16 PM
Fluorene	ND	47.5		µg/Kg-dry	1	3/21/2019 10:48:16 PM
Phenanthrene	ND	47.5		µg/Kg-dry	1	3/21/2019 10:48:16 PM
Anthracene	ND	47.5		µg/Kg-dry	1	3/21/2019 10:48:16 PM
Fluoranthene	ND	47.5		µg/Kg-dry	1	3/21/2019 10:48:16 PM
Pyrene	ND	47.5		µg/Kg-dry	1	3/21/2019 10:48:16 PM
Benz(a)anthracene	ND	47.5		µg/Kg-dry	1	3/21/2019 10:48:16 PM
Chrysene	ND	47.5		µg/Kg-dry	1	3/21/2019 10:48:16 PM
Benzo(b)fluoranthene	ND	47.5		µg/Kg-dry	1	3/21/2019 10:48:16 PM
Benzo(k)fluoranthene	ND	47.5		µg/Kg-dry	1	3/21/2019 10:48:16 PM
Benzo(a)pyrene	ND	47.5		µg/Kg-dry	1	3/21/2019 10:48:16 PM
Indeno(1,2,3-cd)pyrene	ND	47.5		µg/Kg-dry	1	3/21/2019 10:48:16 PM
Dibenz(a,h)anthracene	ND	47.5		µg/Kg-dry	1	3/21/2019 10:48:16 PM
Benzo(g,h,i)perylene	ND	47.5	Q	µg/Kg-dry	1	3/21/2019 10:48:16 PM
Surr: 2-Fluorobiphenyl	55.4	19.4 - 157		%Rec	1	3/21/2019 10:48:16 PM
Surr: Terphenyl-d14 (surr)	59.8	31.5 - 173		%Rec	1	3/21/2019 10:48:16 PM

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria

Mercury by EPA Method 7471

Batch ID: 23965

Analyst: WF

Mercury	ND	0.285		mg/Kg-dry	1	3/27/2019 11:16:00 AM
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Analytical Report

Work Order: 1903289
Date Reported: 4/11/2019

Client: Shannon & Wilson

Collection Date: 3/19/2019 1:20:00 PM

Project: Waller Rd

Lab ID: 1903289-001

Matrix: Soil

Client Sample ID: TP1:C

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Total Metals by EPA Method 6020

Batch ID: 23912

Analyst: WC

Antimony	ND	0.192		mg/Kg-dry	1	3/21/2019 2:12:38 PM
Arsenic	3.56	0.240		mg/Kg-dry	1	3/21/2019 2:12:38 PM
Beryllium	0.286	0.192		mg/Kg-dry	1	3/21/2019 2:12:38 PM
Cadmium	ND	0.192		mg/Kg-dry	1	3/21/2019 2:12:38 PM
Chromium	16.1	0.0959		mg/Kg-dry	1	3/21/2019 2:12:38 PM
Copper	16.3	0.192		mg/Kg-dry	1	3/21/2019 2:12:38 PM
Lead	3.29	0.192		mg/Kg-dry	1	3/21/2019 2:12:38 PM
Nickel	19.9	0.480		mg/Kg-dry	1	3/21/2019 2:12:38 PM
Selenium	1.44	0.480		mg/Kg-dry	1	3/21/2019 2:12:38 PM
Silver	ND	0.0959		mg/Kg-dry	1	3/21/2019 2:12:38 PM
Thallium	ND	0.192		mg/Kg-dry	1	3/21/2019 2:12:38 PM
Zinc	30.7	0.480		mg/Kg-dry	1	3/21/2019 2:12:38 PM

Sample Moisture (Percent Moisture)

Batch ID: R50191

Analyst: CJ

Percent Moisture	17.3			wt%	1	3/21/2019 8:14:12 AM
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Analytical Report

Work Order: 1903289
Date Reported: 4/11/2019

Client: Shannon & Wilson

Collection Date: 3/19/2019 1:00:00 PM

Project: Waller Rd

Lab ID: 1903289-002

Matrix: Soil

Client Sample ID: TP2:C

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Hydrocarbon Identification by NWTPH-HCID				Batch ID: 23918		Analyst: DW
Gasoline	ND	26.5		mg/Kg-dry	1	3/21/2019 10:55:50 PM
Mineral Spirits	ND	39.8		mg/Kg-dry	1	3/21/2019 10:55:50 PM
Kerosene	ND	66.3		mg/Kg-dry	1	3/21/2019 10:55:50 PM
Diesel (Fuel Oil)	ND	66.3		mg/Kg-dry	1	3/21/2019 10:55:50 PM
Heavy Oil	ND	133		mg/Kg-dry	1	3/21/2019 10:55:50 PM
Mineral Oil	ND	133		mg/Kg-dry	1	3/21/2019 10:55:50 PM
Surr: 2-Fluorobiphenyl	92.9	50 - 150		%Rec	1	3/21/2019 10:55:50 PM
Surr: o-Terphenyl	95.9	50 - 150		%Rec	1	3/21/2019 10:55:50 PM

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 23919 Analyst: IH

Naphthalene	ND	53.4		µg/Kg-dry	1	3/21/2019 11:09:04 PM
2-Methylnaphthalene	ND	53.4		µg/Kg-dry	1	3/21/2019 11:09:04 PM
1-Methylnaphthalene	ND	53.4		µg/Kg-dry	1	3/21/2019 11:09:04 PM
Acenaphthylene	ND	53.4		µg/Kg-dry	1	3/21/2019 11:09:04 PM
Acenaphthene	ND	53.4		µg/Kg-dry	1	3/21/2019 11:09:04 PM
Fluorene	ND	53.4		µg/Kg-dry	1	3/21/2019 11:09:04 PM
Phenanthrene	ND	53.4		µg/Kg-dry	1	3/21/2019 11:09:04 PM
Anthracene	ND	53.4		µg/Kg-dry	1	3/21/2019 11:09:04 PM
Fluoranthene	ND	53.4		µg/Kg-dry	1	3/21/2019 11:09:04 PM
Pyrene	ND	53.4		µg/Kg-dry	1	3/21/2019 11:09:04 PM
Benz(a)anthracene	ND	53.4		µg/Kg-dry	1	3/21/2019 11:09:04 PM
Chrysene	ND	53.4		µg/Kg-dry	1	3/21/2019 11:09:04 PM
Benzo(b)fluoranthene	ND	53.4		µg/Kg-dry	1	3/21/2019 11:09:04 PM
Benzo(k)fluoranthene	ND	53.4		µg/Kg-dry	1	3/21/2019 11:09:04 PM
Benzo(a)pyrene	ND	53.4		µg/Kg-dry	1	3/21/2019 11:09:04 PM
Indeno(1,2,3-cd)pyrene	ND	53.4		µg/Kg-dry	1	3/21/2019 11:09:04 PM
Dibenz(a,h)anthracene	ND	53.4		µg/Kg-dry	1	3/21/2019 11:09:04 PM
Benzo(g,h,i)perylene	ND	53.4	Q	µg/Kg-dry	1	3/21/2019 11:09:04 PM
Surr: 2-Fluorobiphenyl	55.6	19.4 - 157		%Rec	1	3/21/2019 11:09:04 PM
Surr: Terphenyl-d14 (surr)	62.0	31.5 - 173		%Rec	1	3/21/2019 11:09:04 PM

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria

Sample Moisture (Percent Moisture)

Batch ID: R50191 Analyst: CJ

Percent Moisture	27.0			wt%	1	3/21/2019 8:14:12 AM
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Analytical Report

Work Order: 1903289
Date Reported: 4/11/2019

Client: Shannon & Wilson

Collection Date: 3/19/2019 12:30:00 PM

Project: Waller Rd

Lab ID: 1903289-003

Matrix: Soil

Client Sample ID: TP3:C

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Hydrocarbon Identification by NWTPH-HCID

Batch ID: 23918

Analyst: DW

Gasoline	ND	27.6		mg/Kg-dry	1	3/21/2019 11:25:38 PM
Mineral Spirits	ND	41.4		mg/Kg-dry	1	3/21/2019 11:25:38 PM
Kerosene	ND	69.0		mg/Kg-dry	1	3/21/2019 11:25:38 PM
Diesel (Fuel Oil)	ND	69.0		mg/Kg-dry	1	3/21/2019 11:25:38 PM
Heavy Oil	ND	138		mg/Kg-dry	1	3/21/2019 11:25:38 PM
Mineral Oil	ND	138		mg/Kg-dry	1	3/21/2019 11:25:38 PM
Surr: 2-Fluorobiphenyl	58.2	50 - 150		%Rec	1	3/21/2019 11:25:38 PM
Surr: o-Terphenyl	60.9	50 - 150		%Rec	1	3/21/2019 11:25:38 PM

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 23919

Analyst: IH

Naphthalene	ND	54.3		µg/Kg-dry	1	3/22/2019 12:32:02 AM
2-Methylnaphthalene	ND	54.3		µg/Kg-dry	1	3/22/2019 12:32:02 AM
1-Methylnaphthalene	ND	54.3		µg/Kg-dry	1	3/22/2019 12:32:02 AM
Acenaphthylene	ND	54.3		µg/Kg-dry	1	3/22/2019 12:32:02 AM
Acenaphthene	ND	54.3		µg/Kg-dry	1	3/22/2019 12:32:02 AM
Fluorene	ND	54.3		µg/Kg-dry	1	3/22/2019 12:32:02 AM
Phenanthrene	ND	54.3		µg/Kg-dry	1	3/22/2019 12:32:02 AM
Anthracene	ND	54.3		µg/Kg-dry	1	3/22/2019 12:32:02 AM
Fluoranthene	ND	54.3		µg/Kg-dry	1	3/22/2019 12:32:02 AM
Pyrene	ND	54.3		µg/Kg-dry	1	3/22/2019 12:32:02 AM
Benz(a)anthracene	ND	54.3		µg/Kg-dry	1	3/22/2019 12:32:02 AM
Chrysene	ND	54.3		µg/Kg-dry	1	3/22/2019 12:32:02 AM
Benzo(b)fluoranthene	ND	54.3		µg/Kg-dry	1	3/22/2019 12:32:02 AM
Benzo(k)fluoranthene	ND	54.3		µg/Kg-dry	1	3/22/2019 12:32:02 AM
Benzo(a)pyrene	ND	54.3		µg/Kg-dry	1	3/22/2019 12:32:02 AM
Indeno(1,2,3-cd)pyrene	ND	54.3		µg/Kg-dry	1	3/22/2019 12:32:02 AM
Dibenz(a,h)anthracene	ND	54.3		µg/Kg-dry	1	3/22/2019 12:32:02 AM
Benzo(g,h,i)perylene	ND	54.3	Q	µg/Kg-dry	1	3/22/2019 12:32:02 AM
Surr: 2-Fluorobiphenyl	43.8	19.4 - 157		%Rec	1	3/22/2019 12:32:02 AM
Surr: Terphenyl-d14 (surr)	39.8	31.5 - 173		%Rec	1	3/22/2019 12:32:02 AM

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria

Mercury by EPA Method 7471

Batch ID: 23965

Analyst: WF

Mercury	ND	0.329		mg/Kg-dry	1	3/27/2019 11:22:29 AM
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Analytical Report

Work Order: 1903289
Date Reported: 4/11/2019

Client: Shannon & Wilson

Collection Date: 3/19/2019 12:30:00 PM

Project: Waller Rd

Lab ID: 1903289-003

Matrix: Soil

Client Sample ID: TP3:C

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Total Metals by EPA Method 6020

Batch ID: 23912

Analyst: WC

Antimony	ND	0.224		mg/Kg-dry	1	3/21/2019 2:17:12 PM
Arsenic	3.69	0.280		mg/Kg-dry	1	3/21/2019 2:17:12 PM
Beryllium	0.332	0.224		mg/Kg-dry	1	3/21/2019 2:17:12 PM
Cadmium	ND	0.224		mg/Kg-dry	1	3/21/2019 2:17:12 PM
Chromium	16.4	0.112		mg/Kg-dry	1	3/21/2019 2:17:12 PM
Copper	13.7	0.224		mg/Kg-dry	1	3/21/2019 2:17:12 PM
Lead	5.11	0.224		mg/Kg-dry	1	3/21/2019 2:17:12 PM
Nickel	17.0	0.559		mg/Kg-dry	1	3/21/2019 2:17:12 PM
Selenium	1.71	0.559		mg/Kg-dry	1	3/21/2019 2:17:12 PM
Silver	ND	0.112		mg/Kg-dry	1	3/21/2019 2:17:12 PM
Thallium	ND	0.224		mg/Kg-dry	1	3/21/2019 2:17:12 PM
Zinc	33.3	0.559		mg/Kg-dry	1	3/21/2019 2:17:12 PM

Sample Moisture (Percent Moisture)

Batch ID: R50191

Analyst: CJ

Percent Moisture	29.6			wt%	1	3/21/2019 8:14:12 AM
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Analytical Report

Work Order: 1903289
Date Reported: 4/11/2019

Client: Shannon & Wilson

Collection Date: 3/19/2019 2:10:00 PM

Project: Waller Rd

Lab ID: 1903289-004

Matrix: Soil

Client Sample ID: TP4:C

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Hydrocarbon Identification by NWTPH-HCID				Batch ID: 23918		Analyst: DW
Gasoline	ND	24.7		mg/Kg-dry	1	3/21/2019 11:55:26 PM
Mineral Spirits	ND	37.1		mg/Kg-dry	1	3/21/2019 11:55:26 PM
Kerosene	ND	61.9		mg/Kg-dry	1	3/21/2019 11:55:26 PM
Diesel (Fuel Oil)	ND	61.9		mg/Kg-dry	1	3/21/2019 11:55:26 PM
Heavy Oil	ND	124		mg/Kg-dry	1	3/21/2019 11:55:26 PM
Mineral Oil	ND	124		mg/Kg-dry	1	3/21/2019 11:55:26 PM
Surr: 2-Fluorobiphenyl	50.7	50 - 150		%Rec	1	3/21/2019 11:55:26 PM
Surr: o-Terphenyl	54.5	50 - 150		%Rec	1	3/21/2019 11:55:26 PM

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 23919 Analyst: IH

Naphthalene	ND	48.7		µg/Kg-dry	1	3/22/2019 12:52:52 AM
2-Methylnaphthalene	ND	48.7		µg/Kg-dry	1	3/22/2019 12:52:52 AM
1-Methylnaphthalene	ND	48.7		µg/Kg-dry	1	3/22/2019 12:52:52 AM
Acenaphthylene	ND	48.7		µg/Kg-dry	1	3/22/2019 12:52:52 AM
Acenaphthene	ND	48.7		µg/Kg-dry	1	3/22/2019 12:52:52 AM
Fluorene	ND	48.7		µg/Kg-dry	1	3/22/2019 12:52:52 AM
Phenanthrene	ND	48.7		µg/Kg-dry	1	3/22/2019 12:52:52 AM
Anthracene	ND	48.7		µg/Kg-dry	1	3/22/2019 12:52:52 AM
Fluoranthene	ND	48.7		µg/Kg-dry	1	3/22/2019 12:52:52 AM
Pyrene	ND	48.7		µg/Kg-dry	1	3/22/2019 12:52:52 AM
Benz(a)anthracene	ND	48.7		µg/Kg-dry	1	3/22/2019 12:52:52 AM
Chrysene	ND	48.7		µg/Kg-dry	1	3/22/2019 12:52:52 AM
Benzo(b)fluoranthene	ND	48.7		µg/Kg-dry	1	3/22/2019 12:52:52 AM
Benzo(k)fluoranthene	ND	48.7		µg/Kg-dry	1	3/22/2019 12:52:52 AM
Benzo(a)pyrene	ND	48.7		µg/Kg-dry	1	3/22/2019 12:52:52 AM
Indeno(1,2,3-cd)pyrene	ND	48.7		µg/Kg-dry	1	3/22/2019 12:52:52 AM
Dibenz(a,h)anthracene	ND	48.7		µg/Kg-dry	1	3/22/2019 12:52:52 AM
Benzo(g,h,i)perylene	ND	48.7	Q	µg/Kg-dry	1	3/22/2019 12:52:52 AM
Surr: 2-Fluorobiphenyl	56.3	19.4 - 157		%Rec	1	3/22/2019 12:52:52 AM
Surr: Terphenyl-d14 (surr)	51.3	31.5 - 173		%Rec	1	3/22/2019 12:52:52 AM

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria

Sample Moisture (Percent Moisture)

Batch ID: R50191 Analyst: CJ

Percent Moisture	23.3			wt%	1	3/21/2019 8:14:12 AM
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Analytical Report

Work Order: 1903289
Date Reported: 4/11/2019

Client: Shannon & Wilson

Collection Date: 3/19/2019 11:15:00 AM

Project: Waller Rd

Lab ID: 1903289-005

Matrix: Soil

Client Sample ID: TP5:C

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Hydrocarbon Identification by NWTPH-HCID

Batch ID: 23918

Analyst: DW

Gasoline	ND	22.9		mg/Kg-dry	1	3/22/2019 12:25:15 AM
Mineral Spirits	ND	34.3		mg/Kg-dry	1	3/22/2019 12:25:15 AM
Kerosene	ND	57.2		mg/Kg-dry	1	3/22/2019 12:25:15 AM
Diesel (Fuel Oil)	ND	57.2		mg/Kg-dry	1	3/22/2019 12:25:15 AM
Heavy Oil	ND	114		mg/Kg-dry	1	3/22/2019 12:25:15 AM
Mineral Oil	ND	114		mg/Kg-dry	1	3/22/2019 12:25:15 AM
Surr: 2-Fluorobiphenyl	130	50 - 150		%Rec	1	3/22/2019 12:25:15 AM
Surr: o-Terphenyl	131	50 - 150		%Rec	1	3/22/2019 12:25:15 AM

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 23919

Analyst: IH

Naphthalene	ND	48.2		µg/Kg-dry	1	3/22/2019 1:13:34 AM
2-Methylnaphthalene	ND	48.2		µg/Kg-dry	1	3/22/2019 1:13:34 AM
1-Methylnaphthalene	ND	48.2		µg/Kg-dry	1	3/22/2019 1:13:34 AM
Acenaphthylene	ND	48.2		µg/Kg-dry	1	3/22/2019 1:13:34 AM
Acenaphthene	ND	48.2		µg/Kg-dry	1	3/22/2019 1:13:34 AM
Fluorene	ND	48.2		µg/Kg-dry	1	3/22/2019 1:13:34 AM
Phenanthrene	ND	48.2		µg/Kg-dry	1	3/22/2019 1:13:34 AM
Anthracene	ND	48.2		µg/Kg-dry	1	3/22/2019 1:13:34 AM
Fluoranthene	ND	48.2		µg/Kg-dry	1	3/22/2019 1:13:34 AM
Pyrene	ND	48.2		µg/Kg-dry	1	3/22/2019 1:13:34 AM
Benz(a)anthracene	ND	48.2		µg/Kg-dry	1	3/22/2019 1:13:34 AM
Chrysene	ND	48.2		µg/Kg-dry	1	3/22/2019 1:13:34 AM
Benzo(b)fluoranthene	ND	48.2		µg/Kg-dry	1	3/22/2019 1:13:34 AM
Benzo(k)fluoranthene	ND	48.2		µg/Kg-dry	1	3/22/2019 1:13:34 AM
Benzo(a)pyrene	ND	48.2		µg/Kg-dry	1	3/22/2019 1:13:34 AM
Indeno(1,2,3-cd)pyrene	ND	48.2		µg/Kg-dry	1	3/22/2019 1:13:34 AM
Dibenz(a,h)anthracene	ND	48.2		µg/Kg-dry	1	3/22/2019 1:13:34 AM
Benzo(g,h,i)perylene	ND	48.2	Q	µg/Kg-dry	1	3/22/2019 1:13:34 AM
Surr: 2-Fluorobiphenyl	61.6	19.4 - 157		%Rec	1	3/22/2019 1:13:34 AM
Surr: Terphenyl-d14 (surr)	57.6	31.5 - 173		%Rec	1	3/22/2019 1:13:34 AM

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria

Mercury by EPA Method 7471

Batch ID: 23965

Analyst: WF

Mercury	ND	0.284		mg/Kg-dry	1	3/27/2019 11:24:04 AM
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Analytical Report

Work Order: 1903289
Date Reported: 4/11/2019

Client: Shannon & Wilson

Collection Date: 3/19/2019 11:15:00 AM

Project: Waller Rd

Lab ID: 1903289-005

Matrix: Soil

Client Sample ID: TP5:C

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Total Metals by EPA Method 6020

Batch ID: 23912

Analyst: WC

Antimony	ND	0.195		mg/Kg-dry	1	3/21/2019 2:21:46 PM
Arsenic	3.75	0.244		mg/Kg-dry	1	3/21/2019 2:21:46 PM
Beryllium	0.317	0.195		mg/Kg-dry	1	3/21/2019 2:21:46 PM
Cadmium	ND	0.195		mg/Kg-dry	1	3/21/2019 2:21:46 PM
Chromium	14.0	0.0976		mg/Kg-dry	1	3/21/2019 2:21:46 PM
Copper	13.7	0.195		mg/Kg-dry	1	3/21/2019 2:21:46 PM
Lead	5.28	0.195		mg/Kg-dry	1	3/21/2019 2:21:46 PM
Nickel	16.6	0.488		mg/Kg-dry	1	3/21/2019 2:21:46 PM
Selenium	1.46	0.488		mg/Kg-dry	1	3/21/2019 2:21:46 PM
Silver	ND	0.0976		mg/Kg-dry	1	3/21/2019 2:21:46 PM
Thallium	ND	0.195		mg/Kg-dry	1	3/21/2019 2:21:46 PM
Zinc	37.8	0.488		mg/Kg-dry	1	3/21/2019 2:21:46 PM

Sample Moisture (Percent Moisture)

Batch ID: R50191

Analyst: CJ

Percent Moisture	19.9			wt%	1	3/21/2019 8:14:12 AM
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Analytical Report

Work Order: 1903289
Date Reported: 4/11/2019

Client: Shannon & Wilson

Collection Date: 3/19/2019 10:40:00 AM

Project: Waller Rd

Lab ID: 1903289-006

Matrix: Soil

Client Sample ID: TP6:C

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Hydrocarbon Identification by NWTPH-HCID

Batch ID: 23918

Analyst: DW

Gasoline	ND	21.3		mg/Kg-dry	1	3/22/2019 12:55:06 AM
Mineral Spirits	ND	31.9		mg/Kg-dry	1	3/22/2019 12:55:06 AM
Kerosene	ND	53.1		mg/Kg-dry	1	3/22/2019 12:55:06 AM
Diesel (Fuel Oil)	ND	53.1		mg/Kg-dry	1	3/22/2019 12:55:06 AM
Heavy Oil	ND	106		mg/Kg-dry	1	3/22/2019 12:55:06 AM
Mineral Oil	ND	106		mg/Kg-dry	1	3/22/2019 12:55:06 AM
Surr: 2-Fluorobiphenyl	89.0	50 - 150		%Rec	1	3/22/2019 12:55:06 AM
Surr: o-Terphenyl	90.1	50 - 150		%Rec	1	3/22/2019 12:55:06 AM

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 23919

Analyst: IH

Naphthalene	ND	41.4		µg/Kg-dry	1	3/22/2019 1:34:17 AM
2-Methylnaphthalene	ND	41.4		µg/Kg-dry	1	3/22/2019 1:34:17 AM
1-Methylnaphthalene	ND	41.4		µg/Kg-dry	1	3/22/2019 1:34:17 AM
Acenaphthylene	ND	41.4		µg/Kg-dry	1	3/22/2019 1:34:17 AM
Acenaphthene	ND	41.4		µg/Kg-dry	1	3/22/2019 1:34:17 AM
Fluorene	ND	41.4		µg/Kg-dry	1	3/22/2019 1:34:17 AM
Phenanthrene	ND	41.4		µg/Kg-dry	1	3/22/2019 1:34:17 AM
Anthracene	ND	41.4		µg/Kg-dry	1	3/22/2019 1:34:17 AM
Fluoranthene	ND	41.4		µg/Kg-dry	1	3/22/2019 1:34:17 AM
Pyrene	ND	41.4		µg/Kg-dry	1	3/22/2019 1:34:17 AM
Benz(a)anthracene	ND	41.4		µg/Kg-dry	1	3/22/2019 1:34:17 AM
Chrysene	ND	41.4		µg/Kg-dry	1	3/22/2019 1:34:17 AM
Benzo(b)fluoranthene	ND	41.4		µg/Kg-dry	1	3/22/2019 1:34:17 AM
Benzo(k)fluoranthene	ND	41.4		µg/Kg-dry	1	3/22/2019 1:34:17 AM
Benzo(a)pyrene	ND	41.4		µg/Kg-dry	1	3/22/2019 1:34:17 AM
Indeno(1,2,3-cd)pyrene	ND	41.4		µg/Kg-dry	1	3/22/2019 1:34:17 AM
Dibenz(a,h)anthracene	ND	41.4		µg/Kg-dry	1	3/22/2019 1:34:17 AM
Benzo(g,h,i)perylene	ND	41.4	Q	µg/Kg-dry	1	3/22/2019 1:34:17 AM
Surr: 2-Fluorobiphenyl	59.2	19.4 - 157		%Rec	1	3/22/2019 1:34:17 AM
Surr: Terphenyl-d14 (surr)	55.9	31.5 - 173		%Rec	1	3/22/2019 1:34:17 AM

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria

Sample Moisture (Percent Moisture)

Batch ID: R50191

Analyst: CJ

Percent Moisture	11.4			wt%	1	3/21/2019 8:14:12 AM
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Analytical Report

Work Order: 1903289
Date Reported: 4/11/2019

Client: Shannon & Wilson

Collection Date: 3/19/2019 8:50:00 AM

Project: Waller Rd

Lab ID: 1903289-007

Matrix: Soil

Client Sample ID: TP7:C

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Hydrocarbon Identification by NWTPH-HCID

Batch ID: 23918

Analyst: DW

Gasoline	ND	21.3		mg/Kg-dry	1	3/22/2019 2:24:43 AM
Mineral Spirits	ND	32.0		mg/Kg-dry	1	3/22/2019 2:24:43 AM
Kerosene	ND	53.3		mg/Kg-dry	1	3/22/2019 2:24:43 AM
Diesel (Fuel Oil)	ND	53.3		mg/Kg-dry	1	3/22/2019 2:24:43 AM
Heavy Oil	ND	107		mg/Kg-dry	1	3/22/2019 2:24:43 AM
Mineral Oil	ND	107		mg/Kg-dry	1	3/22/2019 2:24:43 AM
Surr: 2-Fluorobiphenyl	97.3	50 - 150		%Rec	1	3/22/2019 2:24:43 AM
Surr: o-Terphenyl	97.6	50 - 150		%Rec	1	3/22/2019 2:24:43 AM

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 23919

Analyst: IH

Naphthalene	ND	46.7		µg/Kg-dry	1	3/22/2019 1:55:07 AM
2-Methylnaphthalene	ND	46.7		µg/Kg-dry	1	3/22/2019 1:55:07 AM
1-Methylnaphthalene	ND	46.7		µg/Kg-dry	1	3/22/2019 1:55:07 AM
Acenaphthylene	ND	46.7		µg/Kg-dry	1	3/22/2019 1:55:07 AM
Acenaphthene	ND	46.7		µg/Kg-dry	1	3/22/2019 1:55:07 AM
Fluorene	ND	46.7		µg/Kg-dry	1	3/22/2019 1:55:07 AM
Phenanthrene	ND	46.7		µg/Kg-dry	1	3/22/2019 1:55:07 AM
Anthracene	ND	46.7		µg/Kg-dry	1	3/22/2019 1:55:07 AM
Fluoranthene	ND	46.7		µg/Kg-dry	1	3/22/2019 1:55:07 AM
Pyrene	ND	46.7		µg/Kg-dry	1	3/22/2019 1:55:07 AM
Benz(a)anthracene	ND	46.7		µg/Kg-dry	1	3/22/2019 1:55:07 AM
Chrysene	ND	46.7		µg/Kg-dry	1	3/22/2019 1:55:07 AM
Benzo(b)fluoranthene	ND	46.7		µg/Kg-dry	1	3/22/2019 1:55:07 AM
Benzo(k)fluoranthene	ND	46.7		µg/Kg-dry	1	3/22/2019 1:55:07 AM
Benzo(a)pyrene	ND	46.7		µg/Kg-dry	1	3/22/2019 1:55:07 AM
Indeno(1,2,3-cd)pyrene	ND	46.7		µg/Kg-dry	1	3/22/2019 1:55:07 AM
Dibenz(a,h)anthracene	ND	46.7		µg/Kg-dry	1	3/22/2019 1:55:07 AM
Benzo(g,h,i)perylene	ND	46.7	Q	µg/Kg-dry	1	3/22/2019 1:55:07 AM
Surr: 2-Fluorobiphenyl	65.5	19.4 - 157		%Rec	1	3/22/2019 1:55:07 AM
Surr: Terphenyl-d14 (surr)	59.8	31.5 - 173		%Rec	1	3/22/2019 1:55:07 AM

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria

Mercury by EPA Method 7471

Batch ID: 23965

Analyst: WF

Mercury	ND	0.277		mg/Kg-dry	1	3/27/2019 11:25:40 AM
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Analytical Report

Work Order: 1903289
Date Reported: 4/11/2019

Client: Shannon & Wilson

Collection Date: 3/19/2019 8:50:00 AM

Project: Waller Rd

Lab ID: 1903289-007

Matrix: Soil

Client Sample ID: TP7:C

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Total Metals by EPA Method 6020

Batch ID: 23912

Analyst: WC

Antimony	ND	0.184		mg/Kg-dry	1	3/21/2019 2:26:20 PM
Arsenic	3.96	0.230		mg/Kg-dry	1	3/21/2019 2:26:20 PM
Beryllium	0.276	0.184		mg/Kg-dry	1	3/21/2019 2:26:20 PM
Cadmium	ND	0.184		mg/Kg-dry	1	3/21/2019 2:26:20 PM
Chromium	27.1	0.0921		mg/Kg-dry	1	3/21/2019 2:26:20 PM
Copper	18.1	0.184		mg/Kg-dry	1	3/21/2019 2:26:20 PM
Lead	3.44	0.184		mg/Kg-dry	1	3/21/2019 2:26:20 PM
Nickel	23.9	0.460		mg/Kg-dry	1	3/21/2019 2:26:20 PM
Selenium	1.32	0.460		mg/Kg-dry	1	3/21/2019 2:26:20 PM
Silver	ND	0.0921		mg/Kg-dry	1	3/21/2019 2:26:20 PM
Thallium	ND	0.184		mg/Kg-dry	1	3/21/2019 2:26:20 PM
Zinc	39.0	0.460		mg/Kg-dry	1	3/21/2019 2:26:20 PM

Sample Moisture (Percent Moisture)

Batch ID: R50191

Analyst: CJ

Percent Moisture	16.5			wt%	1	3/21/2019 8:14:12 AM
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Analytical Report

Work Order: 1903289
Date Reported: 4/11/2019

Client: Shannon & Wilson

Collection Date: 3/19/2019 9:55:00 AM

Project: Waller Rd

Lab ID: 1903289-008

Matrix: Soil

Client Sample ID: TP8:C

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Hydrocarbon Identification by NWTPH-HCID

Batch ID: 23918

Analyst: DW

Gasoline	ND	24.0		mg/Kg-dry	1	3/22/2019 2:54:30 AM
Mineral Spirits	ND	36.0		mg/Kg-dry	1	3/22/2019 2:54:30 AM
Kerosene	ND	60.1		mg/Kg-dry	1	3/22/2019 2:54:30 AM
Diesel (Fuel Oil)	ND	60.1		mg/Kg-dry	1	3/22/2019 2:54:30 AM
Heavy Oil	ND	120		mg/Kg-dry	1	3/22/2019 2:54:30 AM
Mineral Oil	ND	120		mg/Kg-dry	1	3/22/2019 2:54:30 AM
Surr: 2-Fluorobiphenyl	119	50 - 150		%Rec	1	3/22/2019 2:54:30 AM
Surr: o-Terphenyl	118	50 - 150		%Rec	1	3/22/2019 2:54:30 AM

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 23919

Analyst: IH

Naphthalene	ND	48.5		µg/Kg-dry	1	3/22/2019 2:15:52 AM
2-Methylnaphthalene	ND	48.5		µg/Kg-dry	1	3/22/2019 2:15:52 AM
1-Methylnaphthalene	ND	48.5		µg/Kg-dry	1	3/22/2019 2:15:52 AM
Acenaphthylene	ND	48.5		µg/Kg-dry	1	3/22/2019 2:15:52 AM
Acenaphthene	ND	48.5		µg/Kg-dry	1	3/22/2019 2:15:52 AM
Fluorene	ND	48.5		µg/Kg-dry	1	3/22/2019 2:15:52 AM
Phenanthrene	ND	48.5		µg/Kg-dry	1	3/22/2019 2:15:52 AM
Anthracene	ND	48.5		µg/Kg-dry	1	3/22/2019 2:15:52 AM
Fluoranthene	ND	48.5		µg/Kg-dry	1	3/22/2019 2:15:52 AM
Pyrene	ND	48.5		µg/Kg-dry	1	3/22/2019 2:15:52 AM
Benz(a)anthracene	ND	48.5		µg/Kg-dry	1	3/22/2019 2:15:52 AM
Chrysene	ND	48.5		µg/Kg-dry	1	3/22/2019 2:15:52 AM
Benzo(b)fluoranthene	ND	48.5		µg/Kg-dry	1	3/22/2019 2:15:52 AM
Benzo(k)fluoranthene	ND	48.5		µg/Kg-dry	1	3/22/2019 2:15:52 AM
Benzo(a)pyrene	ND	48.5		µg/Kg-dry	1	3/22/2019 2:15:52 AM
Indeno(1,2,3-cd)pyrene	ND	48.5		µg/Kg-dry	1	3/22/2019 2:15:52 AM
Dibenz(a,h)anthracene	ND	48.5		µg/Kg-dry	1	3/22/2019 2:15:52 AM
Benzo(g,h,i)perylene	ND	48.5	Q	µg/Kg-dry	1	3/22/2019 2:15:52 AM
Surr: 2-Fluorobiphenyl	56.3	19.4 - 157		%Rec	1	3/22/2019 2:15:52 AM
Surr: Terphenyl-d14 (surr)	49.3	31.5 - 173		%Rec	1	3/22/2019 2:15:52 AM

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria

Sample Moisture (Percent Moisture)

Batch ID: R50191

Analyst: CJ

Percent Moisture	18.2			wt%	1	3/21/2019 8:14:12 AM
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Analytical Report

Work Order: 1903289
Date Reported: 4/11/2019

Client: Shannon & Wilson

Collection Date: 3/19/2019 12:10:00 PM

Project: Waller Rd

Lab ID: 1903289-009

Matrix: Soil

Client Sample ID: TP9:2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 23918

Analyst: DW

Diesel (Fuel Oil)	ND	2,500	D	mg/Kg-dry	100	3/23/2019 12:12:41 AM
Heavy Oil	130,000	6,260	D	mg/Kg-dry	100	3/23/2019 12:12:41 AM
Surr: 2-Fluorobiphenyl	1,230	50 - 150	DS	%Rec	100	3/23/2019 12:12:41 AM
Surr: o-Terphenyl	865	50 - 150	DS	%Rec	100	3/23/2019 12:12:41 AM

NOTES:

S - Outlying surrogate recovery attributed to TPH interference. The method is in control as indicated by the Method Blank (MB) & Laboratory Control Sample (LCS).

Hydrocarbon Identification by NWTPH-HCID

Batch ID: 23918

Analyst: DW

Gasoline	ND	25.0		mg/Kg-dry	1	3/22/2019 3:24:24 AM
Mineral Spirits	ND	37.6		mg/Kg-dry	1	3/22/2019 3:24:24 AM
Kerosene	ND	62.6		mg/Kg-dry	1	3/22/2019 3:24:24 AM
Diesel (Fuel Oil)	ND	62.6		mg/Kg-dry	1	3/22/2019 3:24:24 AM
Heavy Oil	DETECT	125		mg/Kg-dry	1	3/22/2019 3:24:24 AM
Mineral Oil	ND	125		mg/Kg-dry	1	3/22/2019 3:24:24 AM
Surr: 2-Fluorobiphenyl	96.2	50 - 150		%Rec	1	3/22/2019 3:24:24 AM
Surr: o-Terphenyl	2.70	50 - 150	S	%Rec	1	3/22/2019 3:24:24 AM

NOTES:

S - Outlying surrogate recovery attributed to TPH interference. The method is in control as indicated by the Method Blank (MB) & Laboratory Control Sample (LCS).

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 23919

Analyst: IH

Naphthalene	2,070	48.3		µg/Kg-dry	1	3/22/2019 2:36:34 AM
2-Methylnaphthalene	5,280	48.3		µg/Kg-dry	1	3/22/2019 2:36:34 AM
1-Methylnaphthalene	3,780	48.3		µg/Kg-dry	1	3/22/2019 2:36:34 AM
Acenaphthylene	88.2	48.3		µg/Kg-dry	1	3/22/2019 2:36:34 AM
Acenaphthene	312	48.3		µg/Kg-dry	1	3/22/2019 2:36:34 AM
Fluorene	606	48.3		µg/Kg-dry	1	3/22/2019 2:36:34 AM
Phenanthrene	3,640	48.3		µg/Kg-dry	1	3/22/2019 2:36:34 AM
Anthracene	456	48.3		µg/Kg-dry	1	3/22/2019 2:36:34 AM
Fluoranthene	5,010	48.3		µg/Kg-dry	1	3/22/2019 2:36:34 AM
Pyrene	7,370	483	D	µg/Kg-dry	10	3/22/2019 1:28:28 PM
Benz(a)anthracene	3,530	48.3		µg/Kg-dry	1	3/22/2019 2:36:34 AM
Chrysene	4,670	48.3		µg/Kg-dry	1	3/22/2019 2:36:34 AM
Benzo(b)fluoranthene	1,650	48.3		µg/Kg-dry	1	3/22/2019 2:36:34 AM
Benzo(k)fluoranthene	978	483	D	µg/Kg-dry	10	3/22/2019 1:28:28 PM
Benzo(a)pyrene	2,680	483	D	µg/Kg-dry	10	3/22/2019 1:28:28 PM
Indeno(1,2,3-cd)pyrene	294	48.3		µg/Kg-dry	1	3/22/2019 2:36:34 AM



Analytical Report

Work Order: 1903289
Date Reported: 4/11/2019

Client: Shannon & Wilson

Collection Date: 3/19/2019 12:10:00 PM

Project: Waller Rd

Lab ID: 1903289-009

Matrix: Soil

Client Sample ID: TP9:2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 23919

Analyst: IH

Dibenz(a,h)anthracene	128	48.3		µg/Kg-dry	1	3/22/2019 2:36:34 AM
Benzo(g,h,i)perylene	945	48.3	Q	µg/Kg-dry	1	3/22/2019 2:36:34 AM
Surr: 2-Fluorobiphenyl	59.5	19.4 - 157		%Rec	1	3/22/2019 2:36:34 AM
Surr: Terphenyl-d14 (surr)	121	31.5 - 173		%Rec	1	3/22/2019 2:36:34 AM

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria

Mercury by EPA Method 7471

Batch ID: 23965

Analyst: WF

Mercury	ND	0.306		mg/Kg-dry	1	3/27/2019 11:27:22 AM
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Total Metals by EPA Method 6020

Batch ID: 23912

Analyst: WC

Antimony	0.552	0.194		mg/Kg-dry	1	3/21/2019 2:30:54 PM
Arsenic	5.98	0.243		mg/Kg-dry	1	3/21/2019 2:30:54 PM
Beryllium	0.267	0.194		mg/Kg-dry	1	3/21/2019 2:30:54 PM
Cadmium	14.5	0.194		mg/Kg-dry	1	3/21/2019 2:30:54 PM
Chromium	19.0	0.0971		mg/Kg-dry	1	3/21/2019 2:30:54 PM
Copper	68.8	0.194		mg/Kg-dry	1	3/21/2019 2:30:54 PM
Lead	7,950	38.9	D	mg/Kg-dry	200	3/22/2019 11:43:42 AM
Nickel	15.2	0.486		mg/Kg-dry	1	3/21/2019 2:30:54 PM
Selenium	1.37	0.486		mg/Kg-dry	1	3/21/2019 2:30:54 PM
Silver	0.179	0.0971		mg/Kg-dry	1	3/21/2019 2:30:54 PM
Thallium	ND	0.194		mg/Kg-dry	1	3/21/2019 2:30:54 PM
Zinc	2,450	97.1	D	mg/Kg-dry	200	3/22/2019 11:43:42 AM

Metals (EPA 200.8) with TCLP Extraction (EPA 1311)

Batch ID: 24102

Analyst: WC

Lead	6.01	0.200		mg/L	1	4/9/2019 3:19:06 PM
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Sample Moisture (Percent Moisture)

Batch ID: R50191

Analyst: CJ

Percent Moisture	24.3			wt%	1	3/21/2019 8:14:12 AM
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Analytical Report

Work Order: 1903289
Date Reported: 4/11/2019

Client: Shannon & Wilson

Collection Date: 3/19/2019 2:25:00 PM

Project: Waller Rd

Lab ID: 1903289-010

Matrix: Soil

Client Sample ID: TP9:8

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 23918		Analyst: DW
Diesel (Fuel Oil)	ND	213	D	mg/Kg-dry	10	3/22/2019 11:42:54 PM
Heavy Oil	2,990	531	D	mg/Kg-dry	10	3/22/2019 11:42:54 PM
Surr: 2-Fluorobiphenyl	193	50 - 150	DS	%Rec	10	3/22/2019 11:42:54 PM
Surr: o-Terphenyl	189	50 - 150	DS	%Rec	10	3/22/2019 11:42:54 PM

NOTES:

S - Outlying surrogate recovery attributed to TPH interference. The method is in control as indicated by the Method Blank (MB) & Laboratory Control Sample (LCS).

<u>Hydrocarbon Identification by NWTPH-HCID</u>				Batch ID: 23918		Analyst: DW
Gasoline	ND	21.3		mg/Kg-dry	1	3/22/2019 3:54:09 AM
Mineral Spirits	ND	31.9		mg/Kg-dry	1	3/22/2019 3:54:09 AM
Kerosene	ND	53.1		mg/Kg-dry	1	3/22/2019 3:54:09 AM
Diesel (Fuel Oil)	ND	53.1		mg/Kg-dry	1	3/22/2019 3:54:09 AM
Heavy Oil	DETECT	106		mg/Kg-dry	1	3/22/2019 3:54:09 AM
Mineral Oil	ND	106		mg/Kg-dry	1	3/22/2019 3:54:09 AM
Surr: 2-Fluorobiphenyl	117	50 - 150		%Rec	1	3/22/2019 3:54:09 AM
Surr: o-Terphenyl	115	50 - 150		%Rec	1	3/22/2019 3:54:09 AM

<u>Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)</u>				Batch ID: 23919		Analyst: IH
Naphthalene	ND	41.3		µg/Kg-dry	1	3/22/2019 2:57:21 AM
2-Methylnaphthalene	ND	41.3		µg/Kg-dry	1	3/22/2019 2:57:21 AM
1-Methylnaphthalene	ND	41.3		µg/Kg-dry	1	3/22/2019 2:57:21 AM
Acenaphthylene	ND	41.3		µg/Kg-dry	1	3/22/2019 2:57:21 AM
Acenaphthene	ND	41.3		µg/Kg-dry	1	3/22/2019 2:57:21 AM
Fluorene	ND	41.3		µg/Kg-dry	1	3/22/2019 2:57:21 AM
Phenanthrene	ND	41.3		µg/Kg-dry	1	3/22/2019 2:57:21 AM
Anthracene	ND	41.3		µg/Kg-dry	1	3/22/2019 2:57:21 AM
Fluoranthene	ND	41.3		µg/Kg-dry	1	3/22/2019 2:57:21 AM
Pyrene	56.1	41.3		µg/Kg-dry	1	3/22/2019 2:57:21 AM
Benz(a)anthracene	ND	41.3		µg/Kg-dry	1	3/22/2019 2:57:21 AM
Chrysene	57.9	41.3		µg/Kg-dry	1	3/22/2019 2:57:21 AM
Benzo(b)fluoranthene	ND	41.3		µg/Kg-dry	1	3/22/2019 2:57:21 AM
Benzo(k)fluoranthene	ND	41.3		µg/Kg-dry	1	3/22/2019 2:57:21 AM
Benzo(a)pyrene	ND	41.3		µg/Kg-dry	1	3/22/2019 2:57:21 AM
Indeno(1,2,3-cd)pyrene	ND	41.3		µg/Kg-dry	1	3/22/2019 2:57:21 AM
Dibenz(a,h)anthracene	ND	41.3		µg/Kg-dry	1	3/22/2019 2:57:21 AM
Benzo(g,h,i)perylene	56.3	41.3	Q	µg/Kg-dry	1	3/22/2019 2:57:21 AM



Client: Shannon & Wilson

Collection Date: 3/19/2019 2:25:00 PM

Project: Waller Rd

Lab ID: 1903289-010

Matrix: Soil

Client Sample ID: TP9:8

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 23919

Analyst: IH

Surr: 2-Fluorobiphenyl	94.0	19.4 - 157	%Rec	1	3/22/2019 2:57:21 AM
Surr: Terphenyl-d14 (surr)	93.3	31.5 - 173	%Rec	1	3/22/2019 2:57:21 AM

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria

Total Metals by EPA Method 6020

Batch ID: 24060

Analyst: WC

Cadmium	0.694	0.170		mg/Kg-dry	1	4/4/2019 8:42:34 PM
Lead	1,680	3.39	D	mg/Kg-dry	20	4/10/2019 1:37:06 AM

Sample Moisture (Percent Moisture)

Batch ID: R50191

Analyst: CJ

Percent Moisture	9.27			wt%	1	3/21/2019 8:14:12 AM
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Work Order: 1903289
CLIENT: Shannon & Wilson
Project: Waller Rd

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID	MB-23912	SampType:	MBLK		Units:	mg/Kg			Prep Date:	3/21/2019		RunNo:	50215	
Client ID:	MBLKS	Batch ID:	23912						Analysis Date:	3/21/2019		SeqNo:	986291	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit	Qual	
Antimony		ND	0.157											
Arsenic		ND	0.197											
Beryllium		ND	0.157											
Cadmium		ND	0.157											
Chromium		ND	0.0787											
Copper		ND	0.157											
Lead		ND	0.157											
Nickel		ND	0.394											
Selenium		ND	0.394											
Silver		ND	0.0787											
Thallium		ND	0.157											
Zinc		ND	0.394											

Sample ID	LCS-23912	SampType:	LCS	Units:	mg/Kg	Prep Date:	3/21/2019	RunNo:	50215		
Client ID:	LCSS	Batch ID:	23912			Analysis Date:	3/21/2019	SeqNo:	986292		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	1.93	0.154	1.923	0	100	80	120				
Arsenic	37.7	0.192	38.46	0	97.9	80	120				
Beryllium	1.78	0.154	1.923	0	92.4	80	120				
Cadmium	1.80	0.154	1.923	0	93.5	80	120				
Chromium	37.5	0.0769	38.46	0	97.5	80	120				
Copper	38.9	0.154	38.46	0	101	80	120				
Lead	19.0	0.154	19.23	0	98.8	80	120				
Nickel	38.6	0.385	38.46	0	100	80	120				
Selenium	3.71	0.385	3.846	0	96.4	80	120				
Silver	8.01	0.0769	9.615	0	83.3	80	120				
Thallium	0.999	0.154	0.9615	0	104	80	120				
Zinc	39.1	0.385	38.46	0	102	80	120				

Work Order: 1903289
CLIENT: Shannon & Wilson
Project: Waller Rd

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID	1903267-001ADUP		SampType: DUP		Units: mg/Kg-dry		Prep Date: 3/21/2019		RunNo: 50215		
Client ID:	BATCH		Batch ID: 23912				Analysis Date: 3/21/2019		SeqNo: 986294		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	ND	0.172						0		20	
Arsenic	2.22	0.215						2.450	9.91	20	
Beryllium	ND	0.172						0		20	
Cadmium	ND	0.172						0		20	
Chromium	23.1	0.0862						26.95	15.6	20	
Copper	9.87	0.172						11.45	14.8	20	
Lead	1.35	0.172						1.537	12.6	20	
Nickel	28.6	0.431						32.82	13.8	20	
Selenium	0.951	0.431						0.9705	1.98	20	
Silver	ND	0.0862						0		20	
Thallium	ND	0.172						0		20	
Zinc	28.1	0.431						30.46	8.10	20	

Sample ID	1903267-001AMS	SampType: MS	Units: mg/Kg-dry			Prep Date: 3/21/2019			RunNo: 50215		
Client ID:	BATCH	Batch ID: 23912				Analysis Date: 3/21/2019			SeqNo: 986298		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.549	0.170	2.121	0.01342	25.2	75	125				S
Arsenic	39.0	0.212	42.42	2.450	86.1	75	125				
Beryllium	1.70	0.170	2.121	0.1403	73.7	75	125				S
Cadmium	1.94	0.170	2.121	0.04677	89.2	75	125				
Chromium	53.9	0.0848	42.42	26.95	63.4	75	125				S
Copper	45.0	0.170	42.42	11.45	79.0	75	125				
Lead	17.8	0.170	21.21	1.537	76.6	75	125				
Nickel	62.8	0.424	42.42	32.82	70.6	75	125				S
Selenium	4.70	0.424	4.242	0.9705	88.0	75	125				
Silver	6.18	0.0848	10.60	0.06379	57.7	75	125				S
Thallium	0.805	0.170	1.060	0.03078	73.1	75	125				S
Zinc	62.5	0.424	42.42	30.46	75.6	75	125				

Work Order: 1903289
CLIENT: Shannon & Wilson
Project: Waller Rd

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID	1903267-001AMS		SampType:	MS		Units:	mg/Kg-dry		Prep Date:	3/21/2019		RunNo:	50215	
Client ID:	BATCH		Batch ID:	23912					Analysis Date:	3/21/2019		SeqNo:	986298	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		

NOTES:

S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect (Antimony, Beryllium, Silver).

S - Outlying spike recovery(ies) observed. A duplicate analysis was performed and recovered within range (Barium, Chromium, Nickel, Thallium).

Sample ID	1903267-001AMSD	SampType: MSD		Units: mg/Kg-dry		Prep Date: 3/21/2019			RunNo: 50215		
Client ID:	BATCH	Batch ID: 23912		Analysis Date: 3/21/2019					SeqNo: 986299		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	0.599	0.171	2.138	0.01342	27.4	75	125	0.5485	8.79	20	S
Arsenic	40.9	0.214	42.75	2.450	89.9	75	125	38.98	4.78	20	
Beryllium	1.69	0.171	2.138	0.1403	72.4	75	125	1.704	0.935	20	S
Cadmium	2.10	0.171	2.138	0.04677	96.1	75	125	1.939	8.01	20	
Chromium	62.9	0.0855	42.75	26.95	84.0	75	125	53.85	15.4	20	S
Copper	48.3	0.171	42.75	11.45	86.3	75	125	44.98	7.22	20	
Lead	19.0	0.171	21.38	1.537	81.9	75	125	17.79	6.76	20	
Nickel	66.5	0.428	42.75	32.82	78.9	75	125	62.78	5.82	20	
Selenium	4.66	0.428	4.275	0.9705	86.2	75	125	4.704	1.03	20	
Silver	6.46	0.0855	10.69	0.06379	59.8	75	125	6.184	4.35	20	
Thallium	0.856	0.171	1.069	0.03078	77.2	75	125	0.8055	6.08	20	
Zinc	70.0	0.428	42.75	30.46	92.5	75	125	62.54	11.3	20	

NOTES:

S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect (Antimony, Beryllium, Silver).

R - High RPD observed. The method is in control as indicated by the LCS.

Sample ID	1903267-001APDS	SampType: PDS			Units: mg/Kg-dry		Prep Date: 3/21/2019		RunNo: 50215		
Client ID:	BATCH	Batch ID: 23912			Analysis Date: 3/21/2019				SeqNo: 986300		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Antimony	2.05	0.171	2.14	0.0134	95.1	75	125				
Beryllium	1.80	0.171	2.14	0.140	77.6	75	125				
Silver	1.36	0.0855	2.14	0.0638	60.8	75	125				S

Work Order: 1903289
CLIENT: Shannon & Wilson
Project: Waller Rd

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID 1903267-001APDS	SampType: PDS	Units: mg/Kg-dry			Prep Date: 3/21/2019	RunNo: 50215
Client ID: BATCH	Batch ID: 23912	Analysis Date: 3/21/2019			SeqNo: 986300	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual

NOTES:

S - Spike recovery indicates a possible matrix effect. The method is in control as indicated by the Laboratory Control Sample (LCS).

Sample ID MB-24060	SampType: MBLK	Units: mg/Kg			Prep Date: 4/3/2019	RunNo: 50529
Client ID: MBLKS	Batch ID: 24060	Analysis Date: 4/4/2019			SeqNo: 992341	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual
Cadmium	ND	0.161				
Lead	ND	0.161				

Sample ID LCS-24060	SampType: LCS	Units: mg/Kg			Prep Date: 4/3/2019	RunNo: 50529
Client ID: LCSS	Batch ID: 24060	Analysis Date: 4/4/2019			SeqNo: 992342	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual
Cadmium	1.98	0.156	1.953	0	101 80 120	
Lead	18.7	0.156	19.53	0	95.8 80 120	

Sample ID 1904034-002ADUP	SampType: DUP	Units: mg/Kg-dry			Prep Date: 4/3/2019	RunNo: 50529
Client ID: BATCH	Batch ID: 24060	Analysis Date: 4/4/2019			SeqNo: 992344	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual
Cadmium	ND	0.176				0 20
Lead	381	0.176			458.9 18.5 20	E

NOTES:

E - Estimated value. The amount exceeds the linear working range of the instrument.

Sample ID 1904034-002AMS	SampType: MS	Units: mg/Kg-dry			Prep Date: 4/3/2019	RunNo: 50529
Client ID: BATCH	Batch ID: 24060	Analysis Date: 4/4/2019			SeqNo: 992346	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val	%RPD RPDLimit Qual
Cadmium	2.20	0.174	2.179	0.1089	95.9 75 125	

Work Order: 1903289
CLIENT: Shannon & Wilson
Project: Waller Rd

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID	1904034-002AMS	SampType:	MS	Units:	mg/Kg-dry	Prep Date:	4/3/2019	RunNo:	50529		
Client ID:	BATCH	Batch ID:	24060			Analysis Date:	4/4/2019	SeqNo:	992346		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	332	0.174	21.79	458.9	-581	75	125				ES

NOTES:

S - Analyte concentration was too high for accurate spike recovery(ies).

E - Estimated value. The amount exceeds the linear working range of the instrument.

Sample ID	1904034-002AMSD	SampType:	MSD	Units:			mg/Kg-dry	Prep Date:	4/3/2019	RunNo:	50529
Client ID:	BATCH	Batch ID:	24060	Analysis Date:					4/4/2019	SeqNo:	992347
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cadmium	2.09	0.177	2.213	0.1089	89.6	75	125	2.198	4.94	20	
Lead	247	0.177	22.13	458.9	-958	75	125	332.4	29.5	20	ERS

NOTES:

S - Analyte concentration was too high for accurate spike recovery(ies).

R - High RPD due to high analyte concentration. In this range, high RPD's may be expected.

E - Estimated value. The amount exceeds the linear working range of the instrument.

Sample ID	1904034-002APDS	SampType:	PDS	Units:	mg/Kg-dry	Prep Date:	4/3/2019	RunNo:	50529		
Client ID:	BATCH	Batch ID:	24060	Analysis Date:	4/4/2019	SeqNo:	992348				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	477	0.176	22.0	459	84.3	75	125				E

NOTES:

E - Estimated value. The amount exceeds the linear working range of the instrument.

Work Order: 1903289
CLIENT: Shannon & Wilson
Project: Waller Rd

QC SUMMARY REPORT

Mercury by EPA Method 7471

Sample ID	MB-23965	SampType: MBLK		Units: mg/Kg		Prep Date: 3/26/2019		RunNo: 50314			
Client ID:	MBLKS	Batch ID: 23965				Analysis Date: 3/27/2019		SeqNo: 988529			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Mercury ND 0.250

Sample ID	LCS-23965	SampType:	LCS	Units:	mg/Kg	Prep Date:	3/26/2019	RunNo:	50314		
Client ID:	LCSS	Batch ID:	23965	Analysis Date:	3/27/2019	SeqNo:	988530				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Mercury 0.506 0.250 0.5000 0 101 80 120

Sample ID	1903289-001ADUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	3/26/2019	RunNo:	50314		
Client ID:	TP1:C	Batch ID:	23965			Analysis Date:	3/27/2019	SeqNo:	988532		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Mercury ND 0.285 0 20

Sample ID	1903289-001AMS	SampType:	MS	Units:	mg/Kg-dry	Prep Date:	3/26/2019	RunNo:	50314		
Client ID:	TP1:C	Batch ID:	23965			Analysis Date:	3/27/2019	SeqNo:	988533		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Mercury 0.508 0.275 0.5493 0.01881 89.0 70 130

Sample ID	1903289-001AMSD	SampType:	MSD	Units:	mg/Kg-dry	Prep Date:	3/26/2019	RunNo:	50314		
Client ID:	TP1:C	Batch ID:	23965			Analysis Date:	3/27/2019	SeqNo:	988534		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Mercury 0.556 0.275 0.5493 0.01881 97.8 70 130 0.5076 9.09 20

Work Order: 1903289
CLIENT: Shannon & Wilson
Project: Waller Rd

QC SUMMARY REPORT

Metals (EPA 200.8) with TCLP Extraction (EPA 1311)

Sample ID	MB-24102	SampType:	MBLK			Units:	mg/L			Prep Date:	4/8/2019			RunNo:	50599		
Client ID:	MBLKS	Batch ID:	24102							Analysis Date:	4/9/2019			SeqNo:	993569		
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit	Qual				

Lead ND 0.200

Sample ID	LCS-24102	SampType: LCS			Units: mg/L		Prep Date: 4/8/2019			RunNo: 50599		
Client ID:	LCSS	Batch ID: 24102			Analysis Date: 4/9/2019				SeqNo: 993570			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Lead 2.43 0.200 2.500 0 97.3 65 135

Sample ID	1904065-001ADUP	SampType:	DUP	Units:	mg/L	Prep Date:	4/8/2019	RunNo:	50599		
Client ID:	BATCH	Batch ID:	24102			Analysis Date:	4/9/2019	SeqNo:	993669		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Lead ND 0.200 0 30

Sample ID	1904065-001AMS	SampType:	MS	Units:	mg/L	Prep Date:	4/8/2019	RunNo:	50599		
Client ID:	BATCH	Batch ID:	24102			Analysis Date:	4/9/2019	SeqNo:	993670		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Lead 2.42 0.200 2.500 0.06140 94.2 65 135

Sample ID	1904065-001AMSD	SampType:	MSD	Units:	mg/L	Prep Date:	4/8/2019	RunNo:	50599		
Client ID:	BATCH	Batch ID:	24102			Analysis Date:	4/9/2019	SeqNo:	993671		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Lead 2.51 0.200 2.500 0.06140 98.0 65 135 2.416 3.85 30

Work Order: 1903289
CLIENT: Shannon & Wilson
Project: Waller Rd

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID	MB-23918	SampType: MBLK			Units: mg/Kg		Prep Date: 3/21/2019			RunNo: 50232		
Client ID:	MBLKS	Batch ID: 23918			Analysis Date: 3/21/2019				SeqNo: 986640			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Diesel (Fuel Oil)	ND	20.0									
Heavy Oil	ND	50.0									
Surr: 2-Fluorobiphenyl	17.8		20.00		88.9	50	150				
Surr: o-Terphenyl	18.1		20.00		90.4	50	150				

Sample ID	LCS-23918	SampType:	LCS	Units:	mg/Kg	Prep Date:	3/21/2019	RunNo:	50232		
Client ID:	LCSS	Batch ID:	23918	Analysis Date:	3/21/2019	SeqNo:	986641				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	537	20.0	500.0	0	107	65	135				
Surr: 2-Fluorobiphenyl	18.2		20.00		91.0	50	150				
Surr: o-Terphenyl	17.9		20.00		89.4	50	150				

Sample ID	1903289-001ADUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	3/21/2019	RunNo:	50232		
Client ID:	TP1:C	Batch ID:	23918	Analysis Date:	3/21/2019	SeqNo:	986644				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	ND	22.4						0		30	
Heavy Oil	ND	55.9						0		30	
Surr: 2-Fluorobiphenyl	22.7		22.38		101	50	150		0		
Surr: o-Terphenyl	23.3		22.38		104	50	150		0		

Sample ID	1903289-001AMS	SampType:	MS	Units:	mg/Kg-dry	Prep Date:	3/21/2019	RunNo:	50232		
Client ID:	TP1:C	Batch ID:	23918	Analysis Date:				3/21/2019	SeqNo:	986645	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	657	22.8	571.1	0	115	65	135				
Surr: 2-Fluorobiphenyl	22.5		22.85		98.6	50	150				
Surr: o-Terphenyl	22.3		22.85		97.8	50	150				

Work Order: 1903289
CLIENT: Shannon & Wilson
Project: Waller Rd

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID	1903289-001AMS	SampType:	MS	Units:	mg/Kg-dry	Prep Date:	3/21/2019	RunNo:	50232		
Client ID:	TP1:C	Batch ID:	23918			Analysis Date:	3/21/2019	SeqNo:	986645		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID	1903289-001AMSD	SampType:	MSD	Units:	mg/Kg-dry	Prep Date:	3/21/2019	RunNo:	50232		
Client ID:	TP1:C	Batch ID:	23918			Analysis Date:	3/21/2019	SeqNo:	986646		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	635	20.8	519.1	0	122	65	135	657.2	3.45	30	
Surr: 2-Fluorobiphenyl	21.1		20.76		102	50	150		0		
Surr: o-Terphenyl	20.4		20.76		98.3	50	150		0		

Sample ID	1903296-001ADUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	3/21/2019	RunNo:	50285		
Client ID:	BATCH	Batch ID:	23918			Analysis Date:	3/22/2019	SeqNo:	987577		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	20.4						0		30	
Heavy Oil	62.9	51.0						62.84	0.0326	30	
Surr: 2-Fluorobiphenyl	23.2		20.41		113	50	150		0		
Surr: o-Terphenyl	24.7		20.41		121	50	150		0		



Work Order: 1903289
CLIENT: Shannon & Wilson
Project: Waller Rd

QC SUMMARY REPORT

Hydrocarbon Identification by NWTPH-HCID

Sample ID	MB-23918	SampType:	MBLK			Units:	mg/Kg			Prep Date:	3/21/2019			RunNo:	50295		
Client ID:	MBLKS	Batch ID:	23918			Analysis Date:					3/21/2019			SeqNo:	987828		
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit	Qual				
Gasoline		ND	20.0														
Mineral Spirits		ND	30.0														
Kerosene		ND	50.0														
Diesel (Fuel Oil)		ND	50.0														
Heavy Oil		ND	100														
Mineral Oil		ND	100														
Surr: 2-Fluorobiphenyl		17.8		20.00		88.9	50	150									
Surr: o-Terphenyl		18.1		20.00		90.4	50	150									

Sample ID	LCS-23918	SampType:	LCS	Units:	mg/Kg	Prep Date:	3/21/2019	RunNo:	50295		
Client ID:	LCSS	Batch ID:	23918	Analysis Date:				3/21/2019	SeqNo:	987829	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	537	50.0	500.0	0	107	65	135				
Surr: 2-Fluorobiphenyl	18.2		20.00		91.0	50	150				
Surr: o-Terphenyl	17.9		20.00		89.4	50	150				

Work Order: 1903289
CLIENT: Shannon & Wilson
Project: Waller Rd

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID	MB-23919	SampType:	MBLK		Units:	µg/Kg			Prep Date:	3/21/2019		RunNo:	50230	
Client ID:	MBLKS	Batch ID:	23919						Analysis Date:	3/21/2019		SeqNo:	986596	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual			
Naphthalene	ND	40.0												
2-Methylnaphthalene	ND	40.0												
1-Methylnaphthalene	ND	40.0												
Acenaphthylene	ND	40.0												
Acenaphthene	ND	40.0												
Fluorene	ND	40.0												
Phenanthrene	ND	40.0												
Anthracene	ND	40.0												
Fluoranthene	ND	40.0												
Pyrene	ND	40.0												
Benz(a)anthracene	ND	40.0												
Chrysene	ND	40.0												
Benzo(b)fluoranthene	ND	40.0												
Benzo(k)fluoranthene	ND	40.0												
Benzo(a)pyrene	ND	40.0												
Indeno(1,2,3-cd)pyrene	ND	40.0												
Dibenz(a,h)anthracene	ND	40.0												
Benzo(g,h,i)perylene	ND	40.0										Q		
Surr: 2-Fluorobiphenyl	351		500.0		70.3	19.4	157							
Surr: Terphenyl-d14 (surr)	457		500.0		91.3	31.5	173							

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria

Sample ID	LCS-23919	SampType:	LCS	Units:	µg/Kg	Prep Date:	3/21/2019	RunNo:	50230		
Client ID:	LCSS	Batch ID:	23919			Analysis Date:	3/21/2019	SeqNo:	986597		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	805	40.0	1,000	0	80.5	52.9	134				
2-Methylnaphthalene	832	40.0	1,000	0	83.2	45.1	135				
1-Methylnaphthalene	845	40.0	1,000	0	84.5	55.5	133				
Acenaphthylene	821	40.0	1,000	0	82.1	32.8	136				

Work Order: 1903289
CLIENT: Shannon & Wilson
Project: Waller Rd

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID	LCS-23919	SampType: LCS		Units: µg/Kg		Prep Date: 3/21/2019			RunNo: 50230		
Client ID:	LCSS	Batch ID: 23919					Analysis Date: 3/21/2019			SeqNo: 986597	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	783	40.0	1,000	0	78.3	42	137				
Fluorene	761	40.0	1,000	0	76.1	41.4	144				
Phenanthrene	747	40.0	1,000	0	74.7	36.6	141				
Anthracene	776	40.0	1,000	0	77.6	42.5	157				
Fluoranthene	805	40.0	1,000	0	80.5	43.4	144				
Pyrene	788	40.0	1,000	0	78.8	39.6	146				
Benz(a)anthracene	828	40.0	1,000	0	82.8	36.6	142				
Chrysene	843	40.0	1,000	0	84.3	43	165				
Benzo(b)fluoranthene	1,030	40.0	1,000	0	103	41	155				
Benzo(k)fluoranthene	785	40.0	1,000	0	78.5	30.6	164				
Benzo(a)pyrene	923	40.0	1,000	0	92.3	30.2	171				
Indeno(1,2,3-cd)pyrene	689	40.0	1,000	0	68.9	31.3	159				
Dibenz(a,h)anthracene	696	40.0	1,000	0	69.6	28	158				
Benzo(g,h,i)perylene	642	40.0	1,000	0	64.2	32.4	144				
Surr: 2-Fluorobiphenyl	381		500.0		76.2	19.4	157				
Surr: Terphenyl-d14 (surr)	454		500.0		90.9	31.5	173				

Sample ID	1903289-002ADUP	SampType:	DUP	Units:	µg/Kg-dry	Prep Date:	3/21/2019	RunNo:	50230		
Client ID:	TP2:C	Batch ID:	23919			Analysis Date:	3/21/2019	SeqNo:	986600		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	45.9						0		30	
2-Methylnaphthalene	ND	45.9						0		30	
1-Methylnaphthalene	ND	45.9						0		30	
Acenaphthylene	ND	45.9						0		30	
Acenaphthene	ND	45.9						0		30	
Fluorene	ND	45.9						0		30	
Phenanthrene	ND	45.9						0		30	
Anthracene	ND	45.9						0		30	
Fluoranthene	ND	45.9						0		30	

Work Order: 1903289
CLIENT: Shannon & Wilson
Project: Waller Rd

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID	1903289-002ADUP	SampType: DUP	Units: µg/Kg-dry			Prep Date: 3/21/2019			RunNo: 50230		
Client ID:	TP2:C	Batch ID: 23919				Analysis Date: 3/21/2019			SeqNo: 986600		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Pyrene	ND	45.9						0		30	
Benz(a)anthracene	ND	45.9						0		30	
Chrysene	ND	45.9						0		30	
Benzo(b)fluoranthene	ND	45.9						0		30	
Benzo(k)fluoranthene	ND	45.9						0		30	
Benzo(a)pyrene	ND	45.9						0		30	
Indeno(1,2,3-cd)pyrene	ND	45.9						0		30	
Dibenz(a,h)anthracene	ND	45.9						0		30	
Benzo(g,h,i)perylene	ND	45.9						0		30	Q
Surr: 2-Fluorobiphenyl	340		574.1		59.2	19.4	157		0		
Surr: Terphenyl-d14 (surr)	315		574.1		54.8	31.5	173		0		

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria

Sample ID	1903289-002AMS	SampType:	MS	Units:	µg/Kg-dry	Prep Date:	3/21/2019	RunNo:	50230		
Client ID:	TP2:C	Batch ID:	23919			Analysis Date:	3/21/2019	SeqNo:	986601		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	663	47.3	1,183	0	56.1	38.9	124				
2-Methylnaphthalene	699	47.3	1,183	0	59.1	42.8	151				
1-Methylnaphthalene	711	47.3	1,183	0	60.1	38.4	125				
Acenaphthylene	691	47.3	1,183	0	58.4	32.6	160				
Acenaphthene	651	47.3	1,183	0	55.1	31.7	126				
Fluorene	657	47.3	1,183	0	55.5	43.4	153				
Phenanthrene	614	47.3	1,183	0	51.9	23.8	135				
Anthracene	641	47.3	1,183	0	54.2	32.6	160				
Fluoranthene	637	47.3	1,183	0	53.8	28	144				
Pyrene	628	47.3	1,183	0	53.1	27.8	141				
Benz(a)anthracene	641	47.3	1,183	0	54.2	34.9	139				
Chrysene	706	47.3	1,183	0	59.7	45.2	146				
Benzo(b)fluoranthene	854	47.3	1,183	0	72.2	42.2	168				

Work Order: 1903289
CLIENT: Shannon & Wilson
Project: Waller Rd

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID	1903289-002AMS	SampType: MS	Units: µg/Kg-dry			Prep Date: 3/21/2019			RunNo: 50230		
Client ID:	TP2:C	Batch ID:	23919				Analysis Date: 3/21/2019			SeqNo: 986601	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(k)fluoranthene	628	47.3	1,183	0	53.1	20.5	150				
Benzo(a)pyrene	754	47.3	1,183	0	63.8	34.4	179				
Indeno(1,2,3-cd)pyrene	550	47.3	1,183	0	46.5	11.8	140				
Dibenz(a,h)anthracene	557	47.3	1,183	0	47.1	17.3	156				
Benzo(g,h,i)perylene	507	47.3	1,183	0	42.9	24.9	119				
Surr: 2-Fluorobiphenyl	316		591.4		53.4	19.4	157				
Surr: Terphenyl-d14 (surr)	306		591.4		51.7	31.5	173				

Sample ID	1903289-002AMSD	SampType:	MSD	Units:	µg/Kg-dry	Prep Date:	3/21/2019	RunNo:	50230		
Client ID:	TP2:C	Batch ID:	23919			Analysis Date:	3/22/2019	SeqNo:	986602		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	687	48.3	1,208	0	56.8	38.9	124	663.4	3.42	30	
2-Methylnaphthalene	729	48.3	1,208	0	60.4	42.8	151	699.4	4.14	30	
1-Methylnaphthalene	742	48.3	1,208	0	61.4	38.4	125	710.8	4.24	30	
Acenaphthylene	717	48.3	1,208	0	59.3	32.6	160	690.5	3.71	30	
Acenaphthene	698	48.3	1,208	0	57.8	31.7	126	651.2	6.95	30	
Fluorene	684	48.3	1,208	0	56.7	43.4	153	657.1	4.06	30	
Phenanthrene	653	48.3	1,208	0	54.0	23.8	135	614.5	6.03	30	
Anthracene	675	48.3	1,208	0	55.9	32.6	160	641.4	5.08	30	
Fluoranthene	696	48.3	1,208	0	57.7	28	144	636.7	8.95	30	
Pyrene	683	48.3	1,208	0	56.5	27.8	141	628.1	8.36	30	
Benz(a)anthracene	686	48.3	1,208	0	56.8	34.9	139	641.3	6.78	30	
Chrysene	731	48.3	1,208	0	60.5	45.2	146	705.9	3.47	30	
Benzo(b)fluoranthene	843	48.3	1,208	0	69.8	42.2	168	854.4	1.31	30	
Benzo(k)fluoranthene	684	48.3	1,208	0	56.7	20.5	150	627.9	8.60	30	
Benzo(a)pyrene	777	48.3	1,208	0	64.3	34.4	179	754.1	2.99	30	
Indeno(1,2,3-cd)pyrene	576	48.3	1,208	0	47.7	11.8	140	549.7	4.70	30	
Dibenz(a,h)anthracene	580	48.3	1,208	0	48.0	17.3	156	557.3	4.00	30	
Benzo(g,h,i)perylene	532	48.3	1,208	0	44.0	24.9	119	507.4	4.67	30	

Work Order: 1903289
CLIENT: Shannon & Wilson
Project: Waller Rd

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID	1903289-002AMSD	SampType:	MSD	Units:	µg/Kg-dry	Prep Date:	3/21/2019	RunNo:	50230		
Client ID:	TP2:C	Batch ID:	23919			Analysis Date:	3/22/2019	SeqNo:	986602		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 2-Fluorobiphenyl	337		603.9		55.8	19.4	157		0		
Surr: Terphenyl-d14 (surr)	329		603.9		54.4	31.5	173		0		



Work Order: 1903289
CLIENT: Shannon & Wilson
Project: Waller Rd

QC SUMMARY REPORT

Sample Moisture (Percent Moisture)

Sample ID	1903289-002ADUP	SampType:	DUP			Units:	wt%			Prep Date:	3/21/2019			RunNo:	50191		
Client ID:	TP2:C	Batch ID:	R50191							Analysis Date:	3/21/2019			SeqNo:	985679		
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit	Qual				
Percent Moisture		19.6	0.500						26.99		31.5	20	R				

Sample ID	1903300-002ADUP	SampType:	DUP			Units:	wt%			Prep Date:	3/21/2019			RunNo:	50191		
Client ID:	BATCH	Batch ID:	R50191							Analysis Date:	3/21/2019			SeqNo:	985692		
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit	Qual				
Percent Moisture		18.9	0.500						17.38		8.41	20					

Client Name: **SW**

Work Order Number: **1903289**

Logged by: **Brianna Barnes**

Date Received: **3/19/2019 4:45:00 PM**

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Client

Log In

3. Coolers are present? Yes ☒ No ☐ NA ☐
4. Shipping container/cooler in good condition? Yes ☒ No ☐
5. Custody Seals present on shipping container/cooler?
(Refer to comments for Custody Seals not intact) Yes ☐ No ☐ Not Required ☒
6. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
7. Were all items received at a temperature of $>0^{\circ}\text{C}$ to 10.0°C * Yes ☐ No ☒ NA ☐
- Please refer to item information.**
8. Sample(s) in proper container(s)? Yes ☒ No ☐
9. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
10. Are samples properly preserved? Yes ☒ No ☐
11. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
12. Is there headspace in the VOA vials? Yes ☐ No ☐ NA ☒
13. Did all samples containers arrive in good condition(unbroken)? Yes ☒ No ☐
14. Does paperwork match bottle labels? Yes ☒ No ☐
15. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
16. Is it clear what analyses were requested? Yes ☒ No ☐
17. Were all holding times able to be met? Yes ☒ No ☐

Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:		Date:	
By Whom:		Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:			
Client Instructions:			

19. Additional remarks:

Item Information

Item #	Temp °C
Cooler	12.8
Sample	12.8

* Note: DoD/ELAP and TNI require items to be received at $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$



3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record & Laboratory Services Agreement

Date: 3/19/2019 Page: 1 of 1

Project Name: Weller Rd

Project No: 102438-001

Collected by: CTE

Location: Spanaway, WA

Report to (PM): Meg Strong

PM Email: MTS@shandil.com

Laboratory Project No (Internal): 1903289

Special Remarks:

Sample Disposal: ☐ Return to client ☒ Disposal by lab (after 30 days)

Client: Shannon & Wilson, Inc.
Address: 400 N. 34th St., Suite 100
City, State, Zip: Seattle, WA 98103
Telephone: 206-632-8020
Fax: 206-695-6777

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*																Comments
				VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DH)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T) Dissolved (D)	Anions (IC)***	EDB (8011)			
1 TP1:C	3/19	1320	S				X												
2 TP2:C	3/19	1300	S				X												
3 TP3:C	3/19	1230	S				X												
4 TP4:C	3/19	1410	S				X												
5 TP5:C	3/19	1115	S				X												
6 TP6:C	3/19	1040	S				X												
7 TP7:C	3/19	0850	S				X												
8 TP8:C	3/19	0955	S				X												
9 TP9:2.5 TP9:2.5	3/19	1210	S				X												
10 TP9:8	3/19	1425	S				X												

*Matrix: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

**Metals (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above and that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished	Date/Time	Received	Date/Time	Turn-around Time:
x	3/19/19	x	3/19/19	<input type="checkbox"/> Standard
Relinquished	Date/Time	Received	Date/Time	<input type="checkbox"/> 3 Day
x		x		<input type="checkbox"/> 2 Day
				<input type="checkbox"/> Next Day
				Same Day (specify)



3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record & Laboratory Services Agreement

Date: 3/19/2019 Page: 1 of 1

Laboratory Project No (Internal): 1903289

Special Remarks:

Client: Shannon & Wilson, Inc.

Project No: 102438-001

Address: 400 N 34th St, Suite 100

Collected by: CTC

City, State, Zip: Seattle, WA 98103

Location: Spanaway, WA

Telephone: 206-632-8020

Report To (PM): Meg Strong

Fax: 206-695-6777

PM Email: MJS@shandwil.com

Add on per CE 4/1/2019 mm

Sample Disposal: ☐ Return to client ☒ Disposal by lab (after 30 days)

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (HCID)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T) Dissolved (D)	Anions (IC)***	EDB (8011)	Quantify HCID	Comments
-------------	-------------	-------------	-----------------------	-----------------------	---------	------	------------------------------	-----------------------------------	--	------------------------	-----------------------	-----------------------	-----------------------------	---------------------------	----------------	------------	---------------	----------

1	TP1:C	3/19	1320	S															
2	TP2:C	3/19	1300	S															
3	TP3:C	3/19	1230	S															
4	TP4:C	3/19	1410	S															
5	TP5:C	3/19	1115	S															
6	TP6:C	3/19	1040	S															
7	TP7:C	3/19	0850	S															
8	TP8:C	3/19	0955	S															
9	TP9:2.5	3/19	1210	S															
10	TP9:8	3/19	1425	S															

PO per CE 4/1/2019

Turn-around Time:

*Matrix: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

**Metals (Circle): MTCA-5 RCRA-8 TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above and that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished ☒ 3/19/19 1645 Date/Time Received ☒ 3/19/19 1645 Date/Time



3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record & Laboratory Services Agreement

Date: 3/19/2019 Page: 1 of 1
Laboratory Project No (internal): 1903289

Project Name: Waller Rd Special Remarks:

Client: Shannon & Wilson, Inc. Project No: 102438-001

Address: 400 N 34th St, Suite 100 Collected by: CTC

City, State, Zip: Seattle, WA 98103 Location: Spokane / WA

Telephone: 206-632-8020 Report to (PM): Meg Strong

Fax: 206-695-6777 PM Email: MTS@shawnwi.com

Additional 4/19 strategy
Shannon per CE 4/12/2019 mm

Sample Disposal: ☐ Return to client ☒ Disposal by lab (after 30 days)

Sample Name	Sample Date	Sample Time	Sample Matrix*	VOCs (EPA 8260 / 624)	GV/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCD)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 8220 / 200.8)	Total (T) Dissolved (D)	Anions (IC)***	EDB (8011)	Quinoline HCID	TCLP Pb	Comments
-------------	-------------	-------------	----------------	-----------------------	---------	------	------------------------------	----------------------------------	------------------------	-----------------------	-----------------------	-----------------------------	---------------------------	----------------	------------	----------------	---------	----------

1	TP1:C	3/19	1320	S														
2	TP2:C	3/19	1300	S														
3	TP3:C	3/19	1230	S														
4	TP4:C	3/19	1410	S														
5	TP5:C	3/19	1115	S														
6	TP6:C	3/19	1040	S														
7	TP7:C	3/19	0850	S														
8	TP8:C	3/19	0955	S														
9	TP9:2.5	3/19	1210	S														
10	TP9:8	3/19	1425	S														

*Matrix: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

**Metals (Circle): MTCA-5 RCRA-8 Priority Pollutants TML Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate-Nitrite

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above and that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished LA Date/Time 3/19/19 1645 Received [Signature] Date/Time 3/19/19 1645
Retinquished X Date/Time 3/19/19 1645 Received X Date/Time 3/19/19 1645

Appendix B

Site Closure Report

APPENDIX B: SITE CLOSURE REPORT

SITE CLOSURE REPORT

**13.4-ACRE UNDEVELOPED PARCEL,
16720 WALLER ROAD EAST,
TACOMA, WASHINGTON**

**Prepared for
Pierce County Planning & Public Works**

**Prepared by
Herrera Environmental Consultants, Inc.**



Note:

Some pages in this document have been purposely skipped or blank pages inserted so that this document will copy correctly when duplexed.

SITE CLOSURE REPORT

13.4-ACRE UNDEVELOPED PARCEL, 16720 WALLER ROAD EAST, TACOMA, WASHINGTON

**Prepared for
Pierce County Planning & Public Works
2702 South 42nd Street, Suite 109
Tacoma, Washington 98409**

**Prepared by
Herrera Environmental Consultants, Inc.
2200 Sixth Avenue, Suite 1100
Seattle, Washington 98121
Telephone: 206-441-9080**

November 25, 2019

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CERTIFICATE OF LICENSED GEOLOGIST AND LICENSED HYDROGEOLOGIST

This document has been prepared under the supervision of a licensed geologist and a licensed hydrogeologist.



George C. Iftner

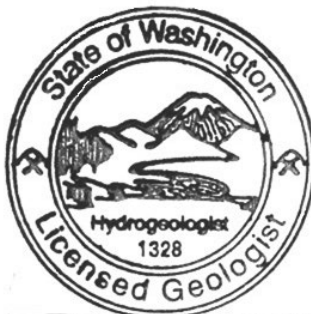
George C. Iftner

George C. Iftner

Name

November 25, 2019

Date



Bruce Allan Carpenter

Bruce A. Carpenter

Bruce A. Carpenter

Name

November 25, 2019

Date

ABBREVIATIONS

amsl	above mean sea level
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and total xylenes
COCs	Chemicals of Concern
COPCs	contaminants of potential concern
cPAHs	carcinogenic polycyclic aromatic hydrocarbons
CUL	cleanup level
Ecology	Washington Department of Ecology
EPA	US Environmental Protection Agency
ESA	Environmental Site Assessment
ETBE	tert-Butyl Ethyl Ether
GIS	Geographic Information System
GPS	Global Positioning System
HCID	Hydrocarbon Identification
Herrera	Herrera Environmental Consultants, Inc.
HVOCs	Halogenated Volatile Organic Compounds
LRI	Land Recovery, Inc.
mg/kg	milligrams per kilogram
mg/L	milligrams per Liter
MTBE	methyl tert-Butyl Ether
MTCA	Model Toxics Control Act

MW	monitoring well
NA	Not applicable
NAVD	North American Vertical Datum
ND	Not detected
NFA	No Further Action
NWTPH-Dx	Northwest Total Petroleum Hydrocarbons – Diesel Extended
NWTPH-Gx	Northwest Total Petroleum Hydrocarbons – Gasoline Extended
PAHs	polycyclic aromatic hydrocarbons
PCBs	polychlorinated biphenyls
RCW	Revised Code of Washington
SIM	secondary-ion mass
SSL	site screening level
TAME	tert-Amyl Methyl Ether
TBA	tert-Butyl Alcohol
TCLP	Toxicity Characteristic Leaching Procedure
TEE	Terrestrial Ecological Evaluation
TP	test pit
TPCHD	Tacoma-Pierce County Health District
µg/L	micrograms per liter
USGS	US Geological Survey
VCP	Voluntary Cleanup Program
VOC	volatile organic compound
WAC	Washington Administrative Code

EXECUTIVE SUMMARY

This Site Closure Report has been prepared for a 13.4-acre undeveloped parcel of land located at 16720 Waller Road East, parcel number 0319262074, in unincorporated Pierce County, Washington. The 13.4-acre parcel, hereafter referred to as the *Site*, is located at the north end of a property owned by Pierce County and is being sold to the Bethel School District to be developed as an elementary school.

This Site Closure Report has been prepared to meet the requirements of the Model Toxics Control Act and regulations implementing it, Washington Administrative Code 173-340, and to provide the results of site characterization and site remediation work completed at the Site.

SITE CHARACTERIZATION

Test Pit Investigations

In May 2019, a total of nine test pits (TP-1 through TP-9) were initially completed at the Site during a Limited Phase II Environmental Site Assessment completed for the School District (S&W 2019). At one test pit (TP-9) petroleum contaminated soils and miscellaneous debris were encountered in fill soils to a depth of 8 feet below ground surface. Elevated concentrations of lube oil, heavy metals, and carcinogenic polycyclic aromatic hydrocarbons were detected above the Model Toxics Control Act Method A cleanup levels in shallow and deep soil samples. In addition, the concentration of lead detected at 2.5 feet below ground surface exceeded the Dangerous Waste limit of 5 milligrams/Liter for Toxicity Characteristic Leaching Procedure lead.

Abandoned automobile remnants were also observed during the Limited Phase II Environmental Site Assessment near TP-4. Those remnants were removed on July 23, 2019, and no Contaminants of Potential Concern were detected in soils at that location above the ecological Site Screening Levels or Model Toxics Control Act Method A or B Cleanup Levels.

In June 2019, an additional 11 test pit explorations were completed by Herrera Environmental Consultants, Inc., including 9 test pits along the north and west soil berms, a 10th “clean” test pit behind the north soil berm, and an 11th at the location of the abandoned automobile remnants. At TP-A through TP-D, miscellaneous household debris including plastic, metal, ceramic, concrete, rope, and similar items were observed in four test pits completed along the west berm. However, no petroleum-stained soils, odors, or other signs of contamination were observed; and concentrations of Chemicals of Concern detected were below the Site’s Site Screening Levels and Cleanup Levels.

At TP-E, miscellaneous household debris was observed, and at TP-F through TP-I, metal debris, rubber hose, and other items were observed along with petroleum staining resembling waste oil

and strong petroleum odors. Laboratory analysis of samples from TP-E and TP-F confirmed elevated concentrations of lube oil, lead, and carcinogenic polycyclic aromatic hydrocarbons above the Site's Site Screening Levels and Cleanup Levels.

Ditch Soil Sampling

In June and July 2019, surface soil samples were collected from a total of six locations in ditches behind soil berms; an elevated concentration of lube oil was detected at the Ditch 5 sample location directly behind TP-E. No elevated concentrations of Chemicals of Concern above the Site's Site Screening Levels or Cleanup Levels were detected at any of the other five ditch sample locations.

Groundwater Sampling

In August and November 2019, two quarterly groundwater sampling events were completed at the Site. During the August 5, 2019, sampling event, only three total metals (chromium, lead, and zinc) were detected above the laboratory reporting limits in a sample from one well (MW-1); however, the metals concentrations were all below the respective Model Toxics Control Act Method A or B cleanup levels. No petroleum hydrocarbons, fuel additives, or carcinogenic polycyclic aromatic hydrocarbons were detected in samples from any of the wells. During the November 1, 2019, sampling event, none of the parameters analyzed were detected above the laboratory reporting limits in any of the three wells.

REMEDIAL ACTIVITIES

In July and August 2019, a total of four remedial excavations, Excavation E through Excavation H were completed at the Site; Excavation H included the former TP-9 source area that was investigated by Shannon & Wilson. At each excavation, soils were visually screened and loaded directly into a truck and trailer or stockpiled on plastic sheeting, and initial soil confirmation samples were collected. Where Chemicals of Concern were detected in soil samples above the Site's Site Screening Levels or Cleanup Levels, additional soils were removed, and the area(s) resampled until no Chemicals of Concern were detected above the Site's Site Screening Levels or Cleanup Levels in any of the final confirmation samples from all four excavations.

A total of 242.49 tons of soils designated as Dangerous Waste were disposed at Chemical Waste Management in Arlington, Oregon, and 759.28 tons of soils designated as PCS were disposed at LRI in Puyallup, Washington.

The Site has been successfully remediated in compliance with Washington Administrative Code Chapter 173-340. The remedial action removed all contamination to levels below the ecological screening levels and/or Model Toxics Control Act Method A or B cleanup levels for unrestricted land use. One additional round of quarterly groundwater sampling is planned in February 2020 to further assess groundwater conditions at the Site. Pending the results of that sampling event and based on the site characterization activities and remedial actions completed and described in this Site Closure Report, an unrestricted No Further Action finding is warranted for this Site.

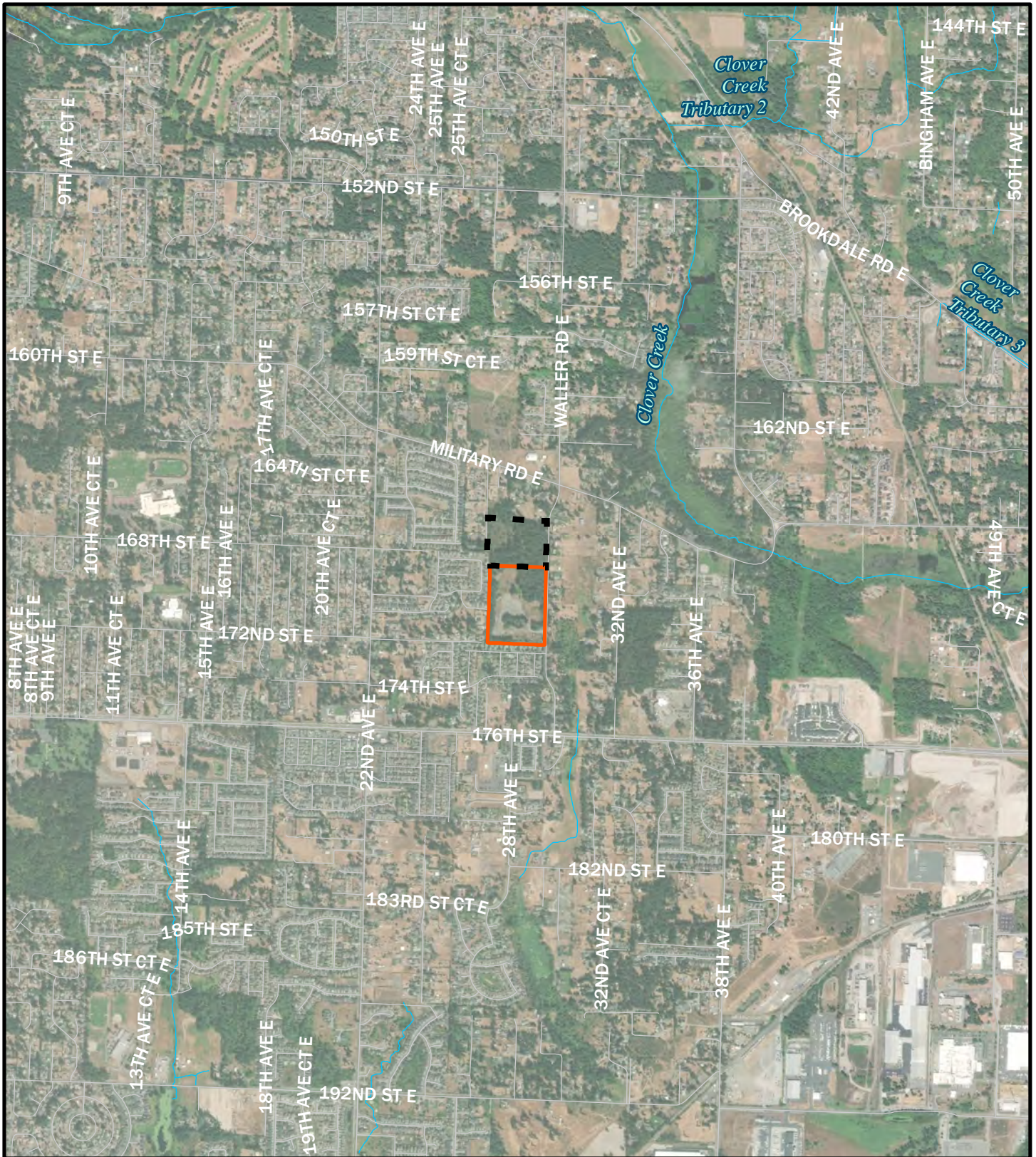
1. INTRODUCTION

The purpose of this Site Closure Report is to describe site remediation activities, including contaminated soil removal and soil and groundwater sampling on 13.4 acres of vacant undeveloped land owned by Pierce County now known as Pierce County Parcel No. 0319262074, formerly the northern portion of the property known as the Prairie Pit Maintenance Facility. The northerly 13.4 acres was not used or developed as part of the County's maintenance facility and is referred to herein as the *Site* (Figures 1 and 2). The Site is located at 16720 Waller Road East, Tacoma, in unincorporated Pierce County, Washington.

Pierce County is selling the Site to the Bethel School District (School District) to be developed as an elementary school. The southern portion of the property (Pierce County Parcel No. 0319263091) is not being sold and will continue to be used as a County maintenance facility.

Pierce County entered the Voluntary Cleanup Program (VCP) in July 2019 when the County's property was constituted as one parcel of land. However, the vacant undeveloped portion (13.4 acres) has since been segregated from the maintenance facility portion (21.5 acres); the County is requesting an opinion from the Washington State Department of Ecology (Ecology) on the remediation activities completed to date to achieve "No Further Action" (NFA) status for the 13.4-acre Site only.

Two quarters of groundwater sampling were completed in August and November 2019, and the results of additional groundwater sampling planned in February 2020 will be presented to Ecology in a technical memorandum separate from this Site Closure Report.



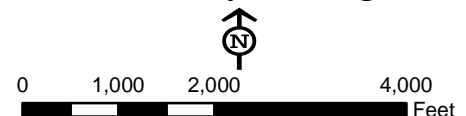
Legend

- 13.4-acre
- undeveloped parcel
- 0319262074
- being sold
- Parcel 0319263091
- Roads
- Stream



Figure 1.

Vicinity Map of 13.4-Acre Undeveloped Parcel, Pierce County, Washington.



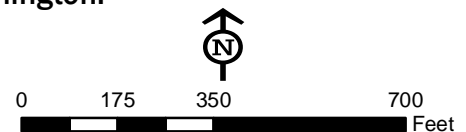


Legend

- | | |
|---|--|
| ● Private water supply well | Soil berm |
| ● Monitoring well (Herrera 2019) | Ditch |
| ■ Test pit (Shannon & Wilson 2019) | Access road |
| Parcel 0319262074 being sold | |
| Parcel 0319263091 | |

Notes: The plotted locations of private water supply wells are not consistent with the listed addresses (see the Hydrology section of the Site Closure Report for more information).

Figure 2. Site Map of 13.4-Acre Undeveloped Parcel, Pierce County, Washington.



HERRERA
Digital Globe, Aerial (2017)

K:\Projects\Y2016\16-06310-011\Project\Report\Fig2_SiteMap_letter.mxd

1.1. GENERAL SITE INFORMATION

Site Name	13.4-Acre Undeveloped Parcel
Site Address	16720 Waller Road East, Tacoma, Pierce County, WA 98446-1336
Facility Site Identification number (FSID)	40178
Cleanup Site ID	15007
VCP Project Number	SW1684

Herrera Environmental Consultants, Inc. (Herrera) has prepared this Site Closure Report for the Site located in Pierce County, Washington.

The project consultant lead is George Iftner, LG, of Herrera Environmental Consultants, Inc. (Herrera) located at 2200 Sixth Avenue, Suite 1100, Seattle, Washington 98121; telephone: 206-787-8210; email: giftner@herrerainc.com. Mr. Iftner is supported by senior reviewer and licensed hydrogeologist Bruce Carpenter, LHG, of Herrera; telephone: 206-787-8217; email: bcarpenter@herrerainc.com.

The property is currently unoccupied but owned by Pierce County. Kerri Wittman, Lands Asset Management Supervisor for Pierce County Planning & Public Works, is the Site contact. She is located at 2702 South 42nd Street, Suite 109, Tacoma, Washington 98409; telephone: 253-798-7020; email: kerri.wittman@piercecountywa.gov.

1.2. REPORT ORGANIZATION

This Site Closure Report has been organized in accordance with Ecology's Remedial Investigation Checklist (Publication No. 16-09-006) dated May 16, and includes the following:

- Section 2 describes the Site history, use, and setting.
- Section 3 describes field investigations including previous environmental investigations, and site characterization and remedial activities.
- Section 4 presents the Conceptual Site Model (CSM) for the Site, including the sources, nature, and extent of concentrations of hazardous substances detected in soil and an assessment of potential receptors and exposure pathways.
- Section 5 presents the cleanup standards selected for the Site and discussion of the Terrestrial Ecological Evaluation completed.
- Section 6 presents the summary, conclusions, and recommendations.
- Section 7 provides the references cited in the report.

2. SITE DESCRIPTION AND BACKGROUND

The property owned by the County along Waller Road East includes the 13.4-acre vacant, undeveloped Site on the north end, and 21.5 acres of land on the south end used by the County as a maintenance facility. The 34.9-acre property is situated in Section 26, Township 19 North, Range 3 East of the Willamette Meridian. Both parcels are located approximately 700 feet south of Military Road East, and directly adjacent to and west of Waller Road East, in unincorporated Pierce County, Washington. According to Pierce County's Public Geographic Information System (GIS) website, the property is currently zoned Moderate Density Single Family (Pierce County 2019).

The County property, including the Site being sold to the School District, is surrounded by a locked fence. Access to the Site is provided from Waller Road East and is restricted to Pierce County employees.

2.1. SITE HISTORY

The property was purchased by the County in the 1952 and the southern portion began operating as a gravel pit around 1961. In 1971 the County obtained a permit to operate as a gravel mine, and mining continued for a few decades on the southern portion of the property. In addition to mining activities, the southern portion of the property was used by the County as a storage area for equipment and materials needed for road maintenance activities and materials generated as byproducts of road maintenance activities, but no equipment or materials are currently stored there (Pierce County 2014).

From 2006 through 2011, street maintenance wastes (i.e., street sweepings) were temporarily stored and tested at the southern portion of the property for petroleum hydrocarbons, PAHs, and metals to determine disposal options. All testing was done in accordance with the solid waste handling permit (27-731) procedures established by the Tacoma Pierce County Health Department (TPCHD). Waste that tested below Model Toxics Control Act (MTCA) cleanup levels was spread in 4- to 6-inch lifts on the southern portion of the property as a daily cover. Waste that tested above MTCA levels was hauled off site to a licensed disposal facility (TPCHD 2018; J. Rudolph, personal communication, June 25, 2019).

In the 1990s, the County erected a security fence around the perimeter of the entire property. The Site (i.e., the northern portion of the property) has not been developed and no mining activities are reported to have occurred there (Pierce County 2014). This is supported by dense stands of trees observed on the Site in aerial photographs reviewed in Google Earth (Google 2019).

2.2. SITE USE

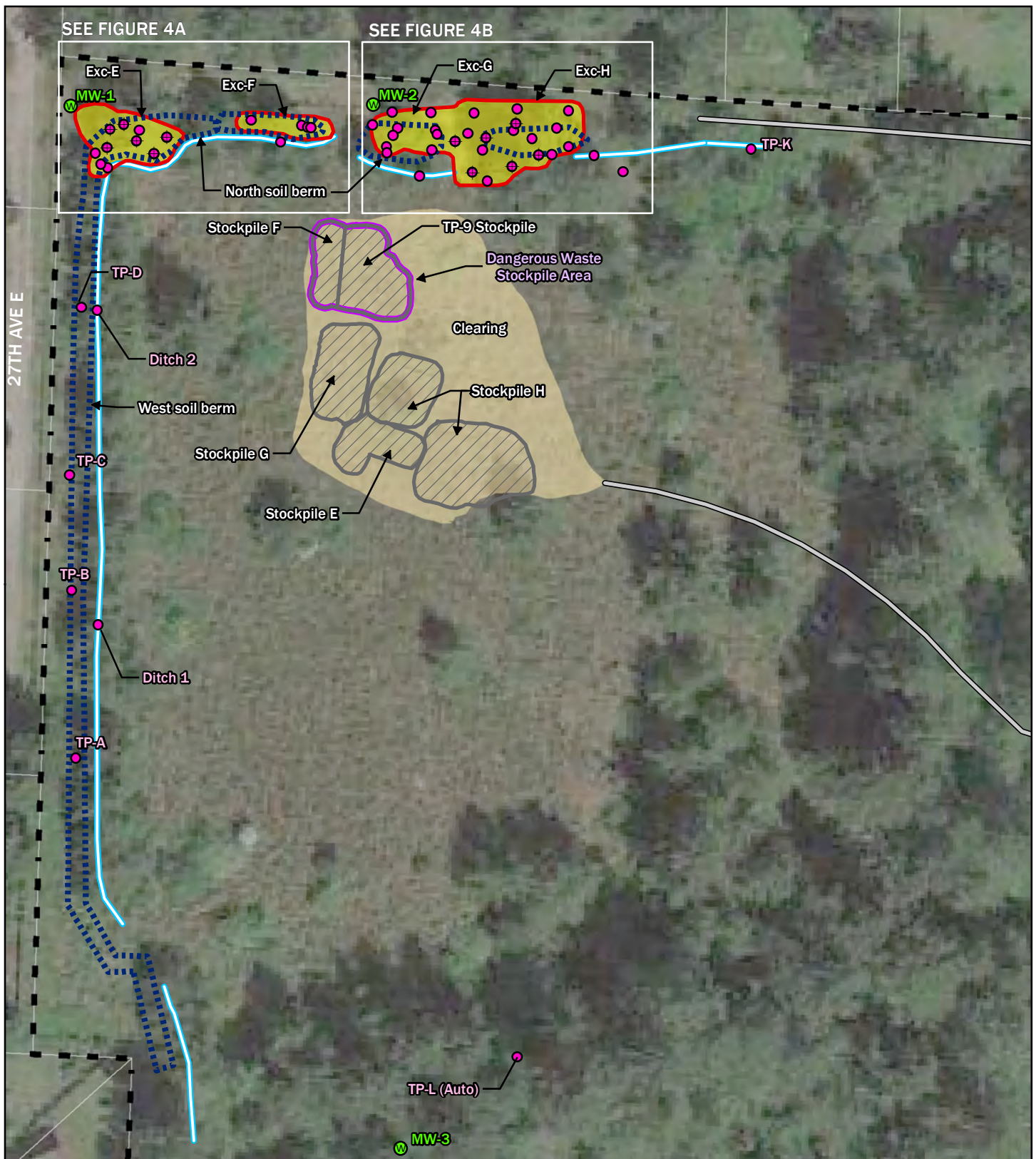
The Site is currently undeveloped and is being purchased by the Bethel School District to build an elementary school. Soil berms located along the north and west sides of the Site indicate that some fill material was historically placed at those locations (Figure 3).

2.3. SITE SETTING

The Site rests on a broad glacial recessional outwash plain, formed by melt water streams as the continental glaciers ablated, about 13,000 years ago. The center of the Site is situated at latitude 47°06'18" north and longitude 122°23'30" west.

The Site slopes gently from west to east with surveyed ground elevations ranging from 380 feet above mean sea level (amsl) at the northwest corner, to 386 feet at the southwest corner to 373 feet along the east property line (Sitts & Hill 2019; Appendix A).

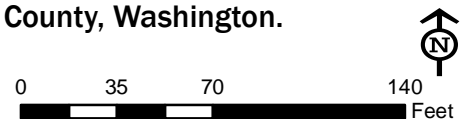
There are two types of groundcover at the Site: forest and prairie. The prairie and forested portions of the Site are vegetated with second-growth Douglas-fir (*Pseudotsuga menziesii*), tall Oregon grape (*Mahonia aquifolium*), Ocean-spray (*Holodiscus discolor*), Scotch broom (*Cytisus scoparius*), Blackberry (*Rubus armeniacus*), and Hazelnut (*Corylus cornuta*).



Legend

- | | |
|---------------------------|----------------|
| Monitoring well | Soil berm |
| Discrete grab soil sample | Clearing area |
| Composite soil sample | Stockpile area |
| Parcel 0319262074 | Ditch |
| Parcel being sold | Access road |
| Excavation final boundary | |
| Parcel boundary | |

Figure 3. Test Pits, Excavations, Stockpiles, and Monitoring Well Locations at the 13.4-Acre Undeveloped Parcel, Pierce County, Washington.



Google Earth, Aerial (2018)

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3. FIELD INVESTIGATIONS

3.1. PREVIOUS ENVIRONMENTAL INVESTIGATIONS

3.1.1. Limited Phase II Environmental Site Assessment

In May 2019, Shannon & Wilson conducted a limited Phase II Environmental Site Assessment (ESA) as part of due diligence investigations of the site associated with the School District's acquisition of the Site (S&W 2019). A total of nine test pits (TP-1 through TP-9) were completed throughout the site (Figure 2); eight of the test pits were placed randomly throughout the Site and the ninth was placed at the location of metal debris observed at the ground surface near the northern property boundary. Soil samples were collected from each test pit for laboratory analysis and the field activities were documented with test pit logs and photographs.

Soils encountered at TP-1 through TP-8 generally included 1.5 to 2.5 feet of brown to black silty sand with organics overlying weathered, medium dense glacial outwash comprised of gravel with silts, sands, cobbles and boulders. Soils at Test Pit 9 included up to 7 feet of brown to black silty sand overlying glacial outwash. A variety of debris including tires, electrical wire, rusted metal drum remnants, rubber, foam, concrete, bricks, and treated wood were observed in the test pit. In addition, remnants of an abandoned automobile (e.g., seat springs and covering and other miscellaneous metal) were observed to the northwest of TP-4.

Ten soil samples, including one from each test pit and two from TP-9 at depths of 2.5 feet and 8 feet below ground surface (bgs), were submitted for laboratory analysis. The following conclusions were presented in the report based on the observations and laboratory analysis performed on the samples:

- Contaminated soils were not identified at TP-1 through TP-8.
- Concentrations of heavy metals detected in test pits other than TP-9 were within natural background ranges (Ecology 1994).
- Lube-oil range petroleum hydrocarbons, carcinogenic polycyclic aromatic hydrocarbons (cPAHs), and heavy metals (cadmium and lead) were detected above the respective Model Toxics Cleanup Act (MTCA) (Ecology 2013) Method A cleanup levels (CULs) for unrestricted land use.

- Lead was detected in the soil sample from 2.5 feet at TP-9 at a concentration of 6.01 milligram per Liter (mg/L) which exceeded the Toxicity Characteristic Leaching Procedure (TCLP) limit of 5 mg/L, indicating that the soils is classified as a Dangerous Waste.
- S&W recommended that contaminated soils at TP-9 and abandoned automobile debris near TP-4 be removed and confirmation samples be collected from both locations.
- S&W recommended that a Soil Management Plan be prepared and used as needed during construction of the future school to address unanticipated contaminated soils if encountered.

3.2. SITE CHARACTERIZATION AND REMEDIAL ACTIVITIES

Herrera reviewed the limited Phase II ESA (S&W 2019), conducted an initial site visit with County staff on June 17, 2019, and participated in a conference call with County staff and Tim Mullins, Ecology VCP Project Manager on July 19, 2019, and identified the following data gaps:

- Lack of test pit and soil sampling data to characterize soils in the north and west berms, located along the north and west sides of the Site (Figure 3)
- Lack of soil sampling data to characterize the drainage ditches located behind the berms
- Lack of groundwater sampling data to characterize groundwater conditions and flow direction at the Site
- Lack of soil data to confirm whether a release may have occurred at the location of the abandoned automobile remnants

Based on these data gaps, the scope of the Site characterization and remediation activities was expanded to include additional soil explorations and sampling at several berm test pits, at ditch locations behind the berms, at the abandoned automobile remnants area, as well as installation of three new monitoring wells and quarterly groundwater sampling.

A discussion of the Contaminants of Potential Concern (COPCs) identified at the Site, Potential Exposure Pathways, and Site Screening Levels (SSLs) selected is presented in the following section, along with a description of the site characterization and remedial activities completed. Photographic documentation is provided in Appendix C.

3.2.1. Contaminants of Potential Concern

The COPCs identified for the Site are those chemicals that were reported above the laboratory reporting limits in media sampled at the Site (e.g., soils) during the limited Phase II ESA (S&W 2019). The COPCs include:

- Lube oil
- PAHs
- Metals (specifically cadmium and lead).

The concentrations of COPCs detected during Site remedial activities were compared to the SSLs described below.

3.2.1.1. *Potential Exposure Pathways*

The following potential exposure pathways were evaluated for the Site:

- **Soil contaminants leaching to groundwater:** Contaminants in soil can leach to groundwater by infiltration of precipitation through contaminated soil.
- **Ingestion of groundwater:** Human receptors have the potential to contact contaminants in groundwater via ingestion.
- **Direct contact with soil:** Human and ecological receptors have the potential to contact contaminants in soil.

Exposure pathways determined not applicable at the Site include:

- **Soil vapor discharge to ambient and indoor air:** Based on the test pit explorations completed, it does not appear that refuse has been placed at the Site that could be a source of soil vapors. No VOCs have been detected above SSLs in soil samples collected at the Site.

3.2.1.2. *Site Screening Levels*

The SSLs selected for soil include:

- Standard MTCA Method A and B CULs were selected because they are protective of human health and drinking water. Chapter 173-340 Washington Administrative Code (WAC).
- Soil CULs for unrestricted land use listed in Table 749-2: Priority Contaminants of Ecological Concern for Sites that Qualify for the Simplified Terrestrial Ecological Evaluation (TEE) Procedure. Chapter 173-340 WAC.

The SSLs selected for groundwater include:

- Standard MTCA Method A and B CULs for the protection of human health, Chapter 173-340 WAC.

3.2.2. Soil Berm Test Pit Explorations and Ditch Sampling

A total of 12 test pits were completed by Langseth Environmental Services, Inc. (Langseth), of Tacoma, Washington. The test pits were necessary to further characterize conditions along the north and west soil berms and supplement data previously collected during the limited Phase II ESA (S&W 2019). In addition, surface soil samples were collected at six ditch locations to characterize conditions in topographic low spots immediately behind the soil berms (see Figures 3, 4A, and 4B). A summary of conditions observed at test pits and ditch sample locations is provided in Table 1. The locations of test pits and ditch samples were recorded in the field using a handheld global positioning system (GPS) unit and the coordinates were downloaded and translated onto figures generated for this report.

On June 27, 2019, the first 11 test pits (TP-A through TP-K) were completed and soil samples collected. A 12th test pit (TP-L) was completed, and a soil sample collected on July 23 at the location of the abandoned automobile remnants. TP-J was completed approximately 40 feet southeast of TP-I (Figure 4B) for the purpose of confirming clean soil conditions behind the north berm.

3.2.2.1. Sample Identification

Test pit and ditch samples were identified using the following system:

- Prefix *TP* for test pit or *Ditch* for ditch
- Designator A through L for test pit locations and 1 through 6 for ditch sample locations
- Suffix indicating the top of the sample interval

For example, TP-F-2.5 represents the sample collected at Test Pit F from 2.5 to 3.5 feet bgs, and Ditch-4-0 represents the sample collected at Ditch 4 from 0 to 1 foot bgs. For sample Ditch-5B-1, the "B" was added after the designator to indicate the second sample collected at that location after additional soil was excavated (e.g., Ditch-5B-1 was collected at the location of Ditch-5-0).

3.2.2.2. Sampling and Laboratory Analysis

Ditch samples were collected from locations Ditch-1 through Ditch-4 on June 27, 2019, and from locations Ditch-5 and Ditch-6 on July 23 and 26, 2019.

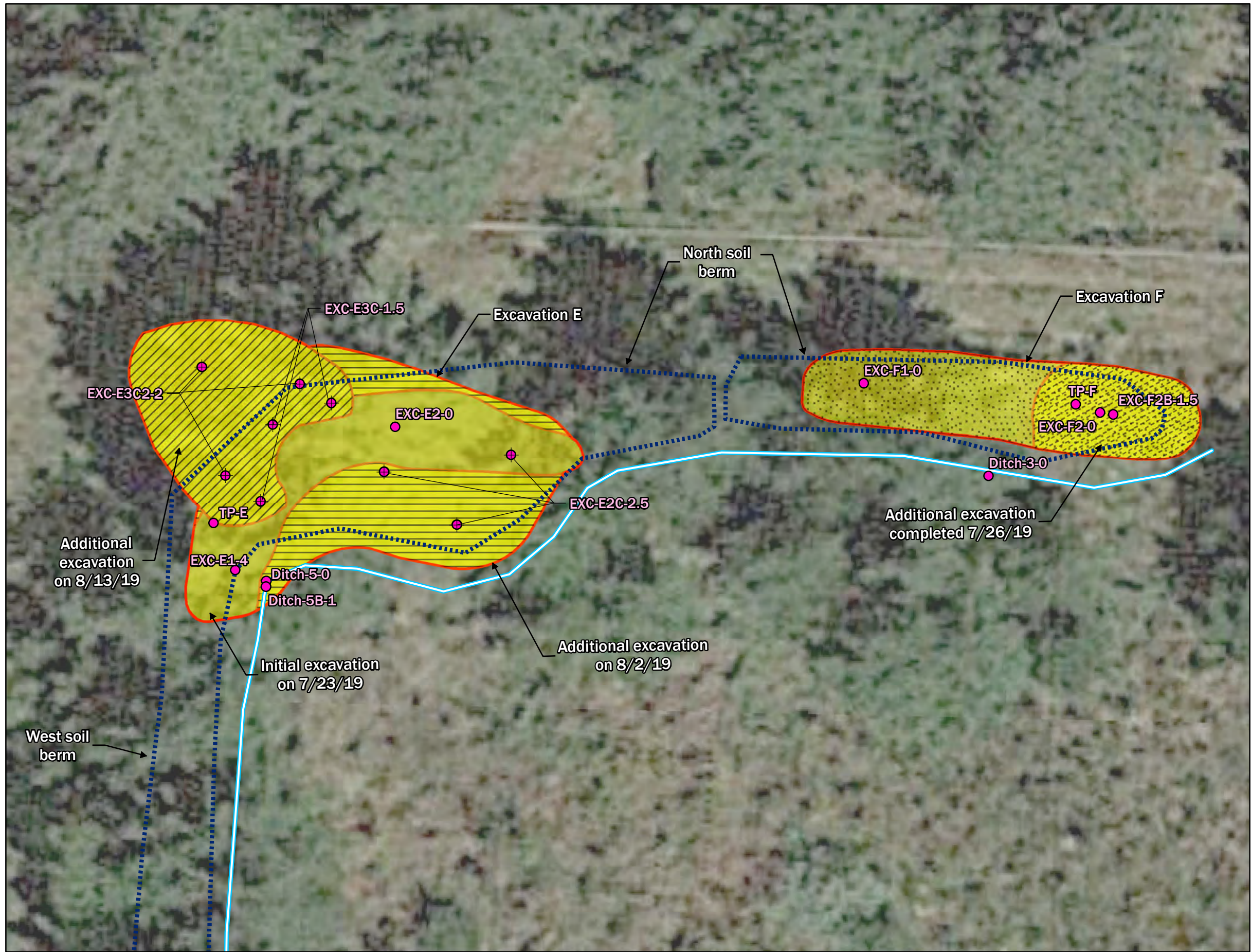


Figure 4A.
Remedial Excavations at the
13.4-Acre Undeveloped Parcel,
Pierce County, Washington.

Legend

- Discrete grab soil sample
- ⊗ Composite soil sample
- Ditch
- Final excavation boundary
- Excavation area
- Additional excavation on 7/26/19
- Additional excavation on 8/2/19
- Additional excavation on 8/13/19
- Excavated soils disposed as dangerous waste based on TCLP testing
- Soil berm



0 6 12 24
Feet



Google Earth, Aerial (2018)

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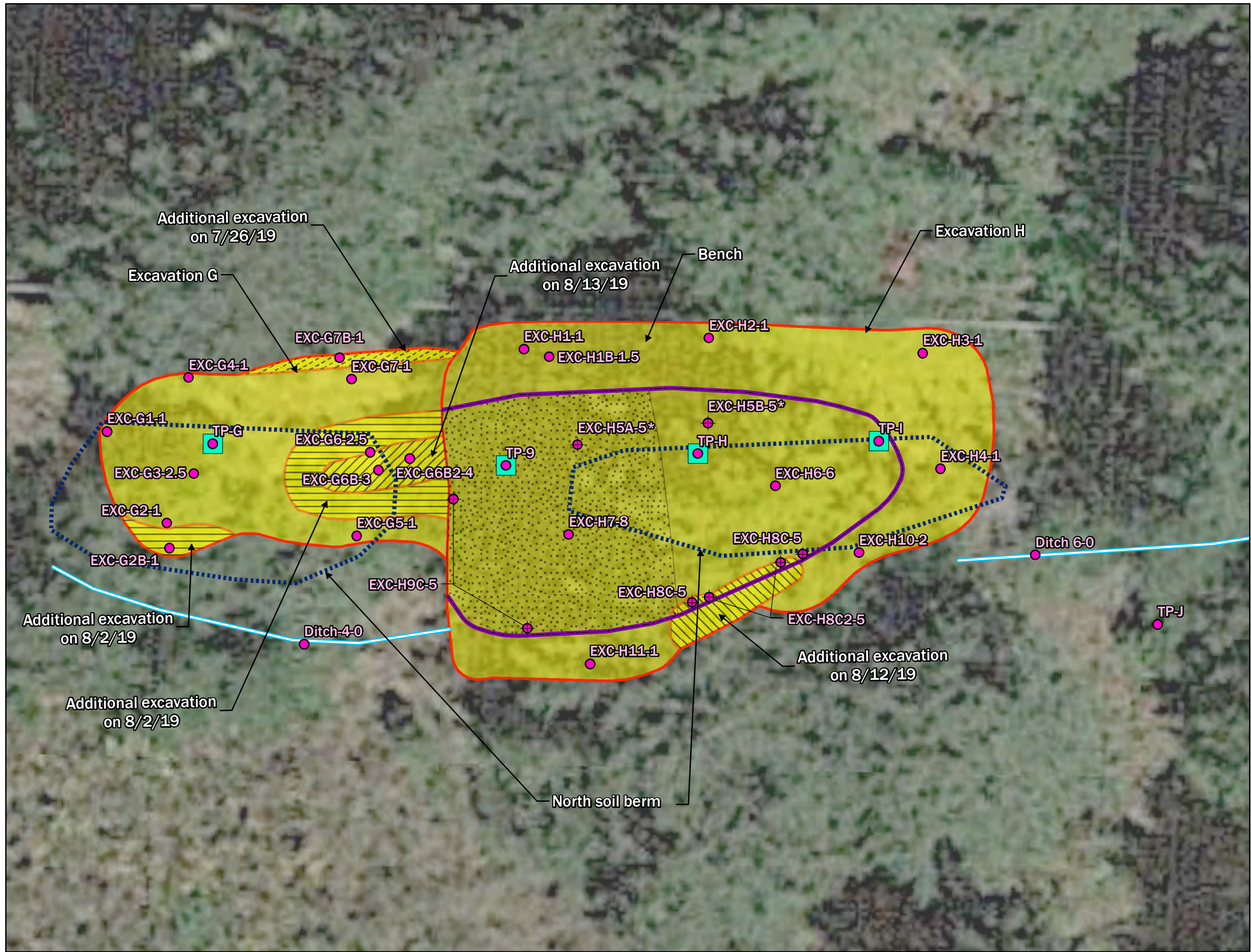
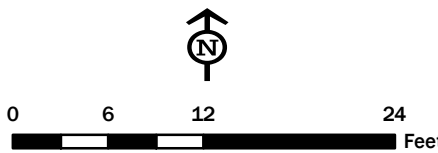


Figure 4B.
Remedial Excavations at the
13.4-Acre Undeveloped Parcel,
Pierce County, Washington.

Legend

- Discrete grab soil sample
- ⊕ Composite soil sample
- TP-# Center of test pit
- Ditch
- Approximate boundary between bench and deeper excavation
- Final excavation boundary
- Excavation area
- Additional excavation on 7/26/19
- Additional excavation on 8/2/19
- Additional excavation on 8/12/19
- Additional excavation on 8/13/19
- Excavated soils disposed as dangerous waste based on TCLP testing
- Soil berm



Google Earth, Aerial (2018)

Table 1. Summary of Test Pit and Ditch Explorations Completed During Site Closure Activities at the 13.4-Acre Undeveloped Parcel, Pierce County, Washington.

Exploration	Location	Approximate Height of Berm (feet)	Total Depth Explored (feet bgs)	Soil Sample Collected?	Observations
TP-A	South end of west berm	3	4	TP-A-3	Dark brown-black sandy GRAVEL with cobbles, trace silt (fill). No odors or soil staining. Black plastic seedling trays, glass, porcelain, brick, tin can, metal screen edging, plastic bags, steel threaded rod, and concrete.
TP-B	West berm, north of TP-A	5	5	TP-B-4	Dark brown-black sandy GRAVEL with cobbles, trace silt to 4.5 feet (fill), then tan GRAVEL with sand (recessional outwash). No odors or soil staining. Small concrete fragments in upper 2 feet, almost completely free of debris.
TP-C	West berm, north of TP-B	4.5	4.5	TP-C-2	Dark brown-black sandy GRAVEL with cobbles, trace silt to 3 feet (fill), then tan GRAVEL with sand (recessional outwash). No odors or soil staining. Black plastic seedling trays, Bayer aspirin bottle, glass milk bottle, and ceramic plate.
TP-D	North end of west berm	2.5	3.0	TP-D-1.5	Dark brown-black sandy GRAVEL with cobbles, trace silt to 2.5 feet (fill), then tan GRAVEL with sand (recessional outwash). No odors or soil staining. Small pieces of ceramic, plastic bag, and dust mask.
TP-E	Corner where west and north berms meet	3	3	TP-E-2	Dark brown-black silty SAND with gravel and cobbles to 3 feet (fill), then tan GRAVEL with sand (recessional outwash). No odors or soil staining. Cans, brick, rope, plastic, landscaper's cloth.
TP-F	North berm, east of TP-E	3 to 5	4	TP-F-2.5	Dark brown-black sandy GRAVEL with cobbles, trace silt to 3.5 feet (fill), then tan GRAVEL with sand (recessional outwash). Slight soil staining and petroleum odors. Metal debris, tin can, shoe ("Durkee-Atwood cork, oil-proof Dupont neoprene"), glass, rubber automotive hose.
TP-G	North berm, west of TP-9	4.5	3.5	TP-G-3 for TCLP	Dark brown-black sandy GRAVEL with cobbles, trace silt (fill). Oil-stained soils with petroleum odors.
TP-H	North berm, east of TP-9	4.5	3.5	TP-H-3 for TCLP	Dark brown-black sandy GRAVEL with cobbles, trace silt (fill). Oil-stained soils with strong petroleum odors and empty 30-gallon drum.
TP-I	North berm, east of TP-H	4.5	2.5	No	Dark brown-black sandy GRAVEL with cobbles, trace silt (fill). Oil-stained soils with strong petroleum odors and oily clothing fragments.

Table 1 (continued). Summary of Test Pit and Ditch Explorations Completed During Site Closure Activities at the 13.4-Acre Undeveloped Parcel, Pierce County, Washington.

Exploration	Location	Approximate Height of Berm (feet)	Total Depth Explored (feet bgs)	Soil Sample Collected?	Observations
TP-J	Behind north berm, SE of TP-I	1.5	2	TP-J-0	Dark brown-black sandy GRAVEL with cobbles, trace silt (mounded native soil), then tan GRAVEL with sand (recessional outwash). No debris, staining, or odors.
TP-K	East end of ditch, along north end of Site	No berm present	2	TP-K-1	Dark brown-black sandy GRAVEL with cobbles, trace silt (mounded native soil) to 1.5 feet, then tan GRAVEL with sand (recessional outwash). Empty 30-gallon drum on ground surface, but no debris, staining, or odors.
TP-L	At automobile remnants	No berm present	1	TP-L-0	Dark brown-black sandy GRAVEL with cobbles, trace silt (native soil). Automobile remnants (seat springs and vinyl covering) removed. No soil staining or odors.
Ditch 1	Behind TP-B to SE	NA	1	Ditch-1-0	Tan GRAVEL with sand, silt cobbles (recessional outwash). No soil staining or odors.
Ditch 2	Behind TP-D to SE	NA	1	Ditch-2-0	Tan GRAVEL with sand, silt cobbles (recessional outwash). No soil staining or odors.
Ditch 3	Behind TP-F to SW	NA	1	Ditch-3-0	Tan GRAVEL with sand, silt cobbles (recessional outwash). No soil staining or odors.
Ditch 4	Behind TP-G to South	NA	1	Ditch-4-0	Tan GRAVEL with sand, silt cobbles (recessional outwash). No soil staining or odors.
Ditch 5	Behind TP-E to SE	NA	2	Ditch-5-0 Ditch-5B-1	Tan GRAVEL with sand, silt cobbles (recessional outwash). No soil staining or odors.
Ditch 6	Behind TP-I to SE	NA	1	Ditch-6-0	Tan GRAVEL with sand, silt cobbles (recessional outwash). No soil staining or odors.

NA = Not applicable

Soil samples from TP-A through TP-K and Ditch-1 through Ditch-4 were submitted to OnSite Environmental in Redmond, Washington, for the following analyses:

- Petroleum hydrocarbon identification (HCID) according to Method Northwest Total Petroleum Hydrocarbons-HCID

Based on the HCID and metals results, follow-up analyses were conducted on select samples for the following:

- Gasoline-range petroleum hydrocarbons according to Method Northwest Total Petroleum Hydrocarbons-Gasoline Extended (NWTPH-Gx)
- Diesel-range petroleum hydrocarbons according to Method NWTPH-Diesel Extended (NWTPH-Dx)
- Volatile organic compounds (VOCs) according to US Environmental Protection Agency (EPA) Method 8260C including the following compounds listed in MTCA table 830-1:
 - Benzene, toluene, ethylbenzene, and total xylenes (BTEX)
 - Fuel additives and blending compounds: methyl tert-Butyl Ether (MTBE), tert-Butyl Alcohol (TBA), tert-Butyl Ethyl Ether (ETBE), and tert-Amyl Methyl Ether (TAME)
 - Halogenated VOCs (HVOCs)
- Polycyclic Aromatic Hydrocarbons (PAHs) including naphthalene according to EPA Method 8270D/SIM
- PCBs according to EPA Method 8082A
- Total metals (Cadmium, Chromium, Lead, Nickel, and Zinc) according to Method 6010D.

Based on the totals metals results, a few samples were also analyzed for:

- Soluble hexavalent chromium by EPA Method 7196A.

Soil samples collected from TP-J, TP-L, Ditch-5, and Ditch-6 were submitted to an onsite laboratory, Libby Environmental, Inc. (Libby) for the following analysis (note that some analyses indicated below were subcontracted out to Fremont Analytical [Fremont] in Seattle, Washington):

- Gasoline-range petroleum hydrocarbons according to Method NWTPH-Gx
- Diesel-range petroleum hydrocarbons according to Method NWTPH-Dx

- VOCs according to EPA Method 8260C including the following compounds listed in MTCA table 830-1:
 - BTEX
 - MTBE, TBA, ETBE, and TAME
 - HVOCs
- cPAHs including naphthalene according to EPA Method 8270D/SIM (subcontracted to Fremont)
- PCBs according to EPA Method 8082 (subcontracted to Fremont)
- Total metals (Cadmium, Chromium, Lead, Nickel, and Zinc) according to EPA Method 7010 (Nickel analysis subcontracted to Fremont)

Soil samples collected from TP-G and TP-H were submitted to Spectra Laboratories (Spectra) of Tacoma, Washington, for TCLP lead analysis to characterize the soils for disposal. No soil sample was collected from TP-I because obvious soil contamination was observed; the contaminated soils were later removed during remedial activities at Excavation H, which encompassed the TP-H and TP-I test pit exploration areas.

3.2.3. Remedial Excavations and Sampling

This section describes remedial excavation and sampling activities. A total of four remedial excavations were completed at the Site (see Figures 3, 4A, and 4B) including:

- Excavation E near the northwest corner of the site, at the intersection of the west and north soil berms, where lube oil and lead were detected in the test pit soil sample above the concentrations listed in Table 749-2 (WAC 173-340-900) for the protection of ecological receptors.
- Excavation F along the north berm where concentrations of lube oil and lead in the test pit sample exceeded the ecological cleanup level, and total cPAHs exceeded the MTCA Method A CUL for unrestricted land use.
- Excavation G along the north berm where stained soils impacted with waste oil were observed during the test pit explorations.
- Excavation H along the north berm where stained soils impacted with waste oil were observed during test pit explorations at TP-H and TP-I, as well as TP-9 (S&W 2019).

Manifests for soil disposed off site are included in Appendix D. A total of 242.49 tons of soils failed the TCLP test for lead and were designated as Dangerous Waste per Chapter 173-303

WAC and disposed at Chemical Waste Management's landfill, 17629 Cedar Springs Lane, Arlington, Oregon. A total of 759.28 tons of soils that did not fail TCLP testing for lead but contained contaminants at concentrations exceeding ecological screening levels and/or Method A cleanup levels, were disposed as petroleum-contaminated soils (PCS) at the Land Recovery, Inc. (LRI) 304th Landfill, 17925 Meridian Street East, Puyallup, Washington.

On July 22, at the start of excavation activities, one truck and trailer load of soils classified as Dangerous Waste was removed from the TP-9 source area and directly loaded using an excavator into the truck and trailer for offsite disposal. Thereafter, all contaminated soils were removed by Langseth using either a large or mini excavator, loaded into a 12-yard dump truck, and transferred to the soil stockpile area south of the north berm.

All soils were stockpiled on plastic sheeting and covered with plastic sheeting at the end of each day to prevent the spread of contaminants via wind or rainfall. Soils classified as Dangerous Waste from Excavations F and H were placed together in one stockpile, and other soils classified as PCS were placed in separate stockpiles. Each stockpile was labeled with spray paint to identify the excavation it came from until the soils could be loaded off site for disposal. Langseth hired a water truck to control dust by spraying down the access road and clearing as needed.

Soil sample locations and the final boundaries of remedial excavations and soil stockpiles were recorded in the field using a handheld GPS unit and the coordinates were downloaded and translated onto figures generated for this report.

3.2.3.1. *Sample Identification*

Excavation samples were generally identified using the following system, with a few exceptions as noted:

- Prefix *Exc* for excavation
- Designator followed by a number to indicate the excavation and sequential number of the sample collected from that excavation
- A letter and/or number after the designator to indicate a sample collected at that location after additional soil was excavated
- A final number indicating the top depth of the sample interval

For example, Exc-E2-0 represents the second sample from Excavation E at a depth of 0 to 1 foot bgs. In some cases, the letter "C" was added after the middle letter and number to indicate a composite sample was collected, as in Exc-E3C-1.5. A "2" was added after the "C" in sample Exc-E3C2-2.5 to indicate the second composite sample collected at the Excavation E sample 3 location after additional soil removal. For sample Exc-G2B-1, the "B" indicates the second sample collected at the Excavation G sample 2 location after additional soil removal. Other exceptions

include samples Exc-H5A-5 and Exc-H5B, which were discrete samples collected only for gasoline-range petroleum hydrocarbon analysis by the mobile laboratory.

3.2.3.2. *Sampling and Laboratory Analysis*

Table 2 provides a summary of the remedial excavations and sequence of initial soil sampling, follow-up sampling, and final confirmation sampling.

Soil samples for TCLP analysis were submitted to Spectra. Soil samples from the initial excavation activities were submitted to Libby's mobile lab on July 25 and 26. Subsequent samples were submitted to Libby's fixed laboratory with some analyses subcontracted to Spectra and Fremont Analytical (Fremont) in Seattle, Washington as noted below. Soil samples from the remedial excavations were submitted for the following analyses:

- TCLP testing on one or more samples from test pits, excavations, and stockpiles to characterize soils for disposal.
- Gasoline-range petroleum hydrocarbons according to Method NWTPH-Gx.
 - As remedial activities progressed beyond July 26, testing for gasoline-range petroleum hydrocarbons was not performed on subsequent samples after analytical results for 42 soil samples from test pits, ditches, and remedial excavations showed no detections above laboratory reporting limits via analysis by HCID and NWTPH-Gx testing methods.
- VOCs, BTEX, fuel additives (MTBE, TBA, ETBE, and TAME), and HVOCs according to EPA Method 8260C.
- Analysis for VOCs, BTEX, fuel additives, and HVOCs was initially performed on samples analyzed for gasoline-range petroleum hydrocarbons. As remedial activities progressed beyond July 26, testing for these constituents was suspended after analytical results for 28 soil samples from test pits, ditches, and remedial excavations showed that none of these compounds were detected above laboratory reporting limits.
- Diesel-range petroleum hydrocarbons according to Method NWTPH-Dx.
- cPAHs including naphthalene according to EPA Method 8270D/SIM (subcontracted to Fremont).
- cPAH analysis was performed to confirm "clean" confirmation samples below the ecological or MTCA Method A CULs and was generally not performed on samples with high concentrations of lube oil that would require excavation and disposal.
- PCBs according to EPA Method 8082 (subcontracted to Fremont).

- PCB analysis was performed on samples where lube oil was detected, and to confirm “clean” confirmation sample TP-L-0 because of its location far removed from the soil berms and TP-9 source area.
- Total metals (Cadmium, Chromium, Lead, Nickel, and Zinc) according to EPA Method 7010 (Nickel analysis subcontracted to Fremont).

Table 2. Summary of Remedial Excavations and Sampling at the 13.4-Acre Undeveloped Parcel, Pierce County, Washington.

Excavation E			
Initial Sample	Following Initial Excavation	Following Expanded Excavation	Following Further Expanded Excavation
TP-E-2 (06/27/19) NW Corner Berm Lube Oil at 640 mg/kg Lead at 410 mg/kg	Exc-E1-4 (07/23/19) SW End (4 feet below top of initial berm) No exceedance	–	–
	Exc-E2-0 (07/23/19) NE end of initial excavation Lube Oil at 3,100 mg/kg	Exc-E2C-2.5 (08/02/19) Composite from NE area of excavation No exceedance	–
	–	Exc-E3C-1.5 (08/02/19) NW area at expanded excavation cPAHs (TEF) at <0.529 mg/kg Lead at 246 mg/kg	Exc-E3C2-2 (08/13/19) Resampled at NW area, expanded excavation No exceedance
	Exc-E-SP1 and Exc-E-SP2 (07/23/19) Stockpile composites for disposal characterization (TCLP Lead) No exceedance	–	–
	Ditch 5 (07/23/19) Behind Excavation E Lube Oil at 504 mg/kg	Ditch-5B-1 (07/26/19) Resampled at Ditch-5 No exceedance	–
Excavation F			
Initial Sample	Following Initial Excavation	Following Expanded Excavation	Follow Up
TP-F-2.5 (06/27/19) North berm Lube Oil at 8,500 mg/kg cPAHs (TEF) at 0.332 mg/kg Lead at 3,600 mg/kg TCLP Lead at 6.4 mg/L	Exc-F1-0 (07/23/19) West bottom No exceedance		Exc-F-Comp (07/30/19) Composite from completed excavation (TCLP Lead) No exceedance*
	Exc-F2-0 (07/23/19) East bottom Lube Oil at 1,090 mg/kg (metals not analyzed)	Exc-F2B-1.5 (07/26/19) Resampled at Exc-F2 after additional excavation No exceedance (metals analyzed)	
	Exc-F-SP1 (07/23/19) Composite from west end of berm for disposal characterization TCLP Lead at 5.30 mg/L	–	
Ditch-3-0 (06/27/19) Behind Test Pit F to SW No exceedance	–	–	–

Table 2 (continued). Summary of Remedial Excavations and Sampling at the 13.4-Acre Undeveloped Parcel, Pierce County, Washington.

Excavation G			
Initial Sample	Following Initial Excavation	Following Expanded Excavation	Following Further Expanded Excavation
TP-G (06/27/19) Test pit west of TP-9 Apparent oil staining TP-G-3 (07/23/19) Composite from berm for disposal characterization (TCLP Lead) No exceedance	Exc-G1-1 (07/24/19) West wall No exceedance	–	–
	Exc-G2-1 (07/24/19) SW wall Lube oil at 1,360 mg/kg (metals not analyzed)	Exc-G2B-1 (08/02/19) Resampled SW wall after expanded excavation No exceedance (metals analyzed)	–
	Exc-G3-2.5 (07/24/19) West bottom Exc-G4-1 (07/25/19) NW wall Exc-G5-1 (07/25/19) SW wall No exceedances	–	–
	Exc-G6-2.5 (07/24/19) East bottom Lube Oil at 4,090 mg/kg	Exc-G6B-3 (08/02/19) Resampled at Exc-G6 after additional excavation Lube Oil at 1,240 mg/kg cPAHs (TEF) at <0.529 mg/kg	Exc-G6B2-4 (08/13/19) Resampled at Exc-G6 after additional excavation No exceedance
	Exc-G7-1 (07/25/19) NE wall Lube Oil at 726 mg/kg (metals not analyzed)	Exc-G7B-1 (07/26/19) Resampled NE wall after expanded excavation No exceedance (metals analyzed)	–
Ditch-4-0 (06/29/19) Behind Test Pit G to S No exceedance	–	–	–

Table 2 (continued). Summary of Remedial Excavations and Sampling at the 13.4-Acre Undeveloped Parcel, Pierce County, Washington.

Excavation H (TP-9)			
Initial Sample	Following Initial Excavation	Following Expanded Excavation	Following Further Expanded Excavation
TP-9:2.5 (03/19/19) Test Pit 9 Lube Oil at 130,000 mg/kg Lead at 7,950 mg/kg Cadmium at 14.5 mg/kg cPAHs at 3.38 mg/kg TCLP lead at 6.01 mg/L TP-9:8 (03/19/19) Test Pit 9 Lube Oil at 2,990 mg/kg Lead at 1,680 mg/kg	TP9-TCLP-5 (07/22/19) Composite at 5 feet for disposal characterization TCLP Lead at 5.95 mg/L	–	Exc-H/TP9-Comp (7/30/19) Composite from nearly completed excavation No exceedance
	Exc-G6B2-4 (08/13/19) Confirmation sample for Excavation G to west of TP-9 No exceedance	–	–
	Exc-H/TP9-Comp (07/30/19) Exc-H9C-5 from nearly completed excavation (TCLP Lead) No exceedance	–	–
	Exc-H6-6 (08/2/19) Confirmation base sample collected E of TP-9 at 6 feet No exceedance	–	–
	Exc-H7-8 (07/26/19) Confirmation base sample collected SE of TP-9 at 8 feet No exceedance	–	–

Table 2 (continued). Summary of Remedial Excavations and Sampling at the 13.4-Acre Undeveloped Parcel, Pierce County, Washington.

Excavation H (TP-9) (continued)			
Initial Sample	Following Initial Excavation	Following Expanded Excavation	Following Further Expanded Excavation
TPH-H (06/27/19) Test pit east of TP-9 Apparent oil staining	Exc-H1-1 (07/26/19) NW bench Lube Oil at 1,200 mg/kg (metals not analyzed)	Exc-H1B-1.5 (07/26/19) Resampled at Exc-H1 after additional excavation No exceedance (metals analyzed)	—
	Exc-H2-1 (07/26/19) N middle bench	Exc-H8C-5 (08/02/19) SE wall composite Lube Oil at 2,610 mg/kg cPAHs (TEF) at <0.529 mg/kg	Exc-H8C2-5 (08/12/19) SE wall composite at Exc-H8C after additional excavation No exceedance
	Exc-H3-1 (07/26/19) NE corner on bench		
	Exc-H4-1 (07/26/19) SE corner on bench	Exc-H9C-5 (08/02/19) SW walls composite	—
	Exc-H5A-5 and Exc-H5B-5 (07/26/19) N wall for Gx and volatiles	Exc-H10-2 (08/02/19) SE bench after trees removed	
	Exc-H5C-5 (07/26/19) N wall composite of H5A and H5B	Exc-H11-1 (08/02/19) South bench after loadout area excavated	
	Exc-H6-6 (07/26/19) East bottom	No exceedances	
	Exc-H7-8 (07/26/19) West bottom		
	No exceedances		

Bold text indicates exceedance one or more of the following ecological screening levels or MTCA Method A CUL for unrestricted land use:

- **Lube Oil: TEE = 460 mg/kg; MTCA Method A CUL = 2,000 mg/kg**
- **Lead: TEE = 220 mg/kg; MTCA Method A CUL = 250 mg/kg**
- **Cadmium: MTCA Method A CUL = 2.0 mg/kg**
- **TCLP Lead: Dangerous Waste limit for the Toxicity Characteristic = 5 mg/L**
- **cPAHs (TEF): MTCA Method A CUL = 0.1 mg/kg**

< = Not detected above laboratory reporting limit shown

cPAHs (TEF) = Carcinogenic polycyclic aromatic hydrocarbons (toxicity equivalency factor)

CUL = Cleanup level

mg/kg = Milligrams per kilogram

mg/L = Milligrams per liter

MTCA = Model Toxics Control Act

TCLP = Toxicity characteristic leaching procedure

3.2.3.3. *Excavation E*

On July 23, excavation activities began at Excavation E (see Figure 4A). Observations at Excavation E included stained soils with petroleum odors, plastic, vinyl, rubber hoses, glass bottles, wire, bricks, landscaper's cloth, rope, steel bedsprings, cans, and other metal debris.

Initial soil samples were collected on July 23. Because elevated concentrations of lube oil were detected in sample Ditch-5-0 from the ditch southeast of the initial excavation, and sample Exc-2-0 from the northeast end of the excavation, additional soils were removed on August 2. After elevated concentrations of cPAHs and lead were detected in composite sample Exc-E3C-1.5 from the expanded excavation, additional soils were removed on August 13 and clean confirmation composite sample Exc-E3C2-2 was collected.

Because the concentrations of TCLP lead detected in composite soil stockpile samples Exc-E-SP1 and EXC-E-SP2 (0.104 mg/L and 0.585 mg/L, respectively) did not exceed the TCLP lead limit, soils from Excavation G were disposed as PCS.

3.2.3.4. *Excavation F*

On July 22, excavation activities began at Excavation F (see Figure 4A). Observations included plastic and metal debris and petroleum-stained soils with strong odors. Initial soil samples were collected on July 23. Because an elevated concentration of lube oil was detected in sample Exc-F2-0 from the east end of the excavation, additional soils were removed on July 26, and clean confirmation sample EXC-F2B-1.5 was collected.

Because the concentration of TCLP lead (5.30 mg/L) detected in composite soil stockpile sample Exc-F-SP1 exceeded the TCLP lead limit, soils from Excavation F were disposed as Dangerous Waste. Upon completion of excavation activities, TCLP lead was not detected above the reporting limit in composite soil sample Exc-F-Comp, confirming that all Dangerous Waste soils were removed from Excavation F.

3.2.3.5. *Excavation G*

On July 23, excavation activities began at Excavation G (see Figure 4B). Observations included metal debris, stained soils with petroleum odors, empty 5-gallon and 55-gallon containers, steel pipe, and wooden timber stained with waste oil. Initial soil samples were collected on July 24 and 25, from the excavation bottom and side walls. Due to elevated concentrations of lube oil detected in three samples, additional soil was excavated on July 26 from the northeast sidewall and on August 2 from the east bottom area and southwest excavation sidewall, and additional samples were collected. Due to elevated concentrations of lube oil and cPAHs detected in sample Exc-G6B-3, the east bottom area was excavated deeper again on August 13 and clean confirmation sample Exc-G6B2-4 was collected.

Because the concentration of lead (1.36 mg/L) detected in composite soil stockpile sample TP-G-3 did not exceed the TCLP lead limit, soils from Excavation G were disposed as PCS.

3.2.3.6. *Excavation H (TP-9)*

On July 22, remedial excavation and soil sampling activities began at Excavation H (the area around TP-9 was renamed to correspond to the location of TP-H, and to simplify the soil sample naming conventions) (see Figure 4B). The initial excavation of soils at the TP-9 source area focused on removing contaminated soils designated as Dangerous Waste based on TCLP testing results. In March 2019, lead was detected in sample TP9:2.5 at a concentration of 6.01 mg/L, which exceeded the TCLP limit of 5 mg/L (S&W 2019).

One truck and trailer volume of soil was initially hauled off site for disposal as Dangerous Waste at Chemical Waste Management's landfill, 17629 Cedar Springs Lane, Arlington, Oregon (see Appendix D). A composite sample was then collected at 5 feet bgs to characterize deeper soils at the TP-9 source area for disposal; the concentration of TCLP lead (5.95 mg/L) detected in sample TP9-TCLP-5 exceeded the TCLP limit of 5.0 mg/L. Therefore, the deeper soils excavated below 5 feet bgs from the TP-9 area were stockpiled on plastic sheeting and were also disposed as Dangerous Waste (see Figure 3). However, TCLP lead concentrations detected in sample TP-G-3 collected from Excavation G to the west and TP-H-3 from Test Pit H to the east of the TP-9 source area did not exceed the TCLP limit for lead. Therefore, soils from Excavation G and areas of Excavation H beyond the TP-9 source area were stockpiled on plastic sheeting and later disposed as PCS, not Dangerous Waste.

Observations at Excavation H included significant areas of petroleum-stained soils with strong petroleum odors, several empty rusty 30-gallon drums, steel shovel, miscellaneous metal debris, bricks, porcelain, and a two-burner electric kitchen stove.

On July 26, initial confirmation soil samples were collected from Excavation H. Because elevated concentrations of lube oil were detected in sample Exc-H1-1 from the northwest bench at the top of the excavation, additional soils were removed and clean confirmation sample Exc-H1B-1.5 was collected. At the southeast corner of the excavation, petroleum-stained soils were observed against the base of two large Douglas-fir trees. On August 1, the trees were removed on behalf of the County by Hunter's Tree Service, and the contaminated soils were excavated. Due to the elevated concentrations of lube oil and cPAHs detected in composite sample Exc-H8C-5 from the southeast sidewall, additional soil was removed on August 12 and clean confirmation sample Exc-H8C2-5 was collected.

3.2.4. *Monitoring Well Installation*

From July 30 through August 1, 2019, three monitoring well borings (MW-1, MW-2, and MW-3) were advanced by Holocene Drilling using a Sonic drill rig equipped with a 4-inch-diameter core barrel for soil classification and field screening (see Figure 3). Well logs, including construction details are provided in Appendix E. A 6-inch-diameter casing was installed to keep the hole open during drilling. Discrete soil samples were collected within the core barrel at variable intervals (less than 10 feet) depending on the difficulty of drilling.

The sample was extruded from the core barrel by vibration. Following retrieval, each sample was logged by a Washington State licensed geologist for soil lithology and screened for odors that may indicate contamination. Soil encountered during drilling was visually inspected for staining and classified in accordance with the Unified Soil Classification System (USCS).

The monitoring wells were constructed with 2-inch-diameter Schedule 40 polyvinyl chloride (PVC) blank well casing flush threaded with a 10-foot section of 0.010-inch slotted machine cut well screen casing at the base. A filter pack of clean silica sand was placed in the annular space between the screened casing and borehole to a height approximately 2 feet above the top of the screened well casing. Bentonite chips were placed above the filter pack to within 2 feet of the ground surface. Monitoring well MW-1 was completed below grade with a watertight well monument box set in a concrete surface seal, and MW-2 and MW-3 were completed with above ground watertight well monuments surrounded by three concrete-filled steel bollards.

3.2.4.1. Well Development

Following installation, the monitoring wells were developed with a submersible pump. Development continued until levels of sand and silt were reduced and water removed from the well was generally of clear quality. Development water from each well was contained in 55-gallon drums, stored temporarily at the site, pending analytical results.

3.2.4.2. Groundwater Sampling from Monitoring Wells

Groundwater samples were collected during two quarterly monitoring events on August 5 and November 1, 2019; field notes are provided in Appendix F. General procedures for collecting groundwater samples from monitoring wells were as follows:

- The well monument cover was removed, and the condition of the well and surrounding area was inspected.
- Observations were noted in the field notebook and on the well sampling log.
- The well casing plug was removed.
- The depth to groundwater was measured from the top of the PVC well casing to the nearest 0.01 foot using an electronic water level indicator.
- The date, time, and measurements were recorded on the well sampling log.
- Care was taken to ensure that no bubbles or headspace were present for the VOC samples.
- Containers were securely capped, labeled, and placed into a chilled cooler for storage, prior to delivery to the laboratory.
- The date and time of sample collection were recorded on the well sampling log and chain-of-custody form.

The wells were purged of standing water using a low-flow purge method, ranging from 0.4 to 0.5 liters per minute with clean, dedicated polyethylene tubing and a submersible pump. Tubing was placed approximately 5 feet below the top of the water table and opposite the screened zone in the three monitoring wells.

During purging, pH, water temperature, dissolved oxygen, specific conductivity, water level, and pumping rate were measured. The amount of water purged, water parameter measurements, and time of collection were recorded on the well sampling log. Recharge occurred quickly for the wells; the water levels remained constant during purging and sampling. Purged water removed during development was placed into 55-gallon drums stored on site.

Samples were collected with the same dedicated polyethylene tubing used to purge the well by pumping directly into sample containers provided by the analytical laboratory. The samples for dissolved lead analyses were field filtered through a 0.45-micron filter. Following sample collection, the well casing plug was replaced, and the well monument cover secured.

Each sample was submitted for the following analyses:

- Gasoline-range petroleum hydrocarbons (NWTPH-Gx)
- Diesel-range petroleum hydrocarbons (NWTPH-Dx)
- Total and dissolved lead (samples were field filtered for the dissolved analyses)
- Ethylene dibromide (EPA8011)
- cPAHs – Low level (EPA8270D/SIM)

3.3. SAMPLING/ANALYTICAL RESULTS

Sampling/analytical results for remedial activities conducted at the Site are presented in the following section.

3.3.1. Quality Analyses

Laboratory analyses were performed by Libby, OnSite, Spectra, and Fremont, all Ecology-accredited laboratories. Laboratory reports and chain of custody forms are provided in Appendix G. A summary of samples collected, and analyses performed is provided in Table 3.

Table 3. Summary of Soil Sampling Analytical Data from Test Pits, Ditches, and Excavations at the 13.4-Acre Undeveloped Parcel, Pierce County, Washington.											
Parameter	Sample Identification									Priority Contaminants of Ecological Concern ^b (mg/kg)	MTCA Method A for Unrestricted Land Use ^c (mg/kg)
	TP-A-3	TP-B-4	TP-C-2	TP-D-1.5	TP-E-2	TP-F-2.5	TP-J-0	TP-K-1	TP-L-0		
Date Collected	6/27/19	6/27/19	6/27/19	6/27/19	6/27/19	6/27/19	7/22/19	6/27/19	7/23/19		
Sample Top Depth (feet)	3	4	2	1.5	2	2.5	0	0	0		
Sample Type	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab		
Description	West berm	West berm	West berm	West berm	NW corner berm	North berm	Behind north berm	By rusted drum on ground	Abandoned auto		
Hydrocarbon Identification											
Gasoline Range Organics	U (23)	U (23)	U (23)	Detected	Detected	Detected	–	U (22)	–	–	–
Diesel Range Organics	U (57)	U (57)	U (57)	U (57)	Detected	Detected	–	U (56)	–	–	–
Lube Oil Range Organics	Detected	Detected	U (110)	Detected	Detected	Detected	–	Detected	–	–	–
NWTPH-Gx (mg/kg)											
Gasoline Range	–	–	–	U (5.9)	U (5.9)	U (5.4)	U (10)	U (5.2)	U (10)	200	100
NWTPH-Dx (mg/kg)											
Diesel Range	U (28)	U (29)	–	U (29)	U (49)	U (620)	U (50)	U (28)	U (50)	460	2,000
Lube Oil Range	250	300	–	300	640	8,500	U (250)	450	U (250)	460	2,000
Volatile Organic Compounds (mg/kg)											
Methyl tert-Butyl Ether (MTBE)	–	–	–	U (0.001)	U (0.001)	U (0.001)	U (0.05)	–	U (0.05)	–	–
Tert-butanol (TBA)	–	–	–	U (0.026)	U (0.024)	U (0.026)	U (0.02)	–	U (0.02)	–	–
Ethyl-tert-Butyl Ether (ETBE)	–	–	–	U (0.0053)	U (0.0048)	U (0.0053)	U (0.10)	–	U (0.10)	–	–
Tert-Amyl Methyl Ether (TAME)	–	–	–	U (0.0053)	U (0.0048)	U (0.0053)	U (0.02)	–	U (0.02)	–	–
Benzene	–	–	–	U (0.001)	U (0.001)	U (0.001)	U (0.02)	–	U (0.02)	–	0.03
Toluene	–	–	–	U (0.0049)	U (0.0048)	U (0.0050)	U (0.10)	–	U (0.10)	–	7
Ethylbenzene	–	–	–	U (0.001)	U (0.001)	U (0.001)	U (0.05)	–	U (0.05)	–	6
Total xylenes	–	–	–	U (0.002)	U (0.002)	U (0.002)	U (0.15)	–	U (0.15)	–	9
Methylene chloride	–	–	–	U (0.0049)	U (0.0048)	U (0.0050)	U (0.02)	–	U (0.02)	–	0.02
Polycyclic Aromatic Hydrocarbons (PAHs)(mg/kg)											
Naphthalene	0.016	U (0.008)	–	0.008	U (0.008)	0.160	–	0.010	U (0.050)	–	5
2-Methylnaphthalene	U (0.008)	U (0.008)	–	U (0.008)	0.009	0.270	–	0.016	U (0.050)	–	320 ^d
1-Methylnaphthalene	U (0.008)	U (0.008)	–	U (0.008)	U (0.008)	0.110	–	U (0.007)	U (0.050)	–	34.5 ^d
Benzo(a)anthracene	U (0.008)	U (0.008)	–	U (0.008)	U (0.008)	0.067	–	U (0.007)	U (0.050)	–	1.37 ^d
Benzo(a)pyrene	U (0.008)	U (0.008)	–	U (0.008)	U (0.008)	0.290	–	U (0.007)	U (0.050)	30	0.1
Benzo(b)fluoranthene	0.011	U (0.008)	–	0.010	0.030	0.110	–	0.020	U (0.050)	–	1.37 ^d
Benzo(j,k)fluoranthene	U (0.008)	U (0.008)	–	U (0.008)	U (0.008)	0.083	–	U (0.007)	U (0.050)	–	13.7 ^d
Chrysene	0.013	U (0.008)	–	0.009	0.033	0.250	–	0.020	U (0.050)	–	137 ^d
Dibenz(a,h)anthracene	U (0.008)	U (0.008)	–	U (0.008)	U (0.008)	0.028	–	U (0.007)	U (0.050)	–	0.137 ^d
Indeno(1,2,3-cd)pyrene	U (0.008)	U (0.008)	–	U (0.008)	0.013	0.110	–	0.012	U (0.050)	–	1.37 ^d
cPAHs (TEF) ^a	0.007	U (0.006)	–	0.007	0.010	0.332	–	0.008	U (0.038)	–	0.1

Table 3 (continued). Summary of Soil Sampling Analytical Data from Test Pits, Ditches, and Excavations at the 13.4-Acre Undeveloped Parcel, Pierce County, Washington.											
Parameter	Sample Identification									Priority Contaminants of Ecological Concern ^b (mg/kg)	MTCA Method A for Unrestricted Land Use ^c (mg/kg)
	TP-A-3	TP-B-4	TP-C-2	TP-D-1.5	TP-E-2	TP-F-2.5	TP-J-0	TP-K-1	TP-L-0		
Date Collected	6/27/19	6/27/19	6/27/19	6/27/19	6/27/19	6/27/19	7/22/19	6/27/19	7/23/19		
Sample Top Depth (feet)	3	4	2	1.5	2	2.5	0	0	0		
Sample Type	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab		
Description	West berm	West berm	West berm	West berm	NW corner berm	North berm	Behind north berm	By rusted drum on ground	Abandoned auto		
Polychlorinated Biphenyls (PCBs) (mg/kg)											
Total PCBs	U (0.057)	U (0.057)	–	U (0.058)	U (0.057)	0.066	–	U (0.056)	U (0.001)	2	1
Total Metals											
Cadmium	U (0.57)	U (0.57)	U (0.56)	U (0.58)	0.57	2.6	–	U (0.56)	U (1.0)	220	250
Chromium (total)	17	17	16	18	21	28	–	20	U (5.0)	42	2,000
Chromium (hexavalent)	–	–	–	–	U (1.1)	U (1.2)	–	U (1.1)	–	–	19
Lead	32	12	U (5.6)	19	410	3,600	–	110	U (5.0)	220	250
Nickel	17	20	18	19	20	22	–	20	2.4	100	1,600 ^d
Zinc	95	42	35	55	81	130	–	35	U (5.0)	270	24,000 ^d
TCLP Lead (mg/L)	–	–	–	–	–	6.4	–	U (0.20)	–	NA	5.0 ^e

SEE END OF TABLE FOR TABLE NOTES.

Table 3 (continued). Summary of Soil Sampling Analytical Data from Test Pits, Ditches, and Excavations at the 13.4-Acre Undeveloped Parcel, Pierce County, Washington.													
Parameter	Sample Identification										Priority Contaminants of Ecological Concern ^b (mg/kg)	MTCA Method A for Unrestricted Land Use ^c (mg/kg)	
	Ditch-1-0	Ditch-2-0	Ditch-3-0	Ditch-4-0	Ditch-5-0	Ditch-5B-1	Ditch-6-0	Exc-E1-4	Exc-E2-0	Exc-E2C-2.5			
Date Collected	6/27/19	6/27/19	6/27/19	6/27/19	7/23/19	7/26/19	7/23/19	7/23/19	7/23/19	8/2/19			
Sample Top Depth (feet)	0	0	0	0	0	0	0	4*	0	2.5			
Sample Type	Grab	Grab	Grab	Grab	Grab		Grab	Grab	Grab	Composite			
Description	Behind Test Pit B to SE	Behind Test Pit D to SE	Behind Test Pit F to SW	Behind Test Pit G to S	Behind Test Pit E to SE	Resampled at Ditch-5	Behind TP-I to SE	*SW end, depth from top of initial berm	NE end of initial excavation	Resampled at NE area, expanded excavation			
Hydrocarbon Identification													
Gasoline Range Organics	U (21)	Detected	–	–	–	–	–	–	–	–	–	–	
Diesel Range Organics	U (52)	U (54)	–	–	–	–	–	–	–	–	–	–	
Lube Oil Range Organics	U (100)	Detected	–	–	–	–	–	–	–	–	–	–	
NWTPH-Gx (mg/kg)													
Gasoline Range	–	U (5.2)	U (6.4)	U (6.4)	U (10)	–	U (10)	U (10)	U (10)	–	200	100	
NWTPH-Dx (mg/kg)													
Diesel Range	–	U (27)	U (29)	U (28)	ND (50)	U (50)	U (50)	U (50)	U (50)	U (10)	460	2,000	
Lube Oil Range	–	260	81	170	504	U (250)	U (250)	253	3,100	U (50)	460	2,000	
Volatile Organic Compounds (mg/kg)													
Methyl tert-Butyl Ether (MTBE)	–	U (0.001)	U (0.001)	U (0.001)	U (0.05)	U (0.039)	U (0.05)	U (0.05)	U (0.05)	–	–	–	
Tert-butanol (TBA)	–	U (0.025)	U (0.031)	U (0.029)	U (0.02)	U (0.039)	U (0.02)	U (0.02)	U (0.02)	–	–	–	
Ethyl-tert-Butyl Ether (ETBE)	–	U (0.0051)	U (0.0061)	U (0.0058)	U (0.10)	U (0.039)	U (0.10)	U (0.10)	U (0.10)	–	–	–	
Tert-Amyl Methyl Ether (TAME)	–	U (0.0051)	U (0.0061)	U (0.0058)	U (0.02)	U (0.039)	U (0.02)	U (0.02)	U (0.02)	–	–	–	
Benzene	–	U (0.001)	U (0.001)	U (0.001)	U (0.02)	U (0.039)	U (0.02)	U (0.02)	U (0.02)	–	–	0.03	
Toluene	–	U (0.0051)	U (0.0061)	U (0.0058)	U (0.10)	U (0.039)	U (0.10)	U (0.10)	U (0.10)	–	–	7	
Ethylbenzene	–	U (0.001)	U (0.001)	U (0.001)	U (0.05)	U (0.039)	U (0.05)	U (0.05)	U (0.05)	–	–	6	
Total xylenes	–	U (0.002)	U (0.002)	U (0.002)	U (0.15)	U (0.039)	U (0.15)	U (0.15)	U (0.15)	–	–	9	
Methylene chloride	–	U (0.0051)	U (0.0061)	0.0073	U (0.02)	U (0.029)	U (0.02)	U (0.02)	U (0.02)	–	–	0.02	
Polycyclic Aromatic Hydrocarbons (PAHs)(mg/kg)													
Naphthalene	–	U (0.007)	U (0.008)	U (0.008)	–	U (0.039)	U (0.042)	U (0.045)	–	U (0.004)	–	5	
2-Methylnaphthalene	–	U (0.007)	U (0.008)	U (0.008)	–	U (0.039)	U (0.042)	U (0.045)	–	–	–	320 ^d	
1-Methylnaphthalene	–	U (0.007)	U (0.008)	U (0.008)	–	U (0.039)	U (0.042)	U (0.045)	–	–	–	34.5 ^d	
Benzo(a)anthracene	–	U (0.007)	U (0.008)	U (0.008)	–	U (0.039)	U (0.042)	U (0.045)	–	U (0.004)	–	1.37 ^d	
Benzo(a)pyrene	–	U (0.007)	U (0.008)	U (0.008)	–	U (0.039)	U (0.042)	U (0.045)	–	U (0.004)	30	0.1	
Benzo(b)fluoranthene	–	U (0.007)	U (0.008)	U (0.008)	–	U (0.039)	U (0.042)	U (0.045)	–	U (0.004)	–	1.37 ^d	
Benzo(j,k)fluoranthene	–	U (0.007)	U (0.008)	U (0.008)	–	U (0.039)	U (0.042)	U (0.045)	–	U (0.004)	–	13.7 ^d	
Chrysene	–	U (0.007)	0.008	U (0.008)	–	U (0.039)	U (0.042)	U (0.045)	–	U (0.004)	–	137 ^d	
Dibenz(a,h)anthracene	–	U (0.007)	U (0.008)	U (0.008)	–	U (0.039)	U (0.042)	U (0.045)	–	U (0.004)	–	0.137 ^d	
Indeno(1,2,3-cd)pyrene	–	U (0.007)	U (0.008)	U (0.008)	–	U (0.039)	U (0.042)	U (0.045)	–	U (0.004)	–	1.37 ^d	
cPAHs (TEF) ^a	–	U (0.005)	0.006	U (0.006)	–	U (0.029)	U (0.032)	U (0.034)	–	U (0.003)	–	0.1	

SEE END OF TABLE FOR TABLE NOTES.

Table 3 (continued). Summary of Soil Sampling Analytical Data from Test Pits, Ditches, and Excavations at the 13.4-Acre Undeveloped Parcel, Pierce County, Washington.												
Parameter	Sample Identification										Priority Contaminants of Ecological Concern ^b (mg/kg)	MTCA Method A for Unrestricted Land Use ^c (mg/kg)
	Ditch-1-0	Ditch-2-0	Ditch-3-0	Ditch-4-0	Ditch-5-0	Ditch-5B-1	Ditch-6-0	Exc-E1-4	Exc-E2-0	Exc-E2C-2.5		
Date Collected	6/27/19	6/27/19	6/27/19	6/27/19	7/23/19	7/26/19	7/23/19	7/23/19	7/23/19	8/2/19		
Sample Top Depth (feet)	0	0	0	0	0	0	0	4*	0	2.5		
Sample Type	Grab	Grab	Grab	Grab	Grab		Grab	Grab	Grab	Composite		
Description	Behind Test Pit B to SE	Behind Test Pit D to SE	Behind Test Pit F to SW	Behind Test Pit G to S	Behind Test Pit E to SE	Resampled at Ditch-5	Behind TP-1 to SE	*SW end, depth from top of initial berm	NE end of initial excavation	Resampled at NE area, expanded excavation		
Polychlorinated Biphenyls (PCBs) (mg/kg)												
Total PCBs	–	U (0.054)	U (0.057)	U (0.057)	–	–	–	U (0.001)	–	–	2	1
Total Metals												
Cadmium	U (0.52)	U (0.54)	U (0.57)	U (0.57)	–	ND (1.0)	ND (1.0)	ND (1.0)	–	U (0.3)	220	250
Chromium (total)	15	22	18	21	–	ND (5.0)	ND (5.0)	ND (5.0)	–	15.6	42	2,000
Chromium (hexavalent)	–	ND (1.1)	–	U (1.1)	–	–	–	–	–	–	–	19
Lead	U (5.2)	6.6	19	15	–	10	29	90	–	7.2	220	250
Nickel	29	22	19	23	–	10.4	8.4	6.5	–	18.1	100	1,600 ^d
Zinc	28	35	51	52	–	7.9	ND (5.0)	ND (5.0)	–	28.2	270	24,000 ^d

SEE END OF TABLE FOR TABLE NOTES.

Table 3 (continued). Summary of Soil Sampling Analytical Data from Test Pits, Ditches, and Excavations at the 13.4-Acre Undeveloped Parcel, Pierce County, Washington.												
Parameter	Sample Identification										Priority Contaminants of Ecological Concern ^b (mg/kg)	MTCA Method A for Unrestricted Land Use ^c (mg/kg)
	Exc-E3C-1.5	Exc-E3C2-2	Exc-F1-0	Exc-F2-0	Exc-F2B-1.5	Exc-G1-1	Exc-G2-1	Exc-G2B-1	Exc-G3-2.5	Exc-G4-1		
Date Collected	8/2/19	8/13/19	7/23/19	7/23/19	7/26/19	7/24/19	7/24/19	8/2/19	7/24/19	7/25/19		
Sample Top Depth (feet)	0	0	0	0	0	1	1	1	2.5	1		
Sample Type	Composite	Composite	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab		
Description	NW area at expanded excavation	Resampled at NW area, expanded excavation	West bottom	East bottom	Resampled at Exc-F2 after additional excavation	West wall	SW wall	Resampled SW wall, after expanded excavation	West bottom	NW wall		
NWTPH-Gx (mg/kg)												
Gasoline Range	–	–	U (0.010)	U (0.010)	–	U (0.010)	U (0.010)	–	U (0.010)	U (0.010)	200	100
NWTPH-Dx (mg/kg)												
Diesel Range	U (10)	U (10)	U (50)	U (50)	U (50)	U (50)	U (50)	U (10)	U (50)	U (50)	460	2,000
Lube Oil Range	136	U (50)	439	1,090	U (250)	U (250)	1,360	U (50)	U (250)	U (250)	460	2,000
Volatile Organic Compounds (mg/kg)												
Methyl tert-Butyl Ether (MTBE)	–	–	U (0.05)	U (0.05)	–	U (0.05)	U (0.05)	–	U (0.05)	U (0.05)	–	–
Tert-butanol (TBA)	–	–	U (0.02)	U (0.02)	–	U (0.02)	U (0.02)	–	U (0.02)	U (0.02)	–	–
Ethyl-tert-Butyl Ether (ETBE)	–	–	U (0.10)	U (0.10)	–	U (0.10)	U (0.10)	–	U (0.10)	U (0.10)	–	–
Tert-Amyl Methyl Ether (TAME)	–	–	U (0.02)	U (0.02)	–	U (0.02)	U (0.02)	–	U (0.02)	U (0.02)	–	–
Benzene	–	–	U (0.02)	U (0.02)	–	U (0.02)	U (0.02)	–	U (0.02)	U (0.02)	–	0.03
Toluene	–	–	U (0.10)	U (0.10)	–	U (0.10)	U (0.10)	–	U (0.10)	U (0.10)	–	7
Ethylbenzene	–	–	U (0.05)	U (0.05)	–	U (0.05)	U (0.05)	–	U (0.05)	U (0.05)	–	6
Total xylenes	–	–	U (0.15)	U (0.15)	–	U (0.15)	U (0.15)	–	U (0.15)	U (0.15)	–	9
Methylene chloride	–	–	U (0.02)	U (0.02)	–	U (0.02)	U (0.02)	–	U (0.02)	U (0.02)	–	0.02
Polycyclic Aromatic Hydrocarbons (PAHs)(mg/kg)												
Naphthalene	U (0.700)	U (0.036)	U (0.041)	–	U (0.043)	U (0.039)	–	U (0.004)	U (0.039)	U (0.042)	–	5
2-Methylnaphthalene	U (0.700)	U (0.036)	U (0.041)	–	U (0.043)	U (0.039)	–	U (0.004)	U (0.039)	U (0.042)	–	320 ^d
1-Methylnaphthalene	U (0.700)	U (0.036)	U (0.041)	–	U (0.043)	U (0.039)	–	U (0.004)	U (0.039)	U (0.042)	–	34.5 ^d
Benzo(a)anthracene	U (0.700)	U (0.036)	U (0.041)	–	U (0.043)	U (0.039)	–	U (0.004)	U (0.039)	U (0.042)	–	1.37 ^d
Benzo(a)pyrene	U (0.700)	U (0.036)	U (0.041)	–	U (0.043)	U (0.039)	–	U (0.004)	U (0.039)	U (0.042)	30	0.1
Benzo(b)fluoranthene	U (0.700)	U (0.036)	U (0.041)	–	U (0.043)	U (0.039)	–	U (0.004)	U (0.039)	U (0.042)	–	1.37 ^d
Benzo(j,k)fluoranthene	U (0.700)	U (0.036)	U (0.041)	–	U (0.043)	U (0.039)	–	U (0.004)	U (0.039)	U (0.042)	–	13.7 ^d
Chrysene	U (0.700)	U (0.036)	U (0.041)	–	U (0.043)	U (0.039)	–	U (0.004)	U (0.039)	U (0.042)	–	137 ^d
Dibenz(a,h)anthracene	U (0.700)	U (0.036)	U (0.041)	–	U (0.043)	U (0.039)	–	U (0.004)	U (0.039)	U (0.042)	–	0.137 ^d
Indeno(1,2,3-cd)pyrene	U (0.700)	U (0.036)	U (0.041)	–	U (0.043)	U (0.039)	–	U (0.004)	U (0.039)	U (0.042)	–	1.37 ^d
cPAHs (TEF) ^a	U (0.529)	U (0.027)	U (0.031)	–	U (0.032)	U (0.029)	–	U (0.003)	U (0.029)	U (0.031)	–	0.1
Polychlorinated Biphenyls (PCBs) (mg/kg)												
Total PCBs	–	–	U (0.001)	–	U (0.1)	–	–	–	–	–	2	1

SEE END OF TABLE FOR TABLE NOTES.

Table 3 (continued). Summary of Soil Sampling Analytical Data from Test Pits, Ditches, and Excavations at the 13.4-Acre Undeveloped Parcel, Pierce County, Washington.												
Parameter	Sample Identification										Priority Contaminants of Ecological Concern ^b (mg/kg)	MTCA Method A for Unrestricted Land Use ^c (mg/kg)
	Exc-E3C-1.5	Exc-E3C2-2	Exc-F1-0	Exc-F2-0	Exc-F2B-1.5	Exc-G1-1	Exc-G2-1	Exc-G2B-1	Exc-G3-2.5	Exc-G4-1		
Date Collected	8/2/19	8/13/19	7/23/19	7/23/19	7/26/19	7/24/19	7/24/19	8/2/19	7/24/19	7/25/19		
Sample Top Depth (feet)	0	0	0	0	0	1	1	1	2.5	1		
Sample Type	Composite	Composite	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab		
Description	NW area at expanded excavation	Resampled at NW area, expanded excavation	West bottom	East bottom	Resampled at Exc-F2 after additional excavation	West wall	SW wall	Resampled SW wall, after expanded excavation	West bottom	NW wall		
Total Metals												
Cadmium	U (0.3)	U (0.3)	U (5.0)	–	U (5.0)	U (5.0)	–	U (0.3)	U (5.0)	U (5.0)	220	250
Chromium (total)	9.2	13.8	U (1.0)	–	U (1.0)	U (1.0)	–	18.7	U (1.0)	U (1.0)	42	2,000
Chromium (hexavalent)	–	–	–	–	–	–	–	–	–	–	–	19
Lead	246	U (2.5)	133	–	U (5.0)	22	–	12.8	U (5.0)	13	220	250
Nickel	17.5	14.6	6.4	–	4.1	11.1	–	27.4	10.6	2.1	100	1,600 ^d
Zinc	67.7	23.6	–	–	9.3	U (5.0)	–	62.6	U (5.0)	U (5.0)	270	24,000 ^d
TCLP Lead (mg/L)	–	–	0.258	–	–	–	–	–	–	–	NA	5.0 ^e

SEE END OF TABLE FOR TABLE NOTES.

Table 3 (continued). Summary of Soil Sampling Analytical Data from Test Pits, Ditches, and Excavations at the 13.4-Acre Undeveloped Parcel, Pierce County, Washington.														
Parameter	Sample Identification											Priority Contaminants of Ecological Concern ^b (mg/kg)	MTCA Method A for Unrestricted Land Use ^c (mg/kg)	
	Exc-G5-1	Exc-G6-2.5	Exc-G6B-3	Exc-G6B2-4	Exc-G7-1	Exc-G7B-1	Exc-H1-1	Exc-H1B-1.5	Exc-H2-1	Exc-H3-1	Exc-H4-1			
	Date Collected	7/25/19	7/24/19	8/2/19	8/13/19	7/25/19	7/26/19	7/26/19	7/26/19	7/26/19	7/26/19			7/26/19
	Sample Top Depth (feet)	1	2.5	3	4	1	1	1	1.5	1	1			1
	Sample Type	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab			Grab
Description	SW wall	East bottom	Resampled at Exc-G6 after additional excavation	Resampled at Exc-G6 after additional excavation	NE wall	Resampled at Exc-G7 after additional excavation	NW bench	Resampled at Exc-H1 after additional excavation	N middle bench	NE corner on bench	SE corner on bench			
NWTPH-Gx (mg/kg)														
Gasoline Range	U (0.010)	U (0.010)	–	–	U (0.010)	U (0.010)	U (0.010)	–	U (0.010)	U (0.010)	–	200	100	
NWTPH-Dx (mg/kg)														
Diesel Range	U (50)	U (50)	U (100)	U (50)	U (50)	U (50)	U (50)	U (50)	U (50)	U (50)	U (50)	460	2,000	
Lube Oil Range	U (250)	4,090	1,240	U (250)	726	U (250)	1,200	U (250)	U (250)	U (250)	U (250)	460	2,000	
Volatile Organic Compounds (mg/kg)														
Methyl tert-Butyl Ether (MTBE)	U (0.05)	U (0.05)	–	–	U (0.05)	U (0.05)	U (0.05)	–	U (0.05)	U (0.05)	–			
Tert-butanol (TBA)	U (0.02)	U (0.02)	–	–	U (0.02)	U (0.02)	U (0.02)	–	U (0.02)	U (0.02)	–	–	–	
Ethyl-tert-Butyl Ether (ETBE)	U (0.10)	U (0.10)	–	–	U (0.10)	U (0.10)	U (0.10)	–	U (0.10)	U (0.10)	–	–	–	
Tert-Amyl Methyl Ether (TAME)	U (0.02)	U (0.02)	–	–	U (0.02)	U (0.02)	U (0.02)	–	U (0.02)	U (0.02)	–	–	–	
Benzene	U (0.02)	U (0.02)	–	–	U (0.02)	U (0.02)	U (0.02)	–	U (0.02)	U (0.02)	–	–	0.03	
Toluene	U (0.10)	U (0.10)	–	–	U (0.10)	U (0.10)	U (0.10)	–	U (0.10)	U (0.10)	–	–	7	
Ethylbenzene	U (0.05)	U (0.05)	–	–	U (0.05)	U (0.05)	U (0.05)	–	U (0.05)	U (0.05)	–	–	6	
Total xylenes	U (0.15)	U (0.15)	–	–	U (0.15)	U (0.15)	U (0.15)	–	U (0.15)	U (0.15)	–	–	9	
Methylene chloride	U (0.02)	U (0.02)	–	–	U (0.02)	U (0.02)	U (0.02)	–	U (0.02)	U (0.02)	–	–	0.02	
Polycyclic Aromatic Hydrocarbons (PAHs)(mg/kg)														
Naphthalene	U (0.040)	–	U (0.700)	U (0.036)	U (0.041)	U (0.041)	–	U (0.042)	U (0.037)	U (0.040)	U (0.036)	–	5	
2-Methylnaphthalene	U (0.040)	–	U (0.700)	U (0.036)	U (0.041)	U (0.041)	–	U (0.042)	U (0.037)	U (0.040)	U (0.036)	–	320 ^d	
1-Methylnaphthalene	U (0.040)	–	U (0.700)	U (0.036)	U (0.041)	U (0.041)	–	U (0.042)	U (0.037)	U (0.040)	U (0.036)	–	34.5 ^d	
Benzo(a)anthracene	U (0.040)	–	U (0.700)	U (0.036)	U (0.041)	U (0.041)	–	U (0.042)	U (0.037)	U (0.040)	U (0.036)	–	1.37 ^d	
Benzo(a)pyrene	U (0.040)	–	U (0.700)	U (0.036)	U (0.041)	U (0.041)	–	U (0.042)	U (0.037)	U (0.040)	U (0.036)	30	0.1	
Benzo(b)fluoranthene	U (0.040)	–	U (0.700)	U (0.036)	U (0.041)	U (0.041)	–	U (0.042)	U (0.037)	U (0.040)	U (0.036)	–	1.37 ^d	
Benzo(j,k)fluoranthene	U (0.040)	–	U (0.700)	U (0.036)	U (0.041)	U (0.041)	–	U (0.042)	U (0.037)	U (0.040)	U (0.036)	–	13.7 ^d	
Chrysene	U (0.040)	–	U (0.700)	U (0.036)	U (0.041)	U (0.041)	–	U (0.042)	U (0.037)	U (0.040)	U (0.036)	–	137 ^d	
Dibenz(a,h)anthracene	U (0.040)	–	U (0.700)	U (0.036)	U (0.041)	U (0.041)	–	U (0.042)	U (0.037)	U (0.040)	U (0.036)	–	0.137 ^d	
Indeno(1,2,3-cd)pyrene	U (0.040)	–	U (0.700)	U (0.036)	U (0.041)	U (0.041)	–	U (0.042)	U (0.037)	U (0.040)	U (0.036)	–	1.37 ^d	
cPAHs (TEF) ^a	U (0.030)	–	U (0.529)	U (0.027)	U (0.031)	U (0.031)	–	U (0.032)	U (0.028)	U (0.030)	U (0.027)	–	0.1	
Polychlorinated Biphenyls (PCBs) (mg/kg)														
Total PCBs	–	–	–	–	–	–	–	–	–	–	–	2	1	

SEE END OF TABLE FOR TABLE NOTES.

Table 3 (continued). Summary of Soil Sampling Analytical Data from Test Pits, Ditches, and Excavations at the 13.4-Acre Undeveloped Parcel, Pierce County, Washington.													
Parameter	Sample Identification											Priority Contaminants of Ecological Concern ^b (mg/kg)	MTCA Method A for Unrestricted Land Use ^c (mg/kg)
	Exc-G5-1	Exc-G6-2.5	Exc-G6B-3	Exc-G6B2-4	Exc-G7-1	Exc-G7B-1	Exc-H1-1	Exc-H1B-1.5	Exc-H2-1	Exc-H3-1	Exc-H4-1		
Date Collected	7/25/19	7/24/19	8/2/19	8/13/19	7/25/19	7/26/19	7/26/19	7/26/19	7/26/19	7/26/19	7/26/19		
Sample Top Depth (feet)	1	2.5	3	4	1	1	1	1.5	1	1	1		
Sample Type	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab	Grab		
Description	SW wall	East bottom	Resampled at Exc-G6 after additional excavation	Resampled at Exc-G6 after additional excavation	NE wall	Resampled at Exc-G7 after additional excavation	NW bench	Resampled at Exc-H1 after additional excavation	N middle bench	NE corner on bench	SE corner on bench		
Total Metals													
Cadmium	U (5.0)	–	0.4	U (0.3)	–	U (5.0)	–	U (5.0)	U (5.0)	U (5.0)	U (5.0)	220	250
Chromium (total)	U (1.0)	–	41	13.1	–	U (1.0)	–	U (1.0)	U (1.0)	8.9	U (1.0)	42	2,000
Chromium (hexavalent)	–	–	–	–	–	–	–	–	–	–	–	–	19
Lead	149	–	194	36.4	–	U (5.0)	–	U (5.0)	U (5.0)	78	U (5.0)	220	250
Nickel	15.8	–	19.3	12.1	–	14.4	–	14.4	8.8	9.7	11.5	100	1,600 ^d
Zinc	7.0	–	51	40.2	–	10	–	12	13	9.0	13	270	24,000 ^d
TCLP Lead (mg/L)	0.901	–	–	–	–	–	–	–	–	–	–	NA	5.0 ^e

SEE END OF TABLE FOR TABLE NOTES.

Table 3 (continued). Summary of Soil Sampling Analytical Data from Test Pits, Ditches, and Excavations at the 13.4-Acre Undeveloped Parcel, Pierce County, Washington.												
Parameter	Sample Identification										Priority Contaminants of Ecological Concern ^b (mg/kg)	MTCA Method A for Unrestricted Land Use ^c (mg/kg)
	Exc-H5A-5	Exc-H5B-5	Exc-H5C-5	Exc-H6-6	Exc-H7-8	Exc-H8C-5	Exc-H8C2-5	Exc-H9C-5	Exc-H10-2	Exc-H11-1		
Date Collected	7/26/19	7/26/19	7/26/19	7/26/19	7/26/19	8/2/19	8/12/19	8/2/19	8/2/19	8/2/19		
Sample Top Depth (feet)	5	5	5	6	8	5	5	5	2	2		
Sample Type	Grab	Grab	Composite	Grab	Grab	Composite	Composite	Composite	Grab	Grab		
Description	N wall for Gx and volatiles	N wall for Gx and volatiles	N wall composite of H5A and H5B	East bottom	West bottom	SE wall	SE wall at Exc-H8C after additional excavation	SW walls	SE bench after trees removed	South bench after loadout area excavated		
NWTPH-Gx (mg/kg)												
Gasoline Range	U (0.010)	U (0.010)	–	–	–	–	–	–	–	–	200	100
NWTPH-Dx (mg/kg)												
Diesel Range	–	–	U (50)	U (50)	U (50)	U (100)	U (10)	U (10)	U (10)	U (10)	460	2,000
Lube Oil Range	–	–	256	U (250)	U (250)	2,610	U (50)	75.4	U (50)	U (50)	460	2,000
Volatile Organic Compounds (mg/kg)												
tert-Butyl Alcohol (TBA)	–	–	–	U (0.05)	U (0.05)	–	–	–	–	–	–	–
tert-Butyl Ethyl Ether (ETBE)	–	–	–	U (0.02)	U (0.02)	–	–	–	–	–	–	–
tert-Amyl Methyl Ether (TAME)	–	–	–	U (0.10)	U (0.10)	–	–	–	–	–	–	–
Benzene	–	–	–	U (0.02)	U (0.02)	–	–	–	–	–	–	0.03
Toluene	–	–	–	U (0.02)	U (0.02)	–	–	–	–	–	–	7
Ethylbenzene	–	–	–	U (0.10)	U (0.10)	–	–	–	–	–	–	6
Total xylenes	–	–	–	U (0.05)	U (0.05)	–	–	–	–	–	–	9
Methylene chloride	–	–	–	U (0.15)	U (0.15)	–	–	–	–	–	–	0.02
Polycyclic Aromatic Hydrocarbons (PAHs)(mg/kg)												
Naphthalene	–	–	U (0.038)	U (0.044)	U (0.042)	U (0.700)	U (0.036)	U (0.004)	U (0.004)	U (0.004)	–	5
2-Methylnaphthalene	–	–	U (0.038)	U (0.044)	U (0.042)	U (0.700)	U (0.036)	U (0.004)	U (0.004)	U (0.004)	–	320 ^d
1-Methylnaphthalene	–	–	U (0.038)	U (0.044)	U (0.042)	U (0.700)	U (0.036)	U (0.004)	U (0.004)	U (0.004)	–	34.5 ^d
Benzo(a)anthracene	–	–	U (0.038)	U (0.044)	U (0.042)	U (0.700)	U (0.036)	U (0.004)	U (0.004)	U (0.004)	–	1.37 ^d
Benzo(a)pyrene	–	–	U (0.038)	U (0.044)	U (0.042)	U (0.700)	U (0.036)	U (0.004)	U (0.004)	U (0.004)	30	0.1
Benzo(b)fluoranthene	–	–	U (0.038)	U (0.044)	U (0.042)	U (0.700)	U (0.036)	U (0.004)	U (0.004)	U (0.004)	–	1.37 ^d
Benzo(j,k)fluoranthene	–	–	U (0.038)	U (0.044)	U (0.042)	U (0.700)	U (0.036)	U (0.004)	U (0.004)	U (0.004)	–	13.7 ^d
Chrysene	–	–	U (0.038)	U (0.044)	U (0.042)	U (0.700)	U (0.036)	U (0.004)	U (0.004)	U (0.004)	–	137 ^d
Dibenz(a,h)anthracene	–	–	U (0.038)	U (0.044)	U (0.042)	U (0.700)	U (0.036)	U (0.004)	U (0.004)	U (0.004)	–	0.137 ^d
Indeno(1,2,3-cd)pyrene	–	–	U (0.038)	U (0.044)	U (0.042)	U (0.700)	U (0.036)	U (0.004)	U (0.004)	U (0.004)	–	1.37 ^d
cPAHs (TEF) ^a	–	–	U (0.029)	U (0.033)	U (0.032)	U (0.529)	U (0.027)	U (0.003)	U (0.003)	U (0.003)	–	0.1
Polychlorinated Biphenyls (PCBs) (mg/kg)												
Total PCBs	–	–	U (0.1)	–	–	–	–	U (0.01)	–	–	2	1

SEE END OF TABLE FOR TABLE NOTES.

Table 3 (continued). Summary of Soil Sampling Analytical Data from Test Pits, Ditches, and Excavations at the 13.4-Acre Undeveloped Parcel, Pierce County, Washington.												
Parameter	Sample Identification										Priority Contaminants of Ecological Concern ^b (mg/kg)	MTCA Method A for Unrestricted Land Use ^c (mg/kg)
	Exc-H5A-5	Exc-H5B-5	Exc-H5C-5	Exc-H6-6	Exc-H7-8	Exc-H8C-5	Exc-H8C2-5	Exc-H9C-5	Exc-H10-2	Exc-H11-1		
Date Collected	7/26/19	7/26/19	7/26/19	7/26/19	7/26/19	8/2/19	8/12/19	8/2/19	8/2/19	8/2/19		
Sample Top Depth (feet)	5	5	5	6	8	5	5	5	2	2		
Sample Type	Grab	Grab	Composite	Grab	Grab	Composite	Composite	Composite	Grab	Grab		
Description	N wall for Gx and volatiles	N wall for Gx and volatiles	N wall composite of H5A and H5B	East bottom	West bottom	SE wall	SE wall at Exc-H8C after additional excavation	SW walls	SE bench after trees removed	South bench after loadout area excavated		
Total Metals												
Cadmium	–	–	U (1.0)	U (1.0)	U (1.0)	U (0.3)	U (0.3)	U (0.3)	U (0.3)	U (0.3)	220	250
Chromium (total)	–	–	12	7.4	7.0	17.4	17.8	11.3	13.4	11.4	42	2,000
Chromium (hexavalent)	–	–	–	–	–	–	–	–	–	–	–	19
Lead	–	–	42	6.7	U (5.0)	86	U (2.5)	15.6	U (2.5)	9.0	220	250
Nickel	–	–	10.6	13.7	10.7	24.3	20.8	18.9	24.8	18.1	100	1,600 ^d
Zinc	–	–	6.8	15	14	154	31.3	42.8	37.4	30.3	270	24,000 ^d

SEE END OF TABLE FOR TABLE NOTES.

Table 3 (continued). Summary of Soil Sampling Analytical Data from Test Pits, Ditches, and Excavations at the 13.4-Acre Undeveloped Parcel, Pierce County, Washington.										
Parameter	Sample Identification								Priority Contaminants of Ecological Concern ^b (mg/kg)	MTCA Method A for Unrestricted Land Use ^c (mg/kg)
	TP9-TCLP-5	EXC-E-SP1	EXC-E-SP2	TP-G-3	TP-H-3	EXC-F-SP1	Exc-H/TP9-Comp	Exc-F-Comp		
Date Collected	7/22/19	7/23/19	7/23/19	7/23/19	7/23/19	7/23/19	7/30/19	7/30/19		
Sample Top Depth (feet)	5	NA	NA	NA	NA	NA	NA	NA		
Sample Type	Composite	Composite	Composite	Composite	Composite	Composite	Composite	Composite		
Description	At 5 feet deep to characterize soil for disposal	From stockpile to characterize soil for disposal	From stockpile to characterize soil for disposal	From berm to characterize soil for disposal	From berm to characterize soil for disposal	From west end of berm to characterize soil for disposal	From nearly completed excavation	From completed excavation		
TCLP Lead (mg/L)	5.95	0.104	0.585	1.36	2.98	5.30	0.073	U (0.025)	NA	5.0 ^e

Orange highlighted sample identification boxes indicate samples that exceeded the Ecological cleanup level or MTCA Method A cleanup level for unrestricted land use for one or more parameters.

Green highlighted sample identification boxes indicate samples that did not exceed the Ecological cleanup level or MTCA Method A cleanup level for any parameters.

BOLD values detected above the reporting limit.

Shaded values exceeded MTCA Table 749-2 ecological screening level and/or MTCA Method A or Method B CUL for unrestricted land use.

- ^a Total cPAHs toxicity equivalency factor (TEF) was calculated using 1/2 the reporting limit for compounds that were not detected above the reporting limit.
- ^b Table 749-2: Priority Contaminants of Ecological Concern for Sites that Qualify for the Simplified Terrestrial Ecological Evaluation Procedure. MTCA Chapter 173-340 WAC.
- ^c Table 740-1: Method A Soil Cleanup Levels for Unrestricted Land Use. MTCA Chapter 173-340 WAC.
- ^d MTCA Method B Cleanup Level
- ^e Maximum Concentration of Lead for the Toxicity Characteristic above which the contaminant must be designated Dangerous Waste per WAC 173-303-090.

– = Not analyzed or not applicable.

cPAHs = Carcinogenic polycyclic aromatic hydrocarbons.

mg/kg = Milligrams per kilogram.

U = Not detected above laboratory reporting limits shown in parentheses.

A data quality assurance review was completed by Herrera for all analyses performed. Data quality assurance review memorandums are included in Appendix H. Data were validated based on the following:

- Sample custody, preservation, holding times, and completeness
- Laboratory reporting limits
- Method blank analysis
- Laboratory control sample analysis
- Surrogate compound analysis
- Matrix spike analysis
- Laboratory duplicate analysis

3.3.2. Geology and Hydrology

3.3.2.1. *Geology*

The project area is located on a broad glacial recessional outwash plain that formed by melt water streams as the continental glaciers ablated about 13,000 years ago. In the project vicinity, the surficial geology has been mapped as Steilacoom Gravel (Brown and Caldwell et al. 1985). Steilacoom Gravel is a locally specific type of recessional outwash deposit composed of coarse gravel with interstitial sand. This unit was deposited by high-energy streams and rivers that rapidly drained a large proglacial lake that occupied the Puyallup River valley. The rivers cut massive outwash channels and spread the gravels out over portions of southern and western Pierce County. The recessional outwash deposits are generally underlain at depth by Vashon glacial till deposited beneath the continental glaciers as they advanced into the Puget Sound area. The low hills rising above the outwash plain are remnants of the topography that was higher in elevation than the recessional outwash surface. These low hills have been mapped as glacial drumlins composed mostly of glacial till.

Soils are mapped as Spanaway gravelly-sandy loam, composed of well drained to excessively well drained sands and gravels across the top 5 feet. The soils have high infiltration rates, high hydraulic conductivity, and low water holding capacity.

Three monitoring wells were installed in July and August 2019, completed to a total depth of 51 feet bgs. Geology observed during the well installation included weathered recessional outwash to a depth of approximately 3 to 4 feet bgs, underlain by unweathered recessional outwash to 51 feet; till was not observed in the borings. Soils encountered in the borings

generally included fine to large gravel with sand, silt, and cobbles, and sandy fine to large gravel with cobbles, trace silt. A distinct change in texture to sandy, fine to medium gravel was observed near the top of the water bearing zone around 40 feet bgs.

3.3.2.2. Hydrology

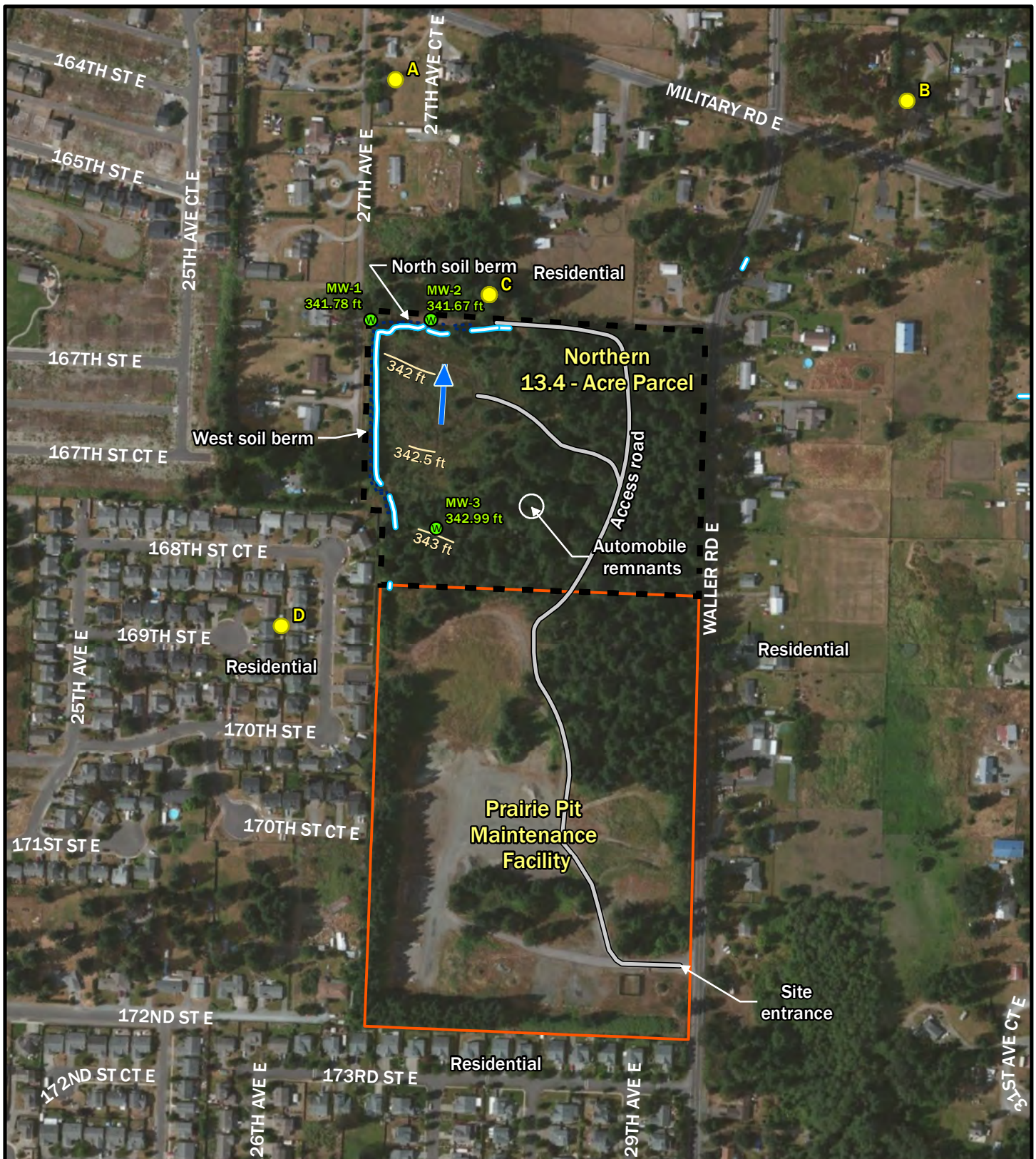
The Site is relatively level with surface water either infiltrating where precipitation falls or collecting in drainage ditches to infiltrate behind the north and west soil berms (Figure 3).

Groundwater in the site vicinity is reported as generally 30 feet bgs or deeper in the shallow aquifer, flowing to the north-northwest (Brown and Caldwell et al. 1985; USGS 2010). Well logs within 0.25 mile of the site indicate shallow groundwater found near 36 feet bgs (Ecology 2019). Groundwater flow in the deep aquifer is generally toward the west northwest; with groundwater measured at over 200 feet bgs.

Groundwater was encountered in MW-1 through MW-3 during installation at depths near 40 feet bgs. On August 5, 2019, static water levels measured in the three monitoring wells MW-1, MW-2, and MW-3, ranged from 37.70 to 38.86 feet bgs. Groundwater contour maps for sampling conducted on August 5 and November 1, 2019, are provided in Figure 5 and Figure 6, respectively.

Information regarding the locations of residential drinking water supply wells located in the vicinity of the Site was reviewed on Ecology's Washington State Well Report Viewer website. The following wells were identified and are depicted as wells A through D on Figure 2 and well logs are provided in Appendix I:

- Well A (Schumacher) appears to be located downgradient to the north of the Site, but the address listed on the well log (16004 38th Avenue East) indicates that the well is located approximately 2,700 feet northeast of where it is shown on Ecology's mapping tool and Figure 2.
- Well B (Ryan Communities) is listed as abandoned and appears to be located to the northeast of the Site. However, the address listed on the well log indicates that the well is located approximately 1,300 feet east of where it is shown on Ecology's mapping tool and Figure 2.
- Well C (Milton) appears to be located adjacent to the north of the Site, but the address listed on the well log (3109 176th Street East) indicates that the well is located approximately 1,300 feet southeast of where it is shown on Ecology's mapping tool and Figure 2.
- Well D (Crest Builders) is located approximately 250 feet east of the Site at the same location as the address listed on the well log (172 East 27th Avenue.).



Legend

- | | |
|---|--|
| ● Private water supply well | — Groundwater contour |
| ● Monitoring well | — Ditch |
| Parcel 0319262074 being sold | — Access road |
| Parcel 0319263091 | ➔ Groundwater flow direction |
| Soil berm | |

Notes: The plotted locations of private water supply wells are not consistent with the listed addresses (see the Hydrology section of the Site Closure Report for more information).

Figure 5.
Groundwater Contour Map, August 5, 2019, 13.4-Acre Undeveloped Parcel, Pierce County, Washington.



0 125 250 500
Feet



Digital Globe, Aerial

K:\Projects\Y2016\16-06310-011\Project\Report\Fig5_PrairiePit_GWContours_Aug5_20190930.mxd



Legend

- Private water supply well
- Monitoring well
- Parcel 0319262074 being sold
- Parcel 0319263091
- Soil berm
- Groundwater contour
- Ditch
- Access road
- ➔ Groundwater flow direction

Notes: The plotted locations of private water supply wells are not consistent with the listed addresses (see the Hydrology section of the Site Closure Report for more information).

Figure 6.
Groundwater Contour Map, November 1, 2019, 13.4-Acre Undeveloped Parcel, Pierce County, Washington.



0 125 250 500
Feet



Digital Globe, Aerial

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A fifth well (Ben Wade property) is depicted on Ecology's website on the south-central portion of the Prairie Pit Maintenance Facility. However, the site address listed on the well log (17016 32nd Avenue East) indicates that the well is located over 500 feet southeast of the property boundary. To avoid confusion and the appearance that there is a drinking water well on the County's maintenance facility, this well is not depicted on Figure 2 of this Site Closure Report.

3.3.2.3. *Soil Analytical Results*

A summary of soil sampling results is presented in Table 3 and summarized below for samples collected from test pits, ditches, and remedial excavations.

Test Pits

The following analytical results were obtained for soil samples from test pits:

- Gasoline-range petroleum hydrocarbons were identified in three of nine test pit samples and diesel-range petroleum hydrocarbons were identified in two of nine samples via HCID analysis; however, neither parameter was detected in follow-up analysis by Methods NWTPH-Gx and NWTPH-Dx.
- No VOCs were detected in any of the samples analyzed.
- Lube oil was detected in six of nine samples at concentrations ranging from 250 to 8,500 mg/kg. At Test Pit E and Test Pit F the concentrations of lube oil exceeded the ecological SSL of 460 mg/kg, but soils exceeding the SSL at these locations were removed during remedial activities and clean confirmation samples were collected.
- cPAHs were detected in five of nine samples, but none of the concentrations of individual cPAHs exceeded the ecological SSL or MTCA Method A or B CUL. At Test Pit F the concentration of total cPAHs exceeded the MTCA Method A CUL of 0.1 mg/kg, but soils exceeding the CUL at that location were removed during remedial activities and a clean confirmation sample was collected.
- Total PCBs were detected in one of seven samples at a concentration of 0.66 mg/kg, below the ecological SSL and MTCA Method A CUL of 1.0 mg/kg.
- Lead was detected in six of eight samples at concentrations ranging from 12 to 3,600 mg/kg. At Test Pit E and Test Pit F the concentrations of lead exceeded the ecological SSL of 220 mg/kg, and soils at Test Pit F also exceeded the Dangerous Waste limit for total lead of 5.0 mg/L. Soils at these locations exceeding the ecological SSL for lead were removed during remedial activities, and clean confirmation samples were collected; soils from Excavation F were disposed as Dangerous Waste.
- Hexavalent chromium was not detected in the three samples that were analyzed.

Ditches

- Gasoline- and diesel-range petroleum hydrocarbons were identified in one of two ditch samples via HCID analysis; however, neither parameter was detected in follow-up analysis by Methods NWTPH-Gx and NWTPH-Dx.
- One VOC, methylene chloride was detected in one sample at a concentration of 0.0073 mg/kg, well below the MTCA Method A cleanup level of 0.02 mg/kg.
- Lube oil was detected in four of seven samples at concentrations ranging from 81 to 504 mg/kg. At the Ditch-5 sample location, the concentration of lube oil exceeded the ecological SSL of 460 mg/kg, but soils exceeding the SSL at this location were removed during remedial activities and a clean confirmation sample was collected.
- Chrysene was detected in one sample at a concentration of 0.007 mg/kg, but well below the MTCA Method B CUL of 137 mg/kg, and the total cPAH concentration of 0.006 mg/kg was also below the MTCA Method A CUL of 0.1 mg/kg.
- PCBs were not detected in any of the ditch samples.
- Total metals detected in ditch samples included total chromium (in four samples ranging from 15 to 22 mg/kg), lead (in five samples ranging from 6.6 to 29 mg/kg), nickel (in six samples ranging from 8.4 to 29 mg/kg), and zinc (in five samples ranging from 7.9 to 52 mg/kg); none of the concentrations exceeded the ecological SSLs or MTCA Method A or B CULs. Hexavalent chromium was not detected in the two samples that were analyzed.

Excavations

- No gasoline- or diesel-range petroleum hydrocarbons, VOCs, or PCBs were detected in any of the 34 samples collected from the remedial excavations.
- Lube oil was detected in 13 of 34 samples at concentrations ranging from 75.4 to 4,090 mg/kg. At each location where the concentration of lube oil exceeded the ecological SSL of 460 mg/kg, additional soils were removed during remedial activities and clean confirmation samples were collected.
- Because of elevated reporting limits due to interference from lube oil, the concentration of total cPAHs of 0.529 mg/kg calculated for 3 of 27 samples, exceeded the MTCA Method A CUL of 0.1 mg/kg. At each of these locations where the CUL was exceeded, additional soils were removed during remedial activities and clean confirmation samples were collected.
- PCBs were not detected in any of the excavation samples.

- Total metals detected in excavation samples included cadmium (in 1 sample at a concentration of 0.4 mg/kg), total chromium (in 15 samples ranging from 7.4 to 41 mg/kg), lead (in 16 samples ranging from 6.7 to 246 mg/kg), nickel (in 26 samples ranging from 2.1 to 27.4 mg/kg), and zinc (in 21 samples ranging from 9.3 to 154 mg/kg); none of the concentrations exceeded the ecological SSLs or MTCA Method A or B CULs. No samples were analyzed for hexavalent chromium.
- The concentration of TCLP lead detected in samples from the TP-9 source area and from Excavation F exceeded the Dangerous Waste limit for total lead of 5.0 mg/L; therefore, soils from both those areas were disposed as Dangerous Waste.

3.3.2.4. Groundwater Analytical Results

A summary of groundwater sampling analytical results is presented in Table 4.

None of the parameters analyzed during the August 5, 2019, sampling event were detected in samples from the three monitoring wells above the laboratory reporting limits except for total metals including chromium, lead, and zinc detected in MW-1. The concentrations of these three total metals were all below the respective MTCA Method A or B cleanup levels. It is assumed that the detection of metals above the reporting limits in the August 5 sample can be attributed to slight turbidity observed in the sample as it was collected.

None of the parameters analyzed during the November 1, 2019, sampling event were detected in any of the three monitoring wells above the laboratory reporting limits.

**Table 4. Summary of Groundwater Sampling Analytical Results,
August and November 2019, 13.4-Acre Undeveloped Parcel, Pierce County, Washington.**

Parameter	MW-1		MW-2		MW-3		MTCA Method A Cleanup Level
Date	8/5/19	11/1/19	8/5/19	11/1/19	8/5/19	11/1/19	
NWTPH-G (µg/L)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	1,000
NWTPH-Dx (mg/L)							
Diesel Range Organics	ND (0.29)	ND (0.21)	ND (0.26)	ND (0.21)	ND (0.25)	ND (0.20)	0.5
Lube Oil	ND (0.46)	ND (0.21)	ND (0.41)	ND (0.21)	ND (0.40)	ND (0.20)	0.5
VOCs (µg/L)	ND (PQLs vary)		ND (PQLs vary)		ND (PQLs vary)		Varies
Metals (µg/L)							
Total Cadmium	ND (4.4)	ND (4.4)	ND (4.4)	ND (4.4)	ND (4.4)	ND (4.4)	5.0
Dissolved Cadmium	ND (4.0)	ND (4.0)	ND (4.0)	ND (4.0)	ND (4.0)	ND (4.0)	5.0
Total Chromium	22	ND (11)	ND (11)	ND (11)	ND (11)	ND (11)	50
Dissolved Chromium	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	50
Total Lead	4.6	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	ND (1.1)	15
Dissolved Lead	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	15
Total Nickel	ND (22)	ND (22)	ND (22)	ND (22)	ND (22)	ND (22)	320 ^a
Dissolved Nickel	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	ND (20)	320 ^a
Total Zinc	40	ND (28)	ND (28)	ND (28)	ND (28)	ND (28)	4,800 ^a
Dissolved Zinc	ND (25)	ND (25)	ND (25)	ND (25)	ND (25)	ND (25)	4,800 ^a
Ethylene dibromide (µg/L)	ND (0.0096)	–	ND (0.0096)	–	ND (0.0097)	–	0.01
Tert-Amyl Methyl Ether (TAME) (µg/L)	ND (1.0)	–	ND (1.0)	–	ND (1.0)	–	–
Total cPAHs (µg/L)	ND (0.011)	ND (0.010)	ND (0.010)	ND (0.010)	ND (0.011)	ND (0.010)	0.1
Total PCBs	ND (0.054)	–	ND (0.051)	–	ND (0.050)	–	0.1

^a MTCA Method B Cleanup Level.

BOLD values detected above the reporting limit.

NWTPH = Northwest total petroleum hydrocarbons

NWTPH-G = Gasoline range

NWTPH-Dx = Diesel range extended (to include heavy oil)

VOCs = Volatile organic compounds

cPAHs = Carcinogenic polycyclic aromatic hydrocarbons

mg/L = Milligrams per liter

µg/L = Micrograms per liter

MTCA = Model Toxics Control Act

ND = Not detected above laboratory reporting limits shown in parentheses

– = Not analyzed or not applicable.

4. CONCEPTUAL SITE MODEL

One primary source of contamination, soils impacted by waste oil, was identified in a soil berm along the north end of the Site. Soils observed at the Site from the ground surface down include:

- Dark brown-black silty sand with gravel ranging from 2.5 to 8 feet thick (considered native soil, or fill with varied amounts of debris including petroleum-contaminated soils where pushed into berms or deposited into the TP-9 source area).
- A few feet of tan gravel with sand, silt, and cobbles (weathered recessional outwash) underlying the surface soils, followed by several feet of light-gray gravel with varying amounts of sand, cobbles, and silt (unweathered recessional outwash).

Groundwater has been detected at depths ranging from 37 to 40 feet bgs in three monitoring wells installed at the Site in 2019. Groundwater was not detected in any of the excavations during soil removal activities and no Chemicals of Concern (COCs) were detected above MTCA Method A or B CULs during the August 5, and November 1, 2019, sampling events.

Potential secondary release mechanisms at the Site could include the following:

- Dust and/or volatile emissions
- Infiltration/percolation
- Stormwater runoff

Dust and volatile emissions were eliminated from consideration because the berms where soil contamination was present were densely vegetated, no VOCs were detected in any of the soil samples analyzed, and the contaminant source appears to be waste oil that typically does not release VOCs.

The remedial excavations were shallow and ranged in depth from approximately 1 to 9 feet bgs. Based on observations of soils in excavations during the remedial activities, the thick viscous nature of waste oil, and confirmation sampling of soils on the excavation bottoms, it appears that infiltration/percolation at the Site has not caused contaminants to migrate into soils deeper than the depths explored in the remedial excavations.

Based on soil samples collected from ditches located in topographic low spots directly behind the soil berms, it does not appear that stormwater runoff has caused contaminants from the soil berms to migrate. Besides the ditches, there are no other stormwater conveyance features present on site.

There is no surface water on the Site, and no COCs were detected above MTCA Method A or B CULs in groundwater samples collected from three newly installed monitoring wells, thus eliminating these two exposure pathways. The soil and air pathways are also considered incomplete, based on soil sampling results. There are no potential health, environmental, or other impacts from the COCs remaining at the site.

5. CLEANUP STANDARDS

5.1. SELECTED SOIL CLEANUP LEVELS

For this Site, MTCA Method A cleanup levels for unrestricted land use were used, with some exceptions. For compounds with more restrictive criteria than MTCA Method A or B cleanup levels for unrestricted land use, listed below, chemical concentration numbers listed in Table 749-2 (WAC 173-340-900) were used as cleanup levels for the Site:

- Diesel Range Organics – A cleanup level of 460 milligram per kilogram (mg/kg)
- Total lead – A cleanup level of 220 mg/kg
- Total chromium – A cleanup level of 42 mg/kg

5.2. CLEANUP STANDARDS FOR OTHER MEDIA

Not applicable—no other contaminated media besides soil have been identified at the site.

5.3. TERRESTRIAL ECOLOGICAL EVALUATION

The site was evaluated by a Herrera biologist for the potential to pose a threat to terrestrial ecological receptors. Supporting documentation for the TEE is provided in Appendix B. To qualify for exclusion from a TEE, the site must meet one of the four criteria included in WAC 173-340-7491(1). The site does not meet any of the exclusion criteria based on the following:

- The impacted soil is located below the point of compliance (site surface extending to 15 feet bgs).
- An institutional control is not present to maintain a physical barrier that prevents potential ecological exposure.
- There are more than 1.5 acres of contiguous undeveloped land within 500 feet of the site.
- Concentrations in the soil are not below natural background levels.

Because the site does not qualify for exclusion from a TEE under subsection (1) of WAC 173-340-7491, further evaluation for the potential threat to terrestrial ecological receptors is required under subsection (2). Model Toxics Control Act (MTCA) regulations (WAC 173-340-7491(2)) allow a simplified TEE if all the following criteria apply:

1. The site is not located on, or directly adjacent to, an area where management of land use plans will maintain or restore native or semi-native vegetation.
2. The site is not used by threatened or endangered species.
3. This site is located on a property that contains less than 10 acres of native vegetation within 500 feet of the site, not including vegetation beyond the property boundaries.
4. The department determines that the site does not present a risk to significant wildlife population.

Each of the above criteria were evaluated, and the site was found to qualify for a simplified evaluation, as described below (see Appendix B for supporting documentation):

Criterion 1: The site is not within a designated critical area.

Criterion 2: Washington Department of Fish and Wildlife's (WDFW) Priority Habitat Species (PHS) mapping tool indicated that no threatened or endangered species use the site.

Criterion 3: Less than 10 acres of native vegetation is located on the property within 500 feet of the contaminated soils at the Site. Approximately 6.2 acres of native vegetation are located within 500 feet of the Site and approximately 3.1 acres of the Site is dominated by nonnative European Scotch Broom (*Cytisus scoparius*).

Criterion 4: It is assumed that Ecology will determine that the site does not present a risk to a significant wildlife population.

The simplified TEE was completed for the site as required in WAC 173-340-7492.

Per WAC 173-340-7492(2)(c)(i), the Site met the criteria to end the evaluation based on exposure analysis, pathway analysis, and contaminant analysis. After remediation, no contaminants listed in Table 749-2 are present in soils at concentrations that exceed the cleanup levels listed.

6. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

6.1. SUMMARY AND CONCLUSIONS

The Site has been adequately characterized and successfully remediated in compliance with Chapter 173-340 WAC. The remedial action removed all contamination to levels below the ecological screening levels and/or MTCA Method A or B cleanup levels for unrestricted land use.

6.1.1. Test Pits

A total of nine test pits were initially completed at the Site during the Limited Phase II ESA completed in May 2019 (S&W). Contaminated soils were not identified at TP-1 through TP-8.

At TP-9, petroleum-impacted soils and miscellaneous debris were encountered in fill soils to a depth of 8 feet bgs. Elevated concentrations of lube oil, heavy metals (cadmium and lead), and cPAHs were detected above the MTCA Method A cleanup levels in samples from 2.5 feet and 8 feet bgs. In Addition, the concentration of lead detected in the 2.5-foot deep sample exceeded the Dangerous Waste limit of 5 mg/L for TCLP lead.

Previous investigations observed abandoned automobile remnants near TP-4. Those remnants were removed on July 23, and no COCs were detected in soils at that location above the ecological SSLs or MTCA Method A or B CULs.

An additional 11 test pit explorations were completed in June 2019, including 9 test pits along the north and west soil berms, and a tenth “clean” test pit behind (e.g., south of) the north soil berm. At TP-A through TP-D, miscellaneous household debris including plastic, metal, ceramic, concrete, rope, and similar items were observed in four test pits completed along the west berm. However, no petroleum-stained soils, odors, or other signs of contamination were observed and concentrations of COCs detected were below the Site SSLs and CULs.

At TP-E, miscellaneous household debris was observed, and at TP-F through TP-I, metal debris, rubber hose, and other items were observed along with petroleum staining resembling waste oil and strong petroleum odors. Laboratory analysis of a samples from TP-E and TP-F confirmed elevated concentrations of lube oil, lead, and cPAHs above the Site SSLs and CULs.

6.1.2. Ditches

Surface soil samples were collected from a total of six locations in ditches. An elevated concentration of lube oil was detected at the Ditch 5 sample location directly behind TP-E. No elevated concentrations of COCs above Site SSLs or CULs were detected at any of the other five ditch sample locations.

6.1.3. Remedial Excavations

A total of four remedial excavations, Excavation E through Excavation H were completed at the Site; Excavation H included the former TP-9 source area that was investigated by Shannon & Wilson. Remedial activities were initiated at the Site on July 22 and completed on August 13. At each excavation, soils were visually screened and loaded directly into a truck and trailer or stockpiled on plastic sheeting, and initial soil confirmation samples were collected. Where COCs were detected in soil samples above Site SSLs or CULs, additional soils were removed, and the area(s) resampled until no COCs were detected above Site SSLs or CULs in any of the final confirmation samples from all four excavations.

A total of 242.49 tons of soils designated as Dangerous Waste were disposed at Chemical Waste Management in Arlington, Oregon, and 759.28 tons of soils designated as PCS were disposed at LRI in Puyallup, Washington.

6.1.4. Groundwater

During the August 5, 2019, sampling event, only three total metals (chromium, lead, and zinc) were detected above the laboratory reporting limits in a sample from one well (MW-1); however, the metals concentrations were all below the respective MTCA Method A or B cleanup levels. No petroleum hydrocarbons, fuel additives, or cPAHs were detected in samples from any of the wells. During the November 1, 2019, sampling event, none of the parameters analyzed were detected above the laboratory reporting limits in any of the three wells.

6.2. RECOMMENDATIONS

One additional round of quarterly groundwater sampling is planned in February 2019 to further assess groundwater conditions at the Site. Pending the results of that sampling event and based on the additional site characterization activities and remedial actions completed to date, an unrestricted NFA is warranted for this Site.

7. REFERENCES

Brown and Caldwell. 1985. Final Report Clover/Chambers Creek Geohydrologic Study for Tacoma-Pierce County Health Department. July.

Ecology. 1994. Natural Background Soil Metals Concentrations in Washington State, Publication No. 94-115, Published by the Washington State Department of Ecology, Olympia, Washington.

Ecology. 2013. Model Toxics Control Act Regulation and Statute—Model Toxics Control Act, Chapter 70.105D RCW; Uniform Environmental Covenants Act, Chapter 64.70 RCW; and MTCA Cleanup Regulation, Chapter 173-340 WAC. Washington State Department of Ecology, Toxics Cleanup Program. Publication Number 94-06. Revised 2013.

Pierce County. 2014. Determination of Non-Significance, Environmental Application No. 770376, Reclamation Plan for Prairie Pit. Prepared by Pierce County, Tacoma, Washington. February 25.

Pierce County. 2019. Pierce County Tax Assessor-Treasurer, tax parcel Information for parcel number 0319262004. Accessed viewed October 14, 2019.

<<https://epip.co.pierce.wa.us/CFApps/atr/ePIP/search.cfm>>.

Rudolph, Jeff, Environmental Biologist III, Pierce County Planning and Public Works. Personal communication: interview with George Iftner, Herrera Environmental Consultants, Inc., and Jeff Rudolph, regarding historical placement of street sweepings on the southern half of the property. June 25, 2019.

S&W. 2019. Limited Phase II Environmental Site Assessment, Approximate 13.4 acres – Waller Road, Frederickson, Washington. Prepared for Bethel School District, Spanaway, Washington by Shannon & Wilson, Seattle, Washington. May 2.

Sitts & Hill. 2019. Monitoring Wells Location Exhibit over topographic survey. Prepared for Pierce County Planning and Public Works by Sitts & Hill Engineers, Inc., Tacoma, Washington. August 7.

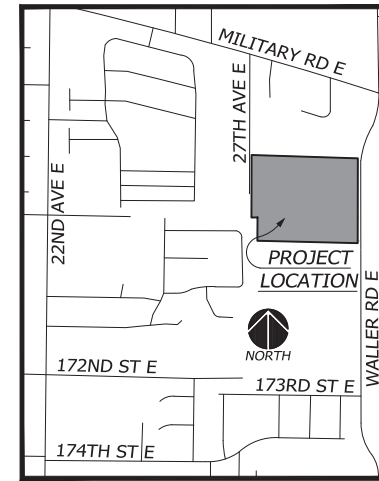
USGS. 2010. Hydrogeologic Framework, Groundwater Movement, and Water Budget in the Chambers-Clover Creek Watershed and Vicinity, Pierce County, Washington. Prepared by the US Geological Survey in cooperation with the Pierce Conservation District and the Washington State Department of Ecology.

APPENDIX A

Monitoring Well Location Exhibit and Topographic Survey

MONITORING WELLS LOCATION EXHIBIT

A PORTION OF THE NE 1/4 OF THE SW 1/4 & THE SE 1/4 OF THE NW 1/4 OF SECTION 26, TOWNSHIP 19 NORTH, RANGE 3 EAST, W.M., PIERCE COUNTY, WASHINGTON



VICINITY MAP
NOT TO SCALE



HORIZONTAL SCALE: 1"=50'
50 0 50 100

LEGEND

- FOUND MONUMENT AS NOTED
- WA DEPT OF ECOLOGY UNIQUE WELL
- FOUND PROPERTY CORNER AS NOTED
- SURVEY CONTROL POINT, AS NOTED
- STORM CULVERT
- UTILITY POLE
- GUY ANCHOR
- JUNCTION BOX
- POWER TRANSFORMER
- TELEPHONE RISER
- TELEPHONE JUNCTION BOX
- SIGN
- MAILBOX
- TPN TAX PARCEL NUMBER
- TREE

- BOUNDARY LINE
- LOT LINE
- SECTION LINE
- RIGHT OF WAY LINE
- ROAD CENTERLINE
- OVERHEAD POWER LINE
- BURIED TELECOMMUNICATIONS LINE
- DITCH LINE
- CHAIN LINK FENCE
- WOOD FENCE
- WIRE FENCE
- ASPHALT SURFACE
- CONCRETE SURFACE
- GRAVEL SURFACE

HORIZONTAL DATUM

WASHINGTON STATE PLANE COORDINATE SYSTEM, SOUTH ZONE, NAD 83/2011
BASED ON GPS OBSERVATION UTILIZING THE WASHINGTON STATE REFERENCE NETWORK (WSRN)

MEASURED NORTH 01°23'58" EAST BETWEEN TWO FOUND MONUMENTS ALONG WALLER ROAD EAST AS SHOWN

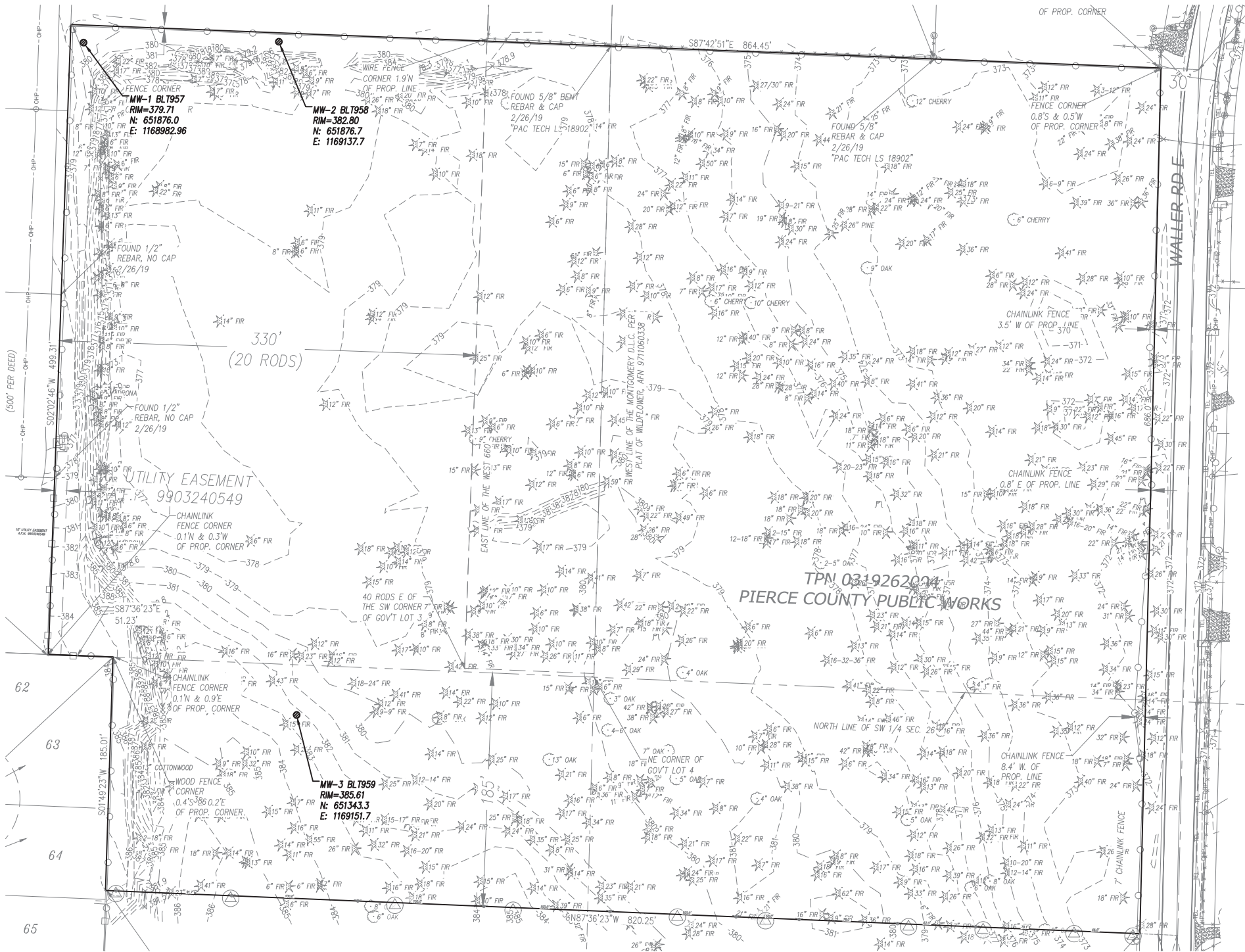
VERTICAL DATUM

NAVD 88
BASED ON GPS OBSERVATION UTILIZING THE WSRN WITH NGS GEOID2012B LOADED

TEMPORARY BENCHMARK ELEVATION = 373.26
DESCRIPTION: 3" SURFACE BRASS W/PUNCH ON WALLER ROAD EAST NEAR THE NORTHEAST SITE CORNER

NOTES

- THE PURPOSE OF THIS SURVEY EXHIBIT IS TO ILLUSTRATE THE LOCATION OF THE 3 MONITORING WELLS INSTALLED UNDER HERRERA DIRECTION AND TO PROVIDE THE ASSOCIATED MEASURED DATA FOR EACH. SEE THE MONITORING WELL TABLE SHOWN HEREON.
- ELEVATIONS FOR THE MONITORING WELL DATA ARE BASED ON FIELD MEASUREMENTS COMPLETED WITH DIFFERENTIAL LEVELING.
- EQUIPMENT USED: TOPCON QS AND/OR CARLSON CR2+ ROBOTIC TOTAL STATION AND TOPCON GR3 RTK/GPS
- THIS SURVEY WAS PERFORMED BY FIELD TRAVERSE WITH THE FINAL RESULTS MEETING OR EXCEEDING THE CURRENT TRAVERSE STANDARDS CONTAINED IN W.A.C. 332-130-090. ALL MEASUREMENTS WERE MADE WITH A TOPCON QS ROBOTIC TOTAL STATION IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S SPECIFICATIONS.
- IN ACCORDANCE WITH THE REVISED CODE OF WASHINGTON (R.C.W.) 58.09 AND THE WASHINGTON ADMINISTRATIVE CODE (W.A.C.) 332-130, THIS SURVEY MAY DEPICT OCCUPANCY INDICATORS THAT DIFFER FROM THE DEEDED LOT LINES. THESE INDICATORS, IF AT ALL PRESENT, MAY REPRESENT A POTENTIAL FOR CLAIMS OF UNWRITTEN TITLE. THIS SURVEY DOES NOT PURPORT TO RESOLVE SUCH ITEMS.
- FIELD WORK PERFORMED IN MARCH AND AUGUST 2019, UNDER SITTS & HILL JOB NUMBER 18234 AND 18497.
- UTILITIES AS SHOWN HEREON ARE BASED ON FIELD SURVEY OBSERVATION OF UTILITY LOCATE SERVICES PERFORMED BY MT. VIEW LOCATING SERVICES LLC IN FEBRUARY FOR THIS SURVEY. THIS HAS BEEN SUPPLEMENTED BY RECORD INFORMATION OBTAINED FROM PIERCE COUNTY GIS. RECORD UTILITY LINES SHOWN HEREON ARE DEPICTED WITH A DASHED LINE TYPE AS SHOWN IN THE LEGEND. UTILITIES OTHER THAN SHOWN MAY EXIST ON THE SITE. THE SURVEYOR DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. THE SURVEYOR DOES CERTIFY THAT THEY ARE SHOWN AS ACCURATELY AS POSSIBLE FROM FIELD SURVEY AND PAINTED UTILITY LOCATE LINES. COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA IS CONSISTENT WITH QUALITY LEVEL B OF THE ASCE STANDARD GUIDELINES 38-02.
- SITTS & HILL ENGINEERS, INC. HAS RELIED UPON TITLE INFORMATION NOTED IN COMMITMENT FOR TITLE INSURANCE PREPARED BY CHICAGO TITLE INSURANCE COMPANY, COMMITMENT NUMBER 0126698-TC, DATED JUNE 6, 2018. SITTS & HILL ENGINEERS, INC. HAS RELIED WHOLLY ON SAID TITLE COMPANY'S REPORT AND THEREFORE QUALIFIES THE MAP'S ACCURACY AND COMPLETENESS TO THAT EXTENT.
- THIS SURVEY COMPLIES WITH W.A.C. 332-130-145. THE CONTOURS DEPICTED HEREON ARE BASED ON DATA FROM DIRECT FIELD MEASUREMENTS. THE TOPOGRAPHIC MAPPING DATA ILLUSTRATED HEREON IS INTENDED TO PROVIDE BACKGROUND AND REFERENCE INFORMATION FOR THIS EXHIBIT. ORIGINAL COMPLETE BOUNDARY AND TOPOGRAPHIC MAPPING WAS COMPLETED FOR BETHEL SCHOOL DISTRICT. REFER TO SITTS & HILL PROJECT NUMBER 18234 FOR ADDITIONAL INFORMATION.



TPN 03-9262004
PIERCE COUNTY PUBLIC WORKS

MONITORING WELL DATA - 08/05/2019

POINT	DESCRIPTION	RIM ELEVATION	TOP OF PVC CASING ELEVATION	ADJACENT GROUND ELEVATION	NORTHING	EASTING
MW-1	BLT 957	379.71	379.50	379.48	651876.0	1166983.0
MW-2	BLT 958	382.80	382.33	379.39	651876.7	1169137.7
MW-3	BLT 959	385.61	384.97	381.85	651343.3	1169151.7

REVISIONS

DESIGNED	DRAWN	CHECKED	DATE	SCALE
			08-07-2019	AS NOTED



SITTS & HILL ENGINEERS, INC.
CIVIL - STRUCTURAL - SURVEYING
4815 CENTER STREET | TACOMA, WA 98403
PHONE: (253) 474-9449 | FAX: (253) 474-0153
http://www.sitts-hill.com

HERRERA INC.
2200 - 6TH AVE. STE. 1100
SEATTLE, WA 98121
ATTN: GEORGE IFTNER

**PRAIRIE PIT SITE
WALLER ROAD
PIERCE COUNTY, WA**
SHEET TITLE
**MONITORING WELLS LOCATION
EXHIBIT**

1 OF 1

PROJECT NO.

18497

APPENDIX B

Terrestrial Ecological Evaluation Documentation



Voluntary Cleanup Program

Washington State Department of Ecology Toxics Cleanup Program

TERRESTRIAL ECOLOGICAL EVALUATION FORM

Under the Model Toxics Control Act (MTCA), a terrestrial ecological evaluation is necessary if hazardous substances are released into the soils at a Site. In the event of such a release, you must take one of the following three actions as part of your investigation and cleanup of the Site:

1. Document an exclusion from further evaluation using the criteria in WAC 173-340-7491.
2. Conduct a simplified evaluation as set forth in WAC 173-340-7492.
3. Conduct a site-specific evaluation as set forth in WAC 173-340-7493.

When requesting a written opinion under the Voluntary Cleanup Program (VCP), you must complete this form and submit it to the Department of Ecology (Ecology). The form documents the type and results of your evaluation.

Completion of this form is not sufficient to document your evaluation. You still need to document your analysis and the basis for your conclusion in your cleanup plan or report.

If you have questions about how to conduct a terrestrial ecological evaluation, please contact the Ecology site manager assigned to your Site. For additional guidance, please refer to <https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Terrestrial-ecological-evaluation>.

Step 1: IDENTIFY HAZARDOUS WASTE SITE

Please identify below the hazardous waste site for which you are documenting an evaluation.

Facility/Site Name: 13.4-Acre Undeveloped Parcel

Facility/Site Address: 16720 Waller Road East, Tacoma, Pierce County, WA 98446-1336

Facility/Site No.: 40178

VCP Project No.: SW1684

Step 2: IDENTIFY EVALUATOR

Please identify below the person who conducted the evaluation and their contact information.

Name: Josh LeClerc

Title: Project Biologist

Organization: Herrera Environmental Consultants

Mailing address: 2200 Sixth Avenue, Suite 1100

City: Seattle

State: WA

Zip code: 98121

Phone: 206-787-8303

Fax:

E-mail: jleclerc@herrerainc.com

Step 3: DOCUMENT EVALUATION TYPE AND RESULTS

A. Exclusion from further evaluation.

1. Does the Site qualify for an exclusion from further evaluation?

- ☐ Yes *If you answered "YES," then answer **Question 2**.*
- ☒ No or Unknown *If you answered "NO" or "UNKNOWN," then skip to **Step 3B** of this form.*

2. What is the basis for the exclusion? Check all that apply. Then skip to **Step 4** of this form.

Point of Compliance: WAC 173-340-7491(1)(a)

- ☐ All soil contamination is, or will be,* at least 15 feet below the surface.
- ☐ All soil contamination is, or will be,* at least 6 feet below the surface (or alternative depth if approved by Ecology), and institutional controls are used to manage remaining contamination.

Barriers to Exposure: WAC 173-340-7491(1)(b)

- ☐ All contaminated soil, is or will be,* covered by physical barriers (such as buildings or paved roads) that prevent exposure to plants and wildlife, and institutional controls are used to manage remaining contamination.

Undeveloped Land: WAC 173-340-7491(1)(c)

- ☐ There is less than 0.25 acres of contiguous[#] undeveloped[±] land on or within 500 feet of any area of the Site and any of the following chemicals is present: chlorinated dioxins or furans, PCB mixtures, DDT, DDE, DDD, aldrin, chlordane, dieldrin, endosulfan, endrin, heptachlor, heptachlor epoxide, benzene hexachloride, toxaphene, hexachlorobenzene, pentachlorophenol, or pentachlorobenzene.
- ☐ For sites not containing any of the chemicals mentioned above, there is less than 1.5 acres of contiguous[#] undeveloped[±] land on or within 500 feet of any area of the Site.

Background Concentrations: WAC 173-340-7491(1)(d)

- ☐ Concentrations of hazardous substances in soil do not exceed natural background levels as described in WAC 173-340-200 and 173-340-709.

* An exclusion based on future land use must have a completion date for future development that is acceptable to Ecology.

[±] "Undeveloped land" is land that is not covered by building, roads, paved areas, or other barriers that would prevent wildlife from feeding on plants, earthworms, insects, or other food in or on the soil.

[#] "Contiguous" undeveloped land is an area of undeveloped land that is not divided into smaller areas of highways, extensive paving, or similar structures that are likely to reduce the potential use of the overall area by wildlife.

B. Simplified evaluation.

1. Does the Site qualify for a simplified evaluation?

- ☒ Yes *If you answered "YES," then answer **Question 2** below.*
- ☐ No or Unknown *If you answered "NO" or "UNKNOWN," then skip to **Step 3C** of this form.*

2. Did you conduct a simplified evaluation?

- ☒ Yes *If you answered "YES," then answer **Question 3** below.*
- ☐ No *If you answered "NO," then skip to **Step 3C** of this form.*

3. Was further evaluation necessary?

- ☐ Yes *If you answered "YES," then answer **Question 4** below.*
- ☒ No *If you answered "NO," then answer **Question 5** below.*

4. If further evaluation was necessary, what did you do?

- ☐ Used the concentrations listed in Table 749-2 as cleanup levels. *If so, then skip to **Step 4** of this form.*
- ☐ Conducted a site-specific evaluation. *If so, then skip to **Step 3C** of this form.*

5. If no further evaluation was necessary, what was the reason? Check all that apply. Then skip to **Step 4** of this form.

Exposure Analysis: WAC 173-340-7492(2)(a)

- ☒ Area of soil contamination at the Site is not more than 350 square feet.
- ☐ Current or planned land use makes wildlife exposure unlikely. Used Table 749-1.

Pathway Analysis: WAC 173-340-7492(2)(b)

- ☒ No potential exposure pathways from soil contamination to ecological receptors.

Contaminant Analysis: WAC 173-340-7492(2)(c)

- ☒ No contaminant listed in Table 749-2 is, or will be, present in the upper 15 feet at concentrations that exceed the values listed in Table 749-2.
- ☐ No contaminant listed in Table 749-2 is, or will be, present in the upper 6 feet (or alternative depth if approved by Ecology) at concentrations that exceed the values listed in Table 749-2, and institutional controls are used to manage remaining contamination.
- ☐ No contaminant listed in Table 749-2 is, or will be, present in the upper 15 feet at concentrations likely to be toxic or have the potential to bioaccumulate as determined using Ecology-approved bioassays.
- ☐ No contaminant listed in Table 749-2 is, or will be, present in the upper 6 feet (or alternative depth if approved by Ecology) at concentrations likely to be toxic or have the potential to bioaccumulate as determined using Ecology-approved bioassays, and institutional controls are used to manage remaining contamination.

C. Site-specific evaluation. A site-specific evaluation process consists of two parts: (1) formulating the problem, and (2) selecting the methods for addressing the identified problem. Both steps require consultation with and approval by Ecology. See WAC 173-340-7493(1)(c).

1. Was there a problem? See WAC 173-340-7493(2).

- ☐ Yes *If you answered “YES,” then answer **Question 2** below.*
- ☐ No *If you answered “NO,” then identify the reason here and then skip to **Question 5** below:*
- ☐ No issues were identified during the problem formulation step.
- ☐ While issues were identified, those issues were addressed by the cleanup actions for protecting human health.

2. What did you do to resolve the problem? See WAC 173-340-7493(3).

- ☐ Used the concentrations listed in Table 749-3 as cleanup levels. *If so, then skip to **Question 5** below.*
- ☐ Used one or more of the methods listed in WAC 173-340-7493(3) to evaluate and address the identified problem. *If so, then answer **Questions 3 and 4** below.*

3. If you conducted further site-specific evaluations, what methods did you use?
Check all that apply. See WAC 173-340-7493(3).

- ☐ Literature surveys.
- ☐ Soil bioassays.
- ☐ Wildlife exposure model.
- ☐ Biomarkers.
- ☐ Site-specific field studies.
- ☐ Weight of evidence.
- ☐ Other methods approved by Ecology. If so, please specify:

4. What was the result of those evaluations?

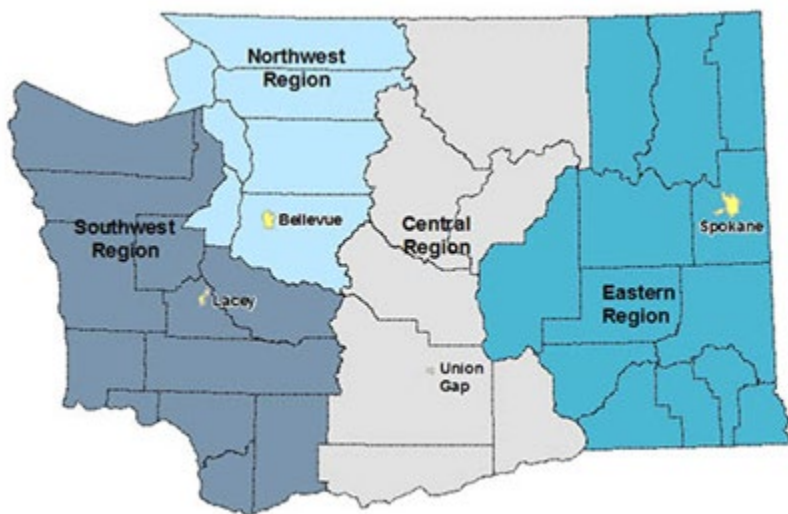
- ☐ Confirmed there was no problem.
- ☐ Confirmed there was a problem and established site-specific cleanup levels.

5. Have you already obtained Ecology’s approval of both your problem formulation and problem resolution steps?

- ☐ Yes If so, please identify the Ecology staff who approved those steps:
- ☐ No

Step 4: SUBMITTAL

Please mail your completed form to the Ecology site manager assigned to your Site. If a site manager has not yet been assigned, please mail your completed form to the Ecology regional office for the County in which your Site is located.



Northwest Region: Attn: VCP Coordinator 3190 160 th Ave. SE Bellevue, WA 98008-5452	Central Region: Attn: VCP Coordinator 1250 West Alder St. Union Gap, WA 98903-0009
Southwest Region: Attn: VCP Coordinator P.O. Box 47775 Olympia, WA 98504-7775	Eastern Region: Attn: VCP Coordinator N. 4601 Monroe Spokane WA 99205-1295

If you need this publication in an alternate format, please call the Toxics Cleanup Program at 360-407-7170. People with hearing loss can call 711 for Washington Relay Service. People with a speech disability can call 877-833-6341.

Bald eagles in Washington

Recent Changes to Bald Eagle Management Planning

The recovery of the bald eagle is a major success story for our state and the entire nation. After 30 years of steady population growth, the iconic bird was removed from the federal endangered species list in 2007, then from the state's list in 2017. Scientists attribute the species' dramatic recovery to a variety of conservation measures, notably the federal ban on DDT.

Now that bald eagle populations have rebounded, many of the special safeguards designed to protect them are no longer necessary. Since 2011, when the Washington Fish and Wildlife Commission changed the species' status from "threatened" to "sensitive," many of the state's special protective measures for bald eagles have been eliminated.



Today, the U.S. Fish and Wildlife Service (USFWS) has the primary responsibility for managing bald eagles under the provisions of the federal Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Current federal guidelines for activities that may affect bald eagles are posted on the USFWS website: <http://www.fws.gov/pacific/eagle/>.

WDFW no longer actively maintains bald eagle nest or roost data, nor distributes it through our Priority Habitat and Species data. For additional information about what WDFW does and does not provide please visit our web site at: <https://wdfw.wa.gov/species-habitats/at-risk/species-recovery/bald-eagle>.

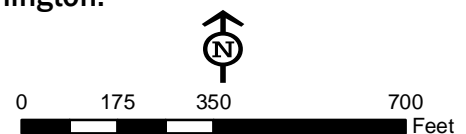


Legend

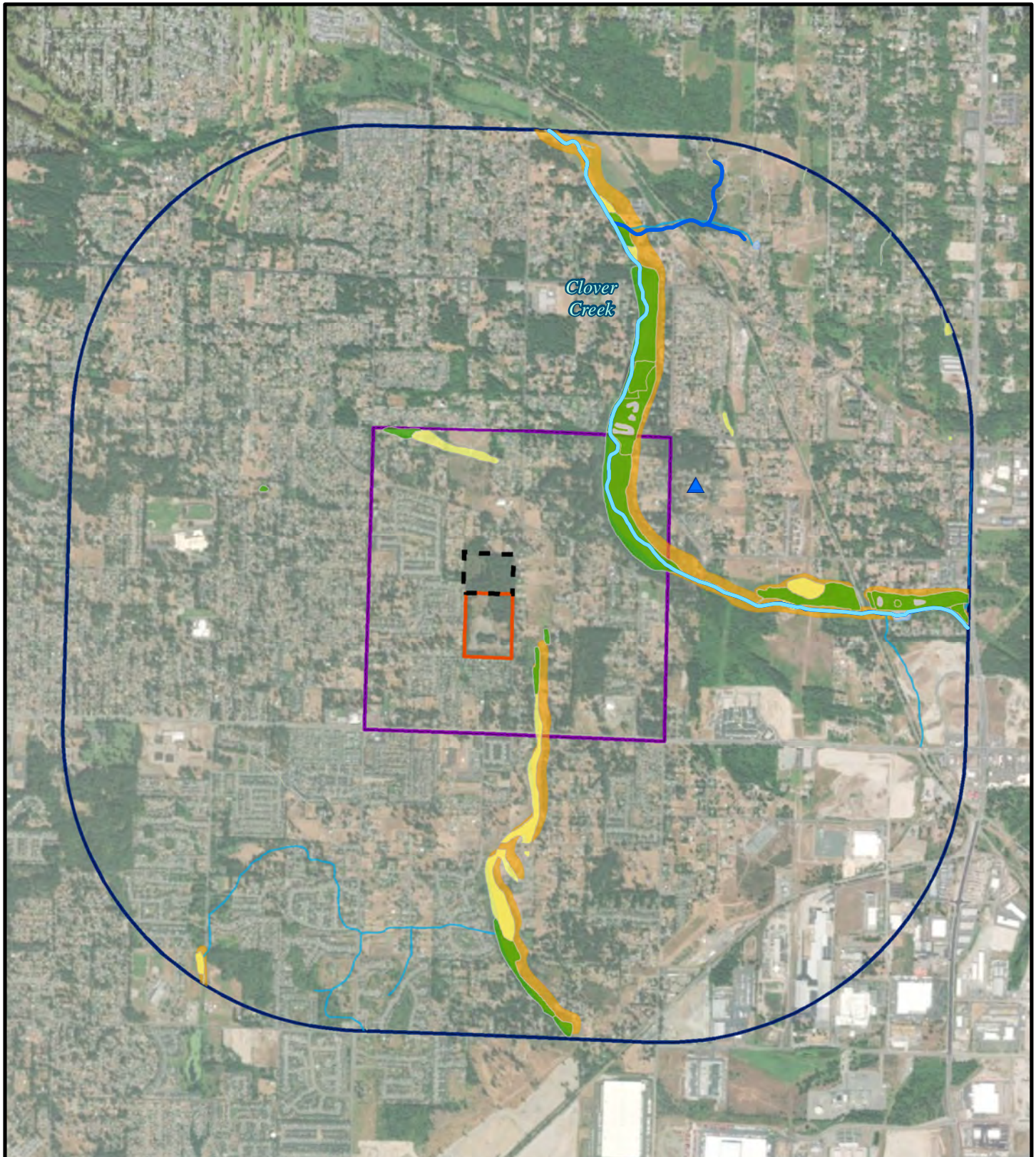
- Private water supply well
- Monitoring well (Herrera 2019)
- Test pit (Shannon & Wilson 2019)
- Parcel 0319262074 being sold
- Parcel 0319263091
- Soil berm
- Ditch
- Access road

Notes: The plotted locations of private water supply wells are not consistent with the listed addresses (see the Hydrology section of the Site Closure Report for more information).

Figure B-1. Site Map of 13.4-Acre Undeveloped Parcel, Pierce County, Washington.



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Legend

- | | |
|------------------------------|-----------------------------------|
| Parcel 0319262074 being sold | PHS boundary |
| Parcel 0319263091 | PHS wetland |
| Area of interest | NWI Wetlands |
| Band-tailed pigeon | Freshwater Emergent Wetland |
| Salmonid Stock Inventory | Freshwater Forested/Shrub Wetland |
| WA Fish Distribution | Freshwater Pond |
| | Riverine |

Figure B-2.
Priority Habitat and Species (PHS) Data
for 13.4-Acre Undeveloped Parcel, Pierce
County, Washington.



0 1,200 2,400 4,800
Feet



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APPENDIX C

Photographic Documentation

13.4-ACRE UNDEVELOPED PARCEL SITE REMEDIATION: PHOTOGRAPHIC LOG

Photo Number	Photo Description
1	Initial site conditions facing west along north berm, west of Shannon & Wilson Test Pit 9 (TP-9).
2	Initial site conditions at TP-9.
3	Ditch 1 sample location behind west berm, near Test Pit B.
4	Ditch 2 sample location behind west berm, near Test Pit D.
5	Ditch 3 sample location behind north berm, near Test Pit F.
6	Ditch 4 sample location behind north berm, near Test Pit G.
7	Ditch 5 sample location behind berm, near Test Pit E; after additional excavation and resampling.
8	Ditch 6 sample location behind berm, near Test Pits I and J.
9	Test Pit A soils.
10	Test Pit A debris (black plastic seedling trays, glass, porcelain, brick, tin can, metal screen edging, plastic bags, steel threaded rod, and concrete).
11	Test Pit B soils.
12	Test Pit B debris (small concrete fragments in upper 2 feet – almost completely free of debris).
13	Test Pit C location.
14	Test Pit C soils.
15	Test Pit C debris (black plastic seedling trays, Bayer aspirin bottle, glass milk bottle, and ceramic plate).
16	Test Pit D soils.
17	Test Pit D debris (ceramic, plastic bag, and dust mask).
18	Test Pit E soils.
19	Test Pit E debris (cans, brick, rope, plastic, landscaper's cloth).
20	Test Pit F soils.
21	Test Pit F debris (rusty drum, shoes, rubber hose, glass).
22	Test Pit G with petroleum stained soils.
23	Test Pit H with petroleum stained soils and clothing.
24	Test Pit H rusty drum.
25	Test Pit I location.
26	Test Pit I with petroleum stained soils.
27	Test Pit J – No debris or impacted soils observed.
28	Test Pit K where rusty 30-gallon empty drum was observed.
29	Test Pit L area by abandoned automobile parts.
30	Test Pit L remnants removed (e.g., seat springs, frame and cover).
31	Monitoring Well 1 (MW-1) location at northwest corner of property.
32	MW-1 representative soils (e.g., gravel with sand at 10 to 15 feet below ground surface (bgs)).
33	MW-2 location near Excavation G.
34	MW-2 saturated soils from 40 to 45 feet bgs.
35	MW-3 location south of abandoned automobile area (e.g., south of Test Pit L).
36	MW-3 saturated soils from 40 to 50 feet bgs.

Photo Number	Photo Description
37	Excavation E: Bed springs uncovered during excavation.
38	Excavation E: Initial excavation at location of Test Pit E.
39	Excavation E: Debris encountered during excavation activities.
40	Excavation E: Rubber hose and debris encountered during excavation.
41	Excavation E: East end of final excavation.
42	Excavation E: West end of final excavation.
43	Excavation E: North end of final excavation.
44	Excavation E: North end of final excavation, facing east.
45	Excavation F during excavation activities.
46	Excavation F nearly completed.
47	Excavation G during excavation activities.
48	Excavation G: Oil stained timbers being removed.
49	Excavation G: Rusty empty 55-gallon drum with oil-stained soils.
50	Excavation G: West end of final excavation.
51	Excavation G: East end of final excavation.
52	Excavation H: Initial excavation work in berm at Test Pit I.
53	Excavation H: Waste oil impacted soils being removed from berm at east end of Excavation H.
54	Excavation H: Before trees were removed to excavate and remove contaminated soils.
55	Excavation H: Final excavation along north fence line, east end of Excavation H.
56	Excavation H: Final excavation, facing west.
57	Excavation H: North wall of final excavation facing west.
58	Excavation H: Final excavation bottom at east end.
59	Excavation H: Final excavation bottom at west end.
60	Excavation H: Final excavation, north sidewall.
61	Excavation H: Southeast corner where trees were removed, before final soil removal on 8/13/19.
62	Excavation H: Final excavation, facing east.
63	Monitoring Well 2 and Excavations G and H after placement of backfill material, facing east.
64	Excavation H at former Test Pit 9 location after placement of backfill.
65	Stockpile area in clearing, facing south.
66	Portions of Stockpiles H and E in background prior to being loaded into trucks for offsite disposal.
67	East end of clearing after Stockpile H was loaded out for offsite disposal.



1. Initial site conditions facing west along north berm, west of Shannon & Wilson Test Pit 9 (TP-9).



2. Initial site conditions at TP-9.



3. Ditch 1 sample location behind west berm, near Test Pit B.



4. Ditch 2 sample location behind west berm, near Test Pit D.



5. Ditch 3 sample location behind north berm, near Test Pit F.



6. Ditch 4 sample location behind north berm, near Test Pit G.



7. Ditch 5 sample location behind berm, near Test Pit E; after additional excavation and resampling.



8. Ditch 6 sample location behind berm, near Test Pits I and J.



9. Test Pit A soils.



10. Test Pit A debris (black plastic seedling trays, glass, porcelain, brick, tin can, metal screen edging, plastic bags, steel threaded rod, and concrete).



11. Test Pit B soils.



12. Test Pit B debris (small concrete fragments – almost completely free of debris).



13. Test Pit C location.



14. Test Pit C soils.



15. Test Pit C debris (black plastic seedling trays, Bayer aspirin bottle, glass milk bottle, and ceramic plate).



16. Test Pit D soils.



17. Test Pit D debris (ceramic, plastic bag, and dust mask).



18. Test Pit E soils.



19. Test Pit E debris (cans, brick, rope, plastic, landscaper's cloth).



20. Test Pit F soils.



21. Test Pit F debris (rusted drum, shoes, rubber hose, glass).



22. Test Pit G with petroleum stained soils.



23. Test Pit H with petroleum stained soils and clothing.



24. Test Pit H rusted drum.



25. Test Pit I location.



26. Test Pit I with petroleum stained soils.



27. Test Pit J – No debris or impacted soils observed.



28. Test Pit K where rusted 30-gallon empty drum was observed.



30. Test Pit L remnants removed (e.g., seat springs, frame and cover).



29. Test Pit L area by abandoned automobile parts.



31. Monitoring Well 1 (MW-1) location at northwest corner of property.



32. MW-1 representative soils (e.g., gravel with sand at 10 to 15 feet below ground surface (bgs)).



34. MW-2 saturated soils from 40 to 45 feet bgs.



33. MW-2 location near Excavation G.



35. MW-3 location south of abandoned automobile area (e.g., south of Test Pit L).



36. MW-3 saturated soils from 40 to 50 feet bgs.



37. Excavation E: Bed springs uncovered during excavation.



38. Excavation E: Initial excavation at location of Test Pit E.



39. Excavation E: Debris encountered during excavation activities.



40. Excavation E: Rubber hose and debris encountered during excavation.



41. Excavation E: East end of final excavation.



42. Excavation E: West end of final excavation.



43. Excavation E: North end of final excavation.



44. Excavation E: North end of final excavation, facing east.



45. Excavation F during excavation activities.



46. Excavation F nearly completed.



47. Excavation G during excavation activities.



48. Excavation G: Oil stained timbers being removed.



49. Excavation G: Rusted empty 55-gallon drum with oil-stained soils.



50. Excavation G: West end of final excavation.



51. Excavation G: East end of final excavation.



52. Excavation H: Initial excavation work in berm at Test Pit I.



53. Excavation H: Waste oil impacted soils being removed from berm at east end of Excavation H.



54. Excavation H: Before trees were removed to excavate and remove contaminated soils.



55. Excavation H: Final excavation along north fence line, east end of Excavation H.



56. Excavation H: Final excavation, facing west.



57. Excavation H: North wall of final excavation facing west.



58. Excavation H: Final excavation bottom at east end.



59. Excavation H: Final excavation bottom at west end.



60. Excavation H: Final excavation, north sidewall.



61. Excavation H: Southeast corner where trees were removed, before final soil removal on 8/13/19.



62. Excavation H: Final excavation, facing east.



63. Monitoring Well 2 and Excavations G and H after placement of backfill material, facing east.



64. Excavation H at former Test Pit 9 location after placement of backfill.



66. Portions of Stockpiles H and E in background prior to being loaded into trucks for offsite disposal.



65. Stockpile area in clearing, facing south.



67. East end of clearing after Stockpile H was loaded out for offsite disposal.

APPENDIX D

Soil Disposal Manifests

Date	Manifest #	Ticket #	Material	Facility	Carrier	Vehicle	Tons/Tonnes	Mat. Quantity	Mat. Unit
07/29/2019	020584404JJK	17780	RCRA Haz Waste - Disposal	Chem Waste Landfill Inc	R Transport	77	29.78	29.78	TON
07/30/2019	020584405JJK	17808	RCRA Haz Waste - Disposal	Chem Waste Landfill Inc	R Transport	77	30.82	30.82	TON
07/31/2019	020584409JJK	17966	RCRA Haz Waste - Disposal	Chem Waste Landfill Inc	R Transport	77	31.69	31.69	TON
07/31/2019	020584410JJK	18131	RCRA Haz Waste - Disposal	Chem Waste Landfill Inc	R Transport	77	31.84	31.84	TON
08/09/2019	020584411JJK	18427	RCRA Haz Waste - Disposal	Chem Waste Landfill Inc	R Transport	77	30.31	30.31	TON
08/09/2019	020584422JJK	18429	RCRA Haz Waste - Disposal	Chem Waste Landfill Inc	R Transport	77	29.56	29.56	TON
08/09/2019	020584423JJK	18430	RCRA Haz Waste - Disposal	Chem Waste Landfill Inc	R Transport	77	30.89	30.89	TON
08/15/2019	020584424JJK	18660	RCRA Haz Waste - Disposal	Chem Waste Landfill Inc	R Transport	77	27.6	27.60	TON

Please print or type.

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number WAH000050335		2. Page 1 of 1	3. Emergency Response Phone (800) 424-9300		4. Manifest Tracking Number 020584423 JJK		
5. Generator's Name and Mailing Address PIERCE COUNTY PLANNING PUBL WK 1800 BLOCK OF WALLER ROAD E TACOMA WA 98446 Generator's Phone: (253) 798-7893									
6. Transporter 1 Company Name R TRANSPORT							U.S. EPA ID Number WAH000028330		
7. Transporter 2 Company Name							U.S. EPA ID Number		
8. Designated Facility Name and Site Address CHEMICAL WASTE MANAGEMENT, INC. 17820 CEDAR SPRINGS LANE ARLINGTON OR 97812-9709 Facility's Phone: (503) 454-2843							U.S. EPA ID Number ORD089452353		
GENERATOR	9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))			10. Containers No. Type		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	X	1. RQ, NA3077, HAZARDOUS WASTE, SOLID, N.O.S., III, (D006), (SOIL CONTAINING >10 LB LEAD)			01	DT	60000	P	D006
		2.							
		3.							
		4.							
14. Special Handling Instructions and Additional Information 1. PROFILE OR342441, STAB08 LEAD IMPACTED SOIL; ERG=171; RQ=10 LBS E/R/P= CHEMTREC#CCN24117 61-780P									
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.									
Generator's/Offor's Printed/Typed Name: Brent Ruhl Signature: <i>[Signature]</i> Month: 08 Day: 02 Year: 19									
INT'L	16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Transporter signature (for exports only): _____ Date leaving U.S.: _____								
	17. Transporter Acknowledgment of Receipt of Materials Transporter 1 Printed/Typed Name: Nick Waters Signature: <i>[Signature]</i> Month: 08 Day: 02 Year: 19 Transporter 2 Printed/Typed Name: _____ Signature: _____ Month: _____ Day: _____ Year: _____								
DESIGNATED FACILITY	18. Discrepancy 18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection Manifest Reference Number: _____ U.S. EPA ID Number: _____ 18b. Alternate Facility (or Generator) _____ Facility's Phone: _____ 18c. Signature of Alternate Facility (or Generator) _____ Month: _____ Day: _____ Year: _____								
	19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems) 1. H132 2. _____ 3. _____ 4. _____								
	20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a Printed/Typed Name: Dawn Duke Signature: <i>[Signature]</i> Month: 8 Day: 2 Year: 19								
	DESIGNATED FACILITY TO GENERATOR								

Please print or type.

Form Approved. OMB No. 2050-0039

**UNIFORM HAZARDOUS
WASTE MANIFEST**

1. Generator ID Number

2. Page 1 of

3. Emergency Response Phone

4. Manifest Tracking Number

WA H 0 0 0 0 0 0 0 0 0 0

(800) 421-0330

020584422 JJK

5. Generator's Name and Mailing Address

Generator's Site Address (if different than mailing address)

PIERCE COUNTY PLANNING PUBL WK
1500 BLOCK OF WALLER ROAD E
TACOMA WA 98448

Generator's Phone:

WA 88448

(253) 766-7403

6. Transporter 1 Company Name

U.S. EPA ID Number

R TRANSPORT

WA H 0 0 0 0 0 0 0 0 0 0

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

U.S. EPA ID Number

CHEMICAL WASTE MANAGEMENT, INC.
1720 CEDAR SPRINGS LANE
BURLINGTON OR 97012-2700

OR 0 0 0 0 0 0 0 0 0 0

Facility's Phone:

(503) 454-2643

9a.
HM9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number,
and Packing Group (if any))

10. Containers

No.

Type

11. Total
Quantity12. Unit
Wt./Vol.

13. Waste Codes

1. RO-NA3077, HAZARDOUS WASTE, SOLID, N.O.S. B.H.
(0008) (SOL) CONTAINING >10LB LEAD

01

DT

60,000

F

none

2.

3.

4.

14. Special Handling Instructions and Additional Information

PROFILE OR34241 SUBB3 LEAD IMPACTED SOIL, ERG=171, RO=10 LBS
E/R/P= CHEMTREC/COCN24117

59120P

15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.

I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offor's Printed/Typed Name

Signature

Month Day Year

George Palmer

Brent Ruhl

Brent Ruhl

08 01 19

16. International Shipments

☐ Import to U.S.☐ Export from U.S.

Port of entry/exit:

Transporter signature (for exports only):

Date leaving U.S.:

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name

Signature

Month Day Year

Nick Watkins

Nick Watkins

08 01 19

Transporter 2 Printed/Typed Name

Signature

Month Day Year

18. Discrepancy

18a. Discrepancy Indication Space

☐ Quantity☐ Type☐ Residue☐ Partial Rejection☐ Full Rejection

Manifest Reference Number:

U.S. EPA ID Number

18b. Alternate Facility (or Generator)

Facility's Phone:

18c. Signature of Alternate Facility (or Generator)

Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1.

2.

3.

4.

H13Z

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in item 18a

Printed/Typed Name

Signature

Month Day Year

Brent Ruhl

Brent Ruhl

08 01 19

GENERATOR

TRANSPORTER/INTL

DESIGNATED FACILITY

Please print or type.

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator ID Number

WAH000053935

2. Page 1 of

1

3. Emergency Response Phone

(800) 424-9300

4. Manifest Tracking Number

020584410 JJK

5. Generator's Name and Mailing Address

PIERCE COUNTY PLANNING FUEL WK
1500 BLOCK OF WALLER ROAD E
TACOMA WA 98145

Generator's Site Address (if different than mailing address)

Generator's Phone:

(253) 799-7383

6. Transporter 1 Company Name

R TRANSPORT

U.S. EPA ID Number

WAH000028328

7. Transporter 2 Company Name

U.S. EPA ID Number

8. Designated Facility Name and Site Address

CHEMICAL WASTE MANAGEMENT, INC.
17329 CEDAR SPRINGS LANE
ARLINGTON OR 97812-8709

U.S. EPA ID Number

OR0089452353

Facility's Phone:

(503) 454-2343

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes		
		No.	Type					
X	1. RC, NA3077, HAZARDOUS WASTE, SOLID, N.O.S., 9.HJ, (D008) (SOIL CONTAINING >10 LB LEAD)	01	DT	60 pco	P	D008		
	2.							
	3.							
	4.							

14. Special Handling Instructions and Additional Information

PROFILE OR342441 STABO3 LEAD IMPACTED SOIL: ERG=17130Q+10 LBS
E/RP= CHEMTREC/CCN24117

63680P

15. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent.

I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.

Generator's/Offor's Printed/Typed Name

GEORGE IFTNER

Signature

George Iftner

Month Day Year

07/30/19

16. International Shipments

☐ Import to U.S.☐ Export from U.S.

Port of entry/exit

Date leaving U.S.:

Transporter signature (for exports only):

17. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name

Nick Watkins

Signature

Nick Watkins

Month Day Year

07/30/19

Transporter 2 Printed/Typed Name

Signature

Month Day Year

18. Discrepancy

18a. Discrepancy Indication Space

☐ Quantity☐ Type☐ Residue☐ Partial Rejection☐ Full Rejection

Manifest Reference Number:

U.S. EPA ID Number

Facility's Phone:

18c. Signature of Alternate Facility (or Generator)

Month Day Year

19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)

1. H132	2.	3.	4.
---------	----	----	----

20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a

Printed/Typed Name

Signature

Month Day Year

07/30/19

Please print or type.

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number WAH000050035	2. Page 1 of 1	3. Emergency Response Phone (800) 424-9300	4. Manifest Tracking Number 020584411 JJK	
5. Generator's Name and Mailing Address PIERCE COUNTY PLANNING PUBL WK 1800 BLOCK OF WALLER ROAD E TACOMA WA 98448 Generator's Phone: (253) 788-7653			Generator's Site Address (if different than mailing address)			
6. Transporter 1 Company Name R TRANSPORT			U.S. EPA ID Number WAH000028338			
7. Transporter 2 Company Name			U.S. EPA ID Number			
8. Designated Facility Name and Site Address CHEMICAL WASTE MANAGEMENT, INC. 17820 CEDAR SPRINGS LANE ARLINGTON OR 97812-2700 Facility's Phone: (541) 454-2843			U.S. EPA ID Number ORD089452353			
GENERATOR	9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit Wt./Vol.
			No.	Type		
	X	1. RQ, NA3077, HAZARDOUS WASTE, SOLID, N.O.S., 9.H., (D008) (SOIL CONTAINING >10 LB LEAD)	01	DT	60/100	P
		2.				
		3.				
		4.				
14. Special Handling Instructions and Additional Information 1. PROFILE OR342441, STAB03 LEAD IMPACTED SOIL, ERG=171, RQ=10 LBS E/R/P= CHEMTREC/CCN24117 600620 P						
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.						
Generator's/Offor's Printed/Typed Name George Duper: Brent Ruhl		Signature Brent Ruhl		Month Day Year 07 31 19		
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: Date leaving U.S.:						
17. Transporter Acknowledgment of Receipt of Materials						
Transporter 1 Printed/Typed Name Nick Watkins		Signature [Signature]		Month Day Year 07 31 19		
Transporter 2 Printed/Typed Name		Signature		Month Day Year		
18. Discrepancy						
18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection						
Manifest Reference Number:						
18b. Alternate Facility (or Generator)				U.S. EPA ID Number		
Facility's Phone:						
18c. Signature of Alternate Facility (or Generator)						Month Day Year
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)						
1. H132		2.		3.		4.
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a						
Printed/Typed Name William Ruhl		Signature [Signature]		Month Day Year 7 31 19		

DESIGNATED FACILITY TO GENERATOR

Please print or type.

Form Approved, OMB No: 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number WAH000050035	2. Page 1 of 1	3. Emergency Response Phone (800)424-9300	4. Manifest Tracking Number 020584409 JJK		
5. Generator's Name and Mailing Address PIERCE COUNTY PLANNING PUBL WK 1600 BLOCK OF WALLER ROAD E TACOMA WA 98446 Generator's Phone: (253) 798-7603							
6. Transporter 1 Company Name R-TRANSPORT						U.S. EPA ID Number WAH000020338	
7. Transporter 2 Company Name						U.S. EPA ID Number	
8. Designated Facility Name and Site Address CHEMICAL WASTE MANAGEMENT, INC. 17620 CEDAR SPRINGS LANE ARLINGTON OR 97912-9709 Facility's Phone: (841) 454-2845						U.S. EPA ID Number ORD089452353	
GENERATOR	9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
			No.	Type			
	X	1. RQ NA3077, HAZARDOUS WASTE, SOLID, N.O.S., (D008) (SOIL CONTAINING >10 LB LEAD)	51	DT	6000	P	D008
		2.					
		3.					
		4.					
14. Special Handling Instructions and Additional Information 1. PROFILE OR2441, STAB03 LEAD IMPACTED SOIL, ERG=171, RQ=10 LBS S/R/P= CHEMTRECH/CEN24117 63380P							
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.							
Generator's/Offoror's Printed/Typed Name George Iftner		Signature George Iftner		Month Day Year 10/26/19			
TRANSPORTER INTL	16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: Date leaving U.S.:						
	17. Transporter Acknowledgment of Receipt of Materials						
	Transporter 1 Printed/Typed Name Nick Watkins		Signature Nick Watkins		Month Day Year 10/26/19		
	Transporter 2 Printed/Typed Name		Signature		Month Day Year		
DESIGNATED FACILITY	18. Discrepancy						
	18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection						
	Manifest Reference Number:						
	18b. Alternate Facility (or Generator)						U.S. EPA ID Number
	Facility's Phone:						
	18c. Signature of Alternate Facility (or Generator)						Month Day Year
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)							
1. H132		2.		3.		4.	
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a							
Printed/Typed Name Dawn Dinter		Signature Dawn Dinter		Month Day Year 10/26/19			

Please print or type.

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number WAH0000050835		2. Page 1 of 1	3. Emergency Response Phone (800) 424-0300		4. Manifest Tracking Number 020584424 JJK	
5. Generator's Name and Mailing Address PIERCE COUNTY PLANNING PUBL WK 1800 BLOCK OF WALLER ROAD E TACOMA WA 98445 Generator's Phone: (253) 748-7263					Generator's Site Address (if different than mailing address)			
6. Transporter 1 Company Name R TRANSPORT					U.S. EPA ID Number WAH000028335			
7. Transporter 2 Company Name					U.S. EPA ID Number			
8. Designated Facility Name and Site Address CHEMICAL WASTE MANAGEMENT, INC. 17320 CEDAR SPRINGS LANE ARLINGTON OR 97012-9706 Facility's Phone: (503) 434-2543					U.S. EPA ID Number ORD089452853			
9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))			10. Containers No. Type		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
X	1. RQ, NA3077, HAZARDOUS WASTE, SOLID, N.O.S., (D008), (SOIL CONTAINING >10 LB LEAD)			01 DT		38,000	lb	D008
	2.							
	3.							
	4.							
14. Special Handling Instructions and Additional Information 1. PROFILE OR242441; STAB03 LEAD IMPACTED SOIL; ERG=171; RQ=10 LBS E/R/P= CHEMTREKCON24117 SS200P								
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true:								
Generator's/Offor's Printed/Typed Name George J Fivel					Signature Brent Ruhl		Month Day Year 08 12 19	
16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: _____ Transporter signature (for exports only): _____ Date leaving U.S.: _____								
17. Transporter Acknowledgment of Receipt of Materials Transporter 1 Printed/Typed Name Nick Watkins Signature Month Day Year 08 12 19 Transporter 2 Printed/Typed Name Signature Month Day Year								
18. Discrepancy 18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection Manifest Reference Number: _____ 18b. Alternate Facility (or Generator) U.S. EPA ID Number Facility's Phone: _____ 18c. Signature of Alternate Facility (or Generator) Month Day Year								
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems) 1. H132 2. 3. 4.								
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a Printed/Typed Name Signature Month Day Year 8 12 19								

Please print or type.

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator ID Number WAHD 00058935		2. Page 1 of 1		3. Emergency Response Phone (800) 424-9300		4. Manifest Tracking Number 020584405 JJK		
		5. Generator's Name and Mailing Address PIERCE COUNTY PLANNING PUEL WK 1800 BLOCK OF WALLER ROAD E TACOMA WA 98448 Generator's Phone: (253) 798-7893		Generator's Site Address (if different than mailing address)						
6. Transporter 1 Company Name R TRANSPORT		U.S. EPA ID Number WAHD 000028338								
7. Transporter 2 Company Name		U.S. EPA ID Number								
8. Designated Facility Name and Site Address CHEMTRON WASTE MANAGEMENT, INC. 17629 CEDAR SPRINGS LANE ARLINGTON OR 97112-8709 Facility's Phone: (541) 464-2643		U.S. EPA ID Number ORD 0098452353								
GENERATOR	9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))				10. Containers No. Type		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes
	X	1. RC RA3077 HAZARDOUS WASTE, SOLID, N.O.S. 9111 (D009) (SOIL CONTAINING 510 PPM LEAD)				01 DT		2400	P	D009
		2.								
		3.								
		4.								
14. Special Handling Instructions and Additional Information 1 PROFILE OR342441 STABOZ LEAD IMPACTED SOIL, EPC-17, EQ-10 LBS 61640P E/R/P= CHEMTRON CN24117										
15. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.										
Generator's/Offeror's Printed/Typed Name: <u>GEORGE FITNER</u> Signature: <u>George Fitner</u> Month: <u>07</u> Day: <u>25</u> Year: <u>19</u>										
TRANSPORTER	16. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S. Port of entry/exit: Date leaving U.S.:									
	17. Transporter Acknowledgment of Receipt of Materials Transporter 1 Printed/Typed Name: <u>Nick Watkins</u> Signature: <u>Nick Watkins</u> Month: <u>07</u> Day: <u>25</u> Year: <u>19</u> Transporter 2 Printed/Typed Name: Signature: Month: Day: Year:									
DESIGNATED FACILITY	18. Discrepancy 18a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection Manifest Reference Number:									
	18b. Alternate Facility (or Generator) U.S. EPA ID Number:									
	Facility's Phone:									
	18c. Signature of Alternate Facility (or Generator) Month: Day: Year:									
19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems) 1. <u>H132</u> 2. 3. 4.										
20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a. Printed/Typed Name: <u>Alan Dwyer</u> Signature: <u>Alan Dwyer</u> Month: <u>07</u> Day: <u>25</u> Year: <u>19</u>										

PCS Hauled to LRI

August 12 thru August 14, 2019

759.28 Tons

www.tchd.org

WASTE DISPOSAL AUTHORIZATION

prepaid check 24503
Langseth
JB

A. Generator Name: Pierce County Planning and Public Works

B. Generator Address: 17000 Waller Road East, Tacoma

C. Transporter Name: Langseth Environmental Services, Inc.

D. Technical Contact: Tom Langseth, Langseth Environmental Phone: (253) 536-6961

E. Waste Description: Contaminated Soils
() Sludge (XX) Solid () PCS (XX) Other

F. Estimated Quantity: 1,000 Tons

G. Actual Quantity (Filled in upon disposal): _____

H. Multiple Loads: (XX) Yes () No

I. Dates of Disposal: August 2, 2019 to December 31, 2019

J. Testing: NWTPH; PAH's, VOC's, Total Metals, TCLP lead

K. Reviewed by Department of Ecology: () Yes (XX) No

L. Disposal/Transportation Requirements: A copy of this WDA must be transported with EACH load of waste and presented to the LRI Landfill Scalehouse Operator. Soils from this project shall be directly disposed in the landfill. Loads shall be covered during transport to the landfill to prevent fugitive emissions of contaminated soils. Load sizes shall comply with conditional-use and solid waste permit criteria.

M. Facility: (XX) LRI Landfill (304th Street LF), 30919 Meridian Street, Eatonville, WA

I hereby certify that I have personally examined and am familiar with the information submitted in this document and any supporting material. Based on my inquiry of those individuals immediately responsible for obtaining the information, the information submitted is true, accurate and complete to the best of my knowledge and ability and that all known and suspected hazards have been disclosed. I agree that the generator and/or transporter will abide by all conditions specified in line (L) or any attachments thereto.

8-2-19

Date _____

Pres/owner

Title

Don Gault

Signature

AUTHORIZED BY:

Tim Borch

David Bosch, TPCHD

253 798 6574

Cc: LRI LF Scalehouse via email

APPROVED

AUG 02 2019

TACOMA-PIERCE COUNTY HEALTH DEPT.
ENVIRONMENTAL HEALTH DIV.
For Official Use Only

PCRCD, LLC dba LRI-304th
304TH LANDFILL
17925 Meridian St E
Puyallup, WA 98375

Weighed: Rebecca

Deposit: Rebecca

BILL TO: 1080
LANGSETH ENVIRO SVCS, INC
7517 PORTLAND AVE
TACOMA WA 98404

Vehicle ID:
Reference: 15
PO #: WDA 2365

NOTES: HARLOW 15

Origin: OTHER

DATE IN: 08/12/2019 TIME IN: 13:01:29
DATE OUT: 08/12/2019 TIME OUT: 13:20:20

INBOUND TICKET Number: 03-00584156

SCALE 1 GROSS WT.	109500	LB
SCALE 2 TARE WT.	40900	LB
NET WEIGHT	68600	LB

Qty	Description	Amount
34.300	SPECIAL WASTE-OUT CO	

X

PCRCD, LLC dba LRI-304th
304TH LANDFILL
17925 Meridian St E
Puyallup, WA 98375

Weighed: Rebecca

Deposit: Rebecca

BILL TO: 1080
LANGSETH ENVIRO SVCS, INC
7517 PORTLAND AVE
TACOMA WA 98404

Vehicle ID:
Reference: 10
PO #: WDA 2365

NOTES: HARLOW 10

Origin: OTHER

DATE IN: 08/12/2019 TIME IN: 14:17:49
DATE OUT: 08/12/2019 TIME OUT: 14:39:33

INBOUND TICKET Number: 03-00584190

SCALE 1 GROSS WT.	103340	LB
SCALE 2 TARE WT.	40440	LB
NET WEIGHT	62900	LB

Qty	Description	Amount
31.450	SPECIAL WASTE-OUT CO	

PCRCD, LLC dba LRI-304th
304TH LANDFILL
17925 Meridian St E
Puyallup, WA 98375

Weighed: Rebecca

Deposit: Rebecca

BILL TO: 1080
LANGSETH ENVIRO SVCS, INC
7517 PORTLAND AVE
TACOMA WA 98404

Vehicle ID:
Reference: 10
PO #: WDA 2365

NOTES: HARLOW 10

Origin: OTHER

DATE IN: 08/12/2019 TIME IN: 12:26:45
DATE OUT: 08/12/2019 TIME OUT: 12:44:31

INBOUND TICKET Number: 03-00584149

SCALE 1 GROSS WT.	108080	LB
SCALE 2 TARE WT.	40500	LB
NET WEIGHT	67580	LB

Qty	Description	Amount
33.790	SPECIAL WASTE-OUT CO	

X

PCRCD, LLC dba LRI-304th
304TH LANDFILL
17925 Meridian St E
Puyallup, WA 98375

Weighed: Rebecca

Deposit: Rebecca

BILL TO: 1080
LANGSETH ENVIRO SVCS, INC
7517 PORTLAND AVE
TACOMA WA 98404

Vehicle ID:
Reference: 24
PO #: WDA 2365

NOTES: HARLOW 24

Origin: OTHER

DATE IN: 08/12/2019 TIME IN: 13:58:33
DATE OUT: 08/12/2019 TIME OUT: 14:17:19

INBOUND TICKET Number: 03-00584185

SCALE 1 GROSS WT.	113640	LB
SCALE 2 TARE WT.	40920	LB
NET WEIGHT	72720	LB

Qty	Description	Amount
36.360	SPECIAL WASTE-OUT CO	

PCRCD, LLC dba LRI-304th
304TH LANDFILL
17925 Meridian St E
Puyallup, WA 98375

Weighed: Rebecca

Deposit: Rebecca

BILL TO: 1080
LANGSETH ENVIRO SVCS, INC
7517 PORTLAND AVE
TACOMA WA 98404

Vehicle ID:
Reference: 10
PO #: WDA 2365

NOTES: HARLOW 10

Origin: OTHER

DATE IN: 08/12/2019 TIME IN: 10:30:15
DATE OUT: 08/12/2019 TIME OUT: 10:48:46

INBOUND TICKET Number: 03-00584085

SCALE 1 GROSS WT.	99080	LB
SCALE 2 TARE WT.	40540	LB
NET WEIGHT	58540	LB

Qty	Description	Amount
29.270	SPECIAL WASTE-OUT CO	

X

PCRCD, LLC dba LRI-304th
304TH LANDFILL
17925 Meridian St E
Puyallup, WA 98375

Weighed: Rebecca

Deposit: Rebecca

BILL TO: 1080
LANGSETH ENVIRO SVCS, INC
7517 PORTLAND AVE
TACOMA WA 98404

Vehicle ID:
Reference: 24
PO #: WDA 2365

NOTES: HARLOW 24

Origin: OTHER

DATE IN: 08/12/2019 TIME IN: 12:04:27
DATE OUT: 08/12/2019 TIME OUT: 12:26:31

INBOUND TICKET Number: 03-00584142

SCALE 1 GROSS WT.	107760	LB
SCALE 2 TARE WT.	40980	LB
NET WEIGHT	66780	LB

Qty	Description	Amount
33.390	SPECIAL WASTE-OUT CO	

PCRCD, LLC dba LRI-304th
304TH LANDFILL
17925 Meridian St E
Puyallup, WA 98375

Weighed: Rebecca

Deposit: Rebecca

BILL TO: 1080
LANGSETH ENVIRO SVCS, INC
7517 PORTLAND AVE
TACOMA WA 98404

Vehicle ID:
Reference: 24
PO #: WDA 2365

NOTES: HARLOW 24

Origin: OTHER

DATE IN: 08/12/2019 TIME IN: 10:09:58
DATE OUT: 08/12/2019 TIME OUT: 10:35:31

INBOUND TICKET Number: 03-00584078

SCALE 1 GROSS WT.	96060	LB
SCALE 2 TARE WT.	41100	LB
NET WEIGHT	54960	LB

Qty	Description	Amount
27.480	SPECIAL WASTE-OUT CO	

X

PCRCD, LLC dba LRI-304th
304TH LANDFILL
17925 Meridian St E
Puyallup, WA 98375

Weighed: Rebecca

Deposit: Rebecca

BILL TO: 1080
LANGSETH ENVIRO SVCS, INC
7517 PORTLAND AVE
TACOMA WA 98404

Vehicle ID:
Reference: 15
PO #: WDA 2365

NOTES: HARLOW 15

Origin: OTHER

DATE IN: 08/12/2019 TIME IN: 10:50:33
DATE OUT: 08/12/2019 TIME OUT: 11:08:05

INBOUND TICKET Number: 03-00584096

SCALE 1 GROSS WT.	99400	LB
SCALE 2 TARE WT.	40960	LB
NET WEIGHT	58440	LB

Qty	Description	Amount
29.220	SPECIAL WASTE-OUT CO	

** Duplicate Ticket **

PCRCD, LLC dba LRI-304th
17925 Meridian St E
Puyallup, WA 98375
(253) 847-7555

1080
LANGSETH ENVIRO SVCS, INC
7517 PORTLAND AVE
TACOMA, WA 98404

SITE	TICKET	GRID		WEIGHMASTER	
03	584206			REBECCA W	
DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
08/12/19	08/12/19	14:54	15:12		
REFERENCE			ORIGIN		
15			OTHER		

Scale Gross Wt. 104500
Scale Tare Wt. 40800
Net Weight 63700

Charge Ticket

QTY	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
31.85		SPECIAL WASTE-OUT CO				

Operating hours 8AM to 4PM M-F & 8AM to Noon on Sat.
304th Landfill-30919 Meridian/SR 161, Graham, WA

PO # WDA 2365
NOTES HARLOW 15

SIGNATURE: _____

CHARGE

TENDER

CHANGE

CHECK #

** Duplicate Ticket **

PCRCD, LLC dba LRI-304th
17925 Meridian St E
Puyallup, WA 98375
(253) 847-7555

1080
LANGSETH ENVIRO SVCS, INC
7517 PORTLAND AVE
TACOMA, WA 98404

SITE	TICKET	GRID		WEIGHMASTER	
03	584235			BREANN L	
DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
08/13/19	08/13/19	8:06	8:23		
REFERENCE			ORIGIN		
24			OTHER		

Scale Gross Wt. 103480
Scale Tare Wt. 41100
Net Weight 62380

Charge Ticket

QTY	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
31.19		SPECIAL WASTE-OUT CO				

Operating hours 8AM to 4PM M-F & 8AM to Noon on Sat.
304th Landfill-30919 Meridian/SR 161, Graham, WA

PO # WDA 2365
NOTES HARLOW 24

SIGNATURE: _____

CHARGE

TENDER

CHANGE

CHECK #

PCRCD, LLC dba LRI-304th
304TH LANDFILL
17925 Meridian St E
Puyallup, WA 98375

Weighed: BREANN

BILL TO: 1080
LANGSETH ENVIRO SVCS, INC
7517 PORTLAND AVE
TACOMA WA 98404

Vehicle ID:
Reference: 4
PO #: WDA 2365

NOTES: HARLOW 4

Origin: OTHER

DATE IN: 08/13/2019 TIME IN: 10:56:02
DATE OUT: 08/13/2019 TIME OUT: 10:56:02

INBOUND TICKET Number: 03-00584336

MANUAL GROSS WT.	107600	LB
MANUAL TARE WT.	42060	LB
NET WEIGHT	65540	LB

Qty	Description	Amount
32.770	SPECIAL WASTE-OUT CO	

X

PCRCD, LLC dba LRI-304th
304TH LANDFILL
17925 Meridian St E
Puyallup, WA 98375

Weighed: BREANN

Deposit: Rebecca

BILL TO: 1080
LANGSETH ENVIRO SVCS, INC
7517 PORTLAND AVE
TACOMA WA 98404

Vehicle ID:
Reference: 15
PO #: WDA 2365

NOTES: HARLOW 15

Origin: OTHER

DATE IN: 08/13/2019 TIME IN: 10:54:50
DATE OUT: 08/13/2019 TIME OUT: 11:12:43

INBOUND TICKET Number: 03-00584334

SCALE 1 GROSS WT.	107240	LB
SCALE 2 TARE WT.	41660	LB
NET WEIGHT	65580	LB

Qty	Description	Amount
32.790	SPECIAL WASTE-OUT CO	

X

PCRCD, LLC dba LRI-304th
304TH LANDFILL
17925 Meridian St E
Puyallup, WA 98375

Weighed: BREANN

Deposit: Rebecca

BILL TO: 1080
LANGSETH ENVIRO SVCS, INC
7517 PORTLAND AVE
TACOMA WA 98404

Vehicle ID:
Reference: 4
PO #: WDA 2365

NOTES: HARLOW 4

Origin: OTHER

DATE IN: 08/13/2019 TIME IN: 11:16:34
DATE OUT: 08/13/2019 TIME OUT: 11:31:54

INBOUND TICKET Number: 03-00584347

SCALE 1 GROSS WT.	103660	LB
SCALE 2 TARE WT.	42020	LB
NET WEIGHT	61640	LB

Qty	Description	Amount
30.820	SPECIAL WASTE-OUT CO	

X

PCRCD, LLC dba LRI-304th
304TH LANDFILL
17925 Meridian St E
Puyallup, WA 98375

Weighed: BREANN

BILL TO: 1080
LANGSETH ENVIRO SVCS, INC
7517 PORTLAND AVE
TACOMA WA 98404

Vehicle ID:
Reference: 15
PO #: WDA 2365

NOTES: HARLOW 15

Origin: OTHER

DATE IN: 08/13/2019 TIME IN: 10:55:25
DATE OUT: 08/13/2019 TIME OUT: 10:55:25

INBOUND TICKET Number: 03-00584335

MANUAL GROSS WT.	110600	LB
MANUAL TARE WT.	40900	LB
NET WEIGHT	69700	LB

Qty	Description	Amount
34.850	SPECIAL WASTE-OUT CO	

X

PCRCD, LLC dba LRI-304th
304TH LANDFILL
17925 Meridian St E
Puyallup, WA 98375

Weighed: BREANN

Deposit: Rebecca

BILL TO: 1080
LANGSETH ENVIRO SVCS, INC
7517 PORTLAND AVE
TACOMA WA 98404

Vehicle ID:
Reference: 15
PO #: WDA 2365

NOTES: HARLOW 15

Origin: OTHER

DATE IN: 08/13/2019 TIME IN: 14:31:15
DATE OUT: 08/13/2019 TIME OUT: 14:47:47

INBOUND TICKET Number: 03-00584438

SCALE 1 GROSS WT.	99720	LB
SCALE 2 TARE WT.	40740	LB
NET WEIGHT	58980	LB

Qty	Description	Amount
29.490	SPECIAL WASTE-OUT CO	

X

PCRCD, LLC dba LRI-304th
304TH LANDFILL
17925 Meridian St E
Puyallup, WA 98375

Weighed: BREANN

Deposit: Rebecca

BILL TO: 1080
LANGSETH ENVIRO SVCS, INC
7517 PORTLAND AVE
TACOMA WA 98404

Vehicle ID:
Reference: 15
PO #: WDA 2365

NOTES: HARLOW 15

Origin: OTHER

DATE IN: 08/13/2019 TIME IN: 12:38:17
DATE OUT: 08/13/2019 TIME OUT: 12:56:26

INBOUND TICKET Number: 03-00584395

SCALE 1 GROSS WT.	106700	LB
SCALE 2 TARE WT.	40760	LB
NET WEIGHT	65940	LB

Qty	Description	Amount
32.970	SPECIAL WASTE-OUT CO	

PCRCD, LLC dba LRI-304th
304TH LANDFILL
17925 Meridian St E
Puyallup, WA 98375

Weighed: BREANN

Deposit: Rebecca

BILL TO: 1080
LANGSETH ENVIRO SVCS, INC
7517 PORTLAND AVE
TACOMA WA 98404

Vehicle ID:
Reference: 4
PO #: WDA 2365

NOTES: HARLOW 4

Origin: OTHER

DATE IN: 08/13/2019 TIME IN: 12:52:00
DATE OUT: 08/13/2019 TIME OUT: 13:11:24

INBOUND TICKET Number: 03-00584404

SCALE 1 GROSS WT.	102380	LB
SCALE 2 TARE WT.	41840	LB
NET WEIGHT	60540	LB

Qty	Description	Amount
30.270	SPECIAL WASTE-OUT CO	

X

PCRCD, LLC dba LRI-304th
304TH LANDFILL
17925 Meridian St E
Puyallup, WA 98375

Weighed: BREANN

Deposit: Rebecca

BILL TO: 1080
LANGSETH ENVIRO SVCS, INC
7517 PORTLAND AVE
TACOMA WA 98404

Vehicle ID:
Reference: 4
PO #: WDA 2365

NOTES: HARLOW 4

Origin: OTHER

DATE IN: 08/13/2019 TIME IN: 14:51:45
DATE OUT: 08/13/2019 TIME OUT: 15:05:33

INBOUND TICKET Number: 03-00584448

SCALE 1 GROSS WT.	102160	LB
SCALE 2 TARE WT.	41820	LB
NET WEIGHT	60340	LB

Qty	Description	Amount
30.170	SPECIAL WASTE-OUT CO	

*** Duplicate Ticket ***

PCRCD, LLC dba LRI-304th
17925 Meridian St E
Puyallup, WA 98375
(253) 847-7555

1080
LANGSETH ENVIRO SVCS, INC
7517 PORTLAND AVE
TACOMA, WA 98404

SITE	TICKET	GRID		WEIGHMASTER	
03	584337			BREANNL	
DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
08/13/19	08/13/19	10:56	10:56		
REFERENCE		ORIGIN			
24		OTHER			

Manual Gross Wt. 102240
Manual Tare Wt. 41080
Net Weight 61160

Charge Ticket

QTY	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
30.58		SPECIAL WASTE-OUT CO				

Operating hours 8AM to 4PM M-F & 8AM to Noon on Sat.
304th Landfill-30919 Meridian/SR 161, Graham, WA

PO # WDA 2365
NOTES HARLOW 24

SIGNATURE: _____

CHARGE

TENDER

CHANGE

CHECK #

*** Duplicate Ticket ***

PCRCD, LLC dba LRI-304th
17925 Meridian St E
Puyallup, WA 98375
(253) 847-7555

1080
LANGSETH ENVIRO SVCS, INC
7517 PORTLAND AVE
TACOMA, WA 98404

SITE	TICKET	GRID		WEIGHMASTER	
03	584364			BREANNL	
DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
08/13/19	08/13/19	11:47	12:10		
REFERENCE		ORIGIN			
24		OTHER			

Scale Gross Wt. 96720
Scale Tare Wt. 40920
Net Weight 55800

Charge Ticket

QTY	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
27.90		SPECIAL WASTE-OUT CO				

Operating hours 8AM to 4PM M-F & 8AM to Noon on Sat.
304th Landfill-30919 Meridian/SR 161, Graham, WA

PO # WDA 2365
NOTES HARLOW 24

SIGNATURE: _____

CHARGE

TENDER

CHANGE

CHECK #

** Duplicate Ticket **

PCRCD, LLC dba LRI-304th
17925 Meridian St E
Puyallup, WA 98375
(253) 847-7555

1080
LANGSETH ENVIRO SVCS, INC
7517 PORTLAND AVE
TACOMA, WA 98404

SITE	TICKET	GRID		WEIGHMASTER	
03	584417			BREANNL	
DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
08/13/19	08/13/19	13:30	13:50		
REFERENCE		ORIGIN			
24		OTHER			

Scale Gross Wt. 97620
Scale Tare Wt. 40900
Net Weight 56720

Charge Ticket

QTY	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
28.36		SPECIAL WASTE-OUT CO				

Operating hours 8AM to 4PM M-F & 8AM to Noon on Sat.
304th Landfill-30919 Meridian/SR 161, Graham, WA

PO # WDA 2365
NOTES HARLOW 24

SIGNATURE: _____

CHARGE

TENDER

CHANGE

CHECK #

** Duplicate Ticket **

PCRCD, LLC dba LRI-304th
17925 Meridian St E
Puyallup, WA 98375
(253) 847-7555

1080
LANGSETH ENVIRO SVCS, INC
7517 PORTLAND AVE
TACOMA, WA 98404

SITE	TICKET	GRID		WEIGHMASTER	
03	584458			REBECCA W	
DATE IN	DATE OUT	TIME IN	TIME OUT	VEHICLE	ROLL OFF
08/13/19	08/13/19	15:18	15:37		
REFERENCE		ORIGIN			
24		OTHER			

Scale Gross Wt. 98480
Scale Tare Wt. 40780
Net Weight 57700

Charge Ticket

QTY	UNIT	DESCRIPTION	RATE	EXTENSION	FEE	TOTAL
28.85		SPECIAL WASTE-OUT CO				

Operating hours 8AM to 4PM M-F & 8AM to Noon on Sat.
304th Landfill-30919 Meridian/SR 161, Graham, WA

PO # WDA 2365
NOTES HARLOW 24

SIGNATURE: _____

CHARGE

TENDER

CHANGE

CHECK #

PCRCD, LLC dba LRI-304th
304TH LANDFILL
17925 Meridian St E
Puyallup, WA 98375

Weighed: Rebecca

Deposit: Dana

BILL TO: 1080
LANGSETH ENVIRO SVCS, INC
7517 PORTLAND AVE
TACOMA WA 98404

Vehicle ID:
Reference: 24
PO #: WDA 2365

NOTES: HARLOW 24

Origin: OTHER

DATE IN: 08/14/2019 TIME IN: 12:20:27
DATE OUT: 08/14/2019 TIME OUT: 12:35:27

INBOUND TICKET Number: 03-00584634

SCALE 1 GROSS WT.	57180	LB
SCALE 2 TARE WT.	40920	LB
NET WEIGHT	16260	LB

Qty	Description	Amount
8.130	SPECIAL WASTE-OUT CO	

X

PCRCD, LLC dba LRI-304th
304TH LANDFILL
17925 Meridian St E
Puyallup, WA 98375

Weighed: Rebecca

Deposit: Dana

BILL TO: 1080
LANGSETH ENVIRO SVCS, INC
7517 PORTLAND AVE
TACOMA WA 98404

Vehicle ID:
Reference: 24
PO #: WDA 2365

NOTES: HARLOW 24

Origin: OTHER

DATE IN: 08/14/2019 TIME IN: 10:43:01
DATE OUT: 08/14/2019 TIME OUT: 11:03:32

INBOUND TICKET Number: 03-00584575

SCALE 1 GROSS WT.	107500	LB
SCALE 2 TARE WT.	41000	LB
NET WEIGHT	66500	LB

Qty	Description	Amount
33.250	SPECIAL WASTE-OUT CO	

X

PCRCD, LLC dba LRI-304th
304TH LANDFILL
17925 Meridian St E
Puyallup, WA 98375

Weighed: Rebecca

Deposit: Dana

BILL TO: 1080
LANGSETH ENVIRO SVCS, INC
7517 PORTLAND AVE
TACOMA WA 98404

Vehicle ID:
Reference: 24
PO #: WDA 2365

NOTES: HARLOW 24

Origin: OTHER

DATE IN: 08/14/2019 TIME IN: 08:58:45
DATE OUT: 08/14/2019 TIME OUT: 09:18:34

INBOUND TICKET Number: 03-00584519

SCALE 1 GROSS WT.	100620	LB
SCALE 2 TARE WT.	41060	LB
NET WEIGHT	59560	LB

Qty	Description	Amount
29.780	SPECIAL WASTE-OUT CO	

X

APPENDIX E

Monitoring Well Logs



SOIL BORING AND MONITORING WELL CONSTRUCTION RECORD

HERRERA

Project name: 13.4-Acre Undeveloped Parcel, Pierce County, WA
 Project number: 16-06310-011
 Client: Pierce County
 Location: NW Corner of Parcel. 10' east, 15' south of fence corner
 HEC rep.: George Iftner
 Start/End Date: 07/30/2019

Monitoring Well MW-1
 Total depth: 51 feet
 Sheet 1 of 3

Drilling Contractor: Holocene
 Drilling method: Sonic
 Sampling method: Bag
 Ground Elevation: 379.48 feet
 Air monitoring (y/n): N
 Instrument(s): na

Instrument Reading (ppm)	Sample Interval, Type	% Recovery	Depth (feet, BGS)	Water Level (feet)	Soil Group	Soil Description	Monitoring Well Construction Detail
NA	5' Bag.	60%	1		SM	Grass, dark brown-black silty sand with gravel (dry) (no odors or discoloration)	<p>Locking Lid Flush mount Concrete Hydrated-Bentonite chips 2-inch diameter schedule 40 PVC</p>
			2				
			3		GP-GM	Tan fine to large GRAVEL with sand, silt, cobbles (dry) (no odors or discoloration) (weathered recessional outwash)	
			4				
			5				
			6			Color change to light gray GRAVEL with sand, silt, cobbles (dry) (unweathered recessional outwash)	
			7				
	5'	80%	8				
			9				
			10		GP	Gray sandy GRAVEL, with trace silt (damp)	
			11		GP-GM	Light gray GRAVEL with sand, cobbles, trace silt (damp)	
			12				
	5'	90%	13				
			14				
			15				
			16		GP	6"-1' gray sandy GRAVEL trace silt (damp)	



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SOIL BORING AND MONITORING WELL CONSTRUCTION RECORD

Monitoring Well MW-1

Total depth: 51 feet

Sheet 2 of 3

Project name: 13.4-Acre Undeveloped Parcel, Pierce County, WA

Project number: 16-06310-011

Client: Pierce County

Location: NW Corner of Parcel. 10' east, 15' south of fence corner

HEC rep.: George Iftner

Start/End Date: 07/30/2019

Drilling Contractor: Holocene

Drilling method: Sonic

Sampling method: Bag

Ground Elevation: 379.48 feet

Air monitoring (y/n): N

Instrument(s): na

Instrument Reading (ppm)	Sample Interval, Type	% Recovery	Depth (feet, BGS)	Water Level (feet)	Soil Group	Soil Description	Monitoring Well Construction Detail		
NA	5'	80%	17		GP-GM	Light gray GRAVEL with sand, cobbles, trace silt (damp)	Hydrated-Bentonite chips		
			18						
			19		GP	Light gray sandy GRAVEL trace silt (moist)			
	5'	70%	20		GP-GM	Light gray, sandy GRAVEL with silt (damp)			
			21						
			22						
			23			Thin sand lenses			
			24						
			25						
			26						
	5'	95%	27				2-inch diameter schedule 40 PVC		
			28						
			29						
			30						
			31						
			32						

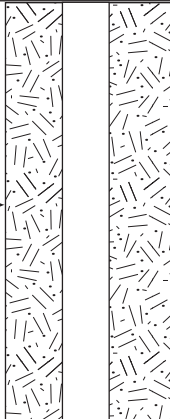
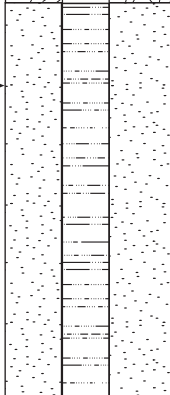
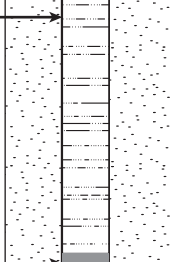



SOIL BORING AND MONITORING WELL CONSTRUCTION RECORD

Monitoring Well MW-1
Total depth: 51 feet
Sheet 3 of 3

Project name: 13.4-Acre Undeveloped Parcel, Pierce County, WA
Project number: 16-06310-011
Client: Pierce County
Location: NW Corner of Parcel. 10' east, 15' south of fence corner
HEC rep.: George Iftner
Start/End Date: 07/30/2019

Drilling Contractor: Holocene
Drilling method: Sonic
Sampling method: Bag
Ground Elevation: 379.48 feet
Air monitoring (y/n): N
Instrument(s): na

Instrument Reading (ppm)	Sample Interval, Type	% Recovery	Depth (feet, BGS)	Water Level (feet)	Soil Group	Soil Description	Monitoring Well Construction Detail	
NA	5'	90%	33		GP-GM	Light gray GRAVEL with silt and sand (damp)	Hydrated-Bentonite chips	
			34					
			35					
			36					
	5'	95%	37					
			38				12/20 sand filter pack	
			39		GP	Light gray sandy fine to large GRAVEL, trace silt (moist)		
			40	▼ wet		Texture change to sandy fine to medium GRAVEL, trace silt (wet)		
			41					
	5'	95%	42					
			43				2-inch diameter schedule 40 PVC 10-slot well screen	
			44					
			45					
			46					
	5'	95%	47					
			48				Threaded cap	
			49					
			50					
			51			Over-drilled to 51' to place sand pack		



HERRERA

SOIL BORING AND MONITORING WELL CONSTRUCTION RECORD

Monitoring Well MW-2

Total depth: 51 feet

Sheet 1 of 3

Project Name: 13.4-Acre Undeveloped Parcel, Pierce County, WA

Project Number: 16-06310-011

Client: Pierce County

Location: Next to North side of Excavation G

HEC Rep.: George Iftner

Start/End Date: 07/31/19

Drilling Contractor: Holocene Drilling

Drilling Method: Sonic

Sampling Method: Bag

Ground Elevation: 379.39 feet

Air Monitoring (y/n): No

Instrument(s): na

Instrument Reading (ppm)	Sample Interval, Type	% Recovery	Depth (feet, BGS)	Water Level (feet)	Soil Group	Soil Description	
NA	5' Bag	80%	1		SM	Grass, dark brown-black silty SAND with gravel (dry) (no odors or discoloration)	Locking Lid →
			2				6" diameter steel monument casing →
			3		GP-GM	Tan fine to large GRAVEL with sandy, cobbles, trace silt (dry) (no odors or discoloration)	12/20 sand →
			4			(weathered recessional outwash)	
			5				
			6				
			7				
	5'	60%	8				Concrete →
			9		GP	Gray sandy GRAVEL, trace silt (damp)	
			10		GP-GM	Light gray GRAVEL with sand, cobbles, trace silt (damp)	Hydrated-Bentonite chips →
			11				
			12				
	5'	90%	13				
			14				
			15				
			16				2-inch diameter schedule 40 PVC →

Monitoring Well
Construction
Detail

Notes:

- Well casing is surrounded by 3 concrete filled steel bollards



SOIL BORING AND MONITORING WELL CONSTRUCTION RECORD

Monitoring Well MW-2
Total depth: 51 feet
Sheet 2 of 3

Project Name: 13.4-Acre Undeveloped Parcel, Pierce County, WA
Project Number: 16-06310-011
Client: Pierce County
Location: Next to North side of Excavation G
HEC Rep.: George Iftner
Start/End Date: 07/31/19

Drilling Contractor: Holocene Drilling
Drilling Method: Sonic
Sampling Method: Bag
Ground Elevation: 379.39 feet
Air Monitoring (y/n): No
Instrument(s): na

Instrument Reading (ppm)	Sample Interval, Type	% Recovery	Depth (feet, BGS)	Water Level (feet)	Soil Group	Soil Description	Monitoring Well Construction Detail		
NA	5'	90%	17		GP-GM	Light gray GRAVEL with sand, cobbles, trace silt silt cobbles (damp)	Hydrated-Bentonite chips →		
			18			Sandy GRAVEL trace silt (moist)			
			19		GP	Light gray sandy GRAVEL with silt (damp)			
			20						
			21						
			22						
	5'	95%	23						
			24		GP	Thin sand lense			
			25		GP-GM	Light gray sandy GRAVEL with sandtrace silt (damp)			
			26						
	5'	95%	27				2-inch diameter schedule 40 PVC →		
			28						
			29						
			30						
			31						
			32						



SOIL BORING AND MONITORING WELL CONSTRUCTION RECORD

Monitoring Well MW-2
Total depth: 51 feet
Sheet 3 of 3

Project Name: 13.4-Acre Undeveloped Parcel, Pierce County, WA
Project Number: 16-06310-011
Client: Pierce County
Location: Next to North side of Excavation G
HEC Rep.: George Iftner
Start/End Date: 07/31/19
Screen: _____

Drilling Contractor: Holocene Drilling
Drilling Method: Sonic
Sampling Method: Bag
Ground Elevation: 379.39 feet
Air Monitoring (y/n): No
Instrument(s): na

Instrument Reading (ppm)	Sample Interval, Type	% Recovery	Depth (feet, BGS)	Water Level (feet)	Soil Group	Soil Description	Monitoring Well Construction Detail
NA	5'	95%	33		GP-GM	Light gray sandy GRAVEL with sand trace silt (damp)	<p>Hydrated-Bentonite chips</p> <p>2-inch diameter schedule 40 PVC</p> <p>12/20 sand filter pack</p> <p>2-inch diameter schedule 40 PVC 10-slot well screen</p> <p>Threaded cap</p>
			34				
			35				
			36				
	5'	95%	37				
			38				
			39				
			40	▼		(moist)	
			41	wet	GP	Light gray sandy fine to medium GRAVEL trace silt (wet)	
			42				
	5'	90%	43				<p>12/20 sand filter pack</p> <p>2-inch diameter schedule 40 PVC 10-slot well screen</p> <p>Threaded cap</p>
			44				
			45				
			46				
			47				
	5'	90%	48				
			49				
			50				
			51			Over-drilled to 51' to place sand pack	



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SOIL BORING AND MONITORING WELL CONSTRUCTION RECORD

Monitoring Well MW-3

Total depth: 51 feet

Sheet 1 of 3

Project Name: 13.4-Acre Undeveloped Parcel, Pierce County, WA

Project Number: 16-06310-011

Client: Pierce County

Location: About 75' south of center of proposed bus cul-de-sac

HEC Rep.: George Iftner

Start/End Date: 08/01/19

Drilling Contractor: Holocene Drilling

Drilling Method: Sonic

Sampling Method: 5' bag

Ground Elevation: 381.85 feet

Air Monitoring (y/n): No

Instrument(s): na

Instrument Reading (ppm)	Sample Interval, Type	% Recovery	Depth (feet, BGS)	Water Level (feet)	Soil Group	Soil Description	
NA			1		SM	Dark brown-black silty SAND with gravel (dry) (no odors or discoloration)	Locking Lid →
			2		GP-GM	Tan GRAVEL with sand, silt, cobbles (dry) (no odors or discoloration) (weathered recessional outwash)	6" diameter steel monument casing →
	5' Bag	50%	3				12/20 sand →
			4				
			5				
			6				
			7				
	5'	90%	8		GP	Tan sandy GRAVEL with silt cobbles (damp) (unweathered recessional outwash)	Concrete →
			9		GP-GM	Light gray GRAVEL with sand, trace silt, cobbles (damp)	
			10				
			11				
			12				
	5'	80%	13				Hydrated-Bentonite chips →
			14				
			15				
			16				

Monitoring Well
Construction
Detail

Notes:

- Well casing is surrounded by 3 concrete-filled steel bollards.



SOIL BORING AND MONITORING WELL CONSTRUCTION RECORD

Monitoring Well MW-3
Total depth: 51 feet
Sheet 2 of 3

Project Name: 13.4-Acre Undeveloped Parcel, Pierce County, WA
Project Number: 16-06310-011
Client: Pierce County
Location: About 75' south of center of proposed bus cul-de-sac
HEC Rep.: George Iftner
Start/End Date: 08/01/19
Screen: _____

Drilling Contractor: Holocene Drilling
Drilling Method: Sonic
Sampling Method: 5' bag
Ground Elevation: 381.85 feet
Air Monitoring (y/n): No
Instrument(s): na

Instrument Reading (ppm)	Sample Interval, Type	% Recovery	Depth (feet, BGS)	Water Level (feet)	Soil Group	Soil Description	Monitoring Well Construction Detail		
NA			17		GP-GM	Light gray GRAVEL with sand, trace silt, cobbles (damp)	Hydrated-Bentonite chips		
	5'	85%	18			17'-19' more fine to medium gravel then fine to large gravel at 19'			
			19						
			20						
			21						
	5'	90%	22						
			23		GP	Approximately 1' of fine to medium GRAVEL then back to fine to large GRAVEL			
			24		GP-GM	Light gray GRAVEL with sand, trace silt (damp)			
			25						
			26			Thin layer 1" dark black organics (peat?) (no odor or sheen) (damp to moist)			
	5'	85%	27				2-inch diameter schedule 40 PVC		
			28						
			29						
			30						
	5'	85%	31						
			32						



SOIL BORING AND MONITORING WELL CONSTRUCTION RECORD

Monitoring Well MW-3
Total depth: 51 feet
Sheet 3 of 3

Project Name: 13.4-Acre Undeveloped Parcel, Pierce County, WA
Project Number: 16-06310-011
Client: Pierce County
Location: About 75' south of center of proposed bus cul-de-sac
HEC Rep.: George Iftner
Start/End Date: 08/01/19
Screen: _____

Drilling Contractor: Holocene Drilling
Drilling Method: Sonic
Sampling Method: 5' bag
Ground Elevation: 381.85 feet
Air Monitoring (y/n): No
Instrument(s): na

Instrument Reading (ppm)	Sample Interval, Type	% Recovery	Depth (feet, BGS)	Water Level (feet)	Soil Group	Soil Description	Monitoring Well Construction Detail
NA			33		GP-GM	Light gray GRAVEL with sand, trace silt (damp)	<p>Hydrated-Bentonite chips</p> <p>2-inch diameter schedule 40 PVC</p> <p>12/20 sand filter pack</p> <p>2-inch diameter schedule 40 PVC 10-slot well screen</p> <p>Threaded cap</p>
	5'	85%	34				
			35				
			36				
	5'	70%	37			Moist about 37' to 38'	
			38				
			39	▼ wet			
			40				
			41				
	5'	95%	42			Dominated by fine to medium gravel	
			43				<p>Hydrated-Bentonite chips</p> <p>2-inch diameter schedule 40 PVC</p> <p>12/20 sand filter pack</p> <p>2-inch diameter schedule 40 PVC 10-slot well screen</p> <p>Threaded cap</p>
			44				
			45				
			46				
			47				
	5'	95%	48				
			49				
			50				
			51			Over-drilled to 51' to place sand pack	

APPENDIX F

Groundwater Sampling Field Notes



Project No.: 16-06310-01A Site: Prairie Pit Well No.: MW-1 Date: 8/5/19
Well Depth: 50' Screen Length: 10' Well Diameter: 2" Casing Type: PVC
Sampling Device SS mega typhoon Tubing Type: 3/8" polyethylene Water Level: 37.68
per submersible
Measuring Point: Top of casing Other Info: Flush mount, purged 0.4 L/min

Sampling Personnel: G. E. Fisher

[illegible]

Type of Samples Collected for Laboratory Analysis:

Type of Samples Collected for Laboratory Analysis:
 Gx, D₁₀, HVOCS + additives, cPAHs + Naphthalene, PCBs, Total + Dissolved metals - Field Filtered
 Well Casing Volumes: (Cd, Cr, Pb, Ni, Zn)

Well Casing Volumes: (Cd, Cr, Pb, Ni, Zn)

Gal/Ft	1¼" = 0.077	1½" = 0.10	2" = 0.16	2½" = 0.24	3" = 0.37	3½" = 0.50	4" = 0.65	6" = 1.46
--------	-------------	------------	-----------	------------	-----------	------------	-----------	-----------



Project No.: 16-06310-011 Site: Prunice pit Well No.: MW-2 Date: 8/5/19
Well Depth: 50' Screen Length: 10' Well Diameter: 2" Casing Type: PVC
Sampling Device SS mega typhoon Tubing Type: 3/8" polyethylene Water Level: 400.66
submersible pump
Measuring Point: Top of casing Other Info: Above-ground monument
purged @ 0.4 L/min

Sampling Personnel: *G. Iffner*

[illegible]

Type of Samples Collected for Laboratory Analysis:

Type of Samples Collected for Laboratory Analysis: Gx/BTEX/PAHs/EDC, HVCs, Dn, cPAHs + Naphthalenes, PCBs, Total + Diss. Metals ^{field filtered}

Well Casing Volumes:

Gal/Ft $1\frac{1}{4}" = 0.077$ $1\frac{1}{2}" = 0.10$ $2" = 0.16$ $2\frac{1}{2}" = 0.24$ $3" = 0.37$ $3\frac{1}{2}" = 0.50$ $4" = 0.65$ $6" = 1.46$



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GROUNDWATER SAMPLING LOG

Project No.: 16-06310-011 Site: Prairie Pit Well No.: MW-3 Date: 8/5/19
 Well Depth: 50' Screen Length: 10' Well Diameter: 2" Casing Type: PVC
 Sampling Device: submersible pump Tubing Type: polyethylene Water Level: 41.98
 Measuring Point: top of casing Other Info: 0.4 L/min purge rate

Sampling Personnel: _____

Std. U. OC		us/cm		mg/L					
Time	pH	Temp.	Cond.	Dis.O ₂	Turb.	[] Conc.			Notes
13:50	Start	Purge							Very turbid 1t. Brown
13:54	6.62	15.0	167	8.44					water level = 41.99
13:58	6.54	13.9	165	8.55					Slightly turbid.
14:02	6.49	13.4	163	8.87					
14:06	6.52	13.7	161	8.95					clear.
14:10	6.51	13.7	162	9.10					water level 41.99
14:15	6.51	13.8	162	9.28					clear
14:19	6.49	13.9	163	9.18					
14:23	6.49	14.0	163	9.16					water level = 41.99
14:25	collected	sample							clear.

Type of Samples Collected for Laboratory Analysis:

GX/BTEX/TAME/EDB/EDC, etc., D₈, HVOCS, PCBs, CPAHs + Naphthalene, metals (or, Cd, Pb, Ni, Zn) Total + Dissolved

Well Casing Volumes:

Gal/Ft 1 1/4" = 0.077 1 1/2" = 0.10 2" = 0.16 2 1/2" = 0.24 3" = 0.37 3 1/2" = 0.50 4" = 0.65 6" = 1.46



Project No.: 16-06310-011 Site: Prairie Pit Well No.: MW-1 Date: 11/1/19
Well Depth: 50' Screen Length: 10' Well Diameter: 2" Casing Type: PVC
Sampling Device: Submersible Pump Tubing Type: Polyethylene Water Level: 38.64
Measuring Point: Top of Casing Other Info: Flow rate 0.4 L/min.
Flush mount manometer, no odors or sheen
Sampling Personnel: George Ifner

Type of Samples Collected for Laboratory Analysis:

Well Casing Volumes: DX, GX, BTEX, EDC CPAHs + Naphthalenes, Total + Diss Metals PCBS

Gal/Ft $1\frac{1}{4}" = 0.077$ $1\frac{1}{2}" = 0.10$ $2" = 0.16$ $2\frac{1}{2}" = 0.24$ $3" = 0.37$ $3\frac{1}{2}" = 0.50$ $4" = 0.65$ $6" = 1.46$



Project No.: 16-06310-01 Site: Prairie Pit Well No.: MW-2 Date: 11/1/19
Well Depth: 50' Screen Length: 10' Well Diameter: 2" Casing Type: PVC
Sampling Device: Submersible Pump Tubing Type: Polyethylene Water Level: 41.58'
Measuring Point: Top of Casing Other Info: Flow Rate 0.4 L/min.
Above ground monument. No odor or sheen
Sampling Personnel: George Iffner

Type of Samples Collected for Laboratory Analysis:
DX, GX, BTEX, EDC CPAHs+Naphthalenes, PCBs, Total+Diss. Metals

Gal/Ft $1\frac{1}{4}" = 0.077$ $1\frac{1}{2}" = 0.10$ $2" = 0.16$ $2\frac{1}{2}" = 0.24$ $3" = 0.37$ $3\frac{1}{2}" = 0.50$ $4" = 0.65$ $6" = 1.46$



Project No.: 1606310-011 Site: Prairie Pit Well No.: MW-3 Date: 11/1/19
Well Depth: 50' Screen Length: 10' Well Diameter: 2" Casing Type: PVC
Sampling Device: Submersible pump Tubing Type: Polyethylene Water Level: 42.91
Measuring Point: Top of casing Other Info: Flow rate 0.4 L/min.
Above ground minimum, No odors or sheen.
Sampling Personnel: G. Ifner

Type of Samples Collected for Laboratory Analysis:

Well Casing Volumes:

gi Document1



APPENDIX G

Laboratory Analytical Data

Table G1 – Total cPAH Calculations Using Adjusted Toxicity Equivalency Factors

Ditch-2-0

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.0036	0.00036	0.007	0.0036
Chrysene	0.01	0.0036	0.000036	0.007	0.0036
Benzo[b]fluoranthene	0.1	0.0036	0.00036	0.007	0.0036
Benzo[k]fluoranthene	0.1	0.0036	0.00036	0.007	0.0036
Benzo[a]pyrene	1	0.0036	0.0036	0.007	0.0036
Indeno[1,2,3-c,d]pyrene	0.1	0.0036	0.00036	0.007	0.0036
Dibenz[a,h]anthracene	0.1	0.0036	0.00036	0.007	0.0036
Total cPAHs			0.005		

Ditch-3-0

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.0038	0.00038	0.008	0.0038
Chrysene	0.01	0.0080	0.00008		
Benzo[b]fluoranthene	0.1	0.0038	0.00038	0.008	0.0038
Benzo[k]fluoranthene	0.1	0.0038	0.00038	0.008	0.0038
Benzo[a]pyrene	1	0.0038	0.0038	0.008	0.0038
Indeno[1,2,3-c,d]pyrene	0.1	0.0038	0.00038	0.008	0.0038
Dibenz[a,h]anthracene	0.1	0.0038	0.00038	0.008	0.0038
Total cPAHs			0.006		

Ditch-4-0

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.0038	0.00038	0.008	0.0038
Chrysene	0.01	0.0038	0.000038	0.008	0.0038
Benzo[b]fluoranthene	0.1	0.0038	0.00038	0.008	0.0038
Benzo[k]fluoranthene	0.1	0.0038	0.00038	0.008	0.0038
Benzo[a]pyrene	1	0.0038	0.0038	0.008	0.0038
Indeno[1,2,3-c,d]pyrene	0.1	0.0038	0.00038	0.008	0.0038
Dibenz[a,h]anthracene	0.1	0.0038	0.00038	0.008	0.0038
Total cPAHs			0.006		

Ditch-5B-1

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.0195	0.00195	0.039	0.0195
Chrysene	0.01	0.0195	0.000195	0.039	0.0195
Benzo[b]fluoranthene	0.1	0.0195	0.00195	0.039	0.0195
Benzo[k]fluoranthene	0.1	0.0195	0.00195	0.039	0.0195
Benzo[a]pyrene	1	0.0195	0.0195	0.039	0.0195
Indeno[1,2,3-c,d]pyrene	0.1	0.0195	0.00195	0.039	0.0195
Dibenz[a,h]anthracene	0.1	0.0195	0.00195	0.039	0.0195
Total cPAHs			0.029		

Ditch-6-0

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.02115	0.002115	0.042	0.02115
Chrysene	0.01	0.02115	0.0002115	0.042	0.02115
Benzo[b]fluoranthene	0.1	0.02115	0.002115	0.042	0.02115
Benzo[k]fluoranthene	0.1	0.02115	0.002115	0.042	0.02115
Benzo[a]pyrene	1	0.02115	0.02115	0.042	0.02115
Indeno[1,2,3-c,d]pyrene	0.1	0.02115	0.002115	0.042	0.02115
Dibenz[a,h]anthracene	0.1	0.02115	0.002115	0.042	0.02115
Total cPAHs			0.032		

TP-A-3

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.00375	0.000375	0.008	0.00375
Chrysene	0.01	0.013	0.00013		
Benzo[b]fluoranthene	0.1	0.011	0.0011		
Benzo[k]fluoranthene	0.1	0.0038	0.00038	0.008	0.0038
Benzo[a]pyrene	1	0.0038	0.0038	0.008	0.0038
Indeno[1,2,3-c,d]pyrene	0.1	0.0038	0.00038	0.008	0.0038
Dibenz[a,h]anthracene	0.1	0.0038	0.00038	0.008	0.0038
Total cPAHs			0.007		

TP-B-4

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.0038	0.00038	0.008	0.0038
Chrysene	0.01	0.0038	0.000038	0.008	0.0038
Benzo[b]fluoranthene	0.1	0.0038	0.00038	0.008	0.0038
Benzo[k]fluoranthene	0.1	0.0038	0.00038	0.008	0.0038
Benzo[a]pyrene	1	0.0038	0.0038	0.008	0.0038
Indeno[1,2,3-c,d]pyrene	0.1	0.0038	0.00038	0.008	0.0038
Dibenz[a,h]anthracene	0.1	0.0038	0.00038	0.008	0.0038
Total cPAHs			0.006		

Table G1 - Total cPAH Calculations Using Adjusted Toxicity Equivalency Factors

TP-D-1.5

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.0039	0.00039	0.008	0.0039
Chrysene	0.01	0.009	0.000092		
Benzo[b]fluoranthene	0.1	0.010	0.00098		
Benzo[k]fluoranthene	0.1	0.0039	0.00039	0.008	0.0039
Benzo[a]pyrene	1	0.0039	0.0039	0.008	0.0039
Indeno[1,2,3-c,d]pyrene	0.1	0.0039	0.00039	0.008	0.0039
Dibenz[a,h]anthracene	0.1	0.0039	0.00039	0.008	0.0039
Total cPAHs			0.007		

TP-E-2

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.0038	0.00038	0.008	0.0038
Chrysene	0.01	0.033	0.00033		
Benzo[b]fluoranthene	0.1	0.030	0.003		
Benzo[k]fluoranthene	0.1	0.0038	0.00038	0.008	0.0038
Benzo[a]pyrene	1	0.0038	0.0038	0.008	0.0038
Indeno[1,2,3-c,d]pyrene	0.1	0.013	0.0013		
Dibenz[a,h]anthracene	0.1	0.0038	0.00038	0.008	0.0038
Total cPAHs			0.010		

TP-F-2.5

Analyte	TEF	Results	TEF-adjusted
Benzo[a]anthracene	0.1	0.067	0.0067
Chrysene	0.01	0.250	0.0025
Benzo[b]fluoranthene	0.1	0.110	0.011
Benzo[k]fluoranthene	0.1	0.083	0.0083
Benzo[a]pyrene	1	0.290	0.29
Indeno[1,2,3-c,d]pyrene	0.1	0.110	0.011
Dibenz[a,h]anthracene	0.1	0.028	0.0028
Total cPAHs			0.332

TP-K-1

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.0037	0.00037	0.007	0.0037
Chrysene	0.01	0.020	0.0002		
Benzo[b]fluoranthene	0.1	0.020	0.002		
Benzo[k]fluoranthene	0.1	0.0037	0.00037	0.007	0.0037
Benzo[a]pyrene	1	0.0037	0.0037	0.007	0.0037
Indeno[1,2,3-c,d]pyrene	0.1	0.012	0.0012		
Dibenz[a,h]anthracene	0.1	0.0037	0.00037	0.007	0.0037
Total cPAHs			0.008		

TP-L-1

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.02505	0.002505	0.050	0.02505
Chrysene	0.01	0.02505	0.0002505	0.050	0.02505
Benzo[b]fluoranthene	0.1	0.02505	0.002505	0.050	0.02505
Benzo[k]fluoranthene	0.1	0.02505	0.002505	0.050	0.02505
Benzo[a]pyrene	1	0.02505	0.02505	0.050	0.02505
Indeno[1,2,3-c,d]pyrene	0.1	0.02505	0.002505	0.050	0.02505
Dibenz[a,h]anthracene	0.1	0.02505	0.002505	0.050	0.02505
Total cPAHs			0.038		

Exc-E1-4

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.0225	0.00225	0.045	0.0225
Chrysene	0.01	0.0225	0.000225	0.045	0.0225
Benzo[b]fluoranthene	0.1	0.0225	0.00225	0.045	0.0225
Benzo[k]fluoranthene	0.1	0.0225	0.00225	0.045	0.0225
Benzo[a]pyrene	1	0.0225	0.0225	0.045	0.0225
Indeno[1,2,3-c,d]pyrene	0.1	0.0225	0.00225	0.045	0.0225
Dibenz[a,h]anthracene	0.1	0.0225	0.00225	0.045	0.0225
Total cPAHs			0.034		

Exc-E2C-2.5

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.002	0.0002	0.004	0.002
Chrysene	0.01	0.002	0.00002	0.004	0.002
Benzo[b]fluoranthene	0.1	0.002	0.0002	0.004	0.002
Benzo[k]fluoranthene	0.1	0.002	0.0002	0.004	0.002
Benzo[a]pyrene	1	0.002	0.002	0.004	0.002
Indeno[1,2,3-c,d]pyrene	0.1	0.002	0.0002	0.004	0.002
Dibenz[a,h]anthracene	0.1	0.002	0.0002	0.004	0.002
Total cPAHs			0.003		

Table G1 - Total cPAH Calculations Using Adjusted Toxicity Equivalency Factors

Exc-E3C-1.5

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.35	0.035	0.700	0.35
Chrysene	0.01	0.35	0.0035	0.700	0.35
Benzo[b]fluoranthene	0.1	0.35	0.035	0.700	0.35
Benzo[k]fluoranthene	0.1	0.35	0.035	0.700	0.35
Benzo[a]pyrene	1	0.35	0.35	0.700	0.35
Indeno[1,2,3-c,d]pyrene	0.1	0.35	0.035	0.700	0.35
Dibenz[a,h]anthracene	0.1	0.35	0.035	0.700	0.35
Total cPAHs			0.529		

Exc-E3C2-2

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.018	0.0018	0.036	0.018
Chrysene	0.01	0.018	0.00018	0.036	0.018
Benzo[b]fluoranthene	0.1	0.018	0.0018	0.036	0.018
Benzo[k]fluoranthene	0.1	0.018	0.0018	0.036	0.018
Benzo[a]pyrene	1	0.018	0.018	0.036	0.018
Indeno[1,2,3-c,d]pyrene	0.1	0.018	0.0018	0.036	0.018
Dibenz[a,h]anthracene	0.1	0.018	0.0018	0.036	0.018
Total cPAHs			0.027		

Exc-F1-0

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.0205	0.00205	0.041	0.0205
Chrysene	0.01	0.0205	0.000205	0.041	0.0205
Benzo[b]fluoranthene	0.1	0.0205	0.00205	0.041	0.0205
Benzo[k]fluoranthene	0.1	0.0205	0.00205	0.041	0.0205
Benzo[a]pyrene	1	0.0205	0.0205	0.041	0.0205
Indeno[1,2,3-c,d]pyrene	0.1	0.0205	0.00205	0.041	0.0205
Dibenz[a,h]anthracene	0.1	0.0205	0.00205	0.041	0.0205
Total cPAHs			0.031		

Exc-F2B-1.5

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.0215	0.00215	0.043	0.0215
Chrysene	0.01	0.0215	0.000215	0.043	0.0215
Benzo[b]fluoranthene	0.1	0.0215	0.00215	0.043	0.0215
Benzo[k]fluoranthene	0.1	0.0215	0.00215	0.043	0.0215
Benzo[a]pyrene	1	0.0215	0.0215	0.043	0.0215
Indeno[1,2,3-c,d]pyrene	0.1	0.0215	0.00215	0.043	0.0215
Dibenz[a,h]anthracene	0.1	0.0215	0.00215	0.043	0.0215
Total cPAHs			0.032		

Exc-G1-1

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.01935	0.001935	0.039	0.01935
Chrysene	0.01	0.01935	0.0001935	0.039	0.01935
Benzo[b]fluoranthene	0.1	0.01935	0.001935	0.039	0.01935
Benzo[k]fluoranthene	0.1	0.01935	0.001935	0.039	0.01935
Benzo[a]pyrene	1	0.01935	0.01935	0.039	0.01935
Indeno[1,2,3-c,d]pyrene	0.1	0.01935	0.001935	0.039	0.01935
Dibenz[a,h]anthracene	0.1	0.01935	0.001935	0.039	0.01935
Total cPAHs			0.029		

Exc-G2B-1

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.002	0.0002	0.004	0.002
Chrysene	0.01	0.002	0.00002	0.004	0.002
Benzo[b]fluoranthene	0.1	0.002	0.0002	0.004	0.002
Benzo[k]fluoranthene	0.1	0.002	0.0002	0.004	0.002
Benzo[a]pyrene	1	0.002	0.002	0.004	0.002
Indeno[1,2,3-c,d]pyrene	0.1	0.002	0.0002	0.004	0.002
Dibenz[a,h]anthracene	0.1	0.002	0.0002	0.004	0.002
Total cPAHs			0.003		

Exc-G3-2.5

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.01935	0.001935	0.039	0.01935
Chrysene	0.01	0.01935	0.0001935	0.039	0.01935
Benzo[b]fluoranthene	0.1	0.01935	0.001935	0.039	0.01935
Benzo[k]fluoranthene	0.1	0.01935	0.001935	0.039	0.01935
Benzo[a]pyrene	1	0.01935	0.01935	0.039	0.01935
Indeno[1,2,3-c,d]pyrene	0.1	0.01935	0.001935	0.039	0.01935
Dibenz[a,h]anthracene	0.1	0.01935	0.001935	0.039	0.01935
Total cPAHs			0.029		

Table G1 - Total cPAH Calculations Using Adjusted Toxicity Equivalency Factors

Exc-G4-1

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.0208	0.00208	0.042	0.0208
Chrysene	0.01	0.0208	0.000208	0.042	0.0208
Benzo[b]fluoranthene	0.1	0.0208	0.00208	0.042	0.0208
Benzo[k]fluoranthene	0.1	0.0208	0.00208	0.042	0.0208
Benzo[a]pyrene	1	0.0208	0.0208	0.042	0.0208
Indeno[1,2,3-c,d]pyrene	0.1	0.0208	0.00208	0.042	0.0208
Dibenz[a,h]anthracene	0.1	0.0208	0.00208	0.042	0.0208
Total cPAHs			0.031		

Exc-G5-1

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.02	0.002	0.040	0.02
Chrysene	0.01	0.02	0.0002	0.040	0.02
Benzo[b]fluoranthene	0.1	0.02	0.002	0.040	0.02
Benzo[k]fluoranthene	0.1	0.02	0.002	0.040	0.02
Benzo[a]pyrene	1	0.02	0.02	0.040	0.02
Indeno[1,2,3-c,d]pyrene	0.1	0.02	0.002	0.040	0.02
Dibenz[a,h]anthracene	0.1	0.02	0.002	0.040	0.02
Total cPAHs			0.030		

Exc-G6B-3

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.35	0.035	0.700	0.35
Chrysene	0.01	0.35	0.0035	0.700	0.35
Benzo[b]fluoranthene	0.1	0.35	0.035	0.700	0.35
Benzo[k]fluoranthene	0.1	0.35	0.035	0.700	0.35
Benzo[a]pyrene	1	0.35	0.35	0.700	0.35
Indeno[1,2,3-c,d]pyrene	0.1	0.35	0.035	0.700	0.35
Dibenz[a,h]anthracene	0.1	0.35	0.035	0.700	0.35
Total cPAHs			0.529		

Exc-G6B2-4

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.018	0.0018	0.036	0.018
Chrysene	0.01	0.018	0.00018	0.036	0.018
Benzo[b]fluoranthene	0.1	0.018	0.0018	0.036	0.018
Benzo[k]fluoranthene	0.1	0.018	0.0018	0.036	0.018
Benzo[a]pyrene	1	0.018	0.018	0.036	0.018
Indeno[1,2,3-c,d]pyrene	0.1	0.018	0.0018	0.036	0.018
Dibenz[a,h]anthracene	0.1	0.018	0.0018	0.036	0.018
Total cPAHs			0.027		

Exc-G7-1

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.02065	0.002065	0.041	0.02065
Chrysene	0.01	0.02065	0.0002065	0.041	0.02065
Benzo[b]fluoranthene	0.1	0.02065	0.002065	0.041	0.02065
Benzo[k]fluoranthene	0.1	0.02065	0.002065	0.041	0.02065
Benzo[a]pyrene	1	0.02065	0.02065	0.041	0.02065
Indeno[1,2,3-c,d]pyrene	0.1	0.02065	0.002065	0.041	0.02065
Dibenz[a,h]anthracene	0.1	0.02065	0.002065	0.041	0.02065
Total cPAHs			0.031		

Exc-H1B-1.5

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.021	0.0021	0.042	0.021
Chrysene	0.01	0.021	0.00021	0.042	0.021
Benzo[b]fluoranthene	0.1	0.021	0.0021	0.042	0.021
Benzo[k]fluoranthene	0.1	0.021	0.0021	0.042	0.021
Benzo[a]pyrene	1	0.021	0.021	0.042	0.021
Indeno[1,2,3-c,d]pyrene	0.1	0.021	0.0021	0.042	0.021
Dibenz[a,h]anthracene	0.1	0.021	0.0021	0.042	0.021
Total cPAHs			0.032		

Exc-H2-1

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.0186	0.00186	0.037	0.0186
Chrysene	0.01	0.0186	0.000186	0.037	0.0186
Benzo[b]fluoranthene	0.1	0.0186	0.00186	0.037	0.0186
Benzo[k]fluoranthene	0.1	0.0186	0.00186	0.037	0.0186
Benzo[a]pyrene	1	0.0186	0.0186	0.037	0.0186
Indeno[1,2,3-c,d]pyrene	0.1	0.0186	0.00186	0.037	0.0186
Dibenz[a,h]anthracene	0.1	0.0186	0.00186	0.037	0.0186
Total cPAHs			0.028		

Table G1 - Total cPAH Calculations Using Adjusted Toxicity Equivalency Factors

Exc-H3-1

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.0201	0.00201	0.040	0.0201
Chrysene	0.01	0.0201	0.000201	0.040	0.0201
Benzo[b]fluoranthene	0.1	0.0201	0.00201	0.040	0.0201
Benzo[k]fluoranthene	0.1	0.0201	0.00201	0.040	0.0201
Benzo[a]pyrene	1	0.0201	0.0201	0.040	0.0201
Indeno[1,2,3-c,d]pyrene	0.1	0.0201	0.00201	0.040	0.0201
Dibenz[a,h]anthracene	0.1	0.0201	0.00201	0.040	0.0201
Total cPAHs			0.030		

Exc-H4-1

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.018	0.0018	0.036	0.018
Chrysene	0.01	0.018	0.00018	0.036	0.018
Benzo[b]fluoranthene	0.1	0.018	0.0018	0.036	0.018
Benzo[k]fluoranthene	0.1	0.018	0.0018	0.036	0.018
Benzo[a]pyrene	1	0.018	0.018	0.036	0.018
Indeno[1,2,3-c,d]pyrene	0.1	0.018	0.0018	0.036	0.018
Dibenz[a,h]anthracene	0.1	0.018	0.0018	0.036	0.018
Total cPAHs			0.027		

Exc-H5C-5

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.019	0.0019	0.038	0.019
Chrysene	0.01	0.019	0.00019	0.038	0.019
Benzo[b]fluoranthene	0.1	0.019	0.0019	0.038	0.019
Benzo[k]fluoranthene	0.1	0.019	0.0019	0.038	0.019
Benzo[a]pyrene	1	0.019	0.019	0.038	0.019
Indeno[1,2,3-c,d]pyrene	0.1	0.019	0.0019	0.038	0.019
Dibenz[a,h]anthracene	0.1	0.019	0.0019	0.038	0.019
Total cPAHs			0.029		

Exc-H6-6

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.022	0.0022	0.044	0.022
Chrysene	0.01	0.022	0.00022	0.044	0.022
Benzo[b]fluoranthene	0.1	0.022	0.0022	0.044	0.022
Benzo[k]fluoranthene	0.1	0.022	0.0022	0.044	0.022
Benzo[a]pyrene	1	0.022	0.022	0.044	0.022
Indeno[1,2,3-c,d]pyrene	0.1	0.022	0.0022	0.044	0.022
Dibenz[a,h]anthracene	0.1	0.022	0.0022	0.044	0.022
Total cPAHs			0.033		

Exc-H7-8

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.021	0.0021	0.042	0.021
Chrysene	0.01	0.021	0.00021	0.042	0.021
Benzo[b]fluoranthene	0.1	0.021	0.0021	0.042	0.021
Benzo[k]fluoranthene	0.1	0.021	0.0021	0.042	0.021
Benzo[a]pyrene	1	0.021	0.021	0.042	0.021
Indeno[1,2,3-c,d]pyrene	0.1	0.021	0.0021	0.042	0.021
Dibenz[a,h]anthracene	0.1	0.021	0.0021	0.042	0.021
Total cPAHs			0.032		

Exc-H8C-5

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.35	0.035	0.700	0.35
Chrysene	0.01	0.35	0.0035	0.700	0.35
Benzo[b]fluoranthene	0.1	0.35	0.035	0.700	0.35
Benzo[k]fluoranthene	0.1	0.35	0.035	0.700	0.35
Benzo[a]pyrene	1	0.35	0.35	0.700	0.35
Indeno[1,2,3-c,d]pyrene	0.1	0.35	0.035	0.700	0.35
Dibenz[a,h]anthracene	0.1	0.35	0.035	0.700	0.35
Total cPAHs			0.529		

Exc-H8C2-5

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL
Benzo[a]anthracene	0.1	0.018	0.0018	0.036	0.018
Chrysene	0.01	0.018	0.00018	0.036	0.018
Benzo[b]fluoranthene	0.1	0.018	0.0018	0.036	0.018
Benzo[k]fluoranthene	0.1	0.018	0.0018	0.036	0.018
Benzo[a]pyrene	1	0.018	0.018	0.036	0.018
Indeno[1,2,3-c,d]pyrene	0.1	0.018	0.0018	0.036	0.018
Dibenz[a,h]anthracene	0.1	0.018	0.0018	0.036	0.018
Total cPAHs			0.027		

Table G1 - Total cPAH Calculations Using Adjusted Toxicity Equivalency Factors

Exc-H9C-5

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL	
Benzo[a]anthracene	0.1	0.002	0.0002	0.004		0.002
Chrysene	0.01	0.002	0.00002	0.004		0.002
Benzo[b]fluoranthene	0.1	0.002	0.0002	0.004		0.002
Benzo[k]fluoranthene	0.1	0.002	0.0002	0.004		0.002
Benzo[a]pyrene	1	0.002	0.002	0.004		0.002
Indeno[1,2,3-c,d]pyrene	0.1	0.002	0.0002	0.004		0.002
Dibenz[a,h]anthracene	0.1	0.002	0.0002	0.004		0.002
Total cPAHs			0.003			

Exc-H10-2

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL	
Benzo[a]anthracene	0.1	0.002	0.0002	0.004		0.002
Chrysene	0.01	0.002	0.00002	0.004		0.002
Benzo[b]fluoranthene	0.1	0.002	0.0002	0.004		0.002
Benzo[k]fluoranthene	0.1	0.002	0.0002	0.004		0.002
Benzo[a]pyrene	1	0.002	0.002	0.004		0.002
Indeno[1,2,3-c,d]pyrene	0.1	0.002	0.0002	0.004		0.002
Dibenz[a,h]anthracene	0.1	0.002	0.0002	0.004		0.002
Total cPAHs			0.003			

Exc-H11-1

Analyte	TEF	Results	TEF-adjusted	Result if ND (non detect)	Adjusted level @1/2 PQL	
Benzo[a]anthracene	0.1	0.002	0.0002	0.004		0.002
Chrysene	0.01	0.002	0.00002	0.004		0.002
Benzo[b]fluoranthene	0.1	0.002	0.0002	0.004		0.002
Benzo[k]fluoranthene	0.1	0.002	0.0002	0.004		0.002
Benzo[a]pyrene	1	0.002	0.002	0.004		0.002
Indeno[1,2,3-c,d]pyrene	0.1	0.002	0.0002	0.004		0.002
Dibenz[a,h]anthracene	0.1	0.002	0.0002	0.004		0.002
Total cPAHs			0.003			



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

July 12, 2019

George Iftner
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 16-06310-011
Laboratory Reference No. 1906-324

Dear George:

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read 'DB', with a long horizontal flourish extending to the right.

David Baumeister
Project Manager

Enclosures



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

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: July 12, 2019
Samples Submitted: June 28, 2019
Laboratory Reference: 1906-324
Project: 16-06310-011

Case Narrative

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

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

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



Date of Report: July 12, 2019
 Samples Submitted: June 28, 2019
 Laboratory Reference: 1906-324
 Project: 16-06310-011

HYDROCARBON IDENTIFICATION NWTPH-HCID

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	TP-A-3					
Laboratory ID:	06-324-01					
Gasoline Range Organics	ND	23	NWTPH-HCID	7-1-19	7-1-19	
Diesel Range Organics	ND	57	NWTPH-HCID	7-1-19	7-1-19	
Lube Oil Range Organics	Detected	110	NWTPH-HCID	7-1-19	7-1-19	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	94	50-150				

Client ID:	TP-B-4					
Laboratory ID:	06-324-02					
Gasoline Range Organics	ND	23	NWTPH-HCID	7-1-19	7-1-19	
Diesel Range Organics	ND	57	NWTPH-HCID	7-1-19	7-1-19	
Lube Oil Range Organics	Detected	110	NWTPH-HCID	7-1-19	7-1-19	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	93	50-150				

Client ID:	TP-C-2					
Laboratory ID:	06-324-03					
Gasoline Range Organics	ND	23	NWTPH-HCID	7-1-19	7-1-19	
Diesel Range Organics	ND	56	NWTPH-HCID	7-1-19	7-1-19	
Lube Oil Range Organics	ND	110	NWTPH-HCID	7-1-19	7-1-19	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	98	50-150				

Client ID:	TP-D-1.5					
Laboratory ID:	06-324-04					
Gasoline Range Organics	Detected	23	NWTPH-HCID	7-1-19	7-1-19	
Diesel Range Organics	ND	59	NWTPH-HCID	7-1-19	7-1-19	
Lube Oil Range Organics	Detected	120	NWTPH-HCID	7-1-19	7-1-19	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	95	50-150				

Client ID:	TP-E-2					
Laboratory ID:	06-324-05					
Gasoline Range Organics	Detected	23	NWTPH-HCID	7-1-19	7-1-19	
Diesel Range Organics	Detected	57	NWTPH-HCID	7-1-19	7-1-19	N
Lube Oil	Detected	110	NWTPH-HCID	7-1-19	7-1-19	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	94	50-150				



Date of Report: July 12, 2019
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HYDROCARBON IDENTIFICATION NWTPH-HCID

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	TP-F-2.5					
Laboratory ID:	06-324-06					
Gasoline Range Organics	Detected	23	NWTPH-HCID	7-1-19	7-1-19	
Diesel Range Organics	Detected	58	NWTPH-HCID	7-1-19	7-1-19	N
Lube Oil	Detected	120	NWTPH-HCID	7-1-19	7-1-19	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	104	50-150				

Client ID:	TP-K-1					
Laboratory ID:	06-324-07					
Gasoline Range Organics	ND	22	NWTPH-HCID	7-1-19	7-1-19	
Diesel Range Organics	ND	56	NWTPH-HCID	7-1-19	7-1-19	
Lube Oil	Detected	110	NWTPH-HCID	7-1-19	7-1-19	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	92	50-150				

Client ID:	Ditch-1-0					
Laboratory ID:	06-324-08					
Gasoline Range Organics	ND	21	NWTPH-HCID	7-1-19	7-1-19	
Diesel Range Organics	ND	52	NWTPH-HCID	7-1-19	7-1-19	
Lube Oil Range Organics	ND	100	NWTPH-HCID	7-1-19	7-1-19	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	88	50-150				

Client ID:	Ditch-2-0					
Laboratory ID:	06-324-09					
Gasoline Range Organics	Detected	22	NWTPH-HCID	7-1-19	7-1-19	
Diesel Range Organics	ND	54	NWTPH-HCID	7-1-19	7-1-19	
Lube Oil Range Organics	Detected	110	NWTPH-HCID	7-1-19	7-1-19	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	94	50-150				



Date of Report: July 12, 2019
 Samples Submitted: June 28, 2019
 Laboratory Reference: 1906-324
 Project: 16-06310-011

**HYDROCARBON IDENTIFICATION
 NWTPH-HCID
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0701S1					
Gasoline Range Organics	ND	20	NWTPH-HCID	7-1-19	7-1-19	
Diesel Range Organics	ND	50	NWTPH-HCID	7-1-19	7-1-19	
Lube Oil Range Organics	ND	100	NWTPH-HCID	7-1-19	7-1-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	93	50-150				



Date of Report: July 12, 2019
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GASOLINE RANGE ORGANICS
NWTPH-Gx

Matrix: Soil
 Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Ditch-3-0					
Laboratory ID:	06-324-10					
Gasoline	ND	6.4	NWTPH-Gx	7-2-19	7-3-19	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	91	58-129				
Client ID:	Ditch-4-0					
Laboratory ID:	06-324-11					
Gasoline	ND	6.4	NWTPH-Gx	7-2-19	7-3-19	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	94	58-129				



Date of Report: July 12, 2019
 Samples Submitted: June 28, 2019
 Laboratory Reference: 1906-324
 Project: 16-06310-011

**GASOLINE RANGE ORGANICS
 NWTPH-Gx
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0702S3					
Gasoline	ND	5.0	NWTPH-Gx	7-2-19	7-2-19	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	86	58-129				

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	06-309-01							
	ORIG	DUP						
Gasoline	ND	ND	NA	NA	NA	NA	NA	30
Surrogate:								
Fluorobenzene				104	99	58-129		



Date of Report: July 12, 2019
 Samples Submitted: June 28, 2019
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 Project: 16-06310-011

GASOLINE RANGE ORGANICS
NWTPH-Gx

Matrix: Soil
 Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	TP-D-1.5					
Laboratory ID:	06-324-04					
Gasoline	ND	5.9	NWTPH-Gx	7-9-19	7-9-19	
Surrogate:	<i>Percent Recovery</i>	<i>Control Limits</i>				
Fluorobenzene	91	58-129				
Client ID:	TP-E-2					
Laboratory ID:	06-324-05					
Gasoline	ND	5.9	NWTPH-Gx	7-9-19	7-9-19	
Surrogate:	<i>Percent Recovery</i>	<i>Control Limits</i>				
Fluorobenzene	94	58-129				
Client ID:	TP-F-2.5					
Laboratory ID:	06-324-06					
Gasoline	ND	5.4	NWTPH-Gx	7-9-19	7-9-19	
Surrogate:	<i>Percent Recovery</i>	<i>Control Limits</i>				
Fluorobenzene	93	58-129				
Client ID:	Ditch-2-0					
Laboratory ID:	06-324-09					
Gasoline	ND	5.2	NWTPH-Gx	7-9-19	7-9-19	
Surrogate:	<i>Percent Recovery</i>	<i>Control Limits</i>				
Fluorobenzene	90	58-129				



Date of Report: July 12, 2019
 Samples Submitted: June 28, 2019
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**GASOLINE RANGE ORGANICS
 NWTPH-Gx
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0709S1					
Gasoline	ND	5.0	NWTPH-Gx	7-9-19	7-9-19	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	88	58-129				

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	06-324-04							
	ORIG	DUP						
Gasoline	ND	ND	NA	NA	NA	NA	NA	30
Surrogate:								
Fluorobenzene				91	90	58-129		



Date of Report: July 12, 2019
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 Project: 16-06310-011

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Ditch-3-0					
Laboratory ID:	06-324-10					
Diesel Range Organics	ND	29	NWTPH-Dx	7-1-19	7-2-19	X1
Lube Oil Range Organics	81	57	NWTPH-Dx	7-1-19	7-2-19	X1
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	<i>84</i>	<i>50-150</i>				
Client ID:	Ditch-4-0					
Laboratory ID:	06-324-11					
Diesel Range Organics	ND	28	NWTPH-Dx	7-1-19	7-2-19	X1
Lube Oil Range Organics	170	57	NWTPH-Dx	7-1-19	7-2-19	X1
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	<i>97</i>	<i>50-150</i>				



Date of Report: July 12, 2019
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 Project: 16-06310-011

**DIESEL AND HEAVY OIL RANGE ORGANICS
 NWTPH-Dx
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0701S2					
Diesel Range Organics	ND	25	NWTPH-Dx	7-1-19	7-2-19	X1
Lube Oil Range Organics	ND	50	NWTPH-Dx	7-1-19	7-2-19	X1
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	107	50-150				

Analyte	Result		Spike Level		Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE										
Laboratory ID:	06-324-11									
	ORIG	DUP								
Diesel Range	ND	ND	NA	NA		NA	NA	NA	NA	X1
Lube Oil Range Organics	145	145	NA	NA		NA	NA	0	NA	X1
Surrogate:										
o-Terphenyl						97	102	50-150		



Date of Report: July 12, 2019
 Samples Submitted: June 28, 2019
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**DIESEL AND HEAVY OIL RANGE ORGANICS
 NWTPH-Dx**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	TP-A-3					
Laboratory ID:	06-324-01					
Diesel Range Organics	ND	28	NWTPH-Dx	7-10-19	7-12-19	
Lube Oil Range Organics	250	57	NWTPH-Dx	7-10-19	7-12-19	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	82	50-150				

Client ID:	TP-B-4					
Laboratory ID:	06-324-02					
Diesel Range Organics	ND	29	NWTPH-Dx	7-10-19	7-10-19	
Lube Oil Range Organics	300	57	NWTPH-Dx	7-10-19	7-10-19	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	77	50-150				

Client ID:	TP-D-1.5					
Laboratory ID:	06-324-04					
Diesel Range Organics	ND	29	NWTPH-Dx	7-10-19	7-11-19	
Lube Oil Range Organics	300	59	NWTPH-Dx	7-10-19	7-11-19	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	80	50-150				

Client ID:	TP-E-2					
Laboratory ID:	06-324-05					
Diesel Range Organics	ND	49	NWTPH-Dx	7-10-19	7-11-19	U1
Lube Oil	640	57	NWTPH-Dx	7-10-19	7-11-19	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	74	50-150				

Client ID:	TP-F-2.5					
Laboratory ID:	06-324-06					
Diesel Range Organics	ND	620	NWTPH-Dx	7-10-19	7-12-19	U1
Lube Oil	8500	1200	NWTPH-Dx	7-10-19	7-12-19	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	---	50-150				S

Client ID:	TP-K-1					
Laboratory ID:	06-324-07					
Diesel Range Organics	ND	28	NWTPH-Dx	7-10-19	7-11-19	
Lube Oil	450	56	NWTPH-Dx	7-10-19	7-11-19	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	76	50-150				



Date of Report: July 12, 2019
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DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Ditch-2-0					
Laboratory ID:	06-324-09					
Diesel Range Organics	ND	27	NWTPH-Dx	7-10-19	7-11-19	
Lube Oil Range Organics	260	54	NWTPH-Dx	7-10-19	7-11-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	70	50-150				



Date of Report: July 12, 2019
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**DIESEL AND HEAVY OIL RANGE ORGANICS
 NWTPH-Dx
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0710S2					
Diesel Range Organics	ND	25	NWTPH-Dx	7-10-19	7-10-19	
Lube Oil Range Organics	ND	50	NWTPH-Dx	7-10-19	7-10-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	84	50-150				

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	06-324-01							
	ORIG	DUP						
Diesel Range	ND	ND	NA	NA	NA	NA	NA	
Lube Oil Range Organics	217	174	NA	NA	NA	NA	22	
<i>Surrogate:</i>								
<i>o-Terphenyl</i>				82	77	50-150		



Date of Report: July 12, 2019
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VOLATILE ORGANICS EPA 8260C

Matrix: Soil
 Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	TP-D-1.5					
Laboratory ID:	06-324-04					
tert-Butyl Alcohol (TBA)	ND	0.026	EPA 8260C	7-7-19	7-7-19	
tert-Butyl Ethyl Ether (ETBE)	ND	0.0053	EPA 8260C	7-7-19	7-7-19	
tert-Amyl Methyl Ether (TAME)	ND	0.0053	EPA 8260C	7-7-19	7-7-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>114</i>	<i>76-131</i>				
<i>Toluene-d8</i>	<i>98</i>	<i>78-128</i>				
<i>4-Bromofluorobenzene</i>	<i>80</i>	<i>71-130</i>				



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VOLATILE ORGANICS EPA 8260C

Matrix: Soil
 Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	TP-E-2					
Laboratory ID:	06-324-05					
tert-Butyl Alcohol (TBA)	ND	0.024	EPA 8260C	7-7-19	7-7-19	
tert-Butyl Ethyl Ether (ETBE)	ND	0.0048	EPA 8260C	7-7-19	7-7-19	
tert-Amyl Methyl Ether (TAME)	ND	0.0048	EPA 8260C	7-7-19	7-7-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>116</i>	<i>76-131</i>				
<i>Toluene-d8</i>	<i>96</i>	<i>78-128</i>				
<i>4-Bromofluorobenzene</i>	<i>78</i>	<i>71-130</i>				



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VOLATILE ORGANICS EPA 8260C

Matrix: Soil
 Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	TP-F-2.5					
Laboratory ID:	06-324-06					
tert-Butyl Alcohol (TBA)	ND	0.026	EPA 8260C	7-7-19	7-7-19	
tert-Butyl Ethyl Ether (ETBE)	ND	0.0053	EPA 8260C	7-7-19	7-7-19	
tert-Amyl Methyl Ether (TAME)	ND	0.0053	EPA 8260C	7-7-19	7-7-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>123</i>	<i>76-131</i>				
<i>Toluene-d8</i>	<i>89</i>	<i>78-128</i>				
<i>4-Bromofluorobenzene</i>	<i>76</i>	<i>71-130</i>				



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VOLATILE ORGANICS EPA 8260C

Matrix: Soil
 Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Ditch-2-0					
Laboratory ID:	06-324-09					
tert-Butyl Alcohol (TBA)	ND	0.025	EPA 8260C	7-7-19	7-7-19	
tert-Butyl Ethyl Ether (ETBE)	ND	0.0051	EPA 8260C	7-7-19	7-7-19	
tert-Amyl Methyl Ether (TAME)	ND	0.0051	EPA 8260C	7-7-19	7-7-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>115</i>	<i>76-131</i>				
<i>Toluene-d8</i>	<i>96</i>	<i>78-128</i>				
<i>4-Bromofluorobenzene</i>	<i>75</i>	<i>71-130</i>				



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VOLATILE ORGANICS EPA 8260C

Matrix: Soil
 Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Ditch-3-0					
Laboratory ID:	06-324-10					
tert-Butyl Alcohol (TBA)	ND	0.031	EPA 8260C	7-7-19	7-7-19	
tert-Butyl Ethyl Ether (ETBE)	ND	0.0061	EPA 8260C	7-7-19	7-7-19	
tert-Amyl Methyl Ether (TAME)	ND	0.0061	EPA 8260C	7-7-19	7-7-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>111</i>	<i>76-131</i>				
<i>Toluene-d8</i>	<i>104</i>	<i>78-128</i>				
<i>4-Bromofluorobenzene</i>	<i>78</i>	<i>71-130</i>				



Date of Report: July 12, 2019
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 Project: 16-06310-011

VOLATILE ORGANICS EPA 8260C

Matrix: Soil
 Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Ditch-4-0					
Laboratory ID:	06-324-11					
tert-Butyl Alcohol (TBA)	ND	0.029	EPA 8260C	7-7-19	7-7-19	
tert-Butyl Ethyl Ether (ETBE)	ND	0.0058	EPA 8260C	7-7-19	7-7-19	
tert-Amyl Methyl Ether (TAME)	ND	0.0058	EPA 8260C	7-7-19	7-7-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>114</i>	<i>76-131</i>				
<i>Toluene-d8</i>	<i>100</i>	<i>78-128</i>				
<i>4-Bromofluorobenzene</i>	<i>79</i>	<i>71-130</i>				



Date of Report: July 12, 2019
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 Laboratory Reference: 1906-324
 Project: 16-06310-011

**VOLATILE ORGANICS EPA 8260C
 METHOD BLANK QUALITY CONTROL**

Matrix: Soil
 Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
<hr/>						
Laboratory ID:	MB0707S1					
tert-Butyl Alcohol (TBA)	ND	0.025	EPA 8260C	7-7-19	7-7-19	
tert-Butyl Ethyl Ether (ETBE)	ND	0.0050	EPA 8260C	7-7-19	7-7-19	
tert-Amyl Methyl Ether (TAME)	ND	0.0050	EPA 8260C	7-7-19	7-7-19	
<hr/>						
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>109</i>	<i>76-131</i>				
<i>Toluene-d8</i>	<i>102</i>	<i>78-128</i>				
<i>4-Bromofluorobenzene</i>	<i>91</i>	<i>71-130</i>				



Date of Report: July 12, 2019
 Samples Submitted: June 28, 2019
 Laboratory Reference: 1906-324
 Project: 16-06310-011

**VOLATILE ORGANICS EPA 8260C
 SB/SBD QUALITY CONTROL**

Matrix: Soil
 Units: mg/kg

Analyte	Result		Spike Level		Percent		Recovery	RPD	RPD	Flags
					Recovery		Limits		Limit	
SPIKE BLANKS										
Laboratory ID:	SB0707S1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	0.0419	0.0447	0.0500	0.0500	84	89	57-133	6	18	
Benzene	0.0405	0.0451	0.0500	0.0500	81	90	71-129	11	16	
Trichloroethene	0.0448	0.0490	0.0500	0.0500	90	98	71-122	9	16	
Toluene	0.0403	0.0458	0.0500	0.0500	81	92	74-125	13	15	
Chlorobenzene	0.0449	0.0497	0.0500	0.0500	90	99	72-120	10	14	
Surrogate:										
Dibromofluoromethane					91	94	76-131			
Toluene-d8					90	91	78-128			
4-Bromofluorobenzene					89	91	71-130			



Date of Report: July 12, 2019
 Samples Submitted: June 28, 2019
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 Project: 16-06310-011

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Matrix: Soil
 Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	TP-D-1.5					
Laboratory ID:	06-324-04					
Dichlorodifluoromethane	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
Chloromethane	ND	0.0049	EPA 8260C	7-7-19	7-7-19	
Vinyl Chloride	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
Bromomethane	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
Chloroethane	ND	0.0049	EPA 8260C	7-7-19	7-7-19	
Trichlorofluoromethane	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
1,1-Dichloroethene	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
Iodomethane	ND	0.0049	EPA 8260C	7-7-19	7-7-19	
Methylene Chloride	ND	0.0049	EPA 8260C	7-7-19	7-7-19	
(trans) 1,2-Dichloroethene	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
Methyl t-Butyl Ether	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
1,1-Dichloroethane	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
2,2-Dichloropropane	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
(cis) 1,2-Dichloroethene	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
Bromochloromethane	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
Chloroform	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
1,1,1-Trichloroethane	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
Carbon Tetrachloride	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
1,1-Dichloropropene	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
Benzene	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
1,2-Dichloroethane	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
Trichloroethene	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
1,2-Dichloropropane	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
Dibromomethane	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
Bromodichloromethane	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
2-Chloroethyl Vinyl Ether	ND	0.0095	EPA 8260C	7-7-19	7-7-19	
(cis) 1,3-Dichloropropene	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
Toluene	ND	0.0049	EPA 8260C	7-7-19	7-7-19	
(trans) 1,3-Dichloropropene	ND	0.00099	EPA 8260C	7-7-19	7-7-19	



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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	TP-D-1.5					
Laboratory ID:	06-324-04					
1,1,2-Trichloroethane	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
Tetrachloroethene	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
1,3-Dichloropropane	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
Dibromochloromethane	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
1,2-Dibromoethane	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
Chlorobenzene	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
1,1,1,2-Tetrachloroethane	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
Ethylbenzene	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
m,p-Xylene	ND	0.0020	EPA 8260C	7-7-19	7-7-19	
o-Xylene	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
Bromoform	ND	0.0049	EPA 8260C	7-7-19	7-7-19	
Bromobenzene	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
1,1,2,2-Tetrachloroethane	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
1,2,3-Trichloropropane	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
2-Chlorotoluene	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
4-Chlorotoluene	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
1,3-Dichlorobenzene	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
1,4-Dichlorobenzene	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
1,2-Dichlorobenzene	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
1,2-Dibromo-3-chloropropane	ND	0.0049	EPA 8260C	7-7-19	7-7-19	
1,2,4-Trichlorobenzene	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
Hexachlorobutadiene	ND	0.0049	EPA 8260C	7-7-19	7-7-19	
1,2,3-Trichlorobenzene	ND	0.00099	EPA 8260C	7-7-19	7-7-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>99</i>	<i>76-131</i>				
<i>Toluene-d8</i>	<i>90</i>	<i>78-128</i>				
<i>4-Bromofluorobenzene</i>	<i>79</i>	<i>71-130</i>				



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Matrix: Soil
 Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	TP-E-2					
Laboratory ID:	06-324-05					
Dichlorodifluoromethane	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
Chloromethane	ND	0.0048	EPA 8260C	7-7-19	7-7-19	
Vinyl Chloride	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
Bromomethane	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
Chloroethane	ND	0.0048	EPA 8260C	7-7-19	7-7-19	
Trichlorofluoromethane	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
1,1-Dichloroethene	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
Iodomethane	ND	0.0048	EPA 8260C	7-7-19	7-7-19	
Methylene Chloride	ND	0.0048	EPA 8260C	7-7-19	7-7-19	
(trans) 1,2-Dichloroethene	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
Methyl t-Butyl Ether	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
1,1-Dichloroethane	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
2,2-Dichloropropane	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
(cis) 1,2-Dichloroethene	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
Bromochloromethane	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
Chloroform	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
1,1,1-Trichloroethane	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
Carbon Tetrachloride	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
1,1-Dichloropropene	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
Benzene	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
1,2-Dichloroethane	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
Trichloroethene	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
1,2-Dichloropropane	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
Dibromomethane	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
Bromodichloromethane	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
2-Chloroethyl Vinyl Ether	ND	0.0092	EPA 8260C	7-7-19	7-7-19	
(cis) 1,3-Dichloropropene	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
Toluene	ND	0.0048	EPA 8260C	7-7-19	7-7-19	
(trans) 1,3-Dichloropropene	ND	0.00096	EPA 8260C	7-7-19	7-7-19	



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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	TP-E-2					
Laboratory ID:	06-324-05					
1,1,2-Trichloroethane	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
Tetrachloroethene	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
1,3-Dichloropropane	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
Dibromochloromethane	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
1,2-Dibromoethane	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
Chlorobenzene	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
1,1,1,2-Tetrachloroethane	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
Ethylbenzene	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
m,p-Xylene	ND	0.0019	EPA 8260C	7-7-19	7-7-19	
o-Xylene	ND	0.00096	EPA 8260C	7-7-19	7-7-19	
Bromoform	ND	0.0048	EPA 8260C	7-7-19	7-7-19	
Bromobenzene	ND	0.081	EPA 8260C	7-9-19	7-9-19	
1,1,2,2-Tetrachloroethane	ND	0.075	EPA 8260C	7-9-19	7-9-19	
1,2,3-Trichloropropane	ND	0.075	EPA 8260C	7-9-19	7-9-19	
2-Chlorotoluene	ND	0.058	EPA 8260C	7-9-19	7-9-19	
4-Chlorotoluene	ND	0.075	EPA 8260C	7-9-19	7-9-19	
1,3-Dichlorobenzene	ND	0.058	EPA 8260C	7-9-19	7-9-19	
1,4-Dichlorobenzene	ND	0.058	EPA 8260C	7-9-19	7-9-19	
1,2-Dichlorobenzene	ND	0.058	EPA 8260C	7-9-19	7-9-19	
1,2-Dibromo-3-chloropropane	ND	0.29	EPA 8260C	7-9-19	7-9-19	
1,2,4-Trichlorobenzene	ND	0.058	EPA 8260C	7-9-19	7-9-19	
Hexachlorobutadiene	ND	0.29	EPA 8260C	7-9-19	7-9-19	
1,2,3-Trichlorobenzene	ND	0.058	EPA 8260C	7-9-19	7-9-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>101</i>	<i>76-131</i>				
<i>Toluene-d8</i>	<i>89</i>	<i>78-128</i>				
<i>4-Bromofluorobenzene</i>	<i>77</i>	<i>71-130</i>				



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Matrix: Soil
 Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	TP-F-2.5					
Laboratory ID:	06-324-06					
Dichlorodifluoromethane	ND	0.0017	EPA 8260C	7-9-19	7-9-19	
Chloromethane	ND	0.0069	EPA 8260C	7-9-19	7-9-19	
Vinyl Chloride	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Bromomethane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Chloroethane	ND	0.0050	EPA 8260C	7-9-19	7-9-19	
Trichlorofluoromethane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
1,1-Dichloroethene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Iodomethane	ND	0.0050	EPA 8260C	7-9-19	7-9-19	
Methylene Chloride	ND	0.0050	EPA 8260C	7-9-19	7-9-19	
(trans) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Methyl t-Butyl Ether	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
1,1-Dichloroethane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
2,2-Dichloropropane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
(cis) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Bromochloromethane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Chloroform	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
1,1,1-Trichloroethane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Carbon Tetrachloride	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
1,1-Dichloropropene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Benzene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
1,2-Dichloroethane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Trichloroethene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
1,2-Dichloropropane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Dibromomethane	ND	0.0014	EPA 8260C	7-9-19	7-9-19	
Bromodichloromethane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
2-Chloroethyl Vinyl Ether	ND	0.0050	EPA 8260C	7-9-19	7-9-19	
(cis) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Toluene	ND	0.0050	EPA 8260C	7-9-19	7-9-19	
(trans) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	



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

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: July 12, 2019
 Samples Submitted: June 28, 2019
 Laboratory Reference: 1906-324
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	TP-F-2.5					
Laboratory ID:	06-324-06					
1,1,2-Trichloroethane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Tetrachloroethene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
1,3-Dichloropropane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Dibromochloromethane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
1,2-Dibromoethane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Chlorobenzene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
1,1,1,2-Tetrachloroethane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Ethylbenzene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
m,p-Xylene	ND	0.0020	EPA 8260C	7-9-19	7-9-19	
o-Xylene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Bromoform	ND	0.0050	EPA 8260C	7-9-19	7-9-19	
Bromobenzene	ND	0.082	EPA 8260C	7-9-19	7-9-19	
1,1,2,2-Tetrachloroethane	ND	0.076	EPA 8260C	7-9-19	7-9-19	
1,2,3-Trichloropropane	ND	0.076	EPA 8260C	7-9-19	7-9-19	
2-Chlorotoluene	ND	0.058	EPA 8260C	7-9-19	7-9-19	
4-Chlorotoluene	ND	0.076	EPA 8260C	7-9-19	7-9-19	
1,3-Dichlorobenzene	ND	0.058	EPA 8260C	7-9-19	7-9-19	
1,4-Dichlorobenzene	ND	0.058	EPA 8260C	7-9-19	7-9-19	
1,2-Dichlorobenzene	ND	0.058	EPA 8260C	7-9-19	7-9-19	
1,2-Dibromo-3-chloropropane	ND	0.29	EPA 8260C	7-9-19	7-9-19	
1,2,4-Trichlorobenzene	ND	0.058	EPA 8260C	7-9-19	7-9-19	
Hexachlorobutadiene	ND	0.29	EPA 8260C	7-9-19	7-9-19	
1,2,3-Trichlorobenzene	ND	0.058	EPA 8260C	7-9-19	7-9-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>89</i>	<i>76-131</i>				
<i>Toluene-d8</i>	<i>80</i>	<i>78-128</i>				
<i>4-Bromofluorobenzene</i>	<i>76</i>	<i>71-130</i>				



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Matrix: Soil
 Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Ditch-2-0					
Laboratory ID:	06-324-09					
Dichlorodifluoromethane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Chloromethane	ND	0.0051	EPA 8260C	7-7-19	7-7-19	
Vinyl Chloride	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Bromomethane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Chloroethane	ND	0.0051	EPA 8260C	7-7-19	7-7-19	
Trichlorofluoromethane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
1,1-Dichloroethene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Iodomethane	ND	0.0051	EPA 8260C	7-7-19	7-7-19	
Methylene Chloride	ND	0.0051	EPA 8260C	7-7-19	7-7-19	
(trans) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Methyl t-Butyl Ether	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
1,1-Dichloroethane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
2,2-Dichloropropane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
(cis) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Bromochloromethane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Chloroform	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
1,1,1-Trichloroethane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Carbon Tetrachloride	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
1,1-Dichloropropene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Benzene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
1,2-Dichloroethane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Trichloroethene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
1,2-Dichloropropane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Dibromomethane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Bromodichloromethane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
2-Chloroethyl Vinyl Ether	ND	0.0098	EPA 8260C	7-7-19	7-7-19	
(cis) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Toluene	ND	0.0051	EPA 8260C	7-7-19	7-7-19	
(trans) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	



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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Ditch-2-0					
Laboratory ID:	06-324-09					
1,1,2-Trichloroethane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Tetrachloroethene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
1,3-Dichloropropane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Dibromochloromethane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
1,2-Dibromoethane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Chlorobenzene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
1,1,1,2-Tetrachloroethane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Ethylbenzene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
m,p-Xylene	ND	0.0020	EPA 8260C	7-7-19	7-7-19	
o-Xylene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Bromoform	ND	0.0051	EPA 8260C	7-7-19	7-7-19	
Bromobenzene	ND	0.062	EPA 8260C	7-9-19	7-9-19	
1,1,2,2-Tetrachloroethane	ND	0.057	EPA 8260C	7-9-19	7-9-19	
1,2,3-Trichloropropane	ND	0.057	EPA 8260C	7-9-19	7-9-19	
2-Chlorotoluene	ND	0.044	EPA 8260C	7-9-19	7-9-19	
4-Chlorotoluene	ND	0.057	EPA 8260C	7-9-19	7-9-19	
1,3-Dichlorobenzene	ND	0.044	EPA 8260C	7-9-19	7-9-19	
1,4-Dichlorobenzene	ND	0.044	EPA 8260C	7-9-19	7-9-19	
1,2-Dichlorobenzene	ND	0.044	EPA 8260C	7-9-19	7-9-19	
1,2-Dibromo-3-chloropropane	ND	0.22	EPA 8260C	7-9-19	7-9-19	
1,2,4-Trichlorobenzene	ND	0.044	EPA 8260C	7-9-19	7-9-19	
Hexachlorobutadiene	ND	0.22	EPA 8260C	7-9-19	7-9-19	
1,2,3-Trichlorobenzene	ND	0.044	EPA 8260C	7-9-19	7-9-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>100</i>	<i>76-131</i>				
<i>Toluene-d8</i>	<i>89</i>	<i>78-128</i>				
<i>4-Bromofluorobenzene</i>	<i>74</i>	<i>71-130</i>				



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Matrix: Soil
 Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Ditch-3-0					
Laboratory ID:	06-324-10					
Dichlorodifluoromethane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Chloromethane	ND	0.0061	EPA 8260C	7-7-19	7-7-19	
Vinyl Chloride	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Bromomethane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Chloroethane	ND	0.0061	EPA 8260C	7-7-19	7-7-19	
Trichlorofluoromethane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
1,1-Dichloroethene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Iodomethane	ND	0.0061	EPA 8260C	7-7-19	7-7-19	
Methylene Chloride	ND	0.0061	EPA 8260C	7-7-19	7-7-19	
(trans) 1,2-Dichloroethene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Methyl t-Butyl Ether	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
1,1-Dichloroethane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
2,2-Dichloropropane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
(cis) 1,2-Dichloroethene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Bromochloromethane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Chloroform	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
1,1,1-Trichloroethane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Carbon Tetrachloride	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
1,1-Dichloropropene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Benzene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
1,2-Dichloroethane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Trichloroethene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
1,2-Dichloropropane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Dibromomethane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Bromodichloromethane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
2-Chloroethyl Vinyl Ether	ND	0.012	EPA 8260C	7-7-19	7-7-19	
(cis) 1,3-Dichloropropene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Toluene	ND	0.0061	EPA 8260C	7-7-19	7-7-19	
(trans) 1,3-Dichloropropene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	



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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Ditch-3-0					
Laboratory ID:	06-324-10					
1,1,2-Trichloroethane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Tetrachloroethene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
1,3-Dichloropropane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Dibromochloromethane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
1,2-Dibromoethane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Chlorobenzene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
1,1,1,2-Tetrachloroethane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Ethylbenzene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
m,p-Xylene	ND	0.0025	EPA 8260C	7-7-19	7-7-19	
o-Xylene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Bromoform	ND	0.0061	EPA 8260C	7-7-19	7-7-19	
Bromobenzene	ND	0.081	EPA 8260C	7-9-19	7-9-19	
1,1,2,2-Tetrachloroethane	ND	0.076	EPA 8260C	7-9-19	7-9-19	
1,2,3-Trichloropropane	ND	0.076	EPA 8260C	7-9-19	7-9-19	
2-Chlorotoluene	ND	0.058	EPA 8260C	7-9-19	7-9-19	
4-Chlorotoluene	ND	0.076	EPA 8260C	7-9-19	7-9-19	
1,3-Dichlorobenzene	ND	0.058	EPA 8260C	7-9-19	7-9-19	
1,4-Dichlorobenzene	ND	0.058	EPA 8260C	7-9-19	7-9-19	
1,2-Dichlorobenzene	ND	0.058	EPA 8260C	7-9-19	7-9-19	
1,2-Dibromo-3-chloropropane	ND	0.29	EPA 8260C	7-9-19	7-9-19	
1,2,4-Trichlorobenzene	ND	0.058	EPA 8260C	7-9-19	7-9-19	
Hexachlorobutadiene	ND	0.29	EPA 8260C	7-9-19	7-9-19	
1,2,3-Trichlorobenzene	ND	0.058	EPA 8260C	7-9-19	7-9-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>96</i>	<i>76-131</i>				
<i>Toluene-d8</i>	<i>96</i>	<i>78-128</i>				
<i>4-Bromofluorobenzene</i>	<i>76</i>	<i>71-130</i>				



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Matrix: Soil
 Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Ditch-4-0					
Laboratory ID:	06-324-11					
Dichlorodifluoromethane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Chloromethane	ND	0.0058	EPA 8260C	7-7-19	7-7-19	
Vinyl Chloride	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Bromomethane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Chloroethane	ND	0.0058	EPA 8260C	7-7-19	7-7-19	
Trichlorofluoromethane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
1,1-Dichloroethene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Iodomethane	ND	0.0058	EPA 8260C	7-7-19	7-7-19	
Methylene Chloride	0.0073	0.0058	EPA 8260C	7-7-19	7-7-19	
(trans) 1,2-Dichloroethene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Methyl t-Butyl Ether	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
1,1-Dichloroethane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
2,2-Dichloropropane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
(cis) 1,2-Dichloroethene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Bromochloromethane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Chloroform	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
1,1,1-Trichloroethane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Carbon Tetrachloride	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
1,1-Dichloropropene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Benzene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
1,2-Dichloroethane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Trichloroethene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
1,2-Dichloropropane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Dibromomethane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Bromodichloromethane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
2-Chloroethyl Vinyl Ether	ND	0.011	EPA 8260C	7-7-19	7-7-19	
(cis) 1,3-Dichloropropene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Toluene	ND	0.0058	EPA 8260C	7-7-19	7-7-19	
(trans) 1,3-Dichloropropene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	



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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Ditch-4-0					
Laboratory ID:	06-324-11					
1,1,2-Trichloroethane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Tetrachloroethene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
1,3-Dichloropropane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Dibromochloromethane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
1,2-Dibromoethane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Chlorobenzene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
1,1,1,2-Tetrachloroethane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Ethylbenzene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
m,p-Xylene	ND	0.0023	EPA 8260C	7-7-19	7-7-19	
o-Xylene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Bromoform	ND	0.0058	EPA 8260C	7-7-19	7-7-19	
Bromobenzene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
1,1,2,2-Tetrachloroethane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
1,2,3-Trichloropropane	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
2-Chlorotoluene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
4-Chlorotoluene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
1,3-Dichlorobenzene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
1,4-Dichlorobenzene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
1,2-Dichlorobenzene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
1,2-Dibromo-3-chloropropane	ND	0.0058	EPA 8260C	7-7-19	7-7-19	
1,2,4-Trichlorobenzene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
Hexachlorobutadiene	ND	0.0058	EPA 8260C	7-7-19	7-7-19	
1,2,3-Trichlorobenzene	ND	0.0012	EPA 8260C	7-7-19	7-7-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>99</i>	<i>76-131</i>				
<i>Toluene-d8</i>	<i>93</i>	<i>78-128</i>				
<i>4-Bromofluorobenzene</i>	<i>78</i>	<i>71-130</i>				



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METHOD BLANK QUALITY CONTROL

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Matrix: Soil
 Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
<hr/>						
Laboratory ID:	MB0707S1					
Dichlorodifluoromethane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Chloromethane	ND	0.0050	EPA 8260C	7-7-19	7-7-19	
Vinyl Chloride	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Bromomethane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Chloroethane	ND	0.0050	EPA 8260C	7-7-19	7-7-19	
Trichlorofluoromethane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
1,1-Dichloroethene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Iodomethane	ND	0.0050	EPA 8260C	7-7-19	7-7-19	
Methylene Chloride	ND	0.0050	EPA 8260C	7-7-19	7-7-19	
(trans) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Methyl t-Butyl Ether	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
1,1-Dichloroethane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
2,2-Dichloropropane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
(cis) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Bromochloromethane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Chloroform	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
1,1,1-Trichloroethane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Carbon Tetrachloride	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
1,1-Dichloropropene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Benzene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
1,2-Dichloroethane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Trichloroethene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
1,2-Dichloropropane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Dibromomethane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Bromodichloromethane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
2-Chloroethyl Vinyl Ether	ND	0.0096	EPA 8260C	7-7-19	7-7-19	
(cis) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Toluene	ND	0.0050	EPA 8260C	7-7-19	7-7-19	
(trans) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	



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METHOD BLANK QUALITY CONTROL

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID: MB0707S1						
1,1,2-Trichloroethane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Tetrachloroethene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
1,3-Dichloropropane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Dibromochloromethane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
1,2-Dibromoethane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Chlorobenzene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
1,1,1,2-Tetrachloroethane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Ethylbenzene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
m,p-Xylene	ND	0.0020	EPA 8260C	7-7-19	7-7-19	
o-Xylene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Bromoform	ND	0.0050	EPA 8260C	7-7-19	7-7-19	
Bromobenzene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
1,1,2,2-Tetrachloroethane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
1,2,3-Trichloropropane	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
2-Chlorotoluene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
4-Chlorotoluene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
1,3-Dichlorobenzene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
1,4-Dichlorobenzene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
1,2-Dichlorobenzene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
1,2-Dibromo-3-chloropropane	ND	0.0050	EPA 8260C	7-7-19	7-7-19	
1,2,4-Trichlorobenzene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
Hexachlorobutadiene	ND	0.0050	EPA 8260C	7-7-19	7-7-19	
1,2,3-Trichlorobenzene	ND	0.0010	EPA 8260C	7-7-19	7-7-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>95</i>	<i>76-131</i>				
<i>Toluene-d8</i>	<i>95</i>	<i>78-128</i>				
<i>4-Bromofluorobenzene</i>	<i>90</i>	<i>71-130</i>				



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VOLATILES EPA 8260C
METHOD BLANK QUALITY CONTROL

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Matrix: Soil
 Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID: MB0709S2						
Dichlorodifluoromethane	ND	0.0017	EPA 8260C	7-9-19	7-9-19	
Chloromethane	ND	0.0069	EPA 8260C	7-9-19	7-9-19	
Vinyl Chloride	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Bromomethane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Chloroethane	ND	0.0050	EPA 8260C	7-9-19	7-9-19	
Trichlorofluoromethane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
1,1-Dichloroethene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Iodomethane	ND	0.0050	EPA 8260C	7-9-19	7-9-19	
Methylene Chloride	ND	0.0050	EPA 8260C	7-9-19	7-9-19	
(trans) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Methyl t-Butyl Ether	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
1,1-Dichloroethane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
2,2-Dichloropropane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
(cis) 1,2-Dichloroethene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Bromochloromethane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Chloroform	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
1,1,1-Trichloroethane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Carbon Tetrachloride	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
1,1-Dichloropropene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Benzene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
1,2-Dichloroethane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Trichloroethene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
1,2-Dichloropropane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Dibromomethane	ND	0.0014	EPA 8260C	7-9-19	7-9-19	
Bromodichloromethane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
2-Chloroethyl Vinyl Ether	ND	0.0050	EPA 8260C	7-9-19	7-9-19	
(cis) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Toluene	ND	0.0050	EPA 8260C	7-9-19	7-9-19	
(trans) 1,3-Dichloropropene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	



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METHOD BLANK QUALITY CONTROL

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID: MB0709S2						
1,1,2-Trichloroethane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Tetrachloroethene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
1,3-Dichloropropane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Dibromochloromethane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
1,2-Dibromoethane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Chlorobenzene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
1,1,1,2-Tetrachloroethane	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Ethylbenzene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
m,p-Xylene	ND	0.0020	EPA 8260C	7-9-19	7-9-19	
o-Xylene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Bromoform	ND	0.0050	EPA 8260C	7-9-19	7-9-19	
Bromobenzene	ND	0.0014	EPA 8260C	7-9-19	7-9-19	
1,1,2,2-Tetrachloroethane	ND	0.0013	EPA 8260C	7-9-19	7-9-19	
1,2,3-Trichloropropane	ND	0.0013	EPA 8260C	7-9-19	7-9-19	
2-Chlorotoluene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
4-Chlorotoluene	ND	0.0013	EPA 8260C	7-9-19	7-9-19	
1,3-Dichlorobenzene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
1,4-Dichlorobenzene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
1,2-Dichlorobenzene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
1,2-Dibromo-3-chloropropane	ND	0.0050	EPA 8260C	7-9-19	7-9-19	
1,2,4-Trichlorobenzene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
Hexachlorobutadiene	ND	0.0050	EPA 8260C	7-9-19	7-9-19	
1,2,3-Trichlorobenzene	ND	0.0010	EPA 8260C	7-9-19	7-9-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>93</i>	<i>76-131</i>				
<i>Toluene-d8</i>	<i>94</i>	<i>78-128</i>				
<i>4-Bromofluorobenzene</i>	<i>108</i>	<i>71-130</i>				



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**VOLATILES EPA 8260C
 SB/SBD QUALITY CONTROL**

Matrix: Soil
 Units: mg/kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0707S1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	0.0419	0.0447	0.0500	0.0500	84	89	57-133	6	18	
Benzene	0.0405	0.0451	0.0500	0.0500	81	90	71-129	11	16	
Trichloroethene	0.0448	0.0490	0.0500	0.0500	90	98	71-122	9	16	
Toluene	0.0403	0.0458	0.0500	0.0500	81	92	74-125	13	15	
Chlorobenzene	0.0449	0.0497	0.0500	0.0500	90	99	72-120	10	14	
Surrogate:										
Dibromofluoromethane					91	94	76-131			
Toluene-d8					90	91	78-128			
4-Bromofluorobenzene					89	91	71-130			
Laboratory ID:	SB0709S2									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	0.0361	0.0396	0.0500	0.0500	72	79	57-133	9	18	
Benzene	0.0372	0.0405	0.0500	0.0500	74	81	71-129	8	16	
Trichloroethene	0.0436	0.0458	0.0500	0.0500	87	92	71-122	5	16	
Toluene	0.0392	0.0425	0.0500	0.0500	78	85	74-125	8	15	
Chlorobenzene	0.0437	0.0453	0.0500	0.0500	87	91	72-120	4	14	
Surrogate:										
Dibromofluoromethane					92	94	76-131			
Toluene-d8					93	92	78-128			
4-Bromofluorobenzene					107	102	71-130			



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PAHs EPA 8270D/SIM

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Ditch-3-0					
Laboratory ID:	06-324-10					
Naphthalene	ND	0.0076	EPA 8270D/SIM	7-1-19	7-1-19	
2-Methylnaphthalene	ND	0.0076	EPA 8270D/SIM	7-1-19	7-1-19	
1-Methylnaphthalene	ND	0.0076	EPA 8270D/SIM	7-1-19	7-1-19	
Benzo[a]anthracene	ND	0.0076	EPA 8270D/SIM	7-1-19	7-1-19	
Chrysene	0.0080	0.0076	EPA 8270D/SIM	7-1-19	7-1-19	
Benzo[b]fluoranthene	ND	0.0076	EPA 8270D/SIM	7-1-19	7-1-19	
Benzo(j,k)fluoranthene	ND	0.0076	EPA 8270D/SIM	7-1-19	7-1-19	
Benzo[a]pyrene	ND	0.0076	EPA 8270D/SIM	7-1-19	7-1-19	
Indeno(1,2,3-c,d)pyrene	ND	0.0076	EPA 8270D/SIM	7-1-19	7-1-19	
Dibenz[a,h]anthracene	ND	0.0076	EPA 8270D/SIM	7-1-19	7-1-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
2-Fluorobiphenyl	73	40 - 111				
Pyrene-d10	80	40 - 110				
Terphenyl-d14	88	45 - 122				



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PAHs EPA 8270D/SIM

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Ditch-4-0					
Laboratory ID:	06-324-11					
Naphthalene	ND	0.0076	EPA 8270D/SIM	7-1-19	7-1-19	
2-Methylnaphthalene	ND	0.0076	EPA 8270D/SIM	7-1-19	7-1-19	
1-Methylnaphthalene	ND	0.0076	EPA 8270D/SIM	7-1-19	7-1-19	
Benzo[a]anthracene	ND	0.0076	EPA 8270D/SIM	7-1-19	7-1-19	
Chrysene	ND	0.0076	EPA 8270D/SIM	7-1-19	7-1-19	
Benzo[b]fluoranthene	ND	0.0076	EPA 8270D/SIM	7-1-19	7-1-19	
Benzo(j,k)fluoranthene	ND	0.0076	EPA 8270D/SIM	7-1-19	7-1-19	
Benzo[a]pyrene	ND	0.0076	EPA 8270D/SIM	7-1-19	7-1-19	
Indeno(1,2,3-c,d)pyrene	ND	0.0076	EPA 8270D/SIM	7-1-19	7-1-19	
Dibenz[a,h]anthracene	ND	0.0076	EPA 8270D/SIM	7-1-19	7-1-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
2-Fluorobiphenyl	65	40 - 111				
Pyrene-d10	85	40 - 110				
Terphenyl-d14	85	45 - 122				



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**PAHs EPA 8270D/SIM
 METHOD BLANK QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID: MB0701S1						
Naphthalene	ND	0.0067	EPA 8270D/SIM	7-1-19	7-1-19	
2-Methylnaphthalene	ND	0.0067	EPA 8270D/SIM	7-1-19	7-1-19	
1-Methylnaphthalene	ND	0.0067	EPA 8270D/SIM	7-1-19	7-1-19	
Benzo[a]anthracene	ND	0.0067	EPA 8270D/SIM	7-1-19	7-1-19	
Chrysene	ND	0.0067	EPA 8270D/SIM	7-1-19	7-1-19	
Benzo[b]fluoranthene	ND	0.0067	EPA 8270D/SIM	7-1-19	7-1-19	
Benzo(j,k)fluoranthene	ND	0.0067	EPA 8270D/SIM	7-1-19	7-1-19	
Benzo[a]pyrene	ND	0.0067	EPA 8270D/SIM	7-1-19	7-1-19	
Indeno(1,2,3-c,d)pyrene	ND	0.0067	EPA 8270D/SIM	7-1-19	7-1-19	
Dibenz[a,h]anthracene	ND	0.0067	EPA 8270D/SIM	7-1-19	7-1-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
2-Fluorobiphenyl	87	40 - 111				
Pyrene-d10	84	40 - 110				
Terphenyl-d14	95	45 - 122				



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**PAHs EPA 8270D/SIM
 MS/MSD QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES										
Laboratory ID:	06-324-11									
	MS	MSD	MS	MSD		MS	MSD			
Naphthalene	0.0489	0.0560	0.0833	0.0833	ND	59	67	44 - 111	14	21
Benzo[a]anthracene	0.0827	0.0840	0.0833	0.0833	ND	99	101	53 - 131	2	23
Chrysene	0.0781	0.0785	0.0833	0.0833	ND	94	94	46 - 126	1	24
Benzo[b]fluoranthene	0.0791	0.0815	0.0833	0.0833	ND	95	98	45 - 127	3	25
Benzo(j,k)fluoranthene	0.0728	0.0739	0.0833	0.0833	ND	87	89	52 - 122	1	21
Benzo[a]pyrene	0.0716	0.0740	0.0833	0.0833	ND	86	89	51 - 126	3	24
Indeno(1,2,3-c,d)pyrene	0.0749	0.0793	0.0833	0.0833	ND	90	95	48 - 127	6	23
Dibenz[a,h]anthracene	0.0770	0.0774	0.0833	0.0833	ND	92	93	51 - 124	1	22
Surrogate:										
2-Fluorobiphenyl						61	60	40 - 111		
Pyrene-d10						82	86	40 - 110		
Terphenyl-d14						86	89	45 - 122		



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PAHs EPA 8270D/SIM

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	TP-A-3					
Laboratory ID:	06-324-01					
Naphthalene	0.016	0.0075	EPA 8270D/SIM	7-8-19	7-10-19	
2-Methylnaphthalene	ND	0.0075	EPA 8270D/SIM	7-8-19	7-10-19	
1-Methylnaphthalene	ND	0.0075	EPA 8270D/SIM	7-8-19	7-10-19	
Benzo[a]anthracene	ND	0.0075	EPA 8270D/SIM	7-8-19	7-10-19	
Chrysene	0.013	0.0075	EPA 8270D/SIM	7-8-19	7-10-19	
Benzo[b]fluoranthene	0.011	0.0075	EPA 8270D/SIM	7-8-19	7-10-19	
Benzo(j,k)fluoranthene	ND	0.0075	EPA 8270D/SIM	7-8-19	7-10-19	
Benzo[a]pyrene	ND	0.0075	EPA 8270D/SIM	7-8-19	7-10-19	
Indeno(1,2,3-c,d)pyrene	ND	0.0075	EPA 8270D/SIM	7-8-19	7-10-19	
Dibenz[a,h]anthracene	ND	0.0075	EPA 8270D/SIM	7-8-19	7-10-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>2-Fluorobiphenyl</i>	<i>57</i>	<i>40 - 111</i>				
<i>Pyrene-d10</i>	<i>76</i>	<i>40 - 110</i>				
<i>Terphenyl-d14</i>	<i>92</i>	<i>45 - 122</i>				



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PAHs EPA 8270D/SIM

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:		TP-B-4				
Laboratory ID:		06-324-02				
Naphthalene	ND	0.0076	EPA 8270D/SIM	7-8-19	7-8-19	
2-Methylnaphthalene	ND	0.0076	EPA 8270D/SIM	7-8-19	7-8-19	
1-Methylnaphthalene	ND	0.0076	EPA 8270D/SIM	7-8-19	7-8-19	
Benzo[a]anthracene	ND	0.0076	EPA 8270D/SIM	7-8-19	7-8-19	
Chrysene	ND	0.0076	EPA 8270D/SIM	7-8-19	7-8-19	
Benzo[b]fluoranthene	ND	0.0076	EPA 8270D/SIM	7-8-19	7-8-19	
Benzo(j,k)fluoranthene	ND	0.0076	EPA 8270D/SIM	7-8-19	7-8-19	
Benzo[a]pyrene	ND	0.0076	EPA 8270D/SIM	7-8-19	7-8-19	
Indeno(1,2,3-c,d)pyrene	ND	0.0076	EPA 8270D/SIM	7-8-19	7-8-19	
Dibenz[a,h]anthracene	ND	0.0076	EPA 8270D/SIM	7-8-19	7-8-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
2-Fluorobiphenyl	48	40 - 111				
Pyrene-d10	77	40 - 110				
Terphenyl-d14	79	45 - 122				



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PAHs EPA 8270D/SIM

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	TP-D-1.5					
Laboratory ID:	06-324-04					
Naphthalene	0.0083	0.0078	EPA 8270D/SIM	7-8-19	7-8-19	
2-Methylnaphthalene	ND	0.0078	EPA 8270D/SIM	7-8-19	7-8-19	
1-Methylnaphthalene	ND	0.0078	EPA 8270D/SIM	7-8-19	7-8-19	
Benzo[a]anthracene	ND	0.0078	EPA 8270D/SIM	7-8-19	7-8-19	
Chrysene	0.0092	0.0078	EPA 8270D/SIM	7-8-19	7-8-19	
Benzo[b]fluoranthene	0.0098	0.0078	EPA 8270D/SIM	7-8-19	7-8-19	
Benzo(j,k)fluoranthene	ND	0.0078	EPA 8270D/SIM	7-8-19	7-8-19	
Benzo[a]pyrene	ND	0.0078	EPA 8270D/SIM	7-8-19	7-8-19	
Indeno(1,2,3-c,d)pyrene	ND	0.0078	EPA 8270D/SIM	7-8-19	7-8-19	
Dibenz[a,h]anthracene	ND	0.0078	EPA 8270D/SIM	7-8-19	7-8-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
2-Fluorobiphenyl	48	40 - 111				
Pyrene-d10	65	40 - 110				
Terphenyl-d14	67	45 - 122				



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PAHs EPA 8270D/SIM

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	TP-E-2					
Laboratory ID:	06-324-05					
Naphthalene	ND	0.0076	EPA 8270D/SIM	7-8-19	7-8-19	
2-Methylnaphthalene	0.0088	0.0076	EPA 8270D/SIM	7-8-19	7-8-19	
1-Methylnaphthalene	ND	0.0076	EPA 8270D/SIM	7-8-19	7-8-19	
Benzo[a]anthracene	ND	0.0076	EPA 8270D/SIM	7-8-19	7-8-19	
Chrysene	0.033	0.0076	EPA 8270D/SIM	7-8-19	7-8-19	
Benzo[b]fluoranthene	0.030	0.0076	EPA 8270D/SIM	7-8-19	7-8-19	
Benzo(j,k)fluoranthene	ND	0.0076	EPA 8270D/SIM	7-8-19	7-8-19	
Benzo[a]pyrene	ND	0.0076	EPA 8270D/SIM	7-8-19	7-8-19	
Indeno(1,2,3-c,d)pyrene	0.013	0.0076	EPA 8270D/SIM	7-8-19	7-8-19	
Dibenz[a,h]anthracene	ND	0.0076	EPA 8270D/SIM	7-8-19	7-8-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>2-Fluorobiphenyl</i>	<i>62</i>	<i>40 - 111</i>				
<i>Pyrene-d10</i>	<i>75</i>	<i>40 - 110</i>				
<i>Terphenyl-d14</i>	<i>71</i>	<i>45 - 122</i>				



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PAHs EPA 8270D/SIM

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	TP-F-2.5					
Laboratory ID:	06-324-06					
Naphthalene	0.16	0.016	EPA 8270D/SIM	7-8-19	7-10-19	
2-Methylnaphthalene	0.27	0.016	EPA 8270D/SIM	7-8-19	7-10-19	
1-Methylnaphthalene	0.11	0.016	EPA 8270D/SIM	7-8-19	7-10-19	
Benzo[a]anthracene	0.067	0.016	EPA 8270D/SIM	7-8-19	7-10-19	
Chrysene	0.25	0.016	EPA 8270D/SIM	7-8-19	7-10-19	
Benzo[b]fluoranthene	0.11	0.016	EPA 8270D/SIM	7-8-19	7-10-19	
Benzo(j,k)fluoranthene	0.083	0.016	EPA 8270D/SIM	7-8-19	7-10-19	
Benzo[a]pyrene	0.29	0.016	EPA 8270D/SIM	7-8-19	7-10-19	
Indeno(1,2,3-c,d)pyrene	0.11	0.016	EPA 8270D/SIM	7-8-19	7-10-19	
Dibenz[a,h]anthracene	0.028	0.016	EPA 8270D/SIM	7-8-19	7-10-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>2-Fluorobiphenyl</i>	<i>78</i>	<i>40 - 111</i>				
<i>Pyrene-d10</i>	<i>81</i>	<i>40 - 110</i>				
<i>Terphenyl-d14</i>	<i>68</i>	<i>45 - 122</i>				



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PAHs EPA 8270D/SIM

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	TP-K-1					
Laboratory ID:	06-324-07					
Naphthalene	0.010	0.0074	EPA 8270D/SIM	7-8-19	7-8-19	
2-Methylnaphthalene	0.016	0.0074	EPA 8270D/SIM	7-8-19	7-8-19	
1-Methylnaphthalene	ND	0.0074	EPA 8270D/SIM	7-8-19	7-8-19	
Benzo[a]anthracene	ND	0.0074	EPA 8270D/SIM	7-8-19	7-8-19	
Chrysene	0.020	0.0074	EPA 8270D/SIM	7-8-19	7-8-19	
Benzo[b]fluoranthene	0.020	0.0074	EPA 8270D/SIM	7-8-19	7-8-19	
Benzo(j,k)fluoranthene	ND	0.0074	EPA 8270D/SIM	7-8-19	7-8-19	
Benzo[a]pyrene	ND	0.0074	EPA 8270D/SIM	7-8-19	7-8-19	
Indeno(1,2,3-c,d)pyrene	0.012	0.0074	EPA 8270D/SIM	7-8-19	7-8-19	
Dibenz[a,h]anthracene	ND	0.0074	EPA 8270D/SIM	7-8-19	7-8-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
2-Fluorobiphenyl	71	40 - 111				
Pyrene-d10	73	40 - 110				
Terphenyl-d14	72	45 - 122				



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PAHs EPA 8270D/SIM

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Ditch-2-0					
Laboratory ID:	06-324-09					
Naphthalene	ND	0.0072	EPA 8270D/SIM	7-8-19	7-8-19	
2-Methylnaphthalene	ND	0.0072	EPA 8270D/SIM	7-8-19	7-8-19	
1-Methylnaphthalene	ND	0.0072	EPA 8270D/SIM	7-8-19	7-8-19	
Benzo[a]anthracene	ND	0.0072	EPA 8270D/SIM	7-8-19	7-8-19	
Chrysene	ND	0.0072	EPA 8270D/SIM	7-8-19	7-8-19	
Benzo[b]fluoranthene	ND	0.0072	EPA 8270D/SIM	7-8-19	7-8-19	
Benzo(j,k)fluoranthene	ND	0.0072	EPA 8270D/SIM	7-8-19	7-8-19	
Benzo[a]pyrene	ND	0.0072	EPA 8270D/SIM	7-8-19	7-8-19	
Indeno(1,2,3-c,d)pyrene	ND	0.0072	EPA 8270D/SIM	7-8-19	7-8-19	
Dibenz[a,h]anthracene	ND	0.0072	EPA 8270D/SIM	7-8-19	7-8-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
2-Fluorobiphenyl	74	40 - 111				
Pyrene-d10	83	40 - 110				
Terphenyl-d14	83	45 - 122				



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**PAHs EPA 8270D/SIM
 METHOD BLANK QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID: MB0708S1						
Naphthalene	ND	0.0067	EPA 8270D/SIM	7-8-19	7-8-19	
2-Methylnaphthalene	ND	0.0067	EPA 8270D/SIM	7-8-19	7-8-19	
1-Methylnaphthalene	ND	0.0067	EPA 8270D/SIM	7-8-19	7-8-19	
Benzo[a]anthracene	ND	0.0067	EPA 8270D/SIM	7-8-19	7-8-19	
Chrysene	ND	0.0067	EPA 8270D/SIM	7-8-19	7-8-19	
Benzo[b]fluoranthene	ND	0.0067	EPA 8270D/SIM	7-8-19	7-8-19	
Benzo(j,k)fluoranthene	ND	0.0067	EPA 8270D/SIM	7-8-19	7-8-19	
Benzo[a]pyrene	ND	0.0067	EPA 8270D/SIM	7-8-19	7-8-19	
Indeno(1,2,3-c,d)pyrene	ND	0.0067	EPA 8270D/SIM	7-8-19	7-8-19	
Dibenz[a,h]anthracene	ND	0.0067	EPA 8270D/SIM	7-8-19	7-8-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
2-Fluorobiphenyl	77	40 - 111				
Pyrene-d10	80	40 - 110				
Terphenyl-d14	82	45 - 122				



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**PAHs EPA 8270D/SIM
 MS/MSD QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	06-324-09										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	0.0661	0.0651	0.0833	0.0833	ND	79	78	44 - 111	2	21	
Benzo[a]anthracene	0.0770	0.0759	0.0833	0.0833	ND	92	91	53 - 131	1	23	
Chrysene	0.0703	0.0708	0.0833	0.0833	ND	84	85	46 - 126	1	24	
Benzo[b]fluoranthene	0.0785	0.0735	0.0833	0.0833	ND	94	88	45 - 127	7	25	
Benzo(j,k)fluoranthene	0.0654	0.0704	0.0833	0.0833	ND	79	85	52 - 122	7	21	
Benzo[a]pyrene	0.0698	0.0732	0.0833	0.0833	ND	84	88	51 - 126	5	24	
Indeno(1,2,3-c,d)pyrene	0.0697	0.0696	0.0833	0.0833	ND	84	84	48 - 127	0	23	
Dibenz[a,h]anthracene	0.0709	0.0707	0.0833	0.0833	ND	85	85	51 - 124	0	22	
Surrogate:											
2-Fluorobiphenyl						73	73	40 - 111			
Pyrene-d10						79	77	40 - 110			
Terphenyl-d14						79	77	45 - 122			



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PCBs EPA 8082A

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Ditch-3-0					
Laboratory ID:	06-324-10					
Aroclor 1016	ND	0.057	EPA 8082A	7-3-19	7-3-19	
Aroclor 1221	ND	0.057	EPA 8082A	7-3-19	7-3-19	
Aroclor 1232	ND	0.057	EPA 8082A	7-3-19	7-3-19	
Aroclor 1242	ND	0.057	EPA 8082A	7-3-19	7-3-19	
Aroclor 1248	ND	0.057	EPA 8082A	7-3-19	7-3-19	
Aroclor 1254	ND	0.057	EPA 8082A	7-3-19	7-3-19	
Aroclor 1260	ND	0.057	EPA 8082A	7-3-19	7-3-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	76	37-122				
Client ID:	Ditch-4-0					
Laboratory ID:	06-324-11					
Aroclor 1016	ND	0.057	EPA 8082A	7-3-19	7-3-19	
Aroclor 1221	ND	0.057	EPA 8082A	7-3-19	7-3-19	
Aroclor 1232	ND	0.057	EPA 8082A	7-3-19	7-3-19	
Aroclor 1242	ND	0.057	EPA 8082A	7-3-19	7-3-19	
Aroclor 1248	ND	0.057	EPA 8082A	7-3-19	7-3-19	
Aroclor 1254	ND	0.057	EPA 8082A	7-3-19	7-3-19	
Aroclor 1260	ND	0.057	EPA 8082A	7-3-19	7-3-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	88	37-122				



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**PCBs EPA 8082A
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0703S1					
Aroclor 1016	ND	0.050	EPA 8082A	7-3-19	7-3-19	
Aroclor 1221	ND	0.050	EPA 8082A	7-3-19	7-3-19	
Aroclor 1232	ND	0.050	EPA 8082A	7-3-19	7-3-19	
Aroclor 1242	ND	0.050	EPA 8082A	7-3-19	7-3-19	
Aroclor 1248	ND	0.050	EPA 8082A	7-3-19	7-3-19	
Aroclor 1254	ND	0.050	EPA 8082A	7-3-19	7-3-19	
Aroclor 1260	ND	0.050	EPA 8082A	7-3-19	7-3-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	90	37-122				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB0703S1										
	SB	SBD	SB	SBD		SB	SBD				
Aroclor 1260	0.540	0.550	0.500	0.500	N/A	108	110	49-120	2	18	
Surrogate:											
DCB						93	89	37-122			



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PCBs EPA 8082A

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	TP-A-3					
Laboratory ID:	06-324-01					
Aroclor 1016	ND	0.057	EPA 8082A	7-12-19	7-12-19	
Aroclor 1221	ND	0.057	EPA 8082A	7-12-19	7-12-19	
Aroclor 1232	ND	0.057	EPA 8082A	7-12-19	7-12-19	
Aroclor 1242	ND	0.057	EPA 8082A	7-12-19	7-12-19	
Aroclor 1248	ND	0.057	EPA 8082A	7-12-19	7-12-19	
Aroclor 1254	ND	0.057	EPA 8082A	7-12-19	7-12-19	
Aroclor 1260	ND	0.057	EPA 8082A	7-12-19	7-12-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	77	37-122				
Client ID:	TP-B-4					
Laboratory ID:	06-324-02					
Aroclor 1016	ND	0.057	EPA 8082A	7-12-19	7-12-19	
Aroclor 1221	ND	0.057	EPA 8082A	7-12-19	7-12-19	
Aroclor 1232	ND	0.057	EPA 8082A	7-12-19	7-12-19	
Aroclor 1242	ND	0.057	EPA 8082A	7-12-19	7-12-19	
Aroclor 1248	ND	0.057	EPA 8082A	7-12-19	7-12-19	
Aroclor 1254	ND	0.057	EPA 8082A	7-12-19	7-12-19	
Aroclor 1260	ND	0.057	EPA 8082A	7-12-19	7-12-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	89	37-122				
Client ID:	TP-D-1.5					
Laboratory ID:	06-324-04					
Aroclor 1016	ND	0.058	EPA 8082A	7-12-19	7-12-19	
Aroclor 1221	ND	0.058	EPA 8082A	7-12-19	7-12-19	
Aroclor 1232	ND	0.058	EPA 8082A	7-12-19	7-12-19	
Aroclor 1242	ND	0.058	EPA 8082A	7-12-19	7-12-19	
Aroclor 1248	ND	0.058	EPA 8082A	7-12-19	7-12-19	
Aroclor 1254	ND	0.058	EPA 8082A	7-12-19	7-12-19	
Aroclor 1260	ND	0.058	EPA 8082A	7-12-19	7-12-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	82	37-122				



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PCBs EPA 8082A

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	TP-E-2					
Laboratory ID:	06-324-05					
Aroclor 1016	ND	0.057	EPA 8082A	7-12-19	7-12-19	
Aroclor 1221	ND	0.057	EPA 8082A	7-12-19	7-12-19	
Aroclor 1232	ND	0.057	EPA 8082A	7-12-19	7-12-19	
Aroclor 1242	ND	0.057	EPA 8082A	7-12-19	7-12-19	
Aroclor 1248	ND	0.057	EPA 8082A	7-12-19	7-12-19	
Aroclor 1254	ND	0.057	EPA 8082A	7-12-19	7-12-19	
Aroclor 1260	ND	0.057	EPA 8082A	7-12-19	7-12-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	80	37-122				
Client ID:	TP-F-2.5					
Laboratory ID:	06-324-06					
Aroclor 1016	ND	0.058	EPA 8082A	7-12-19	7-12-19	
Aroclor 1221	ND	0.058	EPA 8082A	7-12-19	7-12-19	
Aroclor 1232	ND	0.058	EPA 8082A	7-12-19	7-12-19	
Aroclor 1242	ND	0.058	EPA 8082A	7-12-19	7-12-19	
Aroclor 1248	ND	0.058	EPA 8082A	7-12-19	7-12-19	
Aroclor 1254	ND	0.058	EPA 8082A	7-12-19	7-12-19	
Aroclor 1260	0.066	0.058	EPA 8082A	7-12-19	7-12-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	76	37-122				
Client ID:	TP-K-1					
Laboratory ID:	06-324-07					
Aroclor 1016	ND	0.056	EPA 8082A	7-12-19	7-12-19	
Aroclor 1221	ND	0.056	EPA 8082A	7-12-19	7-12-19	
Aroclor 1232	ND	0.056	EPA 8082A	7-12-19	7-12-19	
Aroclor 1242	ND	0.056	EPA 8082A	7-12-19	7-12-19	
Aroclor 1248	ND	0.056	EPA 8082A	7-12-19	7-12-19	
Aroclor 1254	ND	0.056	EPA 8082A	7-12-19	7-12-19	
Aroclor 1260	ND	0.056	EPA 8082A	7-12-19	7-12-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	88	37-122				



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PCBs EPA 8082A

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Ditch-2-0					
Laboratory ID:	06-324-09					
Aroclor 1016	ND	0.054	EPA 8082A	7-12-19	7-12-19	
Aroclor 1221	ND	0.054	EPA 8082A	7-12-19	7-12-19	
Aroclor 1232	ND	0.054	EPA 8082A	7-12-19	7-12-19	
Aroclor 1242	ND	0.054	EPA 8082A	7-12-19	7-12-19	
Aroclor 1248	ND	0.054	EPA 8082A	7-12-19	7-12-19	
Aroclor 1254	ND	0.054	EPA 8082A	7-12-19	7-12-19	
Aroclor 1260	ND	0.054	EPA 8082A	7-12-19	7-12-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>DCB</i>	<i>91</i>	<i>37-122</i>				



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**PCBs EPA 8082A
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0712S1					
Aroclor 1016	ND	0.050	EPA 8082A	7-12-19	7-12-19	
Aroclor 1221	ND	0.050	EPA 8082A	7-12-19	7-12-19	
Aroclor 1232	ND	0.050	EPA 8082A	7-12-19	7-12-19	
Aroclor 1242	ND	0.050	EPA 8082A	7-12-19	7-12-19	
Aroclor 1248	ND	0.050	EPA 8082A	7-12-19	7-12-19	
Aroclor 1254	ND	0.050	EPA 8082A	7-12-19	7-12-19	
Aroclor 1260	ND	0.050	EPA 8082A	7-12-19	7-12-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	96	37-122				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB0712S1										
	SB	SBD	SB	SBD		SB	SBD				
Aroclor 1260	0.511	0.447	0.500	0.500	N/A	102	89	49-120	13	18	
Surrogate:											
DCB						99	105	37-122			



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**TOTAL METALS
 EPA 6010D**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Ditch-3-0					
Laboratory ID:	06-324-10					
Cadmium	ND	0.57	EPA 6010D	7-1-19	7-1-19	
Chromium	18	0.57	EPA 6010D	7-1-19	7-1-19	
Lead	19	5.7	EPA 6010D	7-1-19	7-1-19	
Nickel	19	2.9	EPA 6010D	7-1-19	7-1-19	
Zinc	51	2.9	EPA 6010D	7-1-19	7-1-19	

Client ID:	Ditch-4-0					
Laboratory ID:	06-324-11					
Cadmium	ND	0.57	EPA 6010D	7-1-19	7-1-19	
Chromium	21	0.57	EPA 6010D	7-1-19	7-1-19	
Lead	15	5.7	EPA 6010D	7-1-19	7-1-19	
Nickel	23	2.8	EPA 6010D	7-1-19	7-1-19	
Zinc	52	2.8	EPA 6010D	7-1-19	7-1-19	



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**TOTAL METALS
 EPA 6010D
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0701SM3					
Cadmium	ND	0.50	EPA 6010D	7-1-19	7-1-19	
Chromium	ND	0.50	EPA 6010D	7-1-19	7-1-19	
Lead	ND	5.0	EPA 6010D	7-1-19	7-1-19	
Nickel	ND	2.5	EPA 6010D	7-1-19	7-1-19	
Zinc	ND	2.5	EPA 6010D	7-1-19	7-1-19	

Analyte	Result		Spike Level		Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE										
Laboratory ID:	06-309-06									
	ORIG	DUP								
Cadmium	ND	ND	NA	NA		NA	NA	NA	20	
Chromium	53.3	52.6	NA	NA		NA	NA	1	20	
Lead	7.30	6.65	NA	NA		NA	NA	9	20	
Nickel	57.1	57.6	NA	NA		NA	NA	1	20	
Zinc	59.7	59.6	NA	NA		NA	NA	0	20	

MATRIX SPIKES

Laboratory ID:	06-309-06									
	MS	MSD	MS	MSD		MS	MSD			
Cadmium	48.5	49.0	50.0	50.0	ND	97	98	75-125	1	20
Chromium	145	148	100	100	53.3	92	94	75-125	2	20
Lead	227	230	250	250	7.30	88	89	75-125	1	20
Nickel	149	150	100	100	57.1	92	93	75-125	1	20
Zinc	156	159	100	100	59.7	96	100	75-125	2	20



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**TOTAL METALS
EPA 6010D**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID: TP-A-3						
Laboratory ID: 06-324-01						
Cadmium	ND	0.57	EPA 6010D	7-8-19	7-8-19	
Chromium	17	0.57	EPA 6010D	7-8-19	7-8-19	
Lead	32	5.7	EPA 6010D	7-8-19	7-8-19	
Nickel	17	2.8	EPA 6010D	7-8-19	7-8-19	
Zinc	95	2.8	EPA 6010D	7-8-19	7-8-19	

Client ID: TP-B-4						
Laboratory ID: 06-324-02						
Cadmium	ND	0.57	EPA 6010D	7-8-19	7-8-19	
Chromium	17	0.57	EPA 6010D	7-8-19	7-8-19	
Lead	12	5.7	EPA 6010D	7-8-19	7-8-19	
Nickel	20	2.9	EPA 6010D	7-8-19	7-8-19	
Zinc	42	2.9	EPA 6010D	7-8-19	7-8-19	

Client ID: TP-D-1.5						
Laboratory ID: 06-324-04						
Cadmium	ND	0.58	EPA 6010D	7-8-19	7-8-19	
Chromium	18	0.58	EPA 6010D	7-8-19	7-8-19	
Lead	19	5.8	EPA 6010D	7-8-19	7-8-19	
Nickel	19	2.9	EPA 6010D	7-8-19	7-8-19	
Zinc	55	2.9	EPA 6010D	7-8-19	7-8-19	

Client ID: TP-E-2						
Laboratory ID: 06-324-05						
Cadmium	0.57	0.57	EPA 6010D	7-8-19	7-8-19	
Chromium	21	0.57	EPA 6010D	7-8-19	7-8-19	
Lead	410	5.7	EPA 6010D	7-8-19	7-8-19	
Nickel	20	2.8	EPA 6010D	7-8-19	7-8-19	
Zinc	81	2.8	EPA 6010D	7-8-19	7-8-19	



Date of Report: July 12, 2019
 Samples Submitted: June 28, 2019
 Laboratory Reference: 1906-324
 Project: 16-06310-011

**TOTAL METALS
 EPA 6010D**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	TP-F-2.5					
Laboratory ID:	06-324-06					
Cadmium	2.6	0.58	EPA 6010D	7-8-19	7-8-19	
Chromium	28	0.58	EPA 6010D	7-8-19	7-8-19	
Lead	3600	29	EPA 6010D	7-8-19	7-8-19	
Nickel	22	2.9	EPA 6010D	7-8-19	7-8-19	
Zinc	130	2.9	EPA 6010D	7-8-19	7-8-19	

Client ID:	TP-K-1					
Laboratory ID:	06-324-07					
Cadmium	ND	0.56	EPA 6010D	7-8-19	7-8-19	
Chromium	20	0.56	EPA 6010D	7-8-19	7-8-19	
Lead	110	5.6	EPA 6010D	7-8-19	7-8-19	
Nickel	20	2.8	EPA 6010D	7-8-19	7-8-19	
Zinc	35	2.8	EPA 6010D	7-8-19	7-8-19	

Client ID:	Ditch-2-0					
Laboratory ID:	06-324-09					
Cadmium	ND	0.54	EPA 6010D	7-8-19	7-8-19	
Chromium	22	0.54	EPA 6010D	7-8-19	7-8-19	
Lead	6.6	5.4	EPA 6010D	7-8-19	7-8-19	
Nickel	22	2.7	EPA 6010D	7-8-19	7-8-19	
Zinc	35	2.7	EPA 6010D	7-8-19	7-8-19	



Date of Report: July 12, 2019
 Samples Submitted: June 28, 2019
 Laboratory Reference: 1906-324
 Project: 16-06310-011

**TOTAL METALS
 EPA 6010D
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0708SM1					
Cadmium	ND	0.50	EPA 6010D	7-8-19	7-8-19	
Chromium	ND	0.50	EPA 6010D	7-8-19	7-8-19	
Lead	ND	5.0	EPA 6010D	7-8-19	7-8-19	
Nickel	ND	2.5	EPA 6010D	7-8-19	7-8-19	
Zinc	ND	2.5	EPA 6010D	7-8-19	7-8-19	

Analyte	Result		Spike Level		Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE										
Laboratory ID:	06-324-01									
	ORIG	DUP								
Cadmium	ND	ND	NA	NA		NA	NA	NA	20	
Chromium	15.3	13.7	NA	NA		NA	NA	11	20	
Lead	28.4	32.6	NA	NA		NA	NA	14	20	
Nickel	15.0	15.5	NA	NA		NA	NA	3	20	
Zinc	84.0	80.8	NA	NA		NA	NA	4	20	

MATRIX SPIKES

Laboratory ID:	06-324-01									
	MS	MSD	MS	MSD		MS	MSD			
Cadmium	44.7	45.1	50.0	50.0	ND	89	90	75-125	1	20
Chromium	108	110	100	100	15.3	93	95	75-125	2	20
Lead	248	252	250	250	28.4	88	90	75-125	2	20
Nickel	105	106	100	100	15.0	90	91	75-125	2	20
Zinc	174	177	100	100	84.0	90	93	75-125	2	20



Date of Report: July 12, 2019
 Samples Submitted: June 28, 2019
 Laboratory Reference: 1906-324
 Project: 16-06310-011

% MOISTURE

Client ID	Lab ID	% Moisture	Date Analyzed
TP-A-3	06-324-01	12	7-1-19
TP-B-4	06-324-02	12	7-1-19
TP-C-2	06-324-03	11	7-1-19
TP-D-1.5	06-324-04	15	7-1-19
TP-E-2	06-324-05	12	7-1-19
TP-F-2.5	06-324-06	14	7-1-19
TP-K-1	06-324-07	10	7-1-19
Ditch-1-0	06-324-08	3	7-1-19
Ditch-2-0	06-324-09	8	7-1-19
Ditch-3-0	06-324-10	13	7-1-19
Ditch-4-0	06-324-11	12	7-1-19





Data Qualifiers and Abbreviations

- A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
- B - The analyte indicated was also found in the blank sample.
- C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
- E - The value reported exceeds the quantitation range and is an estimate.
- F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
- H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
- I - Compound recovery is outside of the control limits.
- J - The value reported was below the practical quantitation limit. The value is an estimate.
- K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
- L - The RPD is outside of the control limits.
- M - Hydrocarbons in the gasoline range are impacting the diesel range result.
- M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
- N - Hydrocarbons in the lube oil range are impacting the diesel range result.
- N1 - Hydrocarbons in diesel range are impacting lube oil range results.
- O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
- P - The RPD of the detected concentrations between the two columns is greater than 40.
- Q - Surrogate recovery is outside of the control limits.
- S - Surrogate recovery data is not available due to the necessary dilution of the sample.
- T - The sample chromatogram is not similar to a typical _____.
- U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- U1 - The practical quantitation limit is elevated due to interferences present in the sample.
- V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
- W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
- X - Sample extract treated with a mercury cleanup procedure.
- X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.
- Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.
- Z -
- ND - Not Detected at PQL
- PQL - Practical Quantitation Limit
- RPD - Relative Percent Difference



Chain of Custody

Company: Herrera Env. Cons.
Project Number: 16-06310-011
Project Name: Prairie Pit
Project Manager: George Iffner
Sampled by: George Iffner

**Turnaround Request
(in working days)**

(Select One)

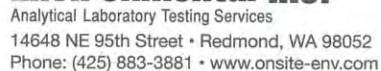
- ☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ _____ (other)

Number of Containers

Laboratory Number: **06-324**

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX/EDB/EDC/MEBE/PAHs/TAME/ETBE	NWTPH-Gx	NWTPH-Dx (T Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level) *	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total PCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	Total Metals (Cd, Cr, Pb, Ni, Zn)	% Moisture
1	TP-A-3	6/27/19	10:00	Soil	6	✓			(X)					(X)(X)									(X)	
2	TP-B-4		10:30		6	✓			(X)					(X)(X)									(X)	
3	TP-C-2		11:00		6	✓																		
4	TP-D-1.5 ^m		11:40		6	✓	(X)		(X)	(X)			(X)(X)										(X)	
5	TP-E-2		12:15		6	✓	(X)		(X)	(X)			(X)(X)										(X)	
6	TP-F-2.5		12:45		6	✓	(X)		(X)	(X)			(X)(X)										(X)	
7	TP-K-1		14:40		6	✓			(X)				(X)(X)										(X)	
8	Ditch-1-0		15:50		6	✓																		
9	Ditch-2-0		16:20		6	✓	(X)		(X)	(X)			(X)(X)										(X)	
10	Ditch-3-0		16:50		6	✓																		

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished	<u>George Iffner</u>	<u>Herrera</u>	<u>6/28/19</u>	<u>11:45</u>	Hold samples for other analyses after HCID * Report cPAHs + Naphthalenes only (X) Added 7/3/19. DB (STA) Data Package: Standard <input type="checkbox"/> Level III <input type="checkbox"/> Level IV <input type="checkbox"/> Chromatograms with final report <input type="checkbox"/> Electronic Data Deliverables (EDDs) <input type="checkbox"/>
Received		<u>OSE</u>	<u>6/28/19</u>	<u>12:45</u>	
Relinquished					
Received					
Relinquished					
Received					
Reviewed/Date		Reviewed/Date			

Page 2 of 2

Company:	Herrera Env. Cons.
Project Number:	16-06310-011
Project Name:	Prairie Pit
Project Manager:	George Iffner
Sampled by:	George Iffner

Turnaround Request
(in working days)

(Check One)

☐ Same Day ☐ 1 Day

☐ 2 Days ☐ 3 Days

☒ Standard (7 Days)

☐ _____ (other)

Laboratory Number: 06-324	
Number of Containers	
NWTPH-HCID	
NWTPH-Gx/BTEX / EDA/EDC/MTAE TBA, TAHE, ETAE	✓
NWTPH-Gx	
NWTPH-Dx (✓) Acid / SG Clean-up)	✓
Volatiles 8260C	
Halogenated Volatiles 8260C	✓
EDB EPA 8011 (Waters Only)	
Semivolatiles 8270D/SIM (with low-level PAHs)	
PAHs 8270D/SIM (low-level)	✓
PCBs 8082A	✓
Organochlorine Pesticides 8081B	
Organophosphorus Pesticides 8270D/SIM	
Chlorinated Acid Herbicides 8151A	
Total RCRA Metals	
Total MTCA Metals	
TCLP Metals	
HEM (oil and grease) 1664A	
Total Metals (Cd, Cr, Pb, Ni, Zn)	✓
% Moisture	✗

Signature	Company	Date	Time	Comments/Special Instructions
Relinquished	Herrera	6/28/19	12:45	
Received	COSE	6/28/19	12:45	
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date				Data Package: Standard <input type="checkbox"/> Level III <input type="checkbox"/> Level IV <input type="checkbox"/>
Reviewed/Date				Chromatograms with final report <input type="checkbox"/> Electronic Data Deliverables (EDDs) <input type="checkbox"/>



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

July 22, 2019

George Iftner
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 16-06310-011
Laboratory Reference No. 1906-324B

Dear George:

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read 'DB', with a long horizontal stroke extending to the right.

David Baumeister
Project Manager

Enclosures



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

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: July 22, 2019
Samples Submitted: June 28, 2019
Laboratory Reference: 1906-324B
Project: 16-06310-011

Case Narrative

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

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

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



Date of Report: July 22, 2019
 Samples Submitted: June 28, 2019
 Laboratory Reference: 1906-324B
 Project: 16-06310-011

**SOLUBLE HEXAVALENT CHROMIUM
 WATER EXTRACTION
 EPA 7196A**

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	TP-E-2					
Laboratory ID:	06-324-05					
Hexavalent Chromium	ND	1.1	EPA 7196A mod.	7-22-19	7-22-19	
Client ID:	TP-F-2.5					
Laboratory ID:	06-324-06					
Hexavalent Chromium	ND	1.2	EPA 7196A mod.	7-22-19	7-22-19	
Client ID:	TP-K-1					
Laboratory ID:	06-324-07					
Hexavalent Chromium	ND	1.1	EPA 7196A mod.	7-22-19	7-22-19	
Client ID:	Ditch-2-0					
Laboratory ID:	06-324-09					
Hexavalent Chromium	ND	1.1	EPA 7196A mod.	7-22-19	7-22-19	
Client ID:	Ditch-4-0					
Laboratory ID:	06-324-11					
Hexavalent Chromium	ND	1.1	EPA 7196A mod.	7-22-19	7-22-19	



Date of Report: July 22, 2019
 Samples Submitted: June 28, 2019
 Laboratory Reference: 1906-324B
 Project: 16-06310-011

**SOLUBLE HEXAVALENT CHROMIUM
 WATER EXTRACTION
 EPA 7196A
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0722S1					
Hexavalent Chromium	ND	1.0	EPA 7196A mod.	7-22-19	7-22-19	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	06-324-05							
	ORIG	DUP						
Hexavalent Chromium	ND	ND	NA	NA	NA	NA	20	

MATRIX SPIKES

Laboratory ID:	06-324-05											
	MS	MSD	MS	MSD		MS	MSD					
Hexavalent Chromium	3.15	3.04	5.00	5.00	ND	63	61	75-125	4	20		V

SPIKE BLANK

Laboratory ID:	SB0722S1											
	SB		SB			SB						
Hexavalent Chromium	4.32		5.00		NA	86		75-125	NA	NA		



Date of Report: July 22, 2019
Samples Submitted: June 28, 2019
Laboratory Reference: 1906-324B
Project: 16-06310-011

TCLP LEAD
EPA 1311/6010D

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

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	TP-F-2.5					
Laboratory ID:	06-324-06					
Lead	6.4	0.20	EPA 6010D	7-19-19	7-22-19	



Date of Report: July 22, 2019
 Samples Submitted: June 28, 2019
 Laboratory Reference: 1906-324B
 Project: 16-06310-011

**TCLP LEAD
 EPA 1311/6010D
 QUALITY CONTROL**

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

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0722TM1					
Lead	ND	0.20	EPA 6010D	7-19-19	7-22-19	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	07-083-01							
	ORIG	DUP						
Lead	0.272	0.242	NA	NA	NA	NA	12	20

MATRIX SPIKES

Laboratory ID:	07-083-01							
	MS	MSD	MS	MSD	MS	MSD		
Lead	9.30	9.30	10.0	10.0	0.272	90	90	75-125
							0	20

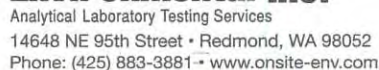




Data Qualifiers and Abbreviations

- A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
- B - The analyte indicated was also found in the blank sample.
- C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
- E - The value reported exceeds the quantitation range and is an estimate.
- F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
- H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
- I - Compound recovery is outside of the control limits.
- J - The value reported was below the practical quantitation limit. The value is an estimate.
- K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
- L - The RPD is outside of the control limits.
- M - Hydrocarbons in the gasoline range are impacting the diesel range result.
- M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
- N - Hydrocarbons in the lube oil range are impacting the diesel range result.
- N1 - Hydrocarbons in diesel range are impacting lube oil range results.
- O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
- P - The RPD of the detected concentrations between the two columns is greater than 40.
- Q - Surrogate recovery is outside of the control limits.
- S - Surrogate recovery data is not available due to the necessary dilution of the sample.
- T - The sample chromatogram is not similar to a typical _____.
- U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- U1 - The practical quantitation limit is elevated due to interferences present in the sample.
- V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
- W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
- X - Sample extract treated with a mercury cleanup procedure.
- X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.
- Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.
- Z -
- ND - Not Detected at PQL
- PQL - Practical Quantitation Limit
- RPD - Relative Percent Difference



Page 1 of 2

* Report cPAMS + Naphthalenes

(X) Added 7/13/19. DB (STA) ^{only} O-Added 7/17/19. DB (STA) ^{3 day TAT}

Data Package: Standard ☐ Level III ☐ Level IV ☐

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

● Added 7/19/19. DB (2 day TAT)

Chain of Custody

Company: Herrera Env. Cons.

Project Number: 16-06310-01

Project Name: Prairie Pit

Project Manager: George Iffner

Sampled by: George Iffner

**Turnaround Request
(in working days)**

(Check One)

☐ Same Day ☐ 1 Day

☐ 2 Days ☐ 3 Days

☒ Standard (7 Days)

☐ _____ (other)

Number of Containers

Laboratory Number: 06-324

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX TRIA/TAME/ETBE	NWTPH-Gx	NWTPH-Dx (I) Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	Total Metals (Cd, Cr, Pb, Ni, Zn)	Hex chrome	% Moisture
11	Ditch-4-0	6/27/19	17:20	soil	6		✓		✓		✓			✓	✓								✓	0	✓

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished	<u>George Iffner</u>	<u>Herrera</u>	<u>6/28/19</u>	<u>12:45</u>	
Received	<u>[Signature]</u>	<u>ONS</u>	<u>6/28/19</u>	<u>12:48</u>	
Relinquished					
Received					
Relinquished					
Received					
Reviewed/Date		Reviewed/Date			Data Package: Standard <input type="checkbox"/> Level III <input type="checkbox"/> Level IV <input type="checkbox"/> Chromatograms with final report <input type="checkbox"/> Electronic Data Deliverables (EDDs) <input type="checkbox"/>



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

August 19, 2019

George Iftner
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 16-06310-011
Laboratory Reference No. 1906-324C

Dear George:

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

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

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

Sincerely,

A handwritten signature in black ink, appearing to read 'DB', with a long horizontal stroke extending to the right.

David Baumeister
Project Manager

Enclosures



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

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: August 19, 2019
Samples Submitted: June 28, 2019
Laboratory Reference: 1906-324C
Project: 16-06310-011

Case Narrative

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

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

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



Date of Report: August 19, 2019
Samples Submitted: June 28, 2019
Laboratory Reference: 1906-324C
Project: 16-06310-011

TCLP LEAD
EPA 1311/6010D

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

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	TP-K-1					
Laboratory ID:	06-324-07					
Lead	ND	0.20	EPA 6010D	8-16-19	8-16-19	



Date of Report: August 19, 2019
 Samples Submitted: June 28, 2019
 Laboratory Reference: 1906-324C
 Project: 16-06310-011

**TCLP LEAD
 EPA 1311/6010D
 QUALITY CONTROL**

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

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0816TM1					
Lead	ND	0.20	EPA 6010D	8-16-19	8-16-19	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	06-324-07							
	ORIG	DUP						
Lead	ND	ND	NA	NA	NA	NA	20	

MATRIX SPIKES

Laboratory ID:	06-324-07									
	MS	MSD	MS	MSD		MS	MSD			
Lead	9.69	9.75	10.0	10.0	ND	97	98	75-125	1	20



Date of Report: August 19, 2019
 Samples Submitted: June 28, 2019
 Laboratory Reference: 1906-324C
 Project: 16-06310-011

**TOTAL METALS
 EPA 6010D**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	TP-C-2					
Laboratory ID:	06-324-03					
Cadmium	ND	0.56	EPA 6010D	8-16-19	8-16-19	
Chromium	16	0.56	EPA 6010D	8-16-19	8-16-19	
Lead	ND	5.6	EPA 6010D	8-16-19	8-16-19	
Nickel	18	2.8	EPA 6010D	8-16-19	8-16-19	
Zinc	35	2.8	EPA 6010D	8-16-19	8-16-19	

Client ID:	Ditch-1-0					
Laboratory ID:	06-324-08					
Cadmium	ND	0.52	EPA 6010D	8-16-19	8-16-19	
Chromium	15	0.52	EPA 6010D	8-16-19	8-16-19	
Lead	ND	5.2	EPA 6010D	8-16-19	8-16-19	
Nickel	29	2.6	EPA 6010D	8-16-19	8-16-19	
Zinc	28	2.6	EPA 6010D	8-16-19	8-16-19	



Date of Report: August 19, 2019
 Samples Submitted: June 28, 2019
 Laboratory Reference: 1906-324C
 Project: 16-06310-011

**TOTAL METALS
 EPA 6010D
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0816SM3					
Cadmium	ND	0.50	EPA 6010D	8-16-19	8-16-19	
Chromium	ND	0.50	EPA 6010D	8-16-19	8-16-19	
Lead	ND	5.0	EPA 6010D	8-16-19	8-16-19	
Nickel	ND	2.5	EPA 6010D	8-16-19	8-16-19	
Zinc	ND	2.5	EPA 6010D	8-16-19	8-16-19	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	08-186-01							
	ORIG	DUP						
Cadmium	ND	ND	NA	NA	NA	NA	20	
Chromium	33.0	30.5	NA	NA	NA	8	20	
Lead	ND	ND	NA	NA	NA	NA	20	
Nickel	41.1	38.2	NA	NA	NA	7	20	
Zinc	26.6	24.9	NA	NA	NA	7	20	

MATRIX SPIKES

Laboratory ID:	08-186-01									
	MS	MSD	MS	MSD		MS	MSD			
Cadmium	43.9	44.8	50.0	50.0	ND	88	90	75-125	2	20
Chromium	125	124	100	100	33.0	92	91	75-125	1	20
Lead	223	227	250	250	ND	89	91	75-125	2	20
Nickel	131	134	100	100	41.1	90	93	75-125	2	20
Zinc	119	120	100	100	26.6	93	94	75-125	1	20





Data Qualifiers and Abbreviations

- A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
- B - The analyte indicated was also found in the blank sample.
- C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
- E - The value reported exceeds the quantitation range and is an estimate.
- F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
- H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
- I - Compound recovery is outside of the control limits.
- J - The value reported was below the practical quantitation limit. The value is an estimate.
- K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
- L - The RPD is outside of the control limits.
- M - Hydrocarbons in the gasoline range are impacting the diesel range result.
- M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
- N - Hydrocarbons in the lube oil range are impacting the diesel range result.
- N1 - Hydrocarbons in diesel range are impacting lube oil range results.
- O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
- P - The RPD of the detected concentrations between the two columns is greater than 40.
- Q - Surrogate recovery is outside of the control limits.
- S - Surrogate recovery data is not available due to the necessary dilution of the sample.
- T - The sample chromatogram is not similar to a typical _____.
- U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- U1 - The practical quantitation limit is elevated due to interferences present in the sample.
- V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
- W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
- X - Sample extract treated with a mercury cleanup procedure.
- X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.
- Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.
- Z -
- ND - Not Detected at PQL
- PQL - Practical Quantitation Limit
- RPD - Relative Percent Difference



Chain of Custody

Company: Herrera Env. Cons.

Project Number: 16-06310-011

Project Name: Prairie pit

Project Manager: George Iftner

Sampled by: George Iftner

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day

☐ 2 Days ☐ 3 Days

☒ Standard (7 Days)

☐ _____ (other)

Laboratory Number: 06-324

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (1 Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	Total Metals (Cd, Cr, Pb, Ni, Zn)	Hex chrom	% Moisture
1	TP-A-3	6/27/19	10:00	Soil	6	✓			(X)					(X)(X)									(X)		8
2	TP-B-4		10:30		6	✓			(X)					(X)(X)									(X)		
3	TP-C-2		11:00		6	✓																	(X)		
4	TP-D-1.5 ^m		11:40		6	✓	(X)		(X)	(X)			(X)(X)										(X)		
5	TP-E-2		12:15		6	✓	(X)		(X)	(X)			(X)(X)										(X)	0	
6	TP-F-2.5		12:45		6	✓	(X)		(X)	(X)			(X)(X)										(X)	0	
7	TP-K-1		14:40		6	✓			(X)				(X)(X)										(X)	0	
8	Ditch-1-0		15:50		6	✓																	(X)	0	
9	Ditch-2-0		16:20		6	✓	(X)		(X)				(X)(X)										(X)	0	
10	Ditch-3-0		16:50		6	✓																	(X)	0	

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished	<u>George Iftner</u>	<u>Herrera</u>	<u>6/28/19</u>	<u>11:45</u>	<u>Hold samples for other analyses after HCLD</u>
Received	<u>[Signature]</u>	<u>OSE</u>	<u>6/28/19</u>	<u>12:45</u>	
Relinquished					
Received					<u>* Report cPAHs + Naphthalenes</u> <u>(X) Added 7/3/19. DB (STA) Only</u> <u>O-Added 7/17/19. DB (STA)</u> Data Package: Standard <input type="checkbox"/> Level III <input type="checkbox"/> Level IV <input type="checkbox"/> Chromatograms with final report <input type="checkbox"/> Electronic Data Deliverables (EDDs) <input type="checkbox"/>
Relinquished					
Received					
Reviewed/Date		Reviewed/Date			<u>Added 8/14/19. DB (3 day TAT)</u> <u>Added 7/19/19. DB (2 day TAT)</u>

Chain of Custody

Company: Herrera Env. Cons.
Project Number: 16-06310-011
Project Name: Prairie Pit
Project Manager: George Iffner
Sampled by: George Iffner

**Turnaround Request
(in working days)**

(Check One)

☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ _____ (other)

Laboratory Number: 06-324

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number	NWTPH	NWTPH TBA	NWTPH	NWTPH	Volatiles	Halogenated	EDB/EHP	Semivolatiles (with low-level PAHs & PCBs)	PAHs & PCBs	Organochlorine	Organophosphorus	Chlorinated	Total R	Total M	TCLP P	HEM (c)	Total	He	% Moisture	
11	Ditch-4-0	6/27/19	17:20	soil	6		✓		✓		✓			✓	✓								✓	0	2



Libby Environmental, Inc.

3322 South Bay Road NE • Olympia, WA 98506-2957

August 2, 2019

George Iftner
Herrera Environmental
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Dear Mr. Iftner:

Please find enclosed the analytical data report for the Prairie Pit Project located in Fredrickson, Washington.

The results of the analyses are summarized in the attached tables. Applicable detection limits and QA/QC data are included. The sample(s) will be disposed of in 30 days unless we are contacted to arrange long term storage.

Libby Environmental, Inc. appreciates the opportunity to have provided analytical services for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

A handwritten signature in black ink, appearing to read "Sherry L. Chilcutt".

Sherry L. Chilcutt
Senior Chemist
Libby Environmental, Inc.

www.LibbyEnvironmental.com

Fax: 360-352-4154

Page: 1 of

Email: giftner@herrerainc.com

Relinquished by:	Date / Time	Received by:	Date / Time	<div> <div>Sample Receipt</div> <div> <div>Good Condition?</div> <div>Y</div> <div>N</div> </div> <div> <div>Cooler Temp.</div> <div>°C</div> </div> <div> <div>Sample Temp.</div> <div>°C</div> </div> </div>		<div>Remarks:</div> <div>ML</div> <div>TAT: 24HR 48HR 5-DAY</div>
Relinquished by:	Date / Time	Received by:	Date / Time			
Relinquished by:	Date / Time	Received by:	Date / Time	Total Number of Containers		

LEGAL ACTION CLAUSE: In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

PRAIRIE PIT PROJECT
Herrera Environmental
Frederickson, Washington
Libby Project # L190725-40
Client Project # 16-063-10-011

3322 South Bay Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@gmail.com

Volatile Organic Compounds including Oxygenates by EPA Method 8260C in Soil

Sample Description		Method Blank	TP-J-0	TP-L-0	Ditch-5-0	Ditch-6-0	Exc-E-SP2
Date Sampled	Reporting	N/A	7/22/19	7/23/19	7/23/19	7/23/19	7/23/19
Date Analyzed	Limits	7/25/19	7/25/19	7/25/19	7/25/19	7/25/19	7/25/19
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Dichlorodifluoromethane	0.06	nd	nd	nd	nd	nd	nd
Chloromethane	0.06	nd	nd	nd	nd	nd	nd
Vinyl chloride	0.02	nd	nd	nd	nd	nd	nd
Bromomethane	0.09	nd	nd	nd	nd	nd	nd
Chloroethane	0.06	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	0.05	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd	nd	nd	nd
Methylene chloride	0.02	nd	nd	nd	nd	nd	nd
Methyl <i>tert</i> - Butyl Ether (MTBE)	0.05	nd	nd	nd	nd	nd	nd
<i>trans</i> -1,2-Dichloroethene	0.02	nd	nd	nd	nd	nd	nd
<i>tert</i> - Butanol (TBA)	0.02	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.03	nd	nd	nd	nd	nd	nd
Ethyl- <i>tert</i> - Butal Ether (ETBE)	0.10	nd	nd	nd	nd	nd	nd
2,2-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd
<i>cis</i> -1,2-Dichloroethene	0.02	nd	nd	nd	nd	nd	nd
Chloroform	0.02	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	0.02	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	0.03	nd	nd	nd	nd	nd	nd
1,1-Dichloropropene	0.02	nd	nd	nd	nd	nd	nd
<i>tert</i> -Amyl Methyl Ether (TAME)	0.02	nd	nd	nd	nd	nd	nd
Benzene	0.02	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	0.03	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	0.02	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	0.02	nd	nd	nd	nd	nd	nd
Dibromomethane	0.04	nd	nd	nd	nd	nd	nd
Bromodichloromethane	0.02	nd	nd	nd	nd	nd	nd
<i>cis</i> -1,3-Dichloropropene	0.02	nd	nd	nd	nd	nd	nd
Toluene	0.10	nd	nd	nd	nd	nd	nd
Trans-1,3-Dichloropropene	0.03	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	0.03	nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd	nd	nd	nd	nd	nd
1,3-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd
Dibromochloromethane	0.03	nd	nd	nd	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.005	nd	nd	nd	nd	nd	nd
Chlorobenzene	0.02	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.03	nd	nd	nd	nd	nd	nd
Ethylbenzene	0.05	nd	nd	nd	nd	nd	nd
Total Xylenes	0.15	nd	nd	nd	nd	nd	nd
Styrene	0.02	nd	nd	nd	nd	nd	nd

Libby Environmental, Inc.

PRAIRIE PIT PROJECT
Herrera Environmental
Frederickson, Washington
Libby Project # L190725-40
Client Project # 16-063-10-011

3322 South Bay Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@gmail.com

Volatile Organic Compounds including Oxygenates by EPA Method 8260C in Soil

Sample Description		Method Blank	TP-J-0	TP-L-0	Ditch-5-0	Ditch-6-0	Exc-E-SP2
Date Sampled	Reporting	N/A	7/22/19	7/23/19	7/23/19	7/23/19	7/23/19
Date Analyzed	Limits (mg/kg)	7/25/19 (mg/kg)	7/25/19 (mg/kg)	7/25/19 (mg/kg)	7/25/19 (mg/kg)	7/25/19 (mg/kg)	7/25/19 (mg/kg)
Bromoform	0.03	nd	nd	nd	nd	nd	nd
Isopropylbenzene	0.05	nd	nd	nd	nd	nd	nd
1,2,3-Trichloropropane	0.05	nd	nd	nd	nd	nd	nd
Bromobenzene	0.03	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.03	nd	nd	nd	nd	nd	nd
n-Propylbenzene	0.04	nd	nd	nd	nd	nd	nd
2-Chlorotoluene	0.03	nd	nd	nd	nd	nd	nd
4-Chlorotoluene	0.03	nd	nd	nd	nd	nd	nd
1,3,5-Trimethylbenzene	0.03	nd	nd	nd	nd	nd	nd
tert-Butylbenzene	0.03	nd	nd	nd	nd	nd	nd
1,2,4-Trimethylbenzene	0.03	nd	nd	nd	nd	nd	nd
sec-Butylbenzene	0.03	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	0.03	nd	nd	nd	nd	nd	nd
Isopropyltoluene	0.03	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	0.03	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	0.03	nd	nd	nd	nd	nd	nd
n-Butylbenzene	0.05	nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	0.05	nd	nd	nd	nd	nd	nd
1,2,4-Trichlorobenzene	0.05	nd	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	0.10	nd	nd	nd	nd	nd	nd
Naphthalenes	0.10	nd	nd	nd	nd	nd	nd
1,2,3-Trichlorobenzene	0.10	nd	nd	nd	nd	nd	nd
Surrogate Recovery							
Dibromofluoromethane		115	118	101	106	101	101
1,2-Dichloroethane-d4		117	123	103	125	120	122
Toluene-d8		82	113	86	91	86	112
4-Bromofluorobenzene		70	66	68	83	74	98

"nd" Indicates not detected at listed detection limit.

"int" Indicates that interference prevents determination.

* ANALYZED BY SIM

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

Libby Environmental, Inc.

PRAIRIE PIT PROJECT
Herrera Environmental
Frederickson, Washington
Libby Project # L190725-40
Client Project # 16-063-10-011

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FAX: (360) 352-4154
Email: libbyenv@gmail.com

Volatile Organic Compounds including Oxygenates by EPA Method 8260C in Soil

Sample Description		Exc-E-SP2	Exc-E1-4	Exc-E2-0	Exc-F1-0	Exc-F2-0	Exc-G1-1
		Dup					
Date Sampled	Reporting	7/23/19	7/23/19	7/23/19	7/23/19	7/23/19	7/24/19
Date Analyzed	Limits	7/25/19	7/25/19	7/25/19	7/25/19	7/25/19	7/25/19
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Dichlorodifluoromethane	0.06	nd	nd	nd	nd	nd	nd
Chloromethane	0.06	nd	nd	nd	nd	nd	nd
Vinyl chloride	0.02	nd	nd	nd	nd	nd	nd
Bromomethane	0.09	nd	nd	nd	nd	nd	nd
Chloroethane	0.06	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	0.05	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd	nd	nd	nd
Methylene chloride	0.02	nd	nd	nd	nd	nd	nd
Methyl <i>tert</i> - Butyl Ether (MTBE)	0.05	nd	nd	nd	nd	nd	nd
<i>trans</i> -1,2-Dichloroethene	0.02	nd	nd	nd	nd	nd	nd
<i>tert</i> - Butanol (TBA)	0.02	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.03	nd	nd	nd	nd	nd	nd
Ethyl- <i>tert</i> - Butal Ether (ETBE)	0.10	nd	nd	nd	nd	nd	nd
2,2-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd
<i>cis</i> -1,2-Dichloroethene	0.02	nd	nd	nd	nd	nd	nd
Chloroform	0.02	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	0.02	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	0.03	nd	nd	nd	nd	nd	nd
1,1-Dichloropropene	0.02	nd	nd	nd	nd	nd	nd
<i>tert</i> -Amyl Methyl Ether (TAME)	0.02	nd	nd	nd	nd	nd	nd
Benzene	0.02	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	0.03	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	0.02	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	0.02	nd	nd	nd	nd	nd	nd
Dibromomethane	0.04	nd	nd	nd	nd	nd	nd
Bromodichloromethane	0.02	nd	nd	nd	nd	nd	nd
<i>cis</i> -1,3-Dichloropropene	0.02	nd	nd	nd	nd	nd	nd
Toluene	0.10	nd	nd	nd	nd	nd	nd
<i>Trans</i> -1,3-Dichloropropene	0.03	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	0.03	nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd	nd	nd	nd	nd	nd
1,3-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd
Dibromochloromethane	0.03	nd	nd	nd	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.005	nd	nd	nd	nd	nd	nd
Chlorobenzene	0.02	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.03	nd	nd	nd	nd	nd	nd
Ethylbenzene	0.05	nd	nd	nd	nd	nd	nd
Total Xylenes	0.15	nd	nd	nd	nd	nd	nd
Styrene	0.02	nd	nd	nd	nd	nd	nd

Libby Environmental, Inc.

PRAIRIE PIT PROJECT
Herrera Environmental
Frederickson, Washington
Libby Project # L190725-40
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Volatile Organic Compounds including Oxygenates by EPA Method 8260C in Soil

Sample Description		Exc-E-SP2	Exc-E1-4	Exc-E2-0	Exc-F1-0	Exc-F2-0	Exc-G1-1
		Dup					
Date Sampled	Reporting	7/23/19	7/23/19	7/23/19	7/23/19	7/23/19	7/24/19
Date Analyzed	Limits	7/25/19	7/25/19	7/25/19	7/25/19	7/25/19	7/25/19
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Bromoform	0.03	nd	nd	nd	nd	nd	nd
Isopropylbenzene	0.05	nd	nd	nd	nd	nd	nd
1,2,3-Trichloropropane	0.05	nd	nd	nd	nd	nd	nd
Bromobenzene	0.03	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.03	nd	nd	nd	nd	nd	nd
n-Propylbenzene	0.04	nd	nd	nd	nd	nd	nd
2-Chlorotoluene	0.03	nd	nd	nd	nd	nd	nd
4-Chlorotoluene	0.03	nd	nd	nd	nd	nd	nd
1,3,5-Trimethylbenzene	0.03	nd	nd	nd	nd	nd	nd
tert-Butylbenzene	0.03	nd	nd	nd	nd	nd	nd
1,2,4-Trimethylbenzene	0.03	nd	nd	nd	nd	nd	nd
sec-Butylbenzene	0.03	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	0.03	nd	nd	nd	nd	nd	nd
Isopropyltoluene	0.03	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	0.03	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	0.03	nd	nd	nd	nd	nd	nd
n-Butylbenzene	0.05	nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	0.05	nd	nd	nd	nd	nd	nd
1,2,4-Trichlorobenzene	0.05	nd	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	0.10	nd	nd	nd	nd	nd	nd
Naphthalenes	0.10	nd	nd	nd	nd	nd	nd
1,2,3-Trichlorobenzene	0.10	nd	nd	nd	nd	nd	nd
Surrogate Recovery							
Dibromofluoromethane		96	106	102	87	89	88
1,2-Dichloroethane-d4		113	118	111	116	116	115
Toluene-d8		88	90	99	90	99	103
4-Bromofluorobenzene		77	78	67	68	69	72

"nd" Indicates not detected at listed detection limit.

"int" Indicates that interference prevents determination.

* ANALYZED BY SIM

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

Libby Environmental, Inc.

PRAIRIE PIT PROJECT
Herrera Environmental
Frederickson, Washington
Libby Project # L190725-40
Client Project # 16-063-10-011

3322 South Bay Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@gmail.com

Volatile Organic Compounds including Oxygenates by EPA Method 8260C in Soil

Sample Description		Exc-G2-1	Exc-G3-2.5	Exc-G6-2.5	Exc-G6-2.5 Dup	Exc-G4-1	Exc-G5-1
Date Sampled	Reporting	7/24/19	7/24/19	7/24/19	7/24/19	7/25/19	7/25/19
Date Analyzed	Limits	7/25/19	7/25/19	7/25/19	7/25/19	7/25/19	7/25/19
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Dichlorodifluoromethane	0.06	nd	nd	nd	nd	nd	nd
Chloromethane	0.06	nd	nd	nd	nd	nd	nd
Vinyl chloride	0.02	nd	nd	nd	nd	nd	nd
Bromomethane	0.09	nd	nd	nd	nd	nd	nd
Chloroethane	0.06	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	0.05	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd	nd	nd	nd
Methylene chloride	0.02	nd	nd	nd	nd	nd	nd
Methyl <i>tert</i> - Butyl Ether (MTBE)	0.05	nd	nd	nd	nd	nd	nd
<i>trans</i> -1,2-Dichloroethene	0.02	nd	nd	nd	nd	nd	nd
<i>tert</i> - Butanol (TBA)	0.02	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.03	nd	nd	nd	nd	nd	nd
Ethyl- <i>tert</i> - Butal Ether (ETBE)	0.10	nd	nd	nd	nd	nd	nd
2,2-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd
<i>cis</i> -1,2-Dichloroethene	0.02	nd	nd	nd	nd	nd	nd
Chloroform	0.02	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	0.02	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	0.03	nd	nd	nd	nd	nd	nd
1,1-Dichloropropene	0.02	nd	nd	nd	nd	nd	nd
<i>tert</i> -Amyl Methyl Ether (TAME)	0.02	nd	nd	nd	nd	nd	nd
Benzene	0.02	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	0.03	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	0.02	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	0.02	nd	nd	nd	nd	nd	nd
Dibromomethane	0.04	nd	nd	nd	nd	nd	nd
Bromodichloromethane	0.02	nd	nd	nd	nd	nd	nd
<i>cis</i> -1,3-Dichloropropene	0.02	nd	nd	nd	nd	nd	nd
Toluene	0.10	nd	nd	nd	nd	nd	nd
Trans-1,3-Dichloropropene	0.03	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	0.03	nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd	nd	nd	nd	nd	nd
1,3-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd
Dibromochloromethane	0.03	nd	nd	nd	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.005	nd	nd	nd	nd	nd	nd
Chlorobenzene	0.02	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.03	nd	nd	nd	nd	nd	nd
Ethylbenzene	0.05	nd	nd	nd	nd	nd	nd
Total Xylenes	0.15	nd	nd	nd	nd	nd	nd
Styrene	0.02	nd	nd	nd	nd	nd	nd

Libby Environmental, Inc.

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Volatile Organic Compounds including Oxygenates by EPA Method 8260C in Soil

Sample Description		Exc-G2-1	Exc-G3-2.5	Exc-G6-2.5	Exc-G6-2.5 Dup	Exc-G4-1	Exc-G5-1
Date Sampled	Reporting	7/24/19	7/24/19	7/24/19	7/24/19	7/25/19	7/25/19
Date Analyzed	Limits	7/25/19	7/25/19	7/25/19	7/25/19	7/25/19	7/25/19
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Bromoform	0.03	nd	nd	nd	nd	nd	nd
Isopropylbenzene	0.05	nd	nd	nd	nd	nd	nd
1,2,3-Trichloropropane	0.05	nd	nd	nd	nd	nd	nd
Bromobenzene	0.03	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.03	nd	nd	nd	nd	nd	nd
n-Propylbenzene	0.04	nd	nd	nd	nd	nd	nd
2-Chlorotoluene	0.03	nd	nd	nd	nd	nd	nd
4-Chlorotoluene	0.03	nd	nd	nd	nd	nd	nd
1,3,5-Trimethylbenzene	0.03	nd	nd	nd	nd	nd	nd
tert-Butylbenzene	0.03	nd	nd	nd	nd	nd	nd
1,2,4-Trimethylbenzene	0.03	nd	nd	nd	nd	nd	nd
sec-Butylbenzene	0.03	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	0.03	nd	nd	nd	nd	nd	nd
Isopropyltoluene	0.03	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	0.03	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	0.03	nd	nd	nd	nd	nd	nd
n-Butylbenzene	0.05	nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	0.05	nd	nd	nd	nd	nd	nd
1,2,4-Trichlorobenzene	0.05	nd	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	0.10	nd	nd	nd	nd	nd	nd
Naphthalenes	0.10	nd	nd	nd	nd	nd	nd
1,2,3-Trichlorobenzene	0.10	nd	nd	nd	nd	nd	nd
Surrogate Recovery							
Dibromofluoromethane		96	106	102	87	89	88
1,2-Dichloroethane-d4		113	118	111	116	116	115
Toluene-d8		88	90	99	90	99	103
4-Bromofluorobenzene		77	78	67	68	69	72

"nd" Indicates not detected at listed detection limit.

"int" Indicates that interference prevents determination.

* ANALYZED BY SIM

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

Libby Environmental, Inc.

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Volatile Organic Compounds including Oxygenates by EPA Method 8260C in Soil

Sample Description		Exc-G7-1
Date Sampled	Reporting	7/25/19
Date Analyzed	Limits	7/25/19
	(mg/kg)	(mg/kg)
Dichlorodifluoromethane	0.06	nd
Chloromethane	0.06	nd
Vinyl chloride	0.02	nd
Bromomethane	0.09	nd
Chloroethane	0.06	nd
Trichlorofluoromethane	0.05	nd
1,1-Dichloroethene	0.05	nd
Methylene chloride	0.02	nd
Methyl <i>tert</i> - Butyl Ether (MTBE)	0.05	nd
<i>trans</i> -1,2-Dichloroethene	0.02	nd
<i>tert</i> - Butanol (TBA)	0.02	nd
1,1-Dichloroethane	0.03	nd
Ethyl- <i>tert</i> - Butyl Ether (ETBE)	0.10	nd
2,2-Dichloropropane	0.05	nd
<i>cis</i> -1,2-Dichloroethene	0.02	nd
Chloroform	0.02	nd
1,1,1-Trichloroethane (TCA)	0.02	nd
Carbon tetrachloride	0.03	nd
1,1-Dichloropropene	0.02	nd
<i>tert</i> -Amyl Methyl Ether (TAME)	0.02	nd
Benzene	0.02	nd
1,2-Dichloroethane (EDC)	0.03	nd
Trichloroethene (TCE)	0.02	nd
1,2-Dichloropropane	0.02	nd
Dibromomethane	0.04	nd
Bromodichloromethane	0.02	nd
<i>cis</i> -1,3-Dichloropropene	0.02	nd
Toluene	0.10	nd
<i>Trans</i> -1,3-Dichloropropene	0.03	nd
1,1,2-Trichloroethane	0.03	nd
Tetrachloroethene (PCE)	0.02	nd
1,3-Dichloropropane	0.05	nd
Dibromochloromethane	0.03	nd
1,2-Dibromoethane (EDB) *	0.005	nd
Chlorobenzene	0.02	nd
1,1,1,2-Tetrachloroethane	0.03	nd
Ethylbenzene	0.05	nd
Total Xylenes	0.15	nd
Styrene	0.02	nd

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Volatile Organic Compounds including Oxygenates by EPA Method 8260C in Soil

Sample Description		Exc-G7-1
Date Sampled	Reporting	7/25/19
Date Analyzed	Limits	7/25/19
	(mg/kg)	(mg/kg)
Bromoform	0.03	nd
Isopropylbenzene	0.05	nd
1,2,3-Trichloropropane	0.05	nd
Bromobenzene	0.03	nd
1,1,2,2-Tetrachloroethane	0.03	nd
n-Propylbenzene	0.04	nd
2-Chlorotoluene	0.03	nd
4-Chlorotoluene	0.03	nd
1,3,5-Trimethylbenzene	0.03	nd
tert-Butylbenzene	0.03	nd
1,2,4-Trimethylbenzene	0.03	nd
sec-Butylbenzene	0.03	nd
1,3-Dichlorobenzene	0.03	nd
Isopropyltoluene	0.03	nd
1,4-Dichlorobenzene	0.03	nd
1,2-Dichlorobenzene	0.03	nd
n-Butylbenzene	0.05	nd
1,2-Dibromo-3-Chloropropane	0.05	nd
1,2,4-Trichlorobenzene	0.05	nd
Hexachloro-1,3-butadiene	0.10	nd
Naphthalenes	0.10	nd
1,2,3-Trichlorobenzene	0.10	nd
Surrogate Recovery		
Dibromofluoromethane		89
1,2-Dichloroethane-d4		122
Toluene-d8		93
4-Bromofluorobenzene		68

"nd" Indicates not detected at listed detection limit.

"int" Indicates that interference prevents determination.

* ANALYZED BY SIM

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

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QA/QC Data - EPA 8260C Analyses

Sample Identification: Exc-G1-1							
Matrix Spike			Matrix Spike Duplicate			RPD	
Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)		
1,1-Dichloroethene	0.50	0.35	70	0.50	0.34	68	2.9
Benzene	0.50	0.50	100	0.50	0.54	108	7.7
Toluene	0.50	0.52	104	0.50	0.60	120	14.3
Chlorobenzene	0.50	0.55	110	0.50	0.59	118	7.0
Trichloroethene (TCE)	0.50	0.43	86	0.50	0.51	102	17.0
Surrogate Recovery							
Dibromofluoromethane		106			108		
1,2-Dichloroethane-d4		130			133		
Toluene-d8		110			112		
4-Bromofluorobenzene		70			66		

Laboratory Control Sample			
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)
1,1-Dichloroethene	0.50	0.40	80
Benzene	0.50	0.49	98
Toluene	0.50	0.42	84
Chlorobenzene	0.50	0.59	118
Trichloroethene (TCE)	0.50	0.42	84
Surrogate Recovery			
Dibromofluoromethane			116
1,2-Dichloroethane-d4			111
Toluene-d8			85
4-Bromofluorobenzene			68

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%

ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Paul Burke

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Analyses of Gasoline (NWTPH-Gx) in Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (mg/kg)
Method Blank	7/25/19	82%	nd
TP-J-0	7/25/19	113%	nd
TP-L-0	7/25/19	86%	nd
Ditch-5-0	7/25/19	91%	nd
Ditch-6-0	7/25/19	86%	nd
Exc-E-SP2	7/25/19	112%	nd
Exc-E-SP2 Dup	7/25/19	88%	nd
Exc-E1-4	7/25/19	90%	nd
Exc-E2-0	7/25/19	99%	nd
Exc-F1-0	7/25/19	90%	nd
Exc-F2-0	7/25/19	99%	nd
Exc-G1-1	7/25/19	103%	nd
Exc-G2-1	7/25/19	88%	nd
Exc-G3-2.5	7/25/19	90%	nd
Exc-G6-2.5	7/25/19	99%	nd
Exc-G6-2.5 Dup	7/25/19	90%	nd
Exc-G4-1	7/25/19	99%	nd
Exc-G5-1	7/25/19	103%	nd
Exc-G7-1	7/25/19	93%	nd

Practical Quantitation Limit	10
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"nd" Indicates not detected at the listed detection limits.

"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Toluene-d8): 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

Libby Environmental, Inc.

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Analyses of Diesel & Oil (NWTPH-Dx/Dx Extended) in Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (mg/kg)	Oil (mg/kg)
Method Blank	7/25/19	87	nd	nd
TP-J-0	7/25/19	83	nd	nd
TP-L-0	7/25/19	69	nd	nd
Ditch-5-0	7/25/19	89	nd	504
Ditch-6-0	7/25/19	80	nd	nd
Exc-E-SP2	7/25/19	90	nd	1060
Exc-E-SP2 Dup	7/25/19	87	nd	1050
Exc-E1-4	7/25/19	86	nd	253
Exc-E2-0	7/25/19	75	nd	3100
Exc-F1-0	7/25/19	81	nd	439
Exc-F2-0	7/25/19	93	nd	1090
Exc-G1-1	7/25/19	85	nd	nd
Exc-G2-1	7/25/19	81	nd	1360
Exc-G3-2.5	7/25/19	92	nd	nd
Exc-G6-2.5	7/25/19	104	nd	4090
Exc-G4-1	7/25/19	90	nd	nd
Exc-G5-1	7/25/19	97	nd	nd
Exc-G5-1 Dup	7/25/19	91	nd	nd
Exc-G7-1	7/25/19	99	nd	726
Practical Quantitation Limit			50	250

"nd" Indicates not detected at the listed detection limits.

"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Paul Burke

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Analyses of PCB (Polychlorinated Biphenyls) in Soil by EPA Method 8082

Sample Description	PQL	Method Blank	LCS	TP-L-0	Exc-E1-4	Exc-F1-0	L190726-40 MS
Date Sampled		N/A	N/A	7/23/19	7/23/19	7/23/19	7/24/19
Date Analyzed		7/31/19	7/31/19	7/31/19	7/31/19	7/31/19	7/31/19
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Aroclor 1016	0.1	nd	102%	nd	nd	nd	99%
Aroclor 1221	0.1	nd		nd	nd	nd	
Aroclor 1232	0.1	nd		nd	nd	nd	
Aroclor 1242	0.1	nd		nd	nd	nd	
Aroclor 1248	0.1	nd		nd	nd	nd	
Aroclor 1254	0.1	nd		nd	nd	nd	
Aroclor 1260	0.1	nd	95%	nd	nd	nd	106%
Surrogate Recovery							
TCMX		104	102	94	99	85	102
DCBP		97	100	100	101	98	105

"nd" Indicates not detected at listed detection limit.

"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%

ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Paul Burke

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PRAIRIE PIT PROJECT

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Libby Project # L190725-40

Client Project # 16-063-10-011

Analyses of Total Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Zinc (mg/kg)
Method Blank	7/30/19	nd	nd	nd	nd
TP-L-0	7/30/19	nd	nd	nd	nd
Ditch-6-0	7/30/19	29	nd	nd	nd
EXC-E1-4	7/30/19	90	nd	nd	nd
EXC-F1-0	7/30/19	133	nd	6.6	nd
EXC-G1-1	7/30/19	22	nd	nd	6.4
EXC-G3-2.5	7/30/19	nd	nd	nd	5.9
EXC-G4-1	7/30/19	13	nd	8.6	6.0
EXC-G5-1	7/30/19	149	nd	nd	7.0
Practical Quantitation Limit		5.0	1.0	5.0	5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson

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PRAIRIE PIT PROJECT

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Frederickson, Washington

Libby Project # L190725-40

Client Project # 16-063-10-011

QA/QC for Total Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead (% Recovery)	Cadmium (% Recovery)	Chromium (% Recovery)	Zinc (% Recovery)
LCS	7/30/19	102%	108%	105%	93%
L190726-40 MS	7/30/19	90%	85%	85%	87%
L190726-40 MSD	7/30/19	94%	86%	85%	91%
RPD	7/30/19	4%	1%	0%	4%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%

ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Dirk Peterson



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Libby Environmental
Sherry Chilcutt
3322 South Bay Road NE
Olympia, WA 98506

RE: Prairie Pit
Work Order Number: 1907372

August 02, 2019

Attention Sherry Chilcutt:

Fremont Analytical, Inc. received 18 sample(s) on 7/29/2019 for the analyses presented in the following report.

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)
Sample Moisture (Percent Moisture)

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

CLIENT: Libby Environmental
Project: Prairie Pit
Work Order: 1907372

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1907372-001	TP-L-0	07/23/2019 10:15 AM	07/29/2019 2:52 PM
1907372-002	Ditch-6-0	07/23/2019 3:10 PM	07/29/2019 2:52 PM
1907372-003	EXC-E1-4	07/23/2019 10:30 AM	07/29/2019 2:52 PM
1907372-004	EXC-F1-0	07/23/2019 2:00 PM	07/29/2019 2:52 PM
1907372-005	EXC-G1-1	07/24/2019 12:10 PM	07/29/2019 2:52 PM
1907372-006	EXC-G3-2.5	07/24/2019 12:30 PM	07/29/2019 2:52 PM
1907372-007	EXC-G4-1	07/25/2019 9:40 AM	07/29/2019 2:52 PM
1907372-008	EXC-G5-1	07/25/2019 10:10 AM	07/29/2019 2:52 PM
1907372-009	EXC-G7-B-1	07/26/2019 8:30 AM	07/29/2019 2:52 PM
1907372-010	EXC-H2-1	07/26/2019 11:00 AM	07/29/2019 2:52 PM
1907372-011	EXC-H3-1	07/26/2019 11:30 AM	07/29/2019 2:52 PM
1907372-012	EXC-H5c-5	07/26/2019 12:00 AM	07/29/2019 2:52 PM
1907372-013	EXC-H1B-1.5	07/26/2019 3:20 PM	07/29/2019 2:52 PM
1907372-014	EXC-H7-8	07/26/2019 2:20 PM	07/29/2019 2:52 PM
1907372-015	EXC-H6-6	07/26/2019 2:50 PM	07/29/2019 2:52 PM
1907372-016	Ditch-5B-1	07/26/2019 3:45 PM	07/29/2019 2:52 PM
1907372-017	EXC-F2B-1.5	07/26/2019 3:55 PM	07/29/2019 2:52 PM
1907372-018	EXC-H4-1	07/26/2019 2:00 PM	07/29/2019 2:52 PM

CLIENT: Libby Environmental**Project:** Prairie Pit

I. SAMPLE RECEIPT:

Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

8/2/19: Revision 1 includes a revised sample ID.

Qualifiers:

- * - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below Reporting Limit
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit
- R - High relative percent difference observed

Acronyms:

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/23/2019 10:15:00 AM

Project: Prairie Pit

Lab ID: 1907372-001

Matrix: Soil

Client Sample ID: TP-L-0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	50.1		µg/Kg-dry	1	7/30/2019 11:10:23 PM
2-Methylnaphthalene	ND	50.1		µg/Kg-dry	1	7/30/2019 11:10:23 PM
1-Methylnaphthalene	ND	50.1		µg/Kg-dry	1	7/30/2019 11:10:23 PM
Benz(a)anthracene	ND	50.1		µg/Kg-dry	1	7/30/2019 11:10:23 PM
Chrysene	ND	50.1		µg/Kg-dry	1	7/30/2019 11:10:23 PM
Benzo(b)fluoranthene	ND	50.1		µg/Kg-dry	1	7/30/2019 11:10:23 PM
Benzo(k)fluoranthene	ND	50.1		µg/Kg-dry	1	7/30/2019 11:10:23 PM
Benzo(a)pyrene	ND	50.1		µg/Kg-dry	1	7/30/2019 11:10:23 PM
Indeno(1,2,3-cd)pyrene	ND	50.1		µg/Kg-dry	1	7/30/2019 11:10:23 PM
Dibenz(a,h)anthracene	ND	50.1		µg/Kg-dry	1	7/30/2019 11:10:23 PM
Surr: 2-Fluorobiphenyl	62.5	19.4 - 157		%Rec	1	7/30/2019 11:10:23 PM
Surr: Terphenyl-d14 (surr)	60.2	31.5 - 173		%Rec	1	7/30/2019 11:10:23 PM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	22.0	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/23/2019 3:10:00 PM

Project: Prairie Pit

Lab ID: 1907372-002

Matrix: Soil

Client Sample ID: Ditch-6-0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	42.3		µg/Kg-dry	1	7/30/2019 11:51:42 PM
2-Methylnaphthalene	ND	42.3		µg/Kg-dry	1	7/30/2019 11:51:42 PM
1-Methylnaphthalene	ND	42.3		µg/Kg-dry	1	7/30/2019 11:51:42 PM
Benz(a)anthracene	ND	42.3		µg/Kg-dry	1	7/30/2019 11:51:42 PM
Chrysene	ND	42.3		µg/Kg-dry	1	7/30/2019 11:51:42 PM
Benzo(b)fluoranthene	ND	42.3		µg/Kg-dry	1	7/30/2019 11:51:42 PM
Benzo(k)fluoranthene	ND	42.3		µg/Kg-dry	1	7/30/2019 11:51:42 PM
Benzo(a)pyrene	ND	42.3		µg/Kg-dry	1	7/30/2019 11:51:42 PM
Indeno(1,2,3-cd)pyrene	ND	42.3		µg/Kg-dry	1	7/30/2019 11:51:42 PM
Dibenz(a,h)anthracene	ND	42.3		µg/Kg-dry	1	7/30/2019 11:51:42 PM
Surr: 2-Fluorobiphenyl	78.2	19.4 - 157		%Rec	1	7/30/2019 11:51:42 PM
Surr: Terphenyl-d14 (surr)	102	31.5 - 173		%Rec	1	7/30/2019 11:51:42 PM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	7.31	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/23/2019 10:30:00 AM

Project: Prairie Pit

Lab ID: 1907372-003

Matrix: Soil

Client Sample ID: EXC-E1-4

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	44.6		µg/Kg-dry	1	7/31/2019 12:12:20 AM
2-Methylnaphthalene	ND	44.6		µg/Kg-dry	1	7/31/2019 12:12:20 AM
1-Methylnaphthalene	ND	44.6		µg/Kg-dry	1	7/31/2019 12:12:20 AM
Benz(a)anthracene	ND	44.6		µg/Kg-dry	1	7/31/2019 12:12:20 AM
Chrysene	ND	44.6		µg/Kg-dry	1	7/31/2019 12:12:20 AM
Benzo(b)fluoranthene	ND	44.6		µg/Kg-dry	1	7/31/2019 12:12:20 AM
Benzo(k)fluoranthene	ND	44.6		µg/Kg-dry	1	7/31/2019 12:12:20 AM
Benzo(a)pyrene	ND	44.6		µg/Kg-dry	1	7/31/2019 12:12:20 AM
Indeno(1,2,3-cd)pyrene	ND	44.6		µg/Kg-dry	1	7/31/2019 12:12:20 AM
Dibenz(a,h)anthracene	ND	44.6		µg/Kg-dry	1	7/31/2019 12:12:20 AM
Surr: 2-Fluorobiphenyl	65.8	19.4 - 157		%Rec	1	7/31/2019 12:12:20 AM
Surr: Terphenyl-d14 (surr)	72.7	31.5 - 173		%Rec	1	7/31/2019 12:12:20 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	13.4	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental
Project: Prairie Pit
Lab ID: 1907372-004
Client Sample ID: EXC-F1-0

Collection Date: 7/23/2019 2:00:00 PM

Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)</u>				Batch ID: 25341		Analyst: SB
Naphthalene	ND	40.9		µg/Kg-dry	1	7/31/2019 12:33:01 AM
2-Methylnaphthalene	ND	40.9		µg/Kg-dry	1	7/31/2019 12:33:01 AM
1-Methylnaphthalene	ND	40.9		µg/Kg-dry	1	7/31/2019 12:33:01 AM
Benz(a)anthracene	ND	40.9		µg/Kg-dry	1	7/31/2019 12:33:01 AM
Chrysene	ND	40.9		µg/Kg-dry	1	7/31/2019 12:33:01 AM
Benzo(b)fluoranthene	ND	40.9		µg/Kg-dry	1	7/31/2019 12:33:01 AM
Benzo(k)fluoranthene	ND	40.9		µg/Kg-dry	1	7/31/2019 12:33:01 AM
Benzo(a)pyrene	ND	40.9		µg/Kg-dry	1	7/31/2019 12:33:01 AM
Indeno(1,2,3-cd)pyrene	ND	40.9		µg/Kg-dry	1	7/31/2019 12:33:01 AM
Dibenz(a,h)anthracene	ND	40.9		µg/Kg-dry	1	7/31/2019 12:33:01 AM
Surr: 2-Fluorobiphenyl	83.9	19.4 - 157		%Rec	1	7/31/2019 12:33:01 AM
Surr: Terphenyl-d14 (surr)	100	31.5 - 173		%Rec	1	7/31/2019 12:33:01 AM
<u>Sample Moisture (Percent Moisture)</u>				Batch ID: R52935		Analyst: KP
Percent Moisture	7.80	0.500		wt%	1	7/29/2019 3:24:07 PM



Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/24/2019 12:10:00 PM

Project: Prairie Pit

Lab ID: 1907372-005

Matrix: Soil

Client Sample ID: EXC-G1-1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	38.7		µg/Kg-dry	1	7/31/2019 12:53:38 AM
2-Methylnaphthalene	ND	38.7		µg/Kg-dry	1	7/31/2019 12:53:38 AM
1-Methylnaphthalene	ND	38.7		µg/Kg-dry	1	7/31/2019 12:53:38 AM
Benz(a)anthracene	ND	38.7		µg/Kg-dry	1	7/31/2019 12:53:38 AM
Chrysene	ND	38.7		µg/Kg-dry	1	7/31/2019 12:53:38 AM
Benzo(b)fluoranthene	ND	38.7		µg/Kg-dry	1	7/31/2019 12:53:38 AM
Benzo(k)fluoranthene	ND	38.7		µg/Kg-dry	1	7/31/2019 12:53:38 AM
Benzo(a)pyrene	ND	38.7		µg/Kg-dry	1	7/31/2019 12:53:38 AM
Indeno(1,2,3-cd)pyrene	ND	38.7		µg/Kg-dry	1	7/31/2019 12:53:38 AM
Dibenz(a,h)anthracene	ND	38.7		µg/Kg-dry	1	7/31/2019 12:53:38 AM
Surr: 2-Fluorobiphenyl	73.9	19.4 - 157		%Rec	1	7/31/2019 12:53:38 AM
Surr: Terphenyl-d14 (surr)	96.1	31.5 - 173		%Rec	1	7/31/2019 12:53:38 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	4.38	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/24/2019 12:30:00 PM

Project: Prairie Pit

Lab ID: 1907372-006

Matrix: Soil

Client Sample ID: EXC-G3-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	38.7		µg/Kg-dry	1	7/31/2019 1:14:14 AM
2-Methylnaphthalene	ND	38.7		µg/Kg-dry	1	7/31/2019 1:14:14 AM
1-Methylnaphthalene	ND	38.7		µg/Kg-dry	1	7/31/2019 1:14:14 AM
Benz(a)anthracene	ND	38.7		µg/Kg-dry	1	7/31/2019 1:14:14 AM
Chrysene	ND	38.7		µg/Kg-dry	1	7/31/2019 1:14:14 AM
Benzo(b)fluoranthene	ND	38.7		µg/Kg-dry	1	7/31/2019 1:14:14 AM
Benzo(k)fluoranthene	ND	38.7		µg/Kg-dry	1	7/31/2019 1:14:14 AM
Benzo(a)pyrene	ND	38.7		µg/Kg-dry	1	7/31/2019 1:14:14 AM
Indeno(1,2,3-cd)pyrene	ND	38.7		µg/Kg-dry	1	7/31/2019 1:14:14 AM
Dibenz(a,h)anthracene	ND	38.7		µg/Kg-dry	1	7/31/2019 1:14:14 AM
Surr: 2-Fluorobiphenyl	75.7	19.4 - 157		%Rec	1	7/31/2019 1:14:14 AM
Surr: Terphenyl-d14 (surr)	74.4	31.5 - 173		%Rec	1	7/31/2019 1:14:14 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	8.58	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/25/2019 9:40:00 AM

Project: Prairie Pit

Lab ID: 1907372-007

Matrix: Soil

Client Sample ID: EXC-G4-1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	41.6		µg/Kg-dry	1	7/31/2019 1:34:53 AM
2-Methylnaphthalene	ND	41.6		µg/Kg-dry	1	7/31/2019 1:34:53 AM
1-Methylnaphthalene	ND	41.6		µg/Kg-dry	1	7/31/2019 1:34:53 AM
Benz(a)anthracene	ND	41.6		µg/Kg-dry	1	7/31/2019 1:34:53 AM
Chrysene	ND	41.6		µg/Kg-dry	1	7/31/2019 1:34:53 AM
Benzo(b)fluoranthene	ND	41.6		µg/Kg-dry	1	7/31/2019 1:34:53 AM
Benzo(k)fluoranthene	ND	41.6		µg/Kg-dry	1	7/31/2019 1:34:53 AM
Benzo(a)pyrene	ND	41.6		µg/Kg-dry	1	7/31/2019 1:34:53 AM
Indeno(1,2,3-cd)pyrene	ND	41.6		µg/Kg-dry	1	7/31/2019 1:34:53 AM
Dibenz(a,h)anthracene	ND	41.6		µg/Kg-dry	1	7/31/2019 1:34:53 AM
Surr: 2-Fluorobiphenyl	68.4	19.4 - 157		%Rec	1	7/31/2019 1:34:53 AM
Surr: Terphenyl-d14 (surr)	67.1	31.5 - 173		%Rec	1	7/31/2019 1:34:53 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	11.2	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/25/2019 10:10:00 AM

Project: Prairie Pit

Lab ID: 1907372-008

Matrix: Soil

Client Sample ID: EXC-G5-1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	40.0		µg/Kg-dry	1	7/31/2019 1:55:28 AM
2-Methylnaphthalene	ND	40.0		µg/Kg-dry	1	7/31/2019 1:55:28 AM
1-Methylnaphthalene	ND	40.0		µg/Kg-dry	1	7/31/2019 1:55:28 AM
Benz(a)anthracene	ND	40.0		µg/Kg-dry	1	7/31/2019 1:55:28 AM
Chrysene	ND	40.0		µg/Kg-dry	1	7/31/2019 1:55:28 AM
Benzo(b)fluoranthene	ND	40.0		µg/Kg-dry	1	7/31/2019 1:55:28 AM
Benzo(k)fluoranthene	ND	40.0		µg/Kg-dry	1	7/31/2019 1:55:28 AM
Benzo(a)pyrene	ND	40.0		µg/Kg-dry	1	7/31/2019 1:55:28 AM
Indeno(1,2,3-cd)pyrene	ND	40.0		µg/Kg-dry	1	7/31/2019 1:55:28 AM
Dibenz(a,h)anthracene	ND	40.0		µg/Kg-dry	1	7/31/2019 1:55:28 AM
Surr: 2-Fluorobiphenyl	73.5	19.4 - 157		%Rec	1	7/31/2019 1:55:28 AM
Surr: Terphenyl-d14 (surr)	72.0	31.5 - 173		%Rec	1	7/31/2019 1:55:28 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	4.10	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/26/2019 8:30:00 AM

Project: Prairie Pit

Lab ID: 1907372-009

Matrix: Soil

Client Sample ID: EXC-G7-B-1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	41.3		µg/Kg-dry	1	7/31/2019 2:16:03 AM
2-Methylnaphthalene	ND	41.3		µg/Kg-dry	1	7/31/2019 2:16:03 AM
1-Methylnaphthalene	ND	41.3		µg/Kg-dry	1	7/31/2019 2:16:03 AM
Benz(a)anthracene	ND	41.3		µg/Kg-dry	1	7/31/2019 2:16:03 AM
Chrysene	ND	41.3		µg/Kg-dry	1	7/31/2019 2:16:03 AM
Benzo(b)fluoranthene	ND	41.3		µg/Kg-dry	1	7/31/2019 2:16:03 AM
Benzo(k)fluoranthene	ND	41.3		µg/Kg-dry	1	7/31/2019 2:16:03 AM
Benzo(a)pyrene	ND	41.3		µg/Kg-dry	1	7/31/2019 2:16:03 AM
Indeno(1,2,3-cd)pyrene	ND	41.3		µg/Kg-dry	1	7/31/2019 2:16:03 AM
Dibenz(a,h)anthracene	ND	41.3		µg/Kg-dry	1	7/31/2019 2:16:03 AM
Surr: 2-Fluorobiphenyl	73.7	19.4 - 157		%Rec	1	7/31/2019 2:16:03 AM
Surr: Terphenyl-d14 (surr)	83.9	31.5 - 173		%Rec	1	7/31/2019 2:16:03 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	3.35	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/26/2019 11:00:00 AM

Project: Prairie Pit

Lab ID: 1907372-010

Matrix: Soil

Client Sample ID: EXC-H2-1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	37.2		µg/Kg-dry	1	7/31/2019 2:36:44 AM
2-Methylnaphthalene	ND	37.2		µg/Kg-dry	1	7/31/2019 2:36:44 AM
1-Methylnaphthalene	ND	37.2		µg/Kg-dry	1	7/31/2019 2:36:44 AM
Benz(a)anthracene	ND	37.2		µg/Kg-dry	1	7/31/2019 2:36:44 AM
Chrysene	ND	37.2		µg/Kg-dry	1	7/31/2019 2:36:44 AM
Benzo(b)fluoranthene	ND	37.2		µg/Kg-dry	1	7/31/2019 2:36:44 AM
Benzo(k)fluoranthene	ND	37.2		µg/Kg-dry	1	7/31/2019 2:36:44 AM
Benzo(a)pyrene	ND	37.2		µg/Kg-dry	1	7/31/2019 2:36:44 AM
Indeno(1,2,3-cd)pyrene	ND	37.2		µg/Kg-dry	1	7/31/2019 2:36:44 AM
Dibenz(a,h)anthracene	ND	37.2		µg/Kg-dry	1	7/31/2019 2:36:44 AM
Surr: 2-Fluorobiphenyl	67.6	19.4 - 157		%Rec	1	7/31/2019 2:36:44 AM
Surr: Terphenyl-d14 (surr)	77.5	31.5 - 173		%Rec	1	7/31/2019 2:36:44 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	8.13	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/26/2019 11:30:00 AM

Project: Prairie Pit

Lab ID: 1907372-011

Matrix: Soil

Client Sample ID: EXC-H3-1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	40.2		µg/Kg-dry	1	7/31/2019 3:38:29 AM
2-Methylnaphthalene	ND	40.2		µg/Kg-dry	1	7/31/2019 3:38:29 AM
1-Methylnaphthalene	ND	40.2		µg/Kg-dry	1	7/31/2019 3:38:29 AM
Benz(a)anthracene	ND	40.2		µg/Kg-dry	1	7/31/2019 3:38:29 AM
Chrysene	ND	40.2		µg/Kg-dry	1	7/31/2019 3:38:29 AM
Benzo(b)fluoranthene	ND	40.2		µg/Kg-dry	1	7/31/2019 3:38:29 AM
Benzo(k)fluoranthene	ND	40.2		µg/Kg-dry	1	7/31/2019 3:38:29 AM
Benzo(a)pyrene	ND	40.2		µg/Kg-dry	1	7/31/2019 3:38:29 AM
Indeno(1,2,3-cd)pyrene	ND	40.2		µg/Kg-dry	1	7/31/2019 3:38:29 AM
Dibenz(a,h)anthracene	ND	40.2		µg/Kg-dry	1	7/31/2019 3:38:29 AM
Surr: 2-Fluorobiphenyl	83.4	19.4 - 157		%Rec	1	7/31/2019 3:38:29 AM
Surr: Terphenyl-d14 (surr)	103	31.5 - 173		%Rec	1	7/31/2019 3:38:29 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	4.42	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental
Project: Prairie Pit
Lab ID: 1907372-012
Client Sample ID: EXC-H5c-5

Collection Date: 7/26/2019

Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	37.8		µg/Kg-dry	1	7/31/2019 3:59:02 AM
2-Methylnaphthalene	ND	37.8		µg/Kg-dry	1	7/31/2019 3:59:02 AM
1-Methylnaphthalene	ND	37.8		µg/Kg-dry	1	7/31/2019 3:59:02 AM
Benz(a)anthracene	ND	37.8		µg/Kg-dry	1	7/31/2019 3:59:02 AM
Chrysene	ND	37.8		µg/Kg-dry	1	7/31/2019 3:59:02 AM
Benzo(b)fluoranthene	ND	37.8		µg/Kg-dry	1	7/31/2019 3:59:02 AM
Benzo(k)fluoranthene	ND	37.8		µg/Kg-dry	1	7/31/2019 3:59:02 AM
Benzo(a)pyrene	ND	37.8		µg/Kg-dry	1	7/31/2019 3:59:02 AM
Indeno(1,2,3-cd)pyrene	ND	37.8		µg/Kg-dry	1	7/31/2019 3:59:02 AM
Dibenz(a,h)anthracene	ND	37.8		µg/Kg-dry	1	7/31/2019 3:59:02 AM
Surr: 2-Fluorobiphenyl	95.0	19.4 - 157		%Rec	1	7/31/2019 3:59:02 AM
Surr: Terphenyl-d14 (surr)	105	31.5 - 173		%Rec	1	7/31/2019 3:59:02 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	4.07	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/26/2019 3:20:00 PM

Project: Prairie Pit

Lab ID: 1907372-013

Matrix: Soil

Client Sample ID: EXC-H1B-1.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	42.0		µg/Kg-dry	1	7/31/2019 4:19:34 AM
2-Methylnaphthalene	ND	42.0		µg/Kg-dry	1	7/31/2019 4:19:34 AM
1-Methylnaphthalene	ND	42.0		µg/Kg-dry	1	7/31/2019 4:19:34 AM
Benz(a)anthracene	ND	42.0		µg/Kg-dry	1	7/31/2019 4:19:34 AM
Chrysene	ND	42.0		µg/Kg-dry	1	7/31/2019 4:19:34 AM
Benzo(b)fluoranthene	ND	42.0		µg/Kg-dry	1	7/31/2019 4:19:34 AM
Benzo(k)fluoranthene	ND	42.0		µg/Kg-dry	1	7/31/2019 4:19:34 AM
Benzo(a)pyrene	ND	42.0		µg/Kg-dry	1	7/31/2019 4:19:34 AM
Indeno(1,2,3-cd)pyrene	ND	42.0		µg/Kg-dry	1	7/31/2019 4:19:34 AM
Dibenz(a,h)anthracene	ND	42.0		µg/Kg-dry	1	7/31/2019 4:19:34 AM
Surr: 2-Fluorobiphenyl	93.2	19.4 - 157		%Rec	1	7/31/2019 4:19:34 AM
Surr: Terphenyl-d14 (surr)	95.0	31.5 - 173		%Rec	1	7/31/2019 4:19:34 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	6.64	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/26/2019 2:20:00 PM

Project: Prairie Pit

Lab ID: 1907372-014

Matrix: Soil

Client Sample ID: EXC-H7-8

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	42.2		µg/Kg-dry	1	7/31/2019 4:40:12 AM
2-Methylnaphthalene	ND	42.2		µg/Kg-dry	1	7/31/2019 4:40:12 AM
1-Methylnaphthalene	ND	42.2		µg/Kg-dry	1	7/31/2019 4:40:12 AM
Benz(a)anthracene	ND	42.2		µg/Kg-dry	1	7/31/2019 4:40:12 AM
Chrysene	ND	42.2		µg/Kg-dry	1	7/31/2019 4:40:12 AM
Benzo(b)fluoranthene	ND	42.2		µg/Kg-dry	1	7/31/2019 4:40:12 AM
Benzo(k)fluoranthene	ND	42.2		µg/Kg-dry	1	7/31/2019 4:40:12 AM
Benzo(a)pyrene	ND	42.2		µg/Kg-dry	1	7/31/2019 4:40:12 AM
Indeno(1,2,3-cd)pyrene	ND	42.2		µg/Kg-dry	1	7/31/2019 4:40:12 AM
Dibenz(a,h)anthracene	ND	42.2		µg/Kg-dry	1	7/31/2019 4:40:12 AM
Surr: 2-Fluorobiphenyl	80.6	19.4 - 157		%Rec	1	7/31/2019 4:40:12 AM
Surr: Terphenyl-d14 (surr)	97.2	31.5 - 173		%Rec	1	7/31/2019 4:40:12 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	8.06	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/26/2019 2:50:00 PM

Project: Prairie Pit

Lab ID: 1907372-015

Matrix: Soil

Client Sample ID: EXC-H6-6

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	43.7		µg/Kg-dry	1	7/31/2019 5:00:43 AM
2-Methylnaphthalene	ND	43.7		µg/Kg-dry	1	7/31/2019 5:00:43 AM
1-Methylnaphthalene	ND	43.7		µg/Kg-dry	1	7/31/2019 5:00:43 AM
Benz(a)anthracene	ND	43.7		µg/Kg-dry	1	7/31/2019 5:00:43 AM
Chrysene	ND	43.7		µg/Kg-dry	1	7/31/2019 5:00:43 AM
Benzo(b)fluoranthene	ND	43.7		µg/Kg-dry	1	7/31/2019 5:00:43 AM
Benzo(k)fluoranthene	ND	43.7		µg/Kg-dry	1	7/31/2019 5:00:43 AM
Benzo(a)pyrene	ND	43.7		µg/Kg-dry	1	7/31/2019 5:00:43 AM
Indeno(1,2,3-cd)pyrene	ND	43.7		µg/Kg-dry	1	7/31/2019 5:00:43 AM
Dibenz(a,h)anthracene	ND	43.7		µg/Kg-dry	1	7/31/2019 5:00:43 AM
Surr: 2-Fluorobiphenyl	77.0	19.4 - 157		%Rec	1	7/31/2019 5:00:43 AM
Surr: Terphenyl-d14 (surr)	91.1	31.5 - 173		%Rec	1	7/31/2019 5:00:43 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	13.7	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/26/2019 3:45:00 PM

Project: Prairie Pit

Lab ID: 1907372-016

Matrix: Soil

Client Sample ID: Ditch-5B-1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	39.1		µg/Kg-dry	1	7/31/2019 5:21:16 AM
2-Methylnaphthalene	ND	39.1		µg/Kg-dry	1	7/31/2019 5:21:16 AM
1-Methylnaphthalene	ND	39.1		µg/Kg-dry	1	7/31/2019 5:21:16 AM
Benz(a)anthracene	ND	39.1		µg/Kg-dry	1	7/31/2019 5:21:16 AM
Chrysene	ND	39.1		µg/Kg-dry	1	7/31/2019 5:21:16 AM
Benzo(b)fluoranthene	ND	39.1		µg/Kg-dry	1	7/31/2019 5:21:16 AM
Benzo(k)fluoranthene	ND	39.1		µg/Kg-dry	1	7/31/2019 5:21:16 AM
Benzo(a)pyrene	ND	39.1		µg/Kg-dry	1	7/31/2019 5:21:16 AM
Indeno(1,2,3-cd)pyrene	ND	39.1		µg/Kg-dry	1	7/31/2019 5:21:16 AM
Dibenz(a,h)anthracene	ND	39.1		µg/Kg-dry	1	7/31/2019 5:21:16 AM
Surr: 2-Fluorobiphenyl	91.0	19.4 - 157		%Rec	1	7/31/2019 5:21:16 AM
Surr: Terphenyl-d14 (surr)	102	31.5 - 173		%Rec	1	7/31/2019 5:21:16 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	1.43	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/26/2019 3:55:00 PM

Project: Prairie Pit

Lab ID: 1907372-017

Matrix: Soil

Client Sample ID: EXC-F2B-1.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	42.8		µg/Kg-dry	1	7/31/2019 5:41:54 AM
2-Methylnaphthalene	ND	42.8		µg/Kg-dry	1	7/31/2019 5:41:54 AM
1-Methylnaphthalene	ND	42.8		µg/Kg-dry	1	7/31/2019 5:41:54 AM
Benz(a)anthracene	ND	42.8		µg/Kg-dry	1	7/31/2019 5:41:54 AM
Chrysene	ND	42.8		µg/Kg-dry	1	7/31/2019 5:41:54 AM
Benzo(b)fluoranthene	ND	42.8		µg/Kg-dry	1	7/31/2019 5:41:54 AM
Benzo(k)fluoranthene	ND	42.8		µg/Kg-dry	1	7/31/2019 5:41:54 AM
Benzo(a)pyrene	ND	42.8		µg/Kg-dry	1	7/31/2019 5:41:54 AM
Indeno(1,2,3-cd)pyrene	ND	42.8		µg/Kg-dry	1	7/31/2019 5:41:54 AM
Dibenz(a,h)anthracene	ND	42.8		µg/Kg-dry	1	7/31/2019 5:41:54 AM
Surr: 2-Fluorobiphenyl	63.2	19.4 - 157		%Rec	1	7/31/2019 5:41:54 AM
Surr: Terphenyl-d14 (surr)	60.6	31.5 - 173		%Rec	1	7/31/2019 5:41:54 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	12.2	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/26/2019 2:00:00 PM

Project: Prairie Pit

Lab ID: 1907372-018

Matrix: Soil

Client Sample ID: EXC-H4-1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	35.9		µg/Kg-dry	1	7/31/2019 6:02:28 AM
2-Methylnaphthalene	ND	35.9		µg/Kg-dry	1	7/31/2019 6:02:28 AM
1-Methylnaphthalene	ND	35.9		µg/Kg-dry	1	7/31/2019 6:02:28 AM
Benz(a)anthracene	ND	35.9		µg/Kg-dry	1	7/31/2019 6:02:28 AM
Chrysene	ND	35.9		µg/Kg-dry	1	7/31/2019 6:02:28 AM
Benzo(b)fluoranthene	ND	35.9		µg/Kg-dry	1	7/31/2019 6:02:28 AM
Benzo(k)fluoranthene	ND	35.9		µg/Kg-dry	1	7/31/2019 6:02:28 AM
Benzo(a)pyrene	ND	35.9		µg/Kg-dry	1	7/31/2019 6:02:28 AM
Indeno(1,2,3-cd)pyrene	ND	35.9		µg/Kg-dry	1	7/31/2019 6:02:28 AM
Dibenz(a,h)anthracene	ND	35.9		µg/Kg-dry	1	7/31/2019 6:02:28 AM
Surr: 2-Fluorobiphenyl	86.0	19.4 - 157		%Rec	1	7/31/2019 6:02:28 AM
Surr: Terphenyl-d14 (surr)	93.6	31.5 - 173		%Rec	1	7/31/2019 6:02:28 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	4.50	0.500		wt%	1	7/29/2019 3:24:07 PM
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Work Order: 1907372
CLIENT: Libby Environmental
Project: Prairie Pit

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: MB-25341	SampType: MBLK	Units: µg/Kg			Prep Date: 7/30/2019			RunNo: 52974			
Client ID: MBLKS	Batch ID: 25341				Analysis Date: 7/30/2019			SeqNo: 1046577			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	40.0									
2-Methylnaphthalene	ND	40.0									
1-Methylnaphthalene	ND	40.0									
Benz(a)anthracene	ND	40.0									
Chrysene	ND	40.0									
Benzo(b)fluoranthene	ND	40.0									
Benzo(k)fluoranthene	ND	40.0									
Benzo(a)pyrene	ND	40.0									
Indeno(1,2,3-cd)pyrene	ND	40.0									
Dibenz(a,h)anthracene	ND	40.0									
Surr: 2-Fluorobiphenyl	291		500.0		58.1	19.4	157				
Surr: Terphenyl-d14 (surr)	395		500.0		78.9	31.5	173				

Sample ID: LCS-25341	SampType: LCS	Units: µg/Kg			Prep Date: 7/30/2019			RunNo: 52974			
Client ID: LCSS	Batch ID: 25341				Analysis Date: 7/30/2019			SeqNo: 1046579			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	939	40.0	1,000	0	93.9	52.9	134				
2-Methylnaphthalene	1,050	40.0	1,000	0	105	45.1	135				
1-Methylnaphthalene	1,030	40.0	1,000	0	103	55.7	141				
Benz(a)anthracene	905	40.0	1,000	0	90.5	36.6	142				
Chrysene	967	40.0	1,000	0	96.7	43	165				
Benzo(b)fluoranthene	882	40.0	1,000	0	88.2	41	155				
Benzo(k)fluoranthene	1,020	40.0	1,000	0	102	30.6	164				
Benzo(a)pyrene	998	40.0	1,000	0	99.8	30.2	171				
Indeno(1,2,3-cd)pyrene	913	40.0	1,000	0	91.3	31.3	159				
Dibenz(a,h)anthracene	910	40.0	1,000	0	91.0	28	158				
Surr: 2-Fluorobiphenyl	439		500.0		87.9	19.4	157				
Surr: Terphenyl-d14 (surr)	476		500.0		95.1	31.5	173				

Work Order: 1907372
CLIENT: Libby Environmental
Project: Prairie Pit

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: 1907372-001ADUP		SampType: DUP		Units: µg/Kg-dry		Prep Date: 7/30/2019		RunNo: 52974			
Client ID: TP-L-0		Batch ID: 25341				Analysis Date: 7/30/2019		SeqNo: 1046581			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	50.3						0		30	
2-Methylnaphthalene	ND	50.3						0		30	
1-Methylnaphthalene	ND	50.3						0		30	
Benz(a)anthracene	ND	50.3						0		30	
Chrysene	ND	50.3						0		30	
Benzo(b)fluoranthene	ND	50.3						0		30	
Benzo(k)fluoranthene	ND	50.3						0		30	
Benzo(a)pyrene	ND	50.3						0		30	
Indeno(1,2,3-cd)pyrene	ND	50.3						0		30	
Dibenz(a,h)anthracene	ND	50.3						0		30	
Surr: 2-Fluorobiphenyl	483		628.9		76.8	19.4	157		0		
Surr: Terphenyl-d14 (surr)	422		628.9		67.1	31.5	173		0		

Sample ID: 1907372-010AMS		SampType: MS		Units: µg/Kg-dry		Prep Date: 7/30/2019		RunNo: 52974			
Client ID: EXC-H2-1		Batch ID: 25341				Analysis Date: 7/31/2019		SeqNo: 1046591			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	743	38.5	961.6	0	77.3	38.9	124				
2-Methylnaphthalene	721	38.5	961.6	0	74.9	42.8	151				
1-Methylnaphthalene	734	38.5	961.6	0	76.4	38.4	125				
Benz(a)anthracene	997	38.5	961.6	6.389	103	34.9	139				
Chrysene	756	38.5	961.6	0	78.7	45.2	146				
Benzo(b)fluoranthene	873	38.5	961.6	0	90.8	42.2	168				
Benzo(k)fluoranthene	717	38.5	961.6	0	74.5	20.5	150				
Benzo(a)pyrene	872	38.5	961.6	0	90.7	34.4	179				
Indeno(1,2,3-cd)pyrene	698	38.5	961.6	0	72.6	11.8	140				
Dibenz(a,h)anthracene	689	38.5	961.6	0	71.6	17.3	156				
Surr: 2-Fluorobiphenyl	390		480.8		81.1	19.4	157				
Surr: Terphenyl-d14 (surr)	464		480.8		96.4	31.5	173				

Work Order: 1907372
CLIENT: Libby Environmental
Project: Prairie Pit

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: 1907372-010AMSD		SampType: MSD		Units: µg/Kg-dry		Prep Date: 7/30/2019			RunNo: 52974		
Client ID: EXC-H2-1		Batch ID: 25341					Analysis Date: 7/31/2019			SeqNo: 1046592	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	976	40.2	1,006	0	97.0	38.9	124	743.2	27.1	30	
2-Methylnaphthalene	1,030	40.2	1,006	0	103	42.8	151	720.6	35.5	30	R
1-Methylnaphthalene	979	40.2	1,006	0	97.3	38.4	125	734.3	28.5	30	
Benz(a)anthracene	1,120	40.2	1,006	6.389	111	34.9	139	996.6	11.7	30	
Chrysene	1,020	40.2	1,006	0	101	45.2	146	756.4	29.2	30	
Benzo(b)fluoranthene	971	40.2	1,006	0	96.5	42.2	168	872.8	10.6	30	
Benzo(k)fluoranthene	1,130	40.2	1,006	0	112	20.5	150	716.8	44.4	30	R
Benzo(a)pyrene	1,140	40.2	1,006	0	113	34.4	179	871.9	26.8	30	
Indeno(1,2,3-cd)pyrene	1,000	40.2	1,006	0	99.6	11.8	140	698.4	35.7	30	R
Dibenz(a,h)anthracene	980	40.2	1,006	0	97.4	17.3	156	688.5	34.9	30	R
Surr: 2-Fluorobiphenyl	501		503.0		99.7	19.4	157		0		
Surr: Terphenyl-d14 (surr)	534		503.0		106	31.5	173		0		

NOTES:

R - High RPD observed, spike recovery is within range.



Date: 8/2/2019

Work Order: 1907372
CLIENT: Libby Environmental
Project: Prairie Pit

QC SUMMARY REPORT
Sample Moisture (Percent Moisture)

Sample ID: 1907372-004ADUP		SampType: DUP		Units: wt%		Prep Date: 7/29/2019			RunNo: 52935		
Client ID: EXC-F1-0		Batch ID: R52935		Analysis Date: 7/29/2019						SeqNo: 1045928	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	7.09	0.500						7.799	9.58	20	

Sample ID: 1907372-016ADUP		SampType: DUP		Units: wt%		Prep Date: 7/29/2019			RunNo: 52935			
Client ID: Ditch-5B-1		Batch ID: R52935					Analysis Date: 7/29/2019			SeqNo: 1045941		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Percent Moisture	1.39	0.500						1.432	2.79	20		

Client Name: **LIBBY**
 Logged by: **Clare Griggs**

Work Order Number: **1907372**
 Date Received: **7/29/2019 2:52:00 PM**

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
 2. How was the sample delivered? Client

Log In

3. Coolers are present? Yes ☒ No ☐ NA ☐
 4. Shipping container/cooler in good condition? Yes ☒ No ☐
 5. Custody Seals present on shipping container/cooler?
 (Refer to comments for Custody Seals not intact) Yes ☐ No ☐ Not Required ☒
 6. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
 7. Were all items received at a temperature of >0°C to 10.0°C * Yes ☐ No ☒ NA ☐
Refer to item information.
 8. Sample(s) in proper container(s)? Yes ☒ No ☐
 9. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
 10. Are samples properly preserved? Yes ☒ No ☐
 11. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
 12. Is there headspace in the VOA vials? Yes ☐ No ☐ NA ☒
 13. Did all samples containers arrive in good condition(unbroken)? Yes ☒ No ☐
 14. Does paperwork match bottle labels? Yes ☒ No ☐
 15. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
 16. Is it clear what analyses were requested? Yes ☒ No ☐
 17. Were all holding times able to be met? Yes ☒ No ☐

Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes ☒ No ☐ NA ☐

Person Notified: Kodev Elev Date: 7/30/2019
 By Whom: Clare Griggs Via: ☒ eMail ☐ Phone ☐ Fax ☐ In Person
 Regarding: Confirming sample names / COC.
 Client Instructions:

19. Additional remarks:

Item Information

Item #	Temp °C
Cooler	6.4
Sample	22.0

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

3322 South Bay Road NE

Ph: 360-352-2110

Olympia, WA 98506

Fax: 360-352-4154

Date: 7/29/19

Page: 1

of

2

Client: Libby Environmental, Inc

Project Manager: Sherry Chilcutt

Address: See above

Project Name: Prairie Pit

City:

State:

Zip:

Location:

City, State: WA

Phone:

Fax:


Collector:

Date of Collection: 7/23-7/26

Client Project #

Email: LibbyEnv@gmail.com

Page 28 of 33

 Sample Number	Date	Time	Sample Type	Container Type	VOC 8260	NWTPH-Gx	BTEX 8021	NWTPH-HCID	NWTPH-Dx	NWTPH-Dx/Dx	PAH 8270 + Naphthalene	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	Field Notes
	Depth																
1 TPL-0	7-23-19	1015	Soil	4oz Jar						X							
2 Ditch-6-0		1516								X							
3 EXC-E1-4		1030								X							
4 EXC-F1-0		1400								X							
5 EXC-G1-1	7-24-19	1210								X							
6 EXC-G3-2.5		1230								X							
7 EXC-G4-1	7-25-19	0940								X							
8 EXC-G5-1		1010								X							
9 EXC-G7-B-1	7-26-19	1030								X							
10 EXC-H2-1		1106								X							
11 EXC-H3-1		1130								X							
12 EXC-H5C-5										X							
13 EXC-H1B-1.5		1520								X							
14 EXC-47-8		1420								X							
15 EXC-H6-6		1450								X							
16 Ditch-5B-1		1545								X							
17 EXC-F2B-1.5		1555								X							

Relinquished by:

Date / Time

Received by:

Date / Time

Sample Receipt

Remarks:

Relinquished by:

Date / Time

Received by:

Date / Time

Good Condition? Y N

Cooler Temp. °C

Sample Temp. °C

Relinquished by:

Date / Time

Received by:

Date / Time

Total Number of Containers

TAT: 24HR 48HR 5-DAY

LEGAL ACTION CLAUSE: In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506

Ph: 360-352-2110
Fax: 360-352-4154

Chain of Custody Record

www.LibbyEnvironmental.com

1907372

Client: Libby Environmental, Inc

Address:

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

Client Project # _____

Date: 7-29-19

Page: 2 of 2

Project Manager: Sherry Choleff

Project Name: Prairie Pit

Location: _____ City, State: WA

Collector: _____ Date of Collection: 7-26-19

Email: Libbyenv@gmail.com

Page 29 of 33



Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	NWTPH-Gx	BTEX 8021	NWTPH-HCID	NWTPH-Dx	NWTPH-Dx/Dx	c PAH 8270 + Naphthalene	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	Field Notes
1 <u>EXC-H1-1</u>	<u>—</u>	<u>1400</u>	<u>Soil</u>	<u>Jar</u>						<input checked="" type="checkbox"/>							
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	

Relinquished by: <u>KDC</u>	Date / Time: <u>7-29-19 1452</u>	Received by: <u>Kayla P. et</u>	Date / Time: <u>7/29/19 1452</u>	Sample Receipt Good Condition? <u>Y</u> <u>N</u> Cooler Temp. _____ °C Sample Temp. _____ °C Total Number of Containers _____	Remarks: TAT: <u>24HR</u> <u>48HR</u> <u>5-DAY</u>
Relinquished by: _____	Date / Time: _____	Received by: _____	Date / Time: _____		
Relinquished by: _____	Date / Time: _____	Received by: _____	Date / Time: _____		
Relinquished by: _____	Date / Time: _____	Received by: _____	Date / Time: _____		

LEGAL ACTION CLAUSE: In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

3322 South Bay Road NE
Olympia, WA 98506

Ph: 360-352-2110
Fax: 360-352-4154

Client: Libby Environmental, Inc

Address: See above

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

Client Project # _____

Date: 7/29/19

Page: 1

of 2

Project Manager: Sherry Chilcutt

Project Name: Prairie Pit

Location: _____


City, State: WA

Collector: _____

Date of Collection: 7/23-7/26

Email: LibbyEnv@gmail.com

Page 30 of 33

						<div>VOC 8260 NWTPH-Gx BTEX 8021 NWTPH-HCID NWTPH-Dx c PAH 8270 + Naphthalene PAH 8270 Semi Vol 8270 PCB 8082 MTCA 5 Metals RCRA 8 Metals</div>												
Sample Number	Date Depth	Time	Sample Type	Container Type														Field Notes
1 TPL-0	7-23-19	1015	Soil	4oz Jar														
2 Ditch-6-0		1516																
3 EXC-EI-4		1030																
4 EXC-FI-0		1400																
5 EXC-G1-1	7-24-19	1210																
6 EXC-G3-2.5		1230																
7 EXC-G4-1	7-25-19	0940																
8 EXC-G5-1		1010																
9 EXC-G7-B-1	7-26-19	0830																
10 EXC-H2-1		1106																
11 EXC-H3-1		1130																
12 EXC-H5C-5		—																
13 EXC-H1B-1.5		1520																
14 EXC-H7-8		1420																
15 EXC-H6-6		1450																
16 Ditch-5B-1		1545																
17 EXC-F2B-1.5		1555																

Relinquished by: _____ Date / Time: 7-29-19 1452

Received by: Kayla Peter Date / Time: 7/29/19 1452

Relinquished by: _____ Date / Time: _____

Received by: _____ Date / Time: _____

Relinquished by: _____ Date / Time: _____

Received by: _____ Date / Time: _____

Sample Receipt

Good Condition? Y N

Cooler Temp. _____ °C

Sample Temp. _____ °C

Total Number of Containers _____

Remarks:

TAT: 24HR 48HR 5-DAY

LEGAL ACTION CLAUSE: In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

3322 South Bay Road NE
Olympia, WA 98506

Ph: 360-352-2110
Fax: 360-352-4154

Client: Libby Environmental, Inc

Address: See above

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

Client Project # _____

Date: 7/29/19

Page: 1

of 2

Project Manager: Sherry Chilcutt

Project Name: Prairie Pit

Location: _____

City, State: WA

Collector: _____

Date of Collection: 7/23-7/26

Email: LibbyEnv@gmail.com

Page 32 of 33



Sample Number	Date Depth	Time	Sample Type	Container Type	VOC 8260	NWTPH-Gx	BTEX 8021	NWTPH-HCID	NWTPH-DX	PAH 8270 + Naphthalene	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	Field Notes
1 TPL-0	7-23-19	1015	Soil	4oz Jar						X						
2 Ditch-6-0		1516								X						
3 EXC-E1-4		1030								X						
4 EXC-F1-0		1400								X						
5 EXC-G1-1	7-24-19	1210								X						
6 EXC-G3-2.5		1230								X						
7 EXC-G4-1	7-25-19	0940								X						
8 EXC-G5-1		1010								X						
9 EXC-H7-B-1	7-26-19	0830								X						
10 EXC-H2-1		1106								X						
11 EXC-H3-1		1130								X						
12 EXC-H5C-5										X						
13 EXC-H1B-1.5		1520								X						
14 EXC-H7-8		1420								X						Sample ID: EXC-H7-8
15 EXC-H6-6		1450								X						
16 Ditch-5B-1		1545								X						
17 EXC-F2B-1.5		1555								X						

Relinquished by: _____ Date / Time _____

Received by: _____ Date / Time _____

Sample Receipt

Remarks: _____

Relinquished by: [Signature] Date / Time 7-29-19 1452

Received by: Kayla Peter Date / Time 7/29/19 1452

Good Condition? Y N

edits per EB 8/2/19 rmm

Relinquished by: _____ Date / Time _____

Received by: _____ Date / Time _____

Cooler Temp. °C

Sample Temp. °C

Relinquished by: _____ Date / Time _____

Received by: _____ Date / Time _____

Total Number of Containers

TAT: 24HR 48HR 5-DAY

LEGAL ACTION CLAUSE: In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

Chain of Custody Record

1907372

www.LibbyEnvironmental.com

3322 South Bay Road NE
Olympia, WA 98506

Ph: 360-352-2110
Fax: 360-352-4154

Date: 7-29-19

Page: 2 of 2

Client: Libby Environmental, Inc

Project Manager: Sherry Chelcutt

Address:

Project Name: Prairie Pit

City: State: Zip:

Location: City, State: WA

Phone: Fax:

Collector: Date of Collection: 7-26-19

Client Project #

Email: Libbyenv@gmail.com



Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	NWTPH-GX	BTEX 8021	NWTPH-HCID	NWTPH-DX	c PAH 8270+Naphthalene	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	Field Notes
1 EXC-H1-1	—	1400	Soil	Jar						X						edit per KE! 7/30/19 ceg
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																

Relinquished by: <i>[Signature]</i>	Date / Time 7-29-19 1452	Received by: <i>Kayla Pet</i>	Date / Time 7/29/19 1452	Sample Receipt		Remarks:
Relinquished by:	Date / Time	Received by:	Date / Time	Good Condition?	Y N	
				Cooler Temp.	°C	
				Sample Temp.	°C	
Relinquished by:	Date / Time	Received by:	Date / Time	Total Number of Containers		TAT: 24HR (48HR) 5-DAY

08/01/2019

Libby Environmental, Inc.
3322 South Bay Road NE
Olympia, WA 98506

Project: Prairie Pit
Date Received: 07/29/2019
Spectra Project: 2019070878
Rush

<u>Client ID</u>	<u>Spectra #</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Sampled</u>
TP-L-0	1	Total Nickel	2.4	mg/Kg	SW846 6010D	Soil	07/23/2019
Ditch-6-0	2	Total Nickel	8.4	mg/Kg	SW846 6010D	Soil	07/23/2019
Exc-E1-4	3	Total Nickel	6.5	mg/Kg	SW846 6010D	Soil	07/23/2019
Exc-F1-0	4	Total Nickel	6.4	mg/Kg	SW846 6010D	Soil	07/23/2019
Exc-G1-1	5	Total Nickel	11.1	mg/Kg	SW846 6010D	Soil	07/24/2019
Exc-G3-2.5	6	Total Nickel	10.6	mg/Kg	SW846 6010D	Soil	07/24/2019
Exc-G4-1	7	Total Nickel	2.1	mg/Kg	SW846 6010D	Soil	07/25/2019
Exc-G5-1	8	Total Nickel	15.8	mg/Kg	SW846 6010D	Soil	07/25/2019
Exc-G7-B1	9	Total Nickel	14.4	mg/Kg	SW846 6010D	Soil	07/26/2019
Exc-H2-1	10	Total Nickel	8.8	mg/Kg	SW846 6010D	Soil	07/26/2019
Exc-H3-1	11	Total Nickel	9.7	mg/Kg	SW846 6010D	Soil	07/26/2019
Exc-H5C-5	12	Total Nickel	10.6	mg/Kg	SW846 6010D	Soil	07/26/2019
Exc-H1B-1.5	13	Total Nickel	14.4	mg/Kg	SW846 6010D	Soil	07/26/2019
Exc-H7-8	14	Total Nickel	10.7	mg/Kg	SW846 6010D	Soil	07/26/2019

SPECTRA LABORATORIES



Jeffrey Cooper, Laboratory Manager

a8/jac



SPECTRA Laboratories

...Where experience matters

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

08/01/2019

Libby Environmental, Inc.
3322 South Bay Road NE
Olympia, WA 98506

Project: Prairie Pit
Date Received: 07/29/2019
Spectra Project: 2019070878
Rush

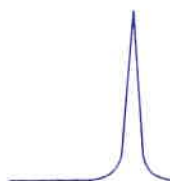
<u>Client ID</u>	<u>Spectra #</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Sampled</u>
Exc-H6-6	15	Total Nickel	13.7	mg/Kg	SW846 6010D	Soil	07/26/2019
Ditch-5B-1	16	Total Nickel	10.4	mg/Kg	SW846 6010D	Soil	07/26/2019
Exc-H4-1	17	Total Nickel	11.5	mg/Kg	SW846 6010D	Soil	07/26/2019
Exc-F2B-1.5	18	Total Nickel	4.1	mg/Kg	SW846 6010D	Soil	07/26/2019

SPECTRA LABORATORIES



Jeffrey Cooper, Laboratory Manager

u8/jac



SPECTRA Laboratories

...Where experience matters

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7/31/2019

Libby Environmental
4139 Libby Rd. NE
Olympia, WA 98506

Units: mg/Kg
Spectra Project: 2019070878
Applies to Spectra #'s 1-18
Analyst: SCJ

QUALITY CONTROL RESULTS ICP Metals SW846 6010D - Soil/Solid

Method Blank

Date Digested: 7/31/2019 Date Analyzed: 7/31/2019

Element	Blank Result
Nickel	< 1.5

Laboratory Control Sample (LCS)

Date Digested: 7/31/2019 Date Analyzed: 7/31/2019

Element	Spike Added	LCS Conc.	LCS %Rec
Nickel	200.0	183.8	91.9

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 7/31/2019 Date Analyzed: 7/31/2019
Sample Spiked: 2019070896-1

Element	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc	MSD %Rec	RPD
Nickel	118.4	200.0	303.5	92.6	307.9	94.8	2.3

Comment:

Recovery Limits 75-125%

RPD Limit 20

SPECTRA LABORATORIES


Jeffrey Cooper
Laboratory Manager

Libby Environmental, Inc. 209070878 Chain of Custody Record

www.LibbyEnvironmental.com

3322 South Bay Road NE
Olympia, WA 98506

Ph: 360-352-2110
Fax: 360-352-4154

Date: 7/29/19

Page: 1 of 2

Client: Libby Environmental, Inc

Project Manager: Sherry Chilcott

Address: see above

Project Name: Prairie Pit

City: State: Zip:


Location: City, State: WA

Phone: Fax:

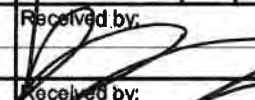
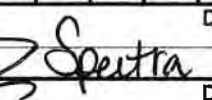
Collector: Date of Collection: 7/22/19 - 7/26/19

Client Project #

Email: Libbyenv@gmail.com

 Sample Number	Date Depth	Time	Sample Type	Container Type													Field Notes	
					VOC 8260	NWTPH-Gx	BTEX 8021	NWTPH-HCID	NWTPH-Dx	c PAH 8270	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	Ni Total		
1 TP-L-0	7-23-19	1330	Soil	Jar														
2 Ditch-6-0		1510																
3 EXC-01-4		1030															Jar is EL-4	
4 EXC-01-0		1400																
5 EXC-01-0	7-24-19	1210																
6 EXC-G3-2.5		1230																
7 EXC-G4-1	7-25-19	9:40																
8 EXC-G5-1		1010																
9 EXC-G7-B1	7-26-19	830																
10 EXC-H2-1		1100																
11 EXC-H3-1		1130																
12 EXC-H5C-5																		
13 EXC-H1B-1.5		1520																
14 EXC-47-8		1420															Jar is H7-8	
15 EXC-46-6		1450																
16 Ditch-5B-1		1545																
17 EXC-40-1		1400															Jar is H4-1	

COPY

Relinquished by: 	Date / Time: 7/29/19 1639	Received by: 	Date / Time: 7/29/19 1639	Sample Receipt Good Condition? Y N Cooler Temp. °C Sample Temp. °C Total Number of Containers	Remarks: TAT: 24HR 48HR 5-DAY
Relinquished by:	Date / Time:	Received by:	Date / Time:		
Relinquished by:	Date / Time:	Received by:	Date / Time:		
Relinquished by:	Date / Time:	Received by:	Date / Time:		

LEGAL ACTION CLAUSE: In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc. 209070878 Chain of Custody Record

www.LibbyEnvironmental.com

3322 South Bay Road NE Ph: 360-352-2110
Olympia, WA 98506 Fax: 360-352-4154

Client: Libby Environmental, Inc

Address: see above

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

Client Project # _____

Date: 7/29/19

Page: 1 of 2

Project Manager: Sherry Chilcott

Project Name: Pratt Pit

Location: _____

City, State: WA

Collector: _____

Date of Collection: 7/22/19 - 7/26/19

Email: Libbyenv@gmail.com



Sample Number	Date Depth	Time	Sample Type	Container Type	VOC 8260	NWTPH-Gx	BTEX 8021	NWTPH-HCID	NWTPH-Dx	c PAH 8270	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	N _T Total	Field Notes
1 TP-L-0	7-23-19	1530	Soil	Jar													
2 Ditch-6-0		1510															
3 EXC-E1-4		1038															
4 EXC-F1-0		1400															
5 EXC-G1-0	7-24-19	1210															
6 EXC-G3-2.5		1230															
7 EXC-G4-1	7-25-19	9:40															
8 EXC-G5-1		1010															
9 EXC-G7-B1	7-26-19	830															
10 EXC-H2-1		1100															
11 EXC-H3-1		1130															
12 EXC-H5C-5																	
13 EXC-H1B-1.5		1520															
14 EXC-47-8		1420															
15 EXC-H6-6		1458															
16 Ditch-5B-1		1545															
17 EXC-H1-1		1400															

Relinquished by: <u>[Signature]</u>	Date / Time: <u>7/29/19 1639</u>	Received by: <u>[Signature]</u>	Date / Time: <u>7-29-19 11:39</u>	Sample Receipt Good Condition? <u>Y</u> <u>N</u> Cooler Temp. _____ °C Sample Temp. _____ °C Total Number of Containers _____ TAT: 24HR 48HR 5-DAY	Remarks:
Relinquished by:	Date / Time:	Received by:	Date / Time:		
Relinquished by:	Date / Time:	Received by:	Date / Time:		
Relinquished by:	Date / Time:	Received by:	Date / Time:		

LEGAL ACTION CLAUSE: In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc. 2019070878 Chain of Custody Record

www.LibbyEnvironmental.com

3322 South Bay Road NE
Olympia, WA 98506

Ph: 360-352-2110
Fax: 360-352-4154

Date: 7-29-19

Page: 2 of 2

Client: Libby Environmental, Inc.

Project Manager: Sherry Chilcutt

Address: See above

Project Name: Paint Pit

City: State: Zip:

Location: City, State: WA

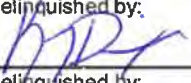

Phone: Fax:

Collector: Date of Collection: 7/22/19 - 7/26/19

Client Project #

Email: Libbyenv@gmail.com

Sample Number	Date Depth	Time	Sample Type	Container Type													Field Notes
					VOC 8260	NWTPH-Gx	BTEX 8021	NWTPH-HCID	NWTPH-Dx	c PAH 8270	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	Total	
1 EXC-F2B-1.5	77-66	1555	Soil														
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	

Relinquished by: 	Date / Time: 7/29/19 1639	Received by:  Spectra	Date / Time: 7-29-19 1639	Sample Receipt Good Condition? Y N Cooler Temp. °C Sample Temp. °C Total Number of Containers	Remarks: TAT: 24HR 48HR 5-DAY
Relinquished by:	Date / Time:	Received by:	Date / Time:		
Relinquished by:	Date / Time:	Received by:	Date / Time:		
Relinquished by:	Date / Time:	Received by:	Date / Time:		

LEGAL ACTION CLAUSE: In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.

Distribution: White - Lab, Yellow - Env, Pink - Originator



Libby Environmental, Inc.

3322 South Bay Road NE • Olympia, WA 98506-2957

August 19, 2019

George Iftner
Herrera Environmental
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Dear Mr. Iftner:

Please find enclosed the analytical data report for the Prairie Pit Project located in Fredrickson, Washington.

The results of the analyses are summarized in the attached tables. Applicable detection limits and QA/QC data are included. The sample(s) will be disposed of in 30 days unless we are contacted to arrange long term storage.

Libby Environmental, Inc. appreciates the opportunity to have provided analytical services for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

A handwritten signature in black ink, appearing to read "Sherry L. Chilcutt".

Sherry L. Chilcutt
Senior Chemist
Libby Environmental, Inc.

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

3322 South Bay Road NE

Ph: 360-352-2110

Olympia, WA 98506

Fax: 360-352-4154

Client: Herrera

Date: 7/25/19

Page: 1 of 1

Address: 2200 6th AVE.

Project Manager: George Iftner

City: Seattle State: WA Zip: 98121

Project Name: prairie pit

Phone: 206-787-8210 Fax: -

Location: Frederickson City, State: WA

Client Project # 16-06310-011

Collector: G. Iftner Date of Collection: see below

Email: giftner@herrerainc.com



Sample Number	Date	Time	Sample Type	Container Type	VOC 8260	Halogenated	NWTPH-Gx	BTEX 8021	NWTPH-HCID	NWTPH-Dx	c PAH 8270 + Napht	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	Oxygens	Metals (Cd, Cr, Pb, Hg, Zn)	Field Notes
1 TP-J-0	7/22/19	10:15	Soil	2 Was 1 Jar	X	X				X							X		7-29-19
2 TP-L-0	7/23/19	15:30								(X)			(X)				(X)		Added per
3 Ditch-S-0		13:50																	George via
4 Ditch-G-0		15:10								(X)							(X)		email 48 hr
5 EXC-E-SP2		10:20								(X)							(X)		
6 EXC-E1-4		10:30								(X)			(X)				(X)		
7 EXC-E2-0		10:35								(X)			(X)				(X)		
8 EXC-F1-0		14:00								(X)			(X)				(X)	(X)	
9 EXC-F2-0	Y	14:10																	
10 EXC-G1-1	7/24/19	12:10								(X)							(X)		
11 EXC-G2-1		12:20								(X)							(X)		
12 EXC-G3-2.5		12:30								(X)							(X)		
13 EXC-G6-2.5		13:00																	
14 EXC-G4-1	7/25/19	09:40								(X)							(X)		
15 EXC-G5-1		10:10								(X)							(X)		
16 EXC-G7-1		09:50															(X)		(X) added by G. Iftner via email 8/14/19. 48HR TAT
17																			

Relinquished by: George Iftner Date / Time: 7/25 14:33

Received by: [Signature] Date / Time: 7/25/19 1712

Relinquished by: _____ Date / Time: _____

Received by: _____ Date / Time: _____

Relinquished by: _____ Date / Time: _____

Received by: _____ Date / Time: _____

Sample Receipt

Good Condition?	Y	N
Cooler Temp.	°C	
Sample Temp.	°C	
Total Number of Containers		

Remarks:

ML

TAT: 24HR 48HR 5-DAY

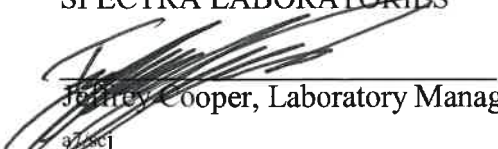
08/16/2019

Libby Environmental, Inc.
3322 South Bay Road NE
Olympia, WA 98506

Project: Prairie Pit
Sample Matrix: Soil
Date Sampled: 07/23/2019
Date Received: 07/29/2019
Spectra Project: 2019070878
Rush

<u>Client ID</u>	<u>Spectra #</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
TP-L-0	1	Total Nickel	2.4	mg/Kg	SW846 6010D
Ditch-6-0	2	Total Nickel	8.4	mg/Kg	SW846 6010D
Exc-E1-4	3	Total Nickel	6.5	mg/Kg	SW846 6010D
Exc-F1-0	4	TCLP Lead	0.258	mg/L	EPA 1311/6010D
Exc-F1-0	4	Total Nickel	6.4	mg/Kg	SW846 6010D
Exc-G1-1	5	Total Nickel	11.1	mg/Kg	SW846 6010D
Exc-G3-2.5	6	Total Nickel	10.6	mg/Kg	SW846 6010D
Exc-G4-1	7	Total Nickel	2.1	mg/Kg	SW846 6010D
Exc-G5-1	8	TCLP Lead	0.901	mg/L	EPA 1311/6010D
Exc-G5-1	8	Total Nickel	15.8	mg/Kg	SW846 6010D
Exc-G7-B1	9	Total Nickel	14.4	mg/Kg	SW846 6010D
Exc-H2-1	10	Total Nickel	8.8	mg/Kg	SW846 6010D
Exc-H3-1	11	Total Nickel	9.7	mg/Kg	SW846 6010D
Exc-H5C-5	12	Total Nickel	10.6	mg/Kg	SW846 6010D
Exc-H1B-1.5	13	Total Nickel	14.4	mg/Kg	SW846 6010D
Exc-H7-8	14	Total Nickel	10.7	mg/Kg	SW846 6010D
Exc-H6-6	15	Total Nickel	13.7	mg/Kg	SW846 6010D
Ditch-5B-1	16	Total Nickel	10.4	mg/Kg	SW846 6010D

SPECTRA LABORATORIES



Jeffrey Cooper, Laboratory Manager

08/16/2019

Libby Environmental, Inc.
3322 South Bay Road NE
Olympia, WA 98506

Project: Prairie Pit
Sample Matrix: Soil
Date Sampled: 07/26/2019
Date Received: 07/29/2019
Spectra Project: 2019070878
Rush

<u>Client ID</u>	<u>Spectra #</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Exc-H4-1	17	Total Nickel	11.5	mg/Kg	SW846 6010D
Exc-F2B-1.5	18	Total Nickel	4.1	mg/Kg	SW846 6010D

SPECTRA LABORATORIES



Jeffrey Cooper, Laboratory Manager

scj

8/16/2019

Libby Environmental, Inc
3322 South Bay Rd, NE
Olympia, WA 98506

Units: mg/L
Spectra Project: 2019080878
Applies to Spectra #'s 4,8
Analyst: SCJ

QUALITY CONTROL RESULTS
ICP Metals EPA 1311/6010D - TCLP Extract

Method Blank

Date Digested: 8/16/2019 Date Analyzed: 8/16/2019

<u>Element</u>	<u>Result</u>
Lead	< 0.025

Laboratory Control Sample (LCS)

Date Digested: 8/16/2019 Date Analyzed: 8/16/2019

<u>Element</u>	<u>Spike Added</u>	<u>LCS Conc.</u>	<u>LCS %Rec</u>
Lead	1.0	0.994	99.4

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 8/16/2019 Date Analyzed: 8/16/2019
Sample Spiked: 2019070767-1

<u>Element</u>	<u>Sample Conc.</u>	<u>Spike Conc.</u>	<u>MS Conc.</u>	<u>MS %Rec</u>	<u>MSD Conc</u>	<u>MSD %Rec</u>	<u>RPD</u>
Lead	0.000	1.0	0.933	93.3	0.930	93.0	0.3

Recovery Limits 75-125%

RPD Limit 20

Comment:

Spectra Laboratories


Jeffrey Cooper

Laboratory Manager

Libby Environmental, Inc. 209070878 Chain of Custody Record

www.LibbyEnvironmental.com

3322 South Bay Road NE Ph: 360-352-2110
Olympia, WA 98506 Fax: 360-352-4154

Date: 7/29/19 Page: 1 of 2

Client: Libby Environmental, Inc

Project Manager: Sherry Chilcott

Address: see above

Project Name: Prairie Pit

City: State: Zip:


Location: City, State: WA

Phone: Fax:

Collector: Date of Collection: 7/22/19-7/26/19

Client Project #

Email: Libby.env@gmail.com

 Sample Number	Date Depth	Time	Sample Type	Container Type													Field Notes	
					VOC 8260	NWTPH-Gx	BTEX 8021	NWTPH-HCID	NWTPH-Dx	NWTPH-Dw/Dx	c PAH 8270	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 6 Metals	RCRA 8 Metals		N, Total
1 TP-L-0	7-23-19	1530	Soil	Jar														
2 Ditch-6-0		1510																
3 EXC-E1-4		1030																
4 EXC-F1-0		1400																
5 EXC-G1-P	7-24-19	1210																
6 EXC-G3-2.5		1230																
7 EXC-G4-1	7-25-19	9:40																
8 EXC-G5-1		1010																
9 EXC-G7-B1	7-26-19	830																
10 EXC-H2-1		1100																
11 EXC-H3-1		1130																
12 EXC-H5C-5																		
13 EXC-H1B-1.5		1520																
14 EXC-H7-8		1420																
15 EXC-H6-6		1450																
16 Ditch-5B-1		1545																
17 EXC-H1-1		1400																

Relinquished by:	Date / Time	Received by:	Date / Time	Sample Receipt Good Condition? Y N Cooler Temp. °C Sample Temp. °C Total Number of Containers	Remarks: TAT: 24HR 48HR 5-DAY
Relinquished by:	Date / Time	Received by:	Date / Time		
Relinquished by:	Date / Time	Received by:	Date / Time		
Relinquished by:	Date / Time	Received by:	Date / Time		

LEGAL ACTION CLAUSE: In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.

Distribution: White - Lab, Yellow - File, Pink - Originator

Marie Holt

7
2019080878

From: Marie Holt
Sent: Wednesday, August 14, 2019 4:03 PM
To: Libby Environmental
Subject: RE: Add-on Analysis - Prairie Pit

Hello Jonelle!

I will pull these samples and submit for the additional testing.

RUSH TCLP Pb w/48 HR TAT:

Sample ID #4 EXC-F1-0
Sample ID #8 EXC-G5-1

Lori Hamilton (for Marie Holt)

From: Libby Environmental [mailto:libbyenv@gmail.com]
Sent: Wednesday, August 14, 2019 2:59 PM
To: Marie Holt <MarieH@spectra-lab.com>
Subject: Add-on Analysis - Prairie Pit

Hi Marie,

Our client has requested additional analysis on two samples:

Project: Prairie Pit
Spectra Project #: 2019070878
Samples: EXC-F1-0, EXC-G5-1
Add-on Analysis Requested: TCLP PB
TAT: 48HR

Do you still have enough volume to run this analysis? Thanks!

Jonelle Orozco
Office Assistant

Libby Environmental, Inc.
3322 South Bay Road NE
Olympia, WA 98506
360-352-2110 Office
www.LibbyEnvironmental.com



Libby Environmental, Inc.

3322 South Bay Road NE • Olympia, WA 98506-2957

August 2, 2019

George Iftner
Herrera Environmental
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Dear Mr. Iftner:

Please find enclosed the analytical data report for the Prairie Pit Project located in Fredrickson, Washington.

The results of the analyses are summarized in the attached tables. Applicable detection limits and QA/QC data are included. The sample(s) will be disposed of in 30 days unless we are contacted to arrange long term storage.

Libby Environmental, Inc. appreciates the opportunity to have provided analytical services for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

A handwritten signature in black ink, appearing to read "Sherry L. Chilcutt".

Sherry L. Chilcutt
Senior Chemist
Libby Environmental, Inc.

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

4139 Libby Road NE

Ph: 360-352-2110

Olympia, WA 98506

Fax: 360-352-4154

Client: Herrera Environmental

Address:

City: State: Zip:

Phone: Fax:

Client Project # 16-063-10-011

Date: 7/26/19

Page: 1 of 1

Project Manager: George Iffner

Project Name: Prairie Pit

Location:


City, State: Fredrickson, Wa

Collector: GI

Date of Collection: 7/26/19

Email:



					<div>WOC 8260 MTCA 8270</div> <div>NWTPH-Gx</div> <div>BTEX 8021</div> <div>NWTPH-HCID</div> <div>NWTPH-Dx</div> <div>c PAH 8270-Dx/Dx</div> <div>PAH 8270+Naphth</div> <div>Semi Vol 8270</div> <div>PCB 8082</div> <div>MTCA 5 Metals</div> <div>RCRA 8 Metals</div> <div>Metals (Cd, Cr, Pb, Ni, Zn)</div>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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Relinquished by: George Iffner Date / Time: 7/26/19 16:00

Received by: Tracy Gray Date / Time: 7/26/19 1605

Sample Receipt

Good Condition? (Y) N
Temp. °C
Seals Intact? (Y) N N/A
Total Number of Containers

Remarks: ML
TAT: 24HR 48HR 5-DAY

Libby Environmental, Inc.

PRAIRIE PIT PROJECT
Herrera Environmental
Frederickson, Washington
Libby Project # L190726-40
Client Project # 16-063-10-011

3322 South Bay Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@gmail.com

Volatile Organic Compounds including Oxygenates by EPA Method 8260C in Soil

Sample Description		Method Blank	Exc-G7B-1	Exc-H1-1	Exc-H2-1	Exc-H2-1 Dup	Exc-H3-1
Date Sampled	Reporting	N/A	7/26/19	7/26/19	7/26/19	7/26/19	7/26/19
Date Analyzed	Limits	7/26/19	7/26/19	7/26/19	7/26/19	7/26/19	7/26/19
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Dichlorodifluoromethane	0.06	nd	nd	nd	nd	nd	nd
Chloromethane	0.06	nd	nd	nd	nd	nd	nd
Vinyl chloride	0.02	nd	nd	nd	nd	nd	nd
Bromomethane	0.09	nd	nd	nd	nd	nd	nd
Chloroethane	0.06	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	0.05	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd	nd	nd	nd
Methylene chloride	0.02	nd	nd	nd	nd	nd	nd
Methyl <i>tert</i> - Butyl Ether (MTBE)	0.05	nd	nd	nd	nd	nd	nd
<i>trans</i> -1,2-Dichloroethene	0.02	nd	nd	nd	nd	nd	nd
<i>tert</i> - Butanol (TBA)	0.02	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.03	nd	nd	nd	nd	nd	nd
Ethyl- <i>tert</i> - Butal Ether (ETBE)	0.10	nd	nd	nd	nd	nd	nd
2,2-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd
<i>cis</i> -1,2-Dichloroethene	0.02	nd	nd	nd	nd	nd	nd
Chloroform	0.02	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	0.02	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	0.03	nd	nd	nd	nd	nd	nd
1,1-Dichloropropene	0.02	nd	nd	nd	nd	nd	nd
<i>tert</i> -Amyl Methyl Ether (TAME)	0.02	nd	nd	nd	nd	nd	nd
Benzene	0.02	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	0.03	nd	nd	nd	nd	nd	nd
Trichloroethene (TCE)	0.02	nd	nd	nd	nd	nd	nd
1,2-Dichloropropane	0.02	nd	nd	nd	nd	nd	nd
Dibromomethane	0.04	nd	nd	nd	nd	nd	nd
Bromodichloromethane	0.02	nd	nd	nd	nd	nd	nd
<i>cis</i> -1,3-Dichloropropene	0.02	nd	nd	nd	nd	nd	nd
Toluene	0.10	nd	nd	nd	nd	nd	nd
Trans-1,3-Dichloropropene	0.03	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	0.03	nd	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd	nd	nd	nd	nd	nd
1,3-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd
Dibromochloromethane	0.03	nd	nd	nd	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.005	nd	nd	nd	nd	nd	nd
Chlorobenzene	0.02	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.03	nd	nd	nd	nd	nd	nd
Ethylbenzene	0.05	nd	nd	nd	nd	nd	nd
Total Xylenes	0.15	nd	nd	nd	nd	nd	nd
Styrene	0.02	nd	nd	nd	nd	nd	nd

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Volatile Organic Compounds including Oxygenates by EPA Method 8260C in Soil

Sample Description		Method Blank	Exc-G7B-1	Exc-H1-1	Exc-H2-1	Exc-H2-1 Dup	Exc-H3-1
Date Sampled	Reporting	N/A	7/26/19	7/26/19	7/26/19	7/26/19	7/26/19
Date Analyzed	Limits (mg/kg)	7/26/19 (mg/kg)	7/26/19 (mg/kg)	7/26/19 (mg/kg)	7/26/19 (mg/kg)	7/26/19 (mg/kg)	7/26/19 (mg/kg)
Bromoform	0.03	nd	nd	nd	nd	nd	nd
Isopropylbenzene	0.05	nd	nd	nd	nd	nd	nd
1,2,3-Trichloropropane	0.05	nd	nd	nd	nd	nd	nd
Bromobenzene	0.03	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.03	nd	nd	nd	nd	nd	nd
n-Propylbenzene	0.04	nd	nd	nd	nd	nd	nd
2-Chlorotoluene	0.03	nd	nd	nd	nd	nd	nd
4-Chlorotoluene	0.03	nd	nd	nd	nd	nd	nd
1,3,5-Trimethylbenzene	0.03	nd	nd	nd	nd	nd	nd
tert-Butylbenzene	0.03	nd	nd	nd	nd	nd	nd
1,2,4-Trimethylbenzene	0.03	nd	nd	nd	nd	nd	nd
sec-Butylbenzene	0.03	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	0.03	nd	nd	nd	nd	nd	nd
Isopropyltoluene	0.03	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	0.03	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	0.03	nd	nd	nd	nd	nd	nd
n-Butylbenzene	0.05	nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	0.05	nd	nd	nd	nd	nd	nd
1,2,4-Trichlorobenzene	0.05	nd	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	0.10	nd	nd	nd	nd	nd	nd
Naphthalenes	0.10	nd	nd	nd	nd	nd	nd
1,2,3-Trichlorobenzene	0.10	nd	nd	nd	nd	nd	nd
Surrogate Recovery							
Dibromofluoromethane		114	98	100	112	98	97
1,2-Dichloroethane-d4		117	104	107	116	121	126
Toluene-d8		100	93	99	97	100	99
4-Bromofluorobenzene		74	74	73	72	76	75

"nd" Indicates not detected at listed detection limit.

"int" Indicates that interference prevents determination.

* ANALYZED BY SIM

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Kodey Eley

Libby Environmental, Inc.

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Volatile Organic Compounds including Oxygenates by EPA Method 8260C in Soil

Sample Description		Exc-H5A-5	Exc-H5B-5	Exc-H7-8	Exc-H6-6	Exc-H4-1
Date Sampled	Reporting	7/26/19	7/26/19	7/26/19	7/26/19	7/26/19
Date Analyzed	Limits	7/26/19	7/26/19	7/26/19	7/26/19	7/26/19
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Dichlorodifluoromethane	0.06	nd	nd	nd	nd	nd
Chloromethane	0.06	nd	nd	nd	nd	nd
Vinyl chloride	0.02	nd	nd	nd	nd	nd
Bromomethane	0.09	nd	nd	nd	nd	nd
Chloroethane	0.06	nd	nd	nd	nd	nd
Trichlorofluoromethane	0.05	nd	nd	nd	nd	nd
1,1-Dichloroethene	0.05	nd	nd	nd	nd	nd
Methylene chloride	0.02	nd	nd	nd	nd	nd
Methyl <i>tert</i> - Butyl Ether (MTBE)	0.05	nd	nd	nd	nd	nd
<i>trans</i> -1,2-Dichloroethene	0.02	nd	nd	nd	nd	nd
<i>tert</i> - Butanol (TBA)	0.02	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.03	nd	nd	nd	nd	nd
Ethyl- <i>tert</i> - Butal Ether (ETBE)	0.10	nd	nd	nd	nd	nd
2,2-Dichloropropane	0.05	nd	nd	nd	nd	nd
<i>cis</i> -1,2-Dichloroethene	0.02	nd	nd	nd	nd	nd
Chloroform	0.02	nd	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	0.02	nd	nd	nd	nd	nd
Carbon tetrachloride	0.03	nd	nd	nd	nd	nd
1,1-Dichloropropene	0.02	nd	nd	nd	nd	nd
<i>tert</i> -Amyl Methyl Ether (TAME)	0.02	nd	nd	nd	nd	nd
Benzene	0.02	nd	nd	nd	nd	nd
1,2-Dichloroethane (EDC)	0.03	nd	nd	nd	nd	nd
Trichloroethene (TCE)	0.02	nd	nd	nd	nd	nd
1,2-Dichloropropane	0.02	nd	nd	nd	nd	nd
Dibromomethane	0.04	nd	nd	nd	nd	nd
Bromodichloromethane	0.02	nd	nd	nd	nd	nd
<i>cis</i> -1,3-Dichloropropene	0.02	nd	nd	nd	nd	nd
Toluene	0.10	nd	nd	nd	nd	nd
Trans-1,3-Dichloropropene	0.03	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	0.03	nd	nd	nd	nd	nd
Tetrachloroethene (PCE)	0.02	nd	nd	nd	nd	nd
1,3-Dichloropropane	0.05	nd	nd	nd	nd	nd
Dibromochloromethane	0.03	nd	nd	nd	nd	nd
1,2-Dibromoethane (EDB) *	0.005	nd	nd	nd	nd	nd
Chlorobenzene	0.02	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.03	nd	nd	nd	nd	nd
Ethylbenzene	0.05	nd	nd	nd	nd	nd
Total Xylenes	0.15	nd	nd	nd	nd	nd
Styrene	0.02	nd	nd	nd	nd	nd

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Volatile Organic Compounds including Oxygenates by EPA Method 8260C in Soil

Sample Description		Exc-H5A-5	Exc-H5B-5	Exc-H7-8	Exc-H6-6	Exc-H4-1
Date Sampled	Reporting	7/26/19	7/26/19	7/26/19	7/26/19	7/26/19
Date Analyzed	Limits	7/26/19	7/26/19	7/26/19	7/26/19	7/26/19
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Bromoform	0.03	nd	nd	nd	nd	nd
Isopropylbenzene	0.05	nd	nd	nd	nd	nd
1,2,3-Trichloropropane	0.05	nd	nd	nd	nd	nd
Bromobenzene	0.03	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.03	nd	nd	nd	nd	nd
n-Propylbenzene	0.04	nd	nd	nd	nd	nd
2-Chlorotoluene	0.03	nd	nd	nd	nd	nd
4-Chlorotoluene	0.03	nd	nd	nd	nd	nd
1,3,5-Trimethylbenzene	0.03	nd	nd	nd	nd	nd
tert-Butylbenzene	0.03	nd	nd	nd	nd	nd
1,2,4-Trimethylbenzene	0.03	nd	nd	nd	nd	nd
sec-Butylbenzene	0.03	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	0.03	nd	nd	nd	nd	nd
Isopropyltoluene	0.03	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	0.03	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	0.03	nd	nd	nd	nd	nd
n-Butylbenzene	0.05	nd	nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	0.05	nd	nd	nd	nd	nd
1,2,4-Trichlorobenzene	0.05	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	0.10	nd	nd	nd	nd	nd
Naphthalenes	0.10	nd	nd	nd	nd	nd
1,2,3-Trichlorobenzene	0.10	nd	nd	nd	nd	nd
Surrogate Recovery						
Dibromofluoromethane		102	96	103	103	98
1,2-Dichloroethane-d4		116	119	119	121	125
Toluene-d8		101	99	99	101	98
4-Bromofluorobenzene		79	102	72	78	72

"nd" Indicates not detected at listed detection limit.

"int" Indicates that interference prevents determination.

* ANALYZED BY SIM

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ANALYSES PERFORMED BY: Kodey Eley

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QA/QC Data - EPA 8260C Analyses

Sample Identification: Exc-5B-5							
Matrix Spike			Matrix Spike Duplicate			RPD	
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)	
1,1-Dichloroethene	0.50	0.33	66	0.50	0.33	65	1.5
Benzene	0.50	0.46	92	0.50	0.46	91	1.1
Toluene	0.50	0.53	105	0.50	0.51	102	3.3
Chlorobenzene	0.50	0.58	116	0.50	0.60	120	3.2
Trichloroethene (TCE)	0.50	0.40	81	0.50	0.42	84	4.5
Surrogate Recovery							
Dibromofluoromethane			99			106	
1,2-Dichloroethane-d4			116			125	
Toluene-d8			109			101	
4-Bromofluorobenzene			84			88	

Laboratory Control Sample			
	Spiked Conc. (mg/kg)	Measured Conc. (mg/kg)	Spike Recovery (%)
1,1-Dichloroethene	0.50	0.40	81
Benzene	0.50	0.45	89
Toluene	0.50	0.46	92
Chlorobenzene	0.50	0.61	122
Trichloroethene (TCE)	0.50	0.41	81
Surrogate Recovery			
Dibromofluoromethane			121
1,2-Dichloroethane-d4			115
Toluene-d8			97
4-Bromofluorobenzene			71

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 65%-135%
ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Kodey Eley

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Analyses of Gasoline (NWTPH-Gx) in Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (mg/kg)
Method Blank	7/26/19	100%	nd
Exc-G7B-1	7/26/19	93%	nd
Exc-H1-1	7/26/19	99%	nd
Exc-H2-1	7/26/19	97%	nd
Exc-H2-1 Dup	7/26/19	100%	nd
Exc-H5A-5	7/26/19	99%	nd
Exc-H5B-5	7/26/19	99%	nd
Exc-H7-8	7/26/19	99%	nd
Exc-H6-6	7/26/19	101%	nd
Exc-H4-1	7/26/19	98%	nd

Practical Quantitation Limit	10
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"nd" Indicates not detected at the listed detection limits.

"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (Toluene-d8): 65% TO 135%

ANALYSES PERFORMED BY: Kodey Eley

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Analyses of Diesel & Oil (NWTPH-Dx/Dx Extended) in Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel (mg/kg)	Oil (mg/kg)
Method Blank	7/26/19	102	nd	nd
Exc-G7B-1	7/26/19	102	nd	nd
Exc-H1-1	7/26/19	88	nd	1200
Exc-H2-1	7/26/19	105	nd	nd
Exc-H2-1 Dup	7/26/19	80	nd	nd
Exc-H3-1	7/26/19	98	nd	nd
Exc-H5C-5	7/26/19	92	nd	256
Exc-H1B-1.5	7/26/19	85	nd	nd
Exc-H7-8	7/26/19	93	nd	nd
Exc-H6-6	7/26/19	106	nd	nd
Ditch-5B-1	7/26/19	104	nd	nd
Exc-H4-1	7/26/19	88	nd	nd
Exc-F2B-1.5	7/26/19	83	nd	nd
Exc-F2B-1.5 Dup	7/26/19	83	nd	nd
Practical Quantitation Limit			50	250

"nd" Indicates not detected at the listed detection limits.

"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Kodey Eley

Libby Environmental, Inc.

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Analyses of PCB (Polychlorinated Biphenyls) in Soil by EPA Method 8082

Sample Description	PQL	Method Blank	LCS	Exc-H5C-5	Exc-F2B- 1.5	Exc-F2B- 1.5 Dup	Exc-H5C-5 MS
Date Sampled		N/A	N/A	7/26/19	7/26/19	7/26/19	7/26/19
Date Analyzed		7/31/19	7/31/19	7/31/19	7/31/19	7/31/19	7/31/19
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Aroclor 1016	0.1	nd	102%	nd	nd	nd	99%
Aroclor 1221	0.1	nd		nd	nd	nd	
Aroclor 1232	0.1	nd		nd	nd	nd	
Aroclor 1242	0.1	nd		nd	nd	nd	
Aroclor 1248	0.1	nd		nd	nd	nd	
Aroclor 1254	0.1	nd		nd	nd	nd	
Aroclor 1260	0.1	nd	95%	nd	nd	nd	106%
Surrogate Recovery							
TCMX		104	102	100	84	123	102
DCBP		97	100	112	99	111	105

"nd" Indicates not detected at listed detection limit.

"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE 65% TO 135%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%

ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Paul Burke

Libby Environmental, Inc.

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Analyses of Total Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Zinc (mg/kg)
Method Blank	7/30/19	nd	nd	nd	nd
Exc-G7B-1	7/30/19	nd	nd	nd	10
Exc-H2-1	7/30/19	nd	nd	nd	13
Exc-H3-1	7/30/19	78	nd	8.9	9.0
Exc-H5C-5	7/30/19	42	nd	12	6.8
Exc-H1B-1.5	7/30/19	nd	nd	nd	12
Exc-H7-8	7/30/19	nd	nd	7.0	14
Exc-H6-6	7/30/19	6.7	nd	7.4	15
Ditch-5B-1	7/30/19	10	nd	nd	7.9
Exc-H4-1	7/30/19	nd	nd	nd	13
Exc-F2B-1.5	7/30/19	nd	nd	nd	9.3
Exc-F2B-1.5 Dup	7/30/19	nd	nd	nd	9.8
Practical Quantitation Limit		5.0	1.0	5.0	5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson

Libby Environmental, Inc.

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QA/QC for Total Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead (% Recovery)	Cadmium (% Recovery)	Chromium (% Recovery)	Zinc (% Recovery)
LCS	7/30/19	102%	108%	105%	93%
EXC-F2B-1.5 MS	7/30/19	90%	85%	85%	87%
EXC-F2B-1.5 MSD	7/30/19	94%	86%	85%	91%
RPD	7/30/19	4%	1%	0%	4%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%

ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Dirk Peterson



Fremont
Analytical

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Libby Environmental
Sherry Chilcutt
3322 South Bay Road NE
Olympia, WA 98506

RE: Prairie Pit
Work Order Number: 1907372

August 02, 2019

Attention Sherry Chilcutt:

Fremont Analytical, Inc. received 18 sample(s) on 7/29/2019 for the analyses presented in the following report.

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)
Sample Moisture (Percent Moisture)

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

CLIENT: Libby Environmental
Project: Prairie Pit
Work Order: 1907372

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1907372-001	TP-L-0	07/23/2019 10:15 AM	07/29/2019 2:52 PM
1907372-002	Ditch-6-0	07/23/2019 3:10 PM	07/29/2019 2:52 PM
1907372-003	EXC-E1-4	07/23/2019 10:30 AM	07/29/2019 2:52 PM
1907372-004	EXC-F1-0	07/23/2019 2:00 PM	07/29/2019 2:52 PM
1907372-005	EXC-G1-1	07/24/2019 12:10 PM	07/29/2019 2:52 PM
1907372-006	EXC-G3-2.5	07/24/2019 12:30 PM	07/29/2019 2:52 PM
1907372-007	EXC-G4-1	07/25/2019 9:40 AM	07/29/2019 2:52 PM
1907372-008	EXC-G5-1	07/25/2019 10:10 AM	07/29/2019 2:52 PM
1907372-009	EXC-G7-B-1	07/26/2019 8:30 AM	07/29/2019 2:52 PM
1907372-010	EXC-H2-1	07/26/2019 11:00 AM	07/29/2019 2:52 PM
1907372-011	EXC-H3-1	07/26/2019 11:30 AM	07/29/2019 2:52 PM
1907372-012	EXC-H5c-5	07/26/2019 12:00 AM	07/29/2019 2:52 PM
1907372-013	EXC-H1B-1.5	07/26/2019 3:20 PM	07/29/2019 2:52 PM
1907372-014	EXC-H7-8	07/26/2019 2:20 PM	07/29/2019 2:52 PM
1907372-015	EXC-H6-6	07/26/2019 2:50 PM	07/29/2019 2:52 PM
1907372-016	Ditch-5B-1	07/26/2019 3:45 PM	07/29/2019 2:52 PM
1907372-017	EXC-F2B-1.5	07/26/2019 3:55 PM	07/29/2019 2:52 PM
1907372-018	EXC-H4-1	07/26/2019 2:00 PM	07/29/2019 2:52 PM

CLIENT: Libby Environmental**Project:** Prairie Pit

I. SAMPLE RECEIPT:

Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

8/2/19: Revision 1 includes a revised sample ID.

Qualifiers:

- * - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below Reporting Limit
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit
- R - High relative percent difference observed

Acronyms:

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/23/2019 10:15:00 AM

Project: Prairie Pit

Lab ID: 1907372-001

Matrix: Soil

Client Sample ID: TP-L-0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	50.1		µg/Kg-dry	1	7/30/2019 11:10:23 PM
2-Methylnaphthalene	ND	50.1		µg/Kg-dry	1	7/30/2019 11:10:23 PM
1-Methylnaphthalene	ND	50.1		µg/Kg-dry	1	7/30/2019 11:10:23 PM
Benz(a)anthracene	ND	50.1		µg/Kg-dry	1	7/30/2019 11:10:23 PM
Chrysene	ND	50.1		µg/Kg-dry	1	7/30/2019 11:10:23 PM
Benzo(b)fluoranthene	ND	50.1		µg/Kg-dry	1	7/30/2019 11:10:23 PM
Benzo(k)fluoranthene	ND	50.1		µg/Kg-dry	1	7/30/2019 11:10:23 PM
Benzo(a)pyrene	ND	50.1		µg/Kg-dry	1	7/30/2019 11:10:23 PM
Indeno(1,2,3-cd)pyrene	ND	50.1		µg/Kg-dry	1	7/30/2019 11:10:23 PM
Dibenz(a,h)anthracene	ND	50.1		µg/Kg-dry	1	7/30/2019 11:10:23 PM
Surr: 2-Fluorobiphenyl	62.5	19.4 - 157		%Rec	1	7/30/2019 11:10:23 PM
Surr: Terphenyl-d14 (surr)	60.2	31.5 - 173		%Rec	1	7/30/2019 11:10:23 PM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	22.0	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/23/2019 3:10:00 PM

Project: Prairie Pit

Lab ID: 1907372-002

Matrix: Soil

Client Sample ID: Ditch-6-0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	42.3		µg/Kg-dry	1	7/30/2019 11:51:42 PM
2-Methylnaphthalene	ND	42.3		µg/Kg-dry	1	7/30/2019 11:51:42 PM
1-Methylnaphthalene	ND	42.3		µg/Kg-dry	1	7/30/2019 11:51:42 PM
Benz(a)anthracene	ND	42.3		µg/Kg-dry	1	7/30/2019 11:51:42 PM
Chrysene	ND	42.3		µg/Kg-dry	1	7/30/2019 11:51:42 PM
Benzo(b)fluoranthene	ND	42.3		µg/Kg-dry	1	7/30/2019 11:51:42 PM
Benzo(k)fluoranthene	ND	42.3		µg/Kg-dry	1	7/30/2019 11:51:42 PM
Benzo(a)pyrene	ND	42.3		µg/Kg-dry	1	7/30/2019 11:51:42 PM
Indeno(1,2,3-cd)pyrene	ND	42.3		µg/Kg-dry	1	7/30/2019 11:51:42 PM
Dibenz(a,h)anthracene	ND	42.3		µg/Kg-dry	1	7/30/2019 11:51:42 PM
Surr: 2-Fluorobiphenyl	78.2	19.4 - 157		%Rec	1	7/30/2019 11:51:42 PM
Surr: Terphenyl-d14 (surr)	102	31.5 - 173		%Rec	1	7/30/2019 11:51:42 PM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	7.31	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/23/2019 10:30:00 AM

Project: Prairie Pit

Lab ID: 1907372-003

Matrix: Soil

Client Sample ID: EXC-E1-4

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	44.6		µg/Kg-dry	1	7/31/2019 12:12:20 AM
2-Methylnaphthalene	ND	44.6		µg/Kg-dry	1	7/31/2019 12:12:20 AM
1-Methylnaphthalene	ND	44.6		µg/Kg-dry	1	7/31/2019 12:12:20 AM
Benz(a)anthracene	ND	44.6		µg/Kg-dry	1	7/31/2019 12:12:20 AM
Chrysene	ND	44.6		µg/Kg-dry	1	7/31/2019 12:12:20 AM
Benzo(b)fluoranthene	ND	44.6		µg/Kg-dry	1	7/31/2019 12:12:20 AM
Benzo(k)fluoranthene	ND	44.6		µg/Kg-dry	1	7/31/2019 12:12:20 AM
Benzo(a)pyrene	ND	44.6		µg/Kg-dry	1	7/31/2019 12:12:20 AM
Indeno(1,2,3-cd)pyrene	ND	44.6		µg/Kg-dry	1	7/31/2019 12:12:20 AM
Dibenz(a,h)anthracene	ND	44.6		µg/Kg-dry	1	7/31/2019 12:12:20 AM
Surr: 2-Fluorobiphenyl	65.8	19.4 - 157		%Rec	1	7/31/2019 12:12:20 AM
Surr: Terphenyl-d14 (surr)	72.7	31.5 - 173		%Rec	1	7/31/2019 12:12:20 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	13.4	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental
Project: Prairie Pit
Lab ID: 1907372-004
Client Sample ID: EXC-F1-0

Collection Date: 7/23/2019 2:00:00 PM

Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)</u>				Batch ID: 25341		Analyst: SB
Naphthalene	ND	40.9		µg/Kg-dry	1	7/31/2019 12:33:01 AM
2-Methylnaphthalene	ND	40.9		µg/Kg-dry	1	7/31/2019 12:33:01 AM
1-Methylnaphthalene	ND	40.9		µg/Kg-dry	1	7/31/2019 12:33:01 AM
Benz(a)anthracene	ND	40.9		µg/Kg-dry	1	7/31/2019 12:33:01 AM
Chrysene	ND	40.9		µg/Kg-dry	1	7/31/2019 12:33:01 AM
Benzo(b)fluoranthene	ND	40.9		µg/Kg-dry	1	7/31/2019 12:33:01 AM
Benzo(k)fluoranthene	ND	40.9		µg/Kg-dry	1	7/31/2019 12:33:01 AM
Benzo(a)pyrene	ND	40.9		µg/Kg-dry	1	7/31/2019 12:33:01 AM
Indeno(1,2,3-cd)pyrene	ND	40.9		µg/Kg-dry	1	7/31/2019 12:33:01 AM
Dibenz(a,h)anthracene	ND	40.9		µg/Kg-dry	1	7/31/2019 12:33:01 AM
Surr: 2-Fluorobiphenyl	83.9	19.4 - 157		%Rec	1	7/31/2019 12:33:01 AM
Surr: Terphenyl-d14 (surr)	100	31.5 - 173		%Rec	1	7/31/2019 12:33:01 AM
<u>Sample Moisture (Percent Moisture)</u>				Batch ID: R52935		Analyst: KP
Percent Moisture	7.80	0.500		wt%	1	7/29/2019 3:24:07 PM



Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/24/2019 12:10:00 PM

Project: Prairie Pit

Lab ID: 1907372-005

Matrix: Soil

Client Sample ID: EXC-G1-1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	38.7		µg/Kg-dry	1	7/31/2019 12:53:38 AM
2-Methylnaphthalene	ND	38.7		µg/Kg-dry	1	7/31/2019 12:53:38 AM
1-Methylnaphthalene	ND	38.7		µg/Kg-dry	1	7/31/2019 12:53:38 AM
Benz(a)anthracene	ND	38.7		µg/Kg-dry	1	7/31/2019 12:53:38 AM
Chrysene	ND	38.7		µg/Kg-dry	1	7/31/2019 12:53:38 AM
Benzo(b)fluoranthene	ND	38.7		µg/Kg-dry	1	7/31/2019 12:53:38 AM
Benzo(k)fluoranthene	ND	38.7		µg/Kg-dry	1	7/31/2019 12:53:38 AM
Benzo(a)pyrene	ND	38.7		µg/Kg-dry	1	7/31/2019 12:53:38 AM
Indeno(1,2,3-cd)pyrene	ND	38.7		µg/Kg-dry	1	7/31/2019 12:53:38 AM
Dibenz(a,h)anthracene	ND	38.7		µg/Kg-dry	1	7/31/2019 12:53:38 AM
Surr: 2-Fluorobiphenyl	73.9	19.4 - 157		%Rec	1	7/31/2019 12:53:38 AM
Surr: Terphenyl-d14 (surr)	96.1	31.5 - 173		%Rec	1	7/31/2019 12:53:38 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	4.38	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/24/2019 12:30:00 PM

Project: Prairie Pit

Lab ID: 1907372-006

Matrix: Soil

Client Sample ID: EXC-G3-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	38.7		µg/Kg-dry	1	7/31/2019 1:14:14 AM
2-Methylnaphthalene	ND	38.7		µg/Kg-dry	1	7/31/2019 1:14:14 AM
1-Methylnaphthalene	ND	38.7		µg/Kg-dry	1	7/31/2019 1:14:14 AM
Benz(a)anthracene	ND	38.7		µg/Kg-dry	1	7/31/2019 1:14:14 AM
Chrysene	ND	38.7		µg/Kg-dry	1	7/31/2019 1:14:14 AM
Benzo(b)fluoranthene	ND	38.7		µg/Kg-dry	1	7/31/2019 1:14:14 AM
Benzo(k)fluoranthene	ND	38.7		µg/Kg-dry	1	7/31/2019 1:14:14 AM
Benzo(a)pyrene	ND	38.7		µg/Kg-dry	1	7/31/2019 1:14:14 AM
Indeno(1,2,3-cd)pyrene	ND	38.7		µg/Kg-dry	1	7/31/2019 1:14:14 AM
Dibenz(a,h)anthracene	ND	38.7		µg/Kg-dry	1	7/31/2019 1:14:14 AM
Surr: 2-Fluorobiphenyl	75.7	19.4 - 157		%Rec	1	7/31/2019 1:14:14 AM
Surr: Terphenyl-d14 (surr)	74.4	31.5 - 173		%Rec	1	7/31/2019 1:14:14 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	8.58	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/25/2019 9:40:00 AM

Project: Prairie Pit

Lab ID: 1907372-007

Matrix: Soil

Client Sample ID: EXC-G4-1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	41.6		µg/Kg-dry	1	7/31/2019 1:34:53 AM
2-Methylnaphthalene	ND	41.6		µg/Kg-dry	1	7/31/2019 1:34:53 AM
1-Methylnaphthalene	ND	41.6		µg/Kg-dry	1	7/31/2019 1:34:53 AM
Benz(a)anthracene	ND	41.6		µg/Kg-dry	1	7/31/2019 1:34:53 AM
Chrysene	ND	41.6		µg/Kg-dry	1	7/31/2019 1:34:53 AM
Benzo(b)fluoranthene	ND	41.6		µg/Kg-dry	1	7/31/2019 1:34:53 AM
Benzo(k)fluoranthene	ND	41.6		µg/Kg-dry	1	7/31/2019 1:34:53 AM
Benzo(a)pyrene	ND	41.6		µg/Kg-dry	1	7/31/2019 1:34:53 AM
Indeno(1,2,3-cd)pyrene	ND	41.6		µg/Kg-dry	1	7/31/2019 1:34:53 AM
Dibenz(a,h)anthracene	ND	41.6		µg/Kg-dry	1	7/31/2019 1:34:53 AM
Surr: 2-Fluorobiphenyl	68.4	19.4 - 157		%Rec	1	7/31/2019 1:34:53 AM
Surr: Terphenyl-d14 (surr)	67.1	31.5 - 173		%Rec	1	7/31/2019 1:34:53 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	11.2	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/25/2019 10:10:00 AM

Project: Prairie Pit

Lab ID: 1907372-008

Matrix: Soil

Client Sample ID: EXC-G5-1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	40.0		µg/Kg-dry	1	7/31/2019 1:55:28 AM
2-Methylnaphthalene	ND	40.0		µg/Kg-dry	1	7/31/2019 1:55:28 AM
1-Methylnaphthalene	ND	40.0		µg/Kg-dry	1	7/31/2019 1:55:28 AM
Benz(a)anthracene	ND	40.0		µg/Kg-dry	1	7/31/2019 1:55:28 AM
Chrysene	ND	40.0		µg/Kg-dry	1	7/31/2019 1:55:28 AM
Benzo(b)fluoranthene	ND	40.0		µg/Kg-dry	1	7/31/2019 1:55:28 AM
Benzo(k)fluoranthene	ND	40.0		µg/Kg-dry	1	7/31/2019 1:55:28 AM
Benzo(a)pyrene	ND	40.0		µg/Kg-dry	1	7/31/2019 1:55:28 AM
Indeno(1,2,3-cd)pyrene	ND	40.0		µg/Kg-dry	1	7/31/2019 1:55:28 AM
Dibenz(a,h)anthracene	ND	40.0		µg/Kg-dry	1	7/31/2019 1:55:28 AM
Surr: 2-Fluorobiphenyl	73.5	19.4 - 157		%Rec	1	7/31/2019 1:55:28 AM
Surr: Terphenyl-d14 (surr)	72.0	31.5 - 173		%Rec	1	7/31/2019 1:55:28 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	4.10	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/26/2019 8:30:00 AM

Project: Prairie Pit

Lab ID: 1907372-009

Matrix: Soil

Client Sample ID: EXC-G7-B-1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	41.3		µg/Kg-dry	1	7/31/2019 2:16:03 AM
2-Methylnaphthalene	ND	41.3		µg/Kg-dry	1	7/31/2019 2:16:03 AM
1-Methylnaphthalene	ND	41.3		µg/Kg-dry	1	7/31/2019 2:16:03 AM
Benz(a)anthracene	ND	41.3		µg/Kg-dry	1	7/31/2019 2:16:03 AM
Chrysene	ND	41.3		µg/Kg-dry	1	7/31/2019 2:16:03 AM
Benzo(b)fluoranthene	ND	41.3		µg/Kg-dry	1	7/31/2019 2:16:03 AM
Benzo(k)fluoranthene	ND	41.3		µg/Kg-dry	1	7/31/2019 2:16:03 AM
Benzo(a)pyrene	ND	41.3		µg/Kg-dry	1	7/31/2019 2:16:03 AM
Indeno(1,2,3-cd)pyrene	ND	41.3		µg/Kg-dry	1	7/31/2019 2:16:03 AM
Dibenz(a,h)anthracene	ND	41.3		µg/Kg-dry	1	7/31/2019 2:16:03 AM
Surr: 2-Fluorobiphenyl	73.7	19.4 - 157		%Rec	1	7/31/2019 2:16:03 AM
Surr: Terphenyl-d14 (surr)	83.9	31.5 - 173		%Rec	1	7/31/2019 2:16:03 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	3.35	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/26/2019 11:00:00 AM

Project: Prairie Pit

Lab ID: 1907372-010

Matrix: Soil

Client Sample ID: EXC-H2-1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	37.2		µg/Kg-dry	1	7/31/2019 2:36:44 AM
2-Methylnaphthalene	ND	37.2		µg/Kg-dry	1	7/31/2019 2:36:44 AM
1-Methylnaphthalene	ND	37.2		µg/Kg-dry	1	7/31/2019 2:36:44 AM
Benz(a)anthracene	ND	37.2		µg/Kg-dry	1	7/31/2019 2:36:44 AM
Chrysene	ND	37.2		µg/Kg-dry	1	7/31/2019 2:36:44 AM
Benzo(b)fluoranthene	ND	37.2		µg/Kg-dry	1	7/31/2019 2:36:44 AM
Benzo(k)fluoranthene	ND	37.2		µg/Kg-dry	1	7/31/2019 2:36:44 AM
Benzo(a)pyrene	ND	37.2		µg/Kg-dry	1	7/31/2019 2:36:44 AM
Indeno(1,2,3-cd)pyrene	ND	37.2		µg/Kg-dry	1	7/31/2019 2:36:44 AM
Dibenz(a,h)anthracene	ND	37.2		µg/Kg-dry	1	7/31/2019 2:36:44 AM
Surr: 2-Fluorobiphenyl	67.6	19.4 - 157		%Rec	1	7/31/2019 2:36:44 AM
Surr: Terphenyl-d14 (surr)	77.5	31.5 - 173		%Rec	1	7/31/2019 2:36:44 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	8.13	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/26/2019 11:30:00 AM

Project: Prairie Pit

Lab ID: 1907372-011

Matrix: Soil

Client Sample ID: EXC-H3-1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	40.2		µg/Kg-dry	1	7/31/2019 3:38:29 AM
2-Methylnaphthalene	ND	40.2		µg/Kg-dry	1	7/31/2019 3:38:29 AM
1-Methylnaphthalene	ND	40.2		µg/Kg-dry	1	7/31/2019 3:38:29 AM
Benz(a)anthracene	ND	40.2		µg/Kg-dry	1	7/31/2019 3:38:29 AM
Chrysene	ND	40.2		µg/Kg-dry	1	7/31/2019 3:38:29 AM
Benzo(b)fluoranthene	ND	40.2		µg/Kg-dry	1	7/31/2019 3:38:29 AM
Benzo(k)fluoranthene	ND	40.2		µg/Kg-dry	1	7/31/2019 3:38:29 AM
Benzo(a)pyrene	ND	40.2		µg/Kg-dry	1	7/31/2019 3:38:29 AM
Indeno(1,2,3-cd)pyrene	ND	40.2		µg/Kg-dry	1	7/31/2019 3:38:29 AM
Dibenz(a,h)anthracene	ND	40.2		µg/Kg-dry	1	7/31/2019 3:38:29 AM
Surr: 2-Fluorobiphenyl	83.4	19.4 - 157		%Rec	1	7/31/2019 3:38:29 AM
Surr: Terphenyl-d14 (surr)	103	31.5 - 173		%Rec	1	7/31/2019 3:38:29 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	4.42	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/26/2019

Project: Prairie Pit

Lab ID: 1907372-012

Matrix: Soil

Client Sample ID: EXC-H5c-5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	37.8		µg/Kg-dry	1	7/31/2019 3:59:02 AM
2-Methylnaphthalene	ND	37.8		µg/Kg-dry	1	7/31/2019 3:59:02 AM
1-Methylnaphthalene	ND	37.8		µg/Kg-dry	1	7/31/2019 3:59:02 AM
Benz(a)anthracene	ND	37.8		µg/Kg-dry	1	7/31/2019 3:59:02 AM
Chrysene	ND	37.8		µg/Kg-dry	1	7/31/2019 3:59:02 AM
Benzo(b)fluoranthene	ND	37.8		µg/Kg-dry	1	7/31/2019 3:59:02 AM
Benzo(k)fluoranthene	ND	37.8		µg/Kg-dry	1	7/31/2019 3:59:02 AM
Benzo(a)pyrene	ND	37.8		µg/Kg-dry	1	7/31/2019 3:59:02 AM
Indeno(1,2,3-cd)pyrene	ND	37.8		µg/Kg-dry	1	7/31/2019 3:59:02 AM
Dibenz(a,h)anthracene	ND	37.8		µg/Kg-dry	1	7/31/2019 3:59:02 AM
Surr: 2-Fluorobiphenyl	95.0	19.4 - 157		%Rec	1	7/31/2019 3:59:02 AM
Surr: Terphenyl-d14 (surr)	105	31.5 - 173		%Rec	1	7/31/2019 3:59:02 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	4.07	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/26/2019 3:20:00 PM

Project: Prairie Pit

Lab ID: 1907372-013

Matrix: Soil

Client Sample ID: EXC-H1B-1.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	42.0		µg/Kg-dry	1	7/31/2019 4:19:34 AM
2-Methylnaphthalene	ND	42.0		µg/Kg-dry	1	7/31/2019 4:19:34 AM
1-Methylnaphthalene	ND	42.0		µg/Kg-dry	1	7/31/2019 4:19:34 AM
Benz(a)anthracene	ND	42.0		µg/Kg-dry	1	7/31/2019 4:19:34 AM
Chrysene	ND	42.0		µg/Kg-dry	1	7/31/2019 4:19:34 AM
Benzo(b)fluoranthene	ND	42.0		µg/Kg-dry	1	7/31/2019 4:19:34 AM
Benzo(k)fluoranthene	ND	42.0		µg/Kg-dry	1	7/31/2019 4:19:34 AM
Benzo(a)pyrene	ND	42.0		µg/Kg-dry	1	7/31/2019 4:19:34 AM
Indeno(1,2,3-cd)pyrene	ND	42.0		µg/Kg-dry	1	7/31/2019 4:19:34 AM
Dibenz(a,h)anthracene	ND	42.0		µg/Kg-dry	1	7/31/2019 4:19:34 AM
Surr: 2-Fluorobiphenyl	93.2	19.4 - 157		%Rec	1	7/31/2019 4:19:34 AM
Surr: Terphenyl-d14 (surr)	95.0	31.5 - 173		%Rec	1	7/31/2019 4:19:34 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	6.64	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/26/2019 2:20:00 PM

Project: Prairie Pit

Lab ID: 1907372-014

Matrix: Soil

Client Sample ID: EXC-H7-8

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	42.2		µg/Kg-dry	1	7/31/2019 4:40:12 AM
2-Methylnaphthalene	ND	42.2		µg/Kg-dry	1	7/31/2019 4:40:12 AM
1-Methylnaphthalene	ND	42.2		µg/Kg-dry	1	7/31/2019 4:40:12 AM
Benz(a)anthracene	ND	42.2		µg/Kg-dry	1	7/31/2019 4:40:12 AM
Chrysene	ND	42.2		µg/Kg-dry	1	7/31/2019 4:40:12 AM
Benzo(b)fluoranthene	ND	42.2		µg/Kg-dry	1	7/31/2019 4:40:12 AM
Benzo(k)fluoranthene	ND	42.2		µg/Kg-dry	1	7/31/2019 4:40:12 AM
Benzo(a)pyrene	ND	42.2		µg/Kg-dry	1	7/31/2019 4:40:12 AM
Indeno(1,2,3-cd)pyrene	ND	42.2		µg/Kg-dry	1	7/31/2019 4:40:12 AM
Dibenz(a,h)anthracene	ND	42.2		µg/Kg-dry	1	7/31/2019 4:40:12 AM
Surr: 2-Fluorobiphenyl	80.6	19.4 - 157		%Rec	1	7/31/2019 4:40:12 AM
Surr: Terphenyl-d14 (surr)	97.2	31.5 - 173		%Rec	1	7/31/2019 4:40:12 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	8.06	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/26/2019 2:50:00 PM

Project: Prairie Pit

Lab ID: 1907372-015

Matrix: Soil

Client Sample ID: EXC-H6-6

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	43.7		µg/Kg-dry	1	7/31/2019 5:00:43 AM
2-Methylnaphthalene	ND	43.7		µg/Kg-dry	1	7/31/2019 5:00:43 AM
1-Methylnaphthalene	ND	43.7		µg/Kg-dry	1	7/31/2019 5:00:43 AM
Benz(a)anthracene	ND	43.7		µg/Kg-dry	1	7/31/2019 5:00:43 AM
Chrysene	ND	43.7		µg/Kg-dry	1	7/31/2019 5:00:43 AM
Benzo(b)fluoranthene	ND	43.7		µg/Kg-dry	1	7/31/2019 5:00:43 AM
Benzo(k)fluoranthene	ND	43.7		µg/Kg-dry	1	7/31/2019 5:00:43 AM
Benzo(a)pyrene	ND	43.7		µg/Kg-dry	1	7/31/2019 5:00:43 AM
Indeno(1,2,3-cd)pyrene	ND	43.7		µg/Kg-dry	1	7/31/2019 5:00:43 AM
Dibenz(a,h)anthracene	ND	43.7		µg/Kg-dry	1	7/31/2019 5:00:43 AM
Surr: 2-Fluorobiphenyl	77.0	19.4 - 157		%Rec	1	7/31/2019 5:00:43 AM
Surr: Terphenyl-d14 (surr)	91.1	31.5 - 173		%Rec	1	7/31/2019 5:00:43 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	13.7	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/26/2019 3:45:00 PM

Project: Prairie Pit

Lab ID: 1907372-016

Matrix: Soil

Client Sample ID: Ditch-5B-1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	39.1		µg/Kg-dry	1	7/31/2019 5:21:16 AM
2-Methylnaphthalene	ND	39.1		µg/Kg-dry	1	7/31/2019 5:21:16 AM
1-Methylnaphthalene	ND	39.1		µg/Kg-dry	1	7/31/2019 5:21:16 AM
Benz(a)anthracene	ND	39.1		µg/Kg-dry	1	7/31/2019 5:21:16 AM
Chrysene	ND	39.1		µg/Kg-dry	1	7/31/2019 5:21:16 AM
Benzo(b)fluoranthene	ND	39.1		µg/Kg-dry	1	7/31/2019 5:21:16 AM
Benzo(k)fluoranthene	ND	39.1		µg/Kg-dry	1	7/31/2019 5:21:16 AM
Benzo(a)pyrene	ND	39.1		µg/Kg-dry	1	7/31/2019 5:21:16 AM
Indeno(1,2,3-cd)pyrene	ND	39.1		µg/Kg-dry	1	7/31/2019 5:21:16 AM
Dibenz(a,h)anthracene	ND	39.1		µg/Kg-dry	1	7/31/2019 5:21:16 AM
Surr: 2-Fluorobiphenyl	91.0	19.4 - 157		%Rec	1	7/31/2019 5:21:16 AM
Surr: Terphenyl-d14 (surr)	102	31.5 - 173		%Rec	1	7/31/2019 5:21:16 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	1.43	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/26/2019 3:55:00 PM

Project: Prairie Pit

Lab ID: 1907372-017

Matrix: Soil

Client Sample ID: EXC-F2B-1.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	42.8		µg/Kg-dry	1	7/31/2019 5:41:54 AM
2-Methylnaphthalene	ND	42.8		µg/Kg-dry	1	7/31/2019 5:41:54 AM
1-Methylnaphthalene	ND	42.8		µg/Kg-dry	1	7/31/2019 5:41:54 AM
Benz(a)anthracene	ND	42.8		µg/Kg-dry	1	7/31/2019 5:41:54 AM
Chrysene	ND	42.8		µg/Kg-dry	1	7/31/2019 5:41:54 AM
Benzo(b)fluoranthene	ND	42.8		µg/Kg-dry	1	7/31/2019 5:41:54 AM
Benzo(k)fluoranthene	ND	42.8		µg/Kg-dry	1	7/31/2019 5:41:54 AM
Benzo(a)pyrene	ND	42.8		µg/Kg-dry	1	7/31/2019 5:41:54 AM
Indeno(1,2,3-cd)pyrene	ND	42.8		µg/Kg-dry	1	7/31/2019 5:41:54 AM
Dibenz(a,h)anthracene	ND	42.8		µg/Kg-dry	1	7/31/2019 5:41:54 AM
Surr: 2-Fluorobiphenyl	63.2	19.4 - 157		%Rec	1	7/31/2019 5:41:54 AM
Surr: Terphenyl-d14 (surr)	60.6	31.5 - 173		%Rec	1	7/31/2019 5:41:54 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	12.2	0.500		wt%	1	7/29/2019 3:24:07 PM
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Analytical Report

Work Order: 1907372
Date Reported: 8/2/2019

Client: Libby Environmental

Collection Date: 7/26/2019 2:00:00 PM

Project: Prairie Pit

Lab ID: 1907372-018

Matrix: Soil

Client Sample ID: EXC-H4-1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 25341

Analyst: SB

Naphthalene	ND	35.9		µg/Kg-dry	1	7/31/2019 6:02:28 AM
2-Methylnaphthalene	ND	35.9		µg/Kg-dry	1	7/31/2019 6:02:28 AM
1-Methylnaphthalene	ND	35.9		µg/Kg-dry	1	7/31/2019 6:02:28 AM
Benz(a)anthracene	ND	35.9		µg/Kg-dry	1	7/31/2019 6:02:28 AM
Chrysene	ND	35.9		µg/Kg-dry	1	7/31/2019 6:02:28 AM
Benzo(b)fluoranthene	ND	35.9		µg/Kg-dry	1	7/31/2019 6:02:28 AM
Benzo(k)fluoranthene	ND	35.9		µg/Kg-dry	1	7/31/2019 6:02:28 AM
Benzo(a)pyrene	ND	35.9		µg/Kg-dry	1	7/31/2019 6:02:28 AM
Indeno(1,2,3-cd)pyrene	ND	35.9		µg/Kg-dry	1	7/31/2019 6:02:28 AM
Dibenz(a,h)anthracene	ND	35.9		µg/Kg-dry	1	7/31/2019 6:02:28 AM
Surr: 2-Fluorobiphenyl	86.0	19.4 - 157		%Rec	1	7/31/2019 6:02:28 AM
Surr: Terphenyl-d14 (surr)	93.6	31.5 - 173		%Rec	1	7/31/2019 6:02:28 AM

Sample Moisture (Percent Moisture)

Batch ID: R52935

Analyst: KP

Percent Moisture	4.50	0.500		wt%	1	7/29/2019 3:24:07 PM
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Work Order: 1907372
CLIENT: Libby Environmental
Project: Prairie Pit

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: MB-25341	SampType: MBLK	Units: µg/Kg			Prep Date: 7/30/2019			RunNo: 52974			
Client ID: MBLKS	Batch ID: 25341				Analysis Date: 7/30/2019			SeqNo: 1046577			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	40.0									
2-Methylnaphthalene	ND	40.0									
1-Methylnaphthalene	ND	40.0									
Benz(a)anthracene	ND	40.0									
Chrysene	ND	40.0									
Benzo(b)fluoranthene	ND	40.0									
Benzo(k)fluoranthene	ND	40.0									
Benzo(a)pyrene	ND	40.0									
Indeno(1,2,3-cd)pyrene	ND	40.0									
Dibenz(a,h)anthracene	ND	40.0									
Surr: 2-Fluorobiphenyl	291		500.0		58.1	19.4	157				
Surr: Terphenyl-d14 (surr)	395		500.0		78.9	31.5	173				

Sample ID: LCS-25341	SampType: LCS	Units: µg/Kg			Prep Date: 7/30/2019			RunNo: 52974			
Client ID: LCSS	Batch ID: 25341				Analysis Date: 7/30/2019			SeqNo: 1046579			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	939	40.0	1,000	0	93.9	52.9	134				
2-Methylnaphthalene	1,050	40.0	1,000	0	105	45.1	135				
1-Methylnaphthalene	1,030	40.0	1,000	0	103	55.7	141				
Benz(a)anthracene	905	40.0	1,000	0	90.5	36.6	142				
Chrysene	967	40.0	1,000	0	96.7	43	165				
Benzo(b)fluoranthene	882	40.0	1,000	0	88.2	41	155				
Benzo(k)fluoranthene	1,020	40.0	1,000	0	102	30.6	164				
Benzo(a)pyrene	998	40.0	1,000	0	99.8	30.2	171				
Indeno(1,2,3-cd)pyrene	913	40.0	1,000	0	91.3	31.3	159				
Dibenz(a,h)anthracene	910	40.0	1,000	0	91.0	28	158				
Surr: 2-Fluorobiphenyl	439		500.0		87.9	19.4	157				
Surr: Terphenyl-d14 (surr)	476		500.0		95.1	31.5	173				

Work Order: 1907372
CLIENT: Libby Environmental
Project: Prairie Pit

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: 1907372-001ADUP		SampType: DUP		Units: µg/Kg-dry		Prep Date: 7/30/2019		RunNo: 52974			
Client ID: TP-L-0		Batch ID: 25341				Analysis Date: 7/30/2019		SeqNo: 1046581			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	50.3						0		30	
2-Methylnaphthalene	ND	50.3						0		30	
1-Methylnaphthalene	ND	50.3						0		30	
Benz(a)anthracene	ND	50.3						0		30	
Chrysene	ND	50.3						0		30	
Benzo(b)fluoranthene	ND	50.3						0		30	
Benzo(k)fluoranthene	ND	50.3						0		30	
Benzo(a)pyrene	ND	50.3						0		30	
Indeno(1,2,3-cd)pyrene	ND	50.3						0		30	
Dibenz(a,h)anthracene	ND	50.3						0		30	
Surr: 2-Fluorobiphenyl	483		628.9		76.8	19.4	157		0		
Surr: Terphenyl-d14 (surr)	422		628.9		67.1	31.5	173		0		

Sample ID: 1907372-010AMS		SampType: MS		Units: µg/Kg-dry		Prep Date: 7/30/2019		RunNo: 52974			
Client ID: EXC-H2-1		Batch ID: 25341				Analysis Date: 7/31/2019		SeqNo: 1046591			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	743	38.5	961.6	0	77.3	38.9	124				
2-Methylnaphthalene	721	38.5	961.6	0	74.9	42.8	151				
1-Methylnaphthalene	734	38.5	961.6	0	76.4	38.4	125				
Benz(a)anthracene	997	38.5	961.6	6.389	103	34.9	139				
Chrysene	756	38.5	961.6	0	78.7	45.2	146				
Benzo(b)fluoranthene	873	38.5	961.6	0	90.8	42.2	168				
Benzo(k)fluoranthene	717	38.5	961.6	0	74.5	20.5	150				
Benzo(a)pyrene	872	38.5	961.6	0	90.7	34.4	179				
Indeno(1,2,3-cd)pyrene	698	38.5	961.6	0	72.6	11.8	140				
Dibenz(a,h)anthracene	689	38.5	961.6	0	71.6	17.3	156				
Surr: 2-Fluorobiphenyl	390		480.8		81.1	19.4	157				
Surr: Terphenyl-d14 (surr)	464		480.8		96.4	31.5	173				

Work Order: 1907372
CLIENT: Libby Environmental
Project: Prairie Pit

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: 1907372-010AMSD		SampType: MSD		Units: µg/Kg-dry		Prep Date: 7/30/2019			RunNo: 52974		
Client ID: EXC-H2-1		Batch ID: 25341					Analysis Date: 7/31/2019			SeqNo: 1046592	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	976	40.2	1,006	0	97.0	38.9	124	743.2	27.1	30	
2-Methylnaphthalene	1,030	40.2	1,006	0	103	42.8	151	720.6	35.5	30	R
1-Methylnaphthalene	979	40.2	1,006	0	97.3	38.4	125	734.3	28.5	30	
Benz(a)anthracene	1,120	40.2	1,006	6.389	111	34.9	139	996.6	11.7	30	
Chrysene	1,020	40.2	1,006	0	101	45.2	146	756.4	29.2	30	
Benzo(b)fluoranthene	971	40.2	1,006	0	96.5	42.2	168	872.8	10.6	30	
Benzo(k)fluoranthene	1,130	40.2	1,006	0	112	20.5	150	716.8	44.4	30	R
Benzo(a)pyrene	1,140	40.2	1,006	0	113	34.4	179	871.9	26.8	30	
Indeno(1,2,3-cd)pyrene	1,000	40.2	1,006	0	99.6	11.8	140	698.4	35.7	30	R
Dibenz(a,h)anthracene	980	40.2	1,006	0	97.4	17.3	156	688.5	34.9	30	R
Surr: 2-Fluorobiphenyl	501		503.0		99.7	19.4	157		0		
Surr: Terphenyl-d14 (surr)	534		503.0		106	31.5	173		0		

NOTES:

R - High RPD observed, spike recovery is within range.

Work Order: 1907372
CLIENT: Libby Environmental
Project: Prairie Pit

QC SUMMARY REPORT

Sample Moisture (Percent Moisture)

Sample ID: 1907372-004ADUP		SampType: DUP		Units: wt%		Prep Date: 7/29/2019			RunNo: 52935		
Client ID: EXC-F1-0		Batch ID: R52935				Analysis Date: 7/29/2019			SeqNo: 1045928		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	7.09	0.500						7.799	9.58	20	

Sample ID: 1907372-016ADUP		SampType: DUP		Units: wt%		Prep Date: 7/29/2019			RunNo: 52935		
Client ID: Ditch-5B-1		Batch ID: R52935				Analysis Date: 7/29/2019			SeqNo: 1045941		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	1.39	0.500						1.432	2.79	20	

Client Name: **LIBBY**
 Logged by: **Clare Griggs**

Work Order Number: **1907372**
 Date Received: **7/29/2019 2:52:00 PM**

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
 2. How was the sample delivered? Client

Log In

3. Coolers are present? Yes ☒ No ☐ NA ☐
 4. Shipping container/cooler in good condition? Yes ☒ No ☐
 5. Custody Seals present on shipping container/cooler?
 (Refer to comments for Custody Seals not intact) Yes ☐ No ☐ Not Required ☒
 6. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
 7. Were all items received at a temperature of >0°C to 10.0°C * Yes ☐ No ☒ NA ☐
Refer to item information.
 8. Sample(s) in proper container(s)? Yes ☒ No ☐
 9. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
 10. Are samples properly preserved? Yes ☒ No ☐
 11. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
 12. Is there headspace in the VOA vials? Yes ☐ No ☐ NA ☒
 13. Did all samples containers arrive in good condition(unbroken)? Yes ☒ No ☐
 14. Does paperwork match bottle labels? Yes ☒ No ☐
 15. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
 16. Is it clear what analyses were requested? Yes ☒ No ☐
 17. Were all holding times able to be met? Yes ☒ No ☐

Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes ☒ No ☐ NA ☐

Person Notified: Kodev Elev Date: 7/30/2019
 By Whom: Clare Griggs Via: ☒ eMail ☐ Phone ☐ Fax ☐ In Person
 Regarding: Confirming sample names / COC.
 Client Instructions:

19. Additional remarks:

Item Information

Item #	Temp °C
Cooler	6.4
Sample	22.0

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

3322 South Bay Road NE

Ph: 360-352-2110

Olympia, WA 98506

Fax: 360-352-4154

Client: Libby Environmental, Inc

Address: See above

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

Client Project # _____

Date: 7/29/19

Page: 1 of 2

Project Manager: Sherry Chilcutt


Project Name: Prairie Pit

Location: _____ City, State: WA

Collector: _____ Date of Collection: 7/23-7/26

Email: Libby Env@gmail.com

Page 28 of 33

 Sample Number	Date	Time	Sample Type	Container Type	VOC 8260	NWTPH-Gx	BTEX 8021	NWTPH-HCID	NWTPH-Dx	NWTPH-Dx/Dx	PAH 8270 + Naphthalene	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	Field Notes
	Depth																
1 TPL-0	7-23-19	1015	Soil	4oz Jar						X							
2 Ditch-6-0		1516								X							
3 EXC-E1-4		1030								X							
4 EXC-F1-0		1400								X							
5 EXC-G1-1	7-24-19	1210								X							
6 EXC-G3-2.5		1230								X							
7 EXC-G4-1	7-25-19	0940								X							
8 EXC-G5-1		1010								X							
9 EXC-G7-B-1	7-26-19	0830								X							
10 EXC-H2-1		1106								X							
11 EXC-H3-1		1130								X							
12 EXC-H5C-5										X							
13 EXC-H1B-1.5		1520								X							
14 EXC-47-8		1420								X							
15 EXC-H6-6		1450								X							
16 Ditch-5B-1		1545								X							
17 EXC-F2B-1.5		1555								X							

Relinquished by:	Date / Time	Received by:	Date / Time	Sample Receipt		Remarks:
<u>[Signature]</u>	<u>7-29-19 1452</u>	<u>Kayla Peter</u>	<u>7/29/19 1452</u>	Good Condition?	Y N	
Relinquished by:	Date / Time	Received by:	Date / Time	Cooler Temp.	°C	
				Sample Temp.	°C	
Relinquished by:	Date / Time	Received by:	Date / Time	Total Number of Containers		TAT: 24HR 48HR 5-DAY

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506

Ph: 360-352-2110
Fax: 360-352-4154

Chain of Custody Record

www.LibbyEnvironmental.com

1907372

Client: Libby Environmental, Inc

Address:

City: State: Zip:

Phone: Fax:

Client Project #

Date: 7-29-19

Page: 2 of 2

Project Manager: Sherry Choleff

Project Name: Prairie Pit

Location: City, State: WA

Collector: Date of Collection: 7-26-19

Email: Libbyenv@gmail.com

Page 29 of 33



Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	NWTPH-Gx	BTEX 8021	NWTPH-HCID	NWTPH-Dx	NWTPH-Dx/Dx	c PAH 8270 + Naphthalene	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	Field Notes
1 <u>EXC-H1-1</u>	<u>—</u>	<u>1400</u>	<u>Soil</u>	<u>Jar</u>						<input checked="" type="checkbox"/>							
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	

Relinquished by: <u>KDC</u>	Date / Time: <u>7-29-19 1452</u>	Received by: <u>Kayla Pet</u>	Date / Time: <u>7/29/19 1452</u>	Sample Receipt Good Condition? Y N Cooler Temp. °C Sample Temp. °C Total Number of Containers	Remarks: TAT: 24HR <u>48HR</u> 5-DAY
Relinquished by:	Date / Time:	Received by:	Date / Time:		
Relinquished by:	Date / Time:	Received by:	Date / Time:		
Relinquished by:	Date / Time:	Received by:	Date / Time:		

LEGAL ACTION CLAUSE: In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc.

Chain of Custody Record

1907372

www.LibbyEnvironmental.com

3322 South Bay Road NE
Olympia, WA 98506

Ph: 360-352-2110
Fax: 360-352-4154

Client: Libby Environmental, Inc

Address: See above

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

Client Project # _____

Date: 7/29/19

Page: 1

of 2

Project Manager: Sherry Chilcutt

Project Name: Prairie Pit

Location: _____


City, State: WA

Collector: _____

Date of Collection: 7/23-7/26

Email: LibbyEnv@gmail.com

Page 30 of 33

Client Project #																	
	Date	Time	Sample Type	Container Type													Field Notes
					VOC 8260	NWTPH-Gx	BTEX 8021	NWTPH-HCID	NWTPH-Dx	NWTPH-Dx/Dx	c PAH 8270 + Naphthalene	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	
Sample Number	Depth																
1 TPL-0	7-23-19	1015	Soil	4oz Jar							X						
2 Ditch-6-0		1516									X						
3 EXC-EI-4		1030									X						
4 EXC-FI-0		1400									X						
5 EXC-G1-1	7-24-19	1210									X						
6 EXC-G3-2.5		1230									X						
7 EXC-G4-1	7-25-19	0940									X						
8 EXC-G5-1		1010									X						
9 EXC-G7-B-1	7-26-19	0830									X						
10 EXC-H2-1		1106									X						
11 EXC-H3-1		1130									X						
12 EXC-H5C-5		—									X						
13 EXC-H1B-1.5		1520									X						
14 EXC-H7-8		1420									X						
15 EXC-H6-6		1450									X						
16 Ditch-5B-1		1545									X						
17 EXC-F2B-1.5		1555									X						

Relinquished by: _____ Date / Time: _____

Received by: _____ Date / Time: _____

Sample Receipt

Remarks: _____

Relinquished by: _____ Date / Time: _____

Received by: _____ Date / Time: _____

Good Condition? Y N

Cooler Temp. °C

Sample Temp. °C

Relinquished by: _____ Date / Time: _____

Received by: _____ Date / Time: _____

Total Number of Containers

TAT: 24HR 48HR 5-DAY

LEGAL ACTION CLAUSE: In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.

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Chain of Custody Record

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3322 South Bay Road NE
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Ph: 360-352-2110
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Client: Libby Environmental, Inc

Address: See above

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

Client Project # _____

Date: 7/29/19

Page: 1

of 2

Project Manager: Sherry Chilcutt

Project Name: Prairie Pit

Location: _____

City, State: WA

Collector: _____

Date of Collection: 7/23-7/26

Email: LibbyEnv@gmail.com

Page 32 of 33



Sample Number	Date Depth	Time	Sample Type	Container Type	VOC 8260	NWTPH-Gx	BTEX 8021	NWTPH-HCID	NWTPH-DX	PAH 8270 + Naphthalene	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	Field Notes
1 TPL-0	7-23-19	1015	Soil	4oz Jar												
2 Ditch-6-0		1516														
3 EXC-E1-4		1030														
4 EXC-F1-0		1400														
5 EXC-G1-1	7-24-19	1210														
6 EXC-G3-2.5		1230														
7 EXC-G4-1	7-25-19	0940														
8 EXC-G5-1		1010														
9 EXC-H7-B-1	7-26-19	0830														
10 EXC-H2-1		1106														
11 EXC-H3-1		1130														
12 EXC-H5C-5																
13 EXC-H1B-1.5		1520														
14 EXC-H7-8		1420														Sample ID: EXC-H7-8
15 EXC-H6-6		1450														
16 Ditch-5B-1		1545														
17 EXC-F2B-1.5		1555														

Relinquished by: _____ Date / Time _____

Received by: _____ Date / Time _____

Sample Receipt

Remarks:

Relinquished by: [Signature] Date / Time 7-29-19 1452

Received by: Kayla Peter Date / Time 7/29/19 1452

Good Condition? Y N

edits per EB 8/2/19 rmm

Relinquished by: _____ Date / Time _____

Received by: _____ Date / Time _____

Cooler Temp. °C

Sample Temp. °C

Relinquished by: _____ Date / Time _____

Received by: _____ Date / Time _____

Total Number of Containers

TAT: 24HR 48HR 5-DAY

LEGAL ACTION CLAUSE: In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.

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Libby Environmental, Inc.

Chain of Custody Record

1907372

www.LibbyEnvironmental.com

3322 South Bay Road NE
Olympia, WA 98506

Ph: 360-352-2110
Fax: 360-352-4154

Date: 7-29-19

Page: 2 of 2

Client: Libby Environmental, Inc

Project Manager: Sherry Chelcutt

Address:

Project Name: Poirie Pit

City: State: Zip:

Location: City, State: WA

Phone: Fax:

Collector: Date of Collection: 7-26-19

Client Project #

Email: Libbyenv@gmail.com



Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	NWTPH-GX	BTEX 8021	NWTPH-HCID	NWTPH-DX	c PAH 8270+Naphthalene	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	Field Notes
1 EXC-H1-1	—	1400	Soil	Jar						X						edit per KE!
2 H4																7/30/19 ceg
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																

Relinquished by: <i>[Signature]</i>	Date / Time: 7-29-19 1452	Received by: <i>Kayla Pet</i>	Date / Time: 7/29/19 1452	Sample Receipt Good Condition? Y N Cooler Temp. °C Sample Temp. °C Total Number of Containers TAT: 24HR (48HR) 5-DAY	Remarks:
Relinquished by:	Date / Time:	Received by:	Date / Time:		
Relinquished by:	Date / Time:	Received by:	Date / Time:		
Relinquished by:	Date / Time:	Received by:	Date / Time:		

08/01/2019

Libby Environmental, Inc.
3322 South Bay Road NE
Olympia, WA 98506

Project: Prairie Pit
Date Received: 07/29/2019
Spectra Project: 2019070878
Rush

<u>Client ID</u>	<u>Spectra #</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Sampled</u>
TP-L-0	1	Total Nickel	2.4	mg/Kg	SW846 6010D	Soil	07/23/2019
Ditch-6-0	2	Total Nickel	8.4	mg/Kg	SW846 6010D	Soil	07/23/2019
Exc-E1-4	3	Total Nickel	6.5	mg/Kg	SW846 6010D	Soil	07/23/2019
Exc-F1-0	4	Total Nickel	6.4	mg/Kg	SW846 6010D	Soil	07/23/2019
Exc-G1-1	5	Total Nickel	11.1	mg/Kg	SW846 6010D	Soil	07/24/2019
Exc-G3-2.5	6	Total Nickel	10.6	mg/Kg	SW846 6010D	Soil	07/24/2019
Exc-G4-1	7	Total Nickel	2.1	mg/Kg	SW846 6010D	Soil	07/25/2019
Exc-G5-1	8	Total Nickel	15.8	mg/Kg	SW846 6010D	Soil	07/25/2019
Exc-G7-B1	9	Total Nickel	14.4	mg/Kg	SW846 6010D	Soil	07/26/2019
Exc-H2-1	10	Total Nickel	8.8	mg/Kg	SW846 6010D	Soil	07/26/2019
Exc-H3-1	11	Total Nickel	9.7	mg/Kg	SW846 6010D	Soil	07/26/2019
Exc-H5C-5	12	Total Nickel	10.6	mg/Kg	SW846 6010D	Soil	07/26/2019
Exc-H1B-1.5	13	Total Nickel	14.4	mg/Kg	SW846 6010D	Soil	07/26/2019
Exc-H7-8	14	Total Nickel	10.7	mg/Kg	SW846 6010D	Soil	07/26/2019

SPECTRA LABORATORIES



Jeffrey Cooper, Laboratory Manager

a8/jac

08/01/2019

Libby Environmental, Inc.
3322 South Bay Road NE
Olympia, WA 98506

Project: Prairie Pit
Date Received: 07/29/2019
Spectra Project: 2019070878
Rush

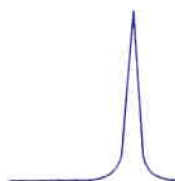
<u>Client ID</u>	<u>Spectra #</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>	<u>Matrix</u>	<u>Date Sampled</u>
Exc-H6-6	15	Total Nickel	13.7	mg/Kg	SW846 6010D	Soil	07/26/2019
Ditch-5B-1	16	Total Nickel	10.4	mg/Kg	SW846 6010D	Soil	07/26/2019
Exc-H4-1	17	Total Nickel	11.5	mg/Kg	SW846 6010D	Soil	07/26/2019
Exc-F2B-1.5	18	Total Nickel	4.1	mg/Kg	SW846 6010D	Soil	07/26/2019

SPECTRA LABORATORIES



Jeffrey Cooper, Laboratory Manager

aj8/jac



SPECTRA Laboratories

...Where experience matters

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

7/31/2019

Libby Environmental
4139 Libby Rd. NE
Olympia, WA 98506

Units: mg/Kg
Spectra Project: 2019070878
Applies to Spectra #'s 1-18
Analyst: SCJ

QUALITY CONTROL RESULTS ICP Metals SW846 6010D - Soil/Solid

Method Blank

Date Digested: 7/31/2019 Date Analyzed: 7/31/2019

Element	Blank Result
Nickel	< 1.5

Laboratory Control Sample (LCS)

Date Digested: 7/31/2019 Date Analyzed: 7/31/2019

Element	Spike Added	LCS Conc.	LCS %Rec
Nickel	200.0	183.8	91.9

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 7/31/2019 Date Analyzed: 7/31/2019
Sample Spiked: 2019070896-1

Element	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc	MSD %Rec	RPD
Nickel	118.4	200.0	303.5	92.6	307.9	94.8	2.3

Comment:

Recovery Limits 75-125%

RPD Limit 20

SPECTRA LABORATORIES


Jeffrey Cooper
Laboratory Manager

Libby Environmental, Inc. 209070878 Chain of Custody Record

www.LibbyEnvironmental.com

3322 South Bay Road NE
Olympia, WA 98506

Ph: 360-352-2110
Fax: 360-352-4154

Date: 7/29/19

Page: 1 of 2

Client: Libby Environmental, Inc

Project Manager: Sherry Chilcott

Address: see above

Project Name: Prairie Pit

City: State: Zip:


Location: City, State: WA

Phone: Fax:

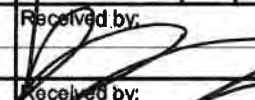
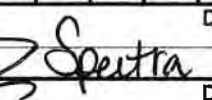
Collector: Date of Collection: 7/22/19 - 7/26/19

Client Project #

Email: Libbyenv@gmail.com

 Sample Number	Date Depth	Time	Sample Type	Container Type													Field Notes	
					VOC 8260	NWTPH-Gx	BTEX 8021	NWTPH-HCID	NWTPH-Dx	c PAH 8270	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	Ni Total		
1 TP-L-0	7-23-19	1330	Soil	Jar														
2 Ditch-6-0		1510																
3 EXC-01-4		1030															Jar is EL-4	
4 EXC-01-0		1400																
5 EXC-01-0	7-24-19	1210																
6 EXC-G3-2.5		1230																
7 EXC-G4-1	7-25-19	9:40																
8 EXC-G5-1		1010																
9 EXC-G7-B1	7-26-19	830																
10 EXC-H2-1		1100																
11 EXC-H3-1		1130																
12 EXC-H5C-5																		
13 EXC-H1B-1.5		1520																
14 EXC-47-8		1420															Jar is H7-8	
15 EXC-46-6		1450																
16 Ditch-5B-1		1545																
17 EXC-40-1		1400															Jar is H4-1	

COPY

Relinquished by: 	Date / Time: 7/29/19 1639	Received by: 	Date / Time: 7/29/19 1639	Sample Receipt Good Condition? Y N Cooler Temp. °C Sample Temp. °C Total Number of Containers	Remarks: TAT: 24HR 48HR 5-DAY
Relinquished by:	Date / Time:	Received by:	Date / Time:		
Relinquished by:	Date / Time:	Received by:	Date / Time:		
Relinquished by:	Date / Time:	Received by:	Date / Time:		

LEGAL ACTION CLAUSE: In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.

Distribution: White - Lab, Yellow - File, Pink - Originator

Libby Environmental, Inc. 209070878 Chain of Custody Record

www.LibbyEnvironmental.com

3322 South Bay Road NE Ph: 360-352-2110
Olympia, WA 98506 Fax: 360-352-4154

Client: Libby Environmental, Inc

Address: see above

City: State: Zip:

Phone: Fax:

Client Project #

Date: 7/29/19

Page: 1 of 2

Project Manager: Sherry Chilcott

Project Name: Prairie Pit

Location:

City, State: WA

Collector:

Date of Collection: 7/22/19 - 7/26/19

Email: Libbyenv@gmail.com



Sample Number	Date Depth	Time	Sample Type	Container Type	VOC 8260	NWTPH-Gx	BTEX 8021	NWTPH-HCID	NWTPH-Dx	c PAH 8270	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	N _T Total	Field Notes
1 TP-L-0	7-23-19	1530	Soil	Jar													
2 Ditch-6-0		1510															
3 EXC-E1-4		1038															
4 EXC-F1-0		1400															
5 EXC-G1-0	7-24-19	1210															
6 EXC-G3-2.5		1230															
7 EXC-G4-1	7-25-19	9:40															
8 EXC-G5-1		1010															
9 EXC-G7-B1	7-26-19	830															
10 EXC-H2-1		1100															
11 EXC-H3-1		1130															
12 EXC-H5C-5																	
13 EXC-H1B-1.5		1520															
14 EXC-47-8		1420															
15 EXC-H6-6		1458															
16 Ditch-5B-1		1545															
17 EXC-H1-1		1400															

Relinquished by:	Date / Time: 7/29/19 1639	Received by:	Date / Time: 7-29-19 11:39	Sample Receipt Good Condition? Y N Cooler Temp. °C Sample Temp. °C Total Number of Containers	Remarks: TAT: 24HR 48HR 5-DAY
Relinquished by:	Date / Time:	Received by:	Date / Time:		
Relinquished by:	Date / Time:	Received by:	Date / Time:		
Relinquished by:	Date / Time:	Received by:	Date / Time:		

LEGAL ACTION CLAUSE: In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.

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Libby Environmental, Inc. 2019070878 Chain of Custody Record

www.LibbyEnvironmental.com

3322 South Bay Road NE
Olympia, WA 98506

Ph: 360-352-2110
Fax: 360-352-4154

Date: 7-29-19

Page: 2 of 2

Client: Libby Environmental, Inc.

Project Manager: Sherry Chilcutt

Address: See above

Project Name: Paint Pit

City: State: Zip:

Location: City, State: WA

Phone: Fax:

Collector: Date of Collection: 7/22/19 - 7/26/19

Client Project #

Email: Libbyenv@gmail.com

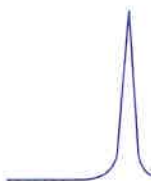


Sample Number	Date Depth	Time	Sample Type	Container Type	VOC 8260	NWTPH-Gx	BTEX 8021	NWTPH-HCID	NWTPH-Dx	c PAH 8270	PAH 8270	Semi Vol 8270	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	Total	Field Notes
1 EXC-F2B-1.5	77-66	1555	Soil														
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
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16																	
17																	

Relinquished by:	Date / Time: 7/29/19 1639	Received by:	Date / Time: 7-29-19 1639	Sample Receipt Good Condition? Y N Cooler Temp. °C Sample Temp. °C Total Number of Containers	Remarks: TAT: 24HR 48HR 5-DAY
Relinquished by:	Date / Time:	Received by:	Date / Time:		
Relinquished by:	Date / Time:	Received by:	Date / Time:		
Relinquished by:	Date / Time:	Received by:	Date / Time:		

LEGAL ACTION CLAUSE: In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.

Distribution: White - Lab, Yellow - Env, Pink - Originator



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07/24/2019

Herrera Environmental
2200 6th Ave
Ste 1100
Seattle, WA 98121

P.O.#: 16-06310-011
Project: Prairie Pit
Client ID: TP9-TCLP-5
Sample Matrix: Solid
Date Sampled: 07/22/2019
Date Received: 07/22/2019
Spectra Project: 2019070636
Spectra Number: 1
Rush

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
TCLP Lead	5.95	mg/L	EPA 1311/6010D

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Jeffrey Cooper, Laboratory Manager

a6/scj



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7/24/2019

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Ste 1100
Seattle, WA 98121

Units: mg/L
Spectra Project: 2019070636
Applies to Spectra #'s 1
Analyst: SCJ

QUALITY CONTROL RESULTS

ICP Metals SW846 6010C - TCLP Extract

Method Blank

Date Digested: 7/24/2019

Date Analyzed: 7/24/2019

Element	Result
Lead	< 0.025

Laboratory Control Sample (LCS)

Date Digested: 7/24/2019

Date Analyzed: 7/24/2019

Element	Spike Added	LCS Conc.	LCS %Rec
Lead	1.0	0.978	97.8

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 7/24/2019

Date Analyzed: 7/24/2019

Sample Spiked: 2019070636-1

Element	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc.	MSD %Rec	RPD
Lead	5.953	1.0	6.844	89.1	6.965	101.2	12.7

Recovery Limits 75-125%

RPD Limit 20

Comment:

Spectra Laboratories



Janelle Cooper
Laboratory Manager

SPECTRA Laboratories

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(253) 272-4850 Fax (253) 572-9838
www.spectra-lab.com info@spectra-lab.com

SPECIAL INSTRUCTIONS/COMMENTS:

TCLP Lead - rough 48-Hr. TAT.

CHAIN OF CUSTODY

SPECTRA PROJECT #

209070636

Return Samples: Y ☒ N

Page 1 of 1

STANDARD ☐

RUSH ☒

CLIENT: <u>Herrera</u>				ADDRESS:																ADDRESS CHANGE <input type="checkbox"/>						
PROJECT: <u>Prairie Pit</u>				NUMBER OF CONTAINERS	HYDROCARBONS				ORGANICS				METALS				OTHER									
CONTACT: <u>George Ifthar</u>					NWTPH-HCID	BTEX	BTEX/NWTPH-G	NWTPH-G	NWTPH-DX	1664 SGT-HEM (TPH)	1664 HEM (FOG)	8260/624 VOA	8260 CHLOR SOLVENTS	8270-625 SEMI VOA	8270 PAH/PNA	8082/608 PCB	TOTAL METALS RCRA 8	TOTAL METALS (SPECIFY)	TCLP METALS RCRA 8	TCLP METALS (SPECIFY) <u>ph.</u>	PH 9040/9045	TX/TOX/EOX	TURBIDITY	FLASH POINT	BOD	SOLIDS (SPECIFY)
SAMPLED BY: <u>George Ifthar</u>																										
PHONE: <u>206-787-8210</u> FAX:																										
e-MAIL: <u>giftner@herrerainc.com</u> Prefer FAX <input type="checkbox"/> or e-MAIL <input checked="" type="checkbox"/>																										
PURCHASE ORDER # <u>16-06310-011</u>																										

SAMPLE ID	DATE SAMPLED	TIME SAMPLED	MATRIX																							
TP9-TCLP-5	7/22/19	08:30	Soil	1																						
				2																						
				3																						
				4																						
				5																						
				6																						
				7																						
				8																						
				9																						
				10																						

LAB USE ONLY	SIGNATURE	PRINTED NAME	COMPANY	DATE	TIME
RELINQUISHED BY	<u>George Ifthar</u>	<u>George Ifthar</u>	<u>Herrera</u>	<u>7/22/19</u>	<u>09:28</u>
RECEIVED BY	<u>Kathryn Reile</u>	<u>Kathryn Reile</u>	<u>Spectra</u>	<u>7-22-19</u>	<u>0928</u>
RELINQUISHED BY					
RECEIVED BY					

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07/25/2019

Herrera Environmental
2200 6th Ave
Ste 1100
Seattle, WA 98121

Project: Prairie Pit
Sample Matrix: Soil
Date Sampled: 07/23/2019
Date Received: 07/23/2019
Spectra Project: 2019070681
Rush

<u>Client ID</u>	<u>Spectra #</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
EXC-E-SP1	1	TCLP Lead	0.104	mg/L	EPA 1311/6010D
EXC-E-SP2	2	TCLP Lead	0.585	mg/L	EPA 1311/6010D
TP-G-3	3	TCLP Lead	1.36	mg/L	EPA 1311/6010D
TP-H-3	4	TCLP Lead	2.98	mg/L	EPA 1311/6010D
EXC-F-SP1	5	TCLP Lead	5.30	mg/L	EPA 1311/6010D

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Jeffrey Cooper, Laboratory Manager

aj/scj

7/25/2019

Herrera Environmental
2200 6th Ave.
Ste 1100
Seattle, WA 98121

Units: mg/L
Spectra Project: 2019070681
Applies to Spectra #'s 1-5
Analyst: SCJ

QUALITY CONTROL RESULTS
ICP Metals EPA 1311/6010D - TCLP Extract

Method Blank

Date Digested: 7/25/2019 Date Analyzed: 7/25/2019

<u>Element</u>	<u>Result</u>
Lead	< 0.025

Laboratory Control Sample (LCS)

Date Digested: 7/25/2019 Date Analyzed: 7/25/2019

<u>Element</u>	<u>Spike Added</u>	<u>LCS Conc.</u>	<u>LCS %Rec</u>
Lead	1.0	0.988	98.8

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 7/24/2019 Date Analyzed: 7/24/2019
Sample Spiked: 2019070636-1

<u>Element</u>	<u>Sample Conc.</u>	<u>Spike Conc.</u>	<u>MS Conc.</u>	<u>MS %Rec</u>	<u>MSD Conc</u>	<u>MSD %Rec</u>	<u>RPD</u>
Lead	5.953	1.0	6.844	89.1	6.965	101.2	12.7

Recovery Limits 75-125%

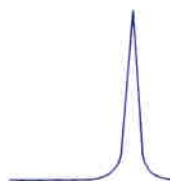
RPD Limit 20

Comment:

Spectra Laboratories



Jeffrey Cooper
Laboratory Manager



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08/01/2019

Herrera Environmental
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Ste 1100
Seattle, WA 98121

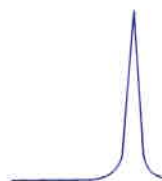
P.O.#: 16-06310-011
Project: Prairie Pit
Sample Matrix: Soil
Date Sampled: 07/30/2019
Date Received: 07/30/2019
Spectra Project: 2019070897
Rush

<u>Client ID</u>	<u>Spectra #</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Exc-H/TP9-Comp	1	TCLP Lead	0.073	mg/L	EPA 1311/6010D
Exc-F-Comp	2	TCLP Lead	< 0.025	mg/L	EPA 1311/6010D

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Jeffrey Cooper, Laboratory Manager

ajscj



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8/1/2019

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Ste 1100
Seattle, WA 98121

Units: mg/L
Spectra Project: 2019070897
Applies to Spectra #'s 1-2
Analyst: SCJ

QUALITY CONTROL RESULTS ICP Metals EPA 1311/6010D - TCLP Extract

Method Blank

Date Digested: 8/1/2019 Date Analyzed: 8/1/2019

Element	Result
Lead	< 0.025

Laboratory Control Sample (LCS)

Date Digested: 8/1/2019 Date Analyzed: 8/1/2019

Element	Spike Added	LCS Conc.	LCS %Rec
Lead	1.0	1.031	103.1

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 7/29/2019 Date Analyzed: 7/29/2019
Sample Spiked: 2019070783-1

Element	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc	MSD %Rec	RPD
Lead	0.000	1.0	0.824	82.4	0.797	79.7	3.3

Recovery Limits 75-125%

RPD Limit 20

Comment:

Spectra Laboratories


Jeffrey Cooper
Laboratory Manager

SPECTRA Laboratories

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(253) 272-4850 Fax (253) 572-9838

www.spectra-lab.com info@spectra-lab.com

SPECIAL INSTRUCTIONS/COMMENTS:

CHAIN OF CUSTODY

SPECTRA PROJECT #

2019070897

Return Samples: Y ☒ N

Page 1 of 1

STANDARD ☐

RUSH ☒

CLIENT: HERRERA ENV. CONS.

ADDRESS:

ADDRESS

CHANGE ☐

PROJECT: PRAIRIE PIT

CONTACT: GEORGE IFTNER

SAMPLED BY: GEORGE IFTNER

PHONE: 206-787-8210 FAX: -

e-MAIL: giftner@herrerainc.com Prefer FAX ☐
or e-MAIL ☒

PURCHASE ORDER # 16-06310-011

NUMBER OF CONTAINERS

HYDROCARBONS

ORGANICS

METALS

OTHER

NWTPH-HCID

BTEX

BTEX/NWTPH-G

NWTPH-G

NWTPH-Dx

1664 SGT-HEM (TPH)

1664 HEM (FOG)

8260/824 VOA

8260 CHLOR SOLVENTS

8270-825 SEMI VOA

8270 PAH/PNA

8082/608 PCB

TOTAL METALS RCRA 8

TOTAL METALS (SPECIFY)

TCLP METALS RCRA 8

TCLP METALS (SPECIFY) Lead

PH 9040/9045

TX/TOX/EOX

TURBIDITY

FLASH POINT

BOD

SOLIDS (SPECIFY)

1	Exc - H/tp9-comp	7/30/19	14:20	soil	1
2	Exc - F-comp	↓	14:30	soil	1
3					
4					
5					
6					
7					
8					
9					
10					

LAB USE ONLY

SIGNATURE

PRINTED NAME

COMPANY

DATE

TIME

RELINQUISHED BY

George Iftner

GEORGE IFTNER HERRERA 7/30/19 15:30

RECEIVED BY

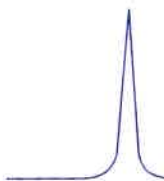
Lori Hamilton

Lori Hamilton Spectra 7-30-19 1530

RELINQUISHED BY

RECEIVED BY

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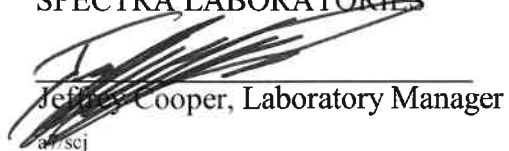
08/07/2019

Herrera Environmental
2200 6th Ave
Ste 1100
Seattle, WA 98121

P.O.#: 16-06310-011
Project: Prairie Pit
Sample Matrix: Soil
Date Sampled: 07/30/2019
Date Received: 08/02/2019
Spectra Project: 2019080063

<u>Client ID</u>	<u>Spectra #</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
MW-1	1	Total Lead	< 2.5	mg/Kg	SW846 6010D
MW-2	2	Total Lead	< 2.5	mg/Kg	SW846 6010D
MW-3	3	Total Lead	< 2.5	mg/Kg	SW846 6010D

SPECTRA LABORATORIES


Jeffrey Cooper, Laboratory Manager
a/scj

8/7/2019

Herrera Environmental
2200 6th Ave Ste 1100
Seattle, WA 98121

Units: mg/Kg
Spectra Project: 2019080063
Applies to Spectra #'s: 1-3
Analyst: SCJ

QUALITY CONTROL RESULTS

ICP Metals SW846 6010D - Soil/Solid

Method Blank

Date Digested: 8/7/2019

Date Analyzed: 8/7/2019

Element

Blank Result

Lead

< 2.5

Laboratory Control Sample (LCS)

Date Digested: 8/7/2019

Date Analyzed: 8/7/2019

Element

Spike
Added

LCS
Conc.

LCS
%Rec

Lead

200.0

194.3

97.2

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 8/7/2019

Date Analyzed: 8/7/2019

Sample Spiked: 2019080063-3

Element

Sample
Conc.

Spike
Conc.

MS
Conc.

MS
%Rec

MSD
Conc

MSD
%Rec

RPD

Lead

0.0

200.0

178.1

89.1

177.4

88.7

0.4

Comment:

Recovery Limits 75-125%

RPD Limit 20

SPECTRA LABORATORIES



Jeffrey Cooper
Laboratory Manager

SPECTRA Laboratories

2221 Ross Way, Tacoma, WA 98421

(253) 272-4850 Fax (253) 572-9838

www.spectra-lab.com info@spectra-lab.com

SPECIAL INSTRUCTIONS/COMMENTS:

CHAIN OF CUSTODY

SPECTRA PROJECT #

2019080063

Return Samples: Y ☒ N

Page 1 of 1

STANDARD ☒

RUSH ☐

CLIENT: Herrera

ADDRESS: 2200 6th Ave Seattle, WA 98121

ADDRESS

CHANGE ☐

PROJECT: Prairie Pit

CONTACT: George Ifthner

SAMPLED BY: George Ifthner

PHONE: 206-787-8210 FAX:

e-MAIL: giftner@herrerainc.com Prefer FAX ☐ or e-MAIL ☒

PURCHASE ORDER # 1606310-011

NUMBER OF CONTAINERS

HYDROCARBONS

ORGANICS

METALS

OTHER

NWTPH-HCID

BTEX

BTEX/NWTPH-G

NWTPH-G

NWTPH-Dx

1664 SGT-HEM (TPH)

1664 HEM (FOG)

8260/624 VOA

8260 CHLOR SOLVENTS

8270-625 SEMI VOA

8270 PAH/PNA

8082/608 PCB

TOTAL METALS RCRA 8

TOTAL METALS (SPECIFY) Pb

TCLP METALS RCRA 8

TCLP METALS (SPECIFY)

PH 9040/9045

TX/TOX/EOX

TURBIDITY

FLASH POINT

BOD

SOLIDS (SPECIFY)

SAMPLE ID

DATE
SAMPLED

TIME
SAMPLED

MATRIX

1

MW-1

7/30/19

17:20

Soil

1

2

MW-2

7/31/19

13:45

↓

1

3

MW-3

8/1/19

15:00

↓

1

4

5

6

7

8

9

10

LAB USE ONLY

SIGNATURE

PRINTED NAME

COMPANY

DATE

TIME

RELINQUISHED BY

George Ifthner

George Ifthner

Herrera

8/2/19

15:22

RECEIVED BY

Lori Hamilton

Lori Hamilton

Spectra

8-2-19

1522

RELINQUISHED BY

RECEIVED BY

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08/20/2019

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2200 6th Ave
Ste 1100
Seattle, WA 98121

P.O.#: 16-06310-011
Project: Prairie Pit
Client ID: EXC-G2B-1
Sample Matrix: Soil
Date Sampled: 08/02/2019
Date Received: 08/02/2019
Spectra Project: 2019080052
Spectra Number: 1
Rush

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Benzo(a)Anthracene--SIM	<0.004	mg/Kg	8270D SIM
Benzo(a)Pyrene--SIM	<0.004	mg/Kg	8270D SIM
Benzo(b)Fluoranthene--SIM	<0.004	mg/Kg	8270D SIM
Benzo(k)Fluoranthene--SIM	<0.004	mg/Kg	8270D SIM
Chrysene--SIM	<0.004	mg/Kg	8270D SIM
Dibenz(a,h)Anthracene--SIM	<0.004	mg/Kg	8270D SIM
Indeno(1,2,3-cd)Pyrene--SIM	<0.004	mg/Kg	8270D SIM
Naphthalene--SIM	<0.004	mg/Kg	8270D SIM
Diesel	<10	mg/Kg	NWTPH-D
Oil	<50	mg/Kg	NWTPH-D
Total Cadmium	< 0.3	mg/Kg	SW846 6010D
Total Chromium	18.7	mg/Kg	SW846 6010D
Total Lead	12.8	mg/Kg	SW846 6010D
Total Nickel	27.4	mg/Kg	SW846 6010D
Total Zinc	62.6	mg/Kg	SW846 6010D

<u>Surrogate</u>	<u>% Recovery</u>	<u>Method</u>
p-Terphenyl	87	NWTPH-D
2-Fluorobiphenyl--SIM	89	8270D SIM
Nitrobenzene-d5--SIM	84	8270D SIM
p-Terphenyl-d14--SIM	98	8270D SIM

SPECTRA LABORATORIES



Jeffrey Cooper, Laboratory Manager

as/djs

08/20/2019

Herrera Environmental
2200 6th Ave
Ste 1100
Seattle, WA 98121

P.O.#: 16-06310-011
Project: Prairie Pit
Client ID: EXC-G6B-3
Sample Matrix: Soil
Date Sampled: 08/02/2019
Date Received: 08/02/2019
Spectra Project: 2019080052
Spectra Number: 2
Rush

Analyte	Result	Units	Method
Benzo(a)Anthracene	<0.70**	mg/Kg	EPA 625
Benzo(a)Pyrene	<0.70**	mg/Kg	EPA 625
Benzo(b)Fluoranthene	<0.70**	mg/Kg	EPA 625
Benzo(k)Fluoranthene	<0.70**	mg/Kg	EPA 625
Chrysene	<0.70**	mg/Kg	EPA 625
Dibenz(a,h)Anthracene	<0.70**	mg/Kg	EPA 625
Indeno(1,2,3-cd)Pyrene	<0.70**	mg/Kg	EPA 625
Naphthalene	<0.70**	mg/Kg	EPA 625
Diesel	<100	mg/Kg	NWTPH-D
Oil	1240*	mg/Kg	NWTPH-D
Total Cadmium	0.4	mg/Kg	SW846 6010D
Total Chromium	41	mg/Kg	SW846 6010D
Total Lead	194	mg/Kg	SW846 6010D
Total Nickel	19.3	mg/Kg	SW846 6010D
Total Zinc	51	mg/Kg	SW846 6010D

*Sample was taken through NWTPH cleanup procedures. **Elevated reporting limit due to sample matrix interference.

***SIM surrogates diluted out of range in scan mode.

Surrogate	% Recovery	Method
p-Terphenyl	72	NWTPH-D
2-Fluorobiphenyl--SIM	0***	8270D SIM
Nitrobenzene-d5--SIM	0***	8270D SIM
p-Terphenyl-d14--SIM	0***	8270D SIM

SPECTRA LABORATORIES

Jeffrey Cooper, Laboratory Manager

15/djs

08/20/2019

Herrera Environmental
2200 6th Ave
Ste 1100
Seattle, WA 98121

P.O.#: 16-06310-011
Project: Prairie Pit
Client ID: EXC-H8C-5
Sample Matrix: Soil
Date Sampled: 08/02/2019
Date Received: 08/02/2019
Spectra Project: 2019080052
Spectra Number: 3

Rush

Analyte	Result	Units	Method
Benzo(a)Anthracene	<0.70***	mg/Kg	EPA 625
Benzo(a)Pyrene	<0.70***	mg/Kg	EPA 625
Benzo(b)Fluoranthene	<0.70***	mg/Kg	EPA 625
Benzo(k)Fluoranthene	<0.70***	mg/Kg	EPA 625
Chrysene	<0.70***	mg/Kg	EPA 625
Dibenz(a,h)Anthracene	<0.70***	mg/Kg	EPA 625
Indeno(1,2,3-cd)Pyrene	<0.70***	mg/Kg	EPA 625
Naphthalene	<0.70***	mg/Kg	EPA 625
Diesel	<100	mg/Kg	NWTPH-D
Oil	2610*	mg/Kg	NWTPH-D
Total Cadmium	< 0.3	mg/Kg	SW846 6010D
Total Chromium	17.4	mg/Kg	SW846 6010D
Total Lead	86	mg/Kg	SW846 6010D
Total Nickel	24.3	mg/Kg	SW846 6010D
Total Zinc	154	mg/Kg	SW846 6010D

*Sample was taken through NWTPH cleanup procedures **No surrogate recovery due to dilution requirements.

Elevated reporting limit due to sample matrix interference. *SIM surrogates diluted out of range in scan mode.

Surrogate	% Recovery	Method
p-Terphenyl	0**	NWTPH-D
2-Fluorobiphenyl--SIM	0****	8270D SIM
Nitrobenzene-d5--SIM	0****	8270D SIM
p-Terphenyl-d14--SIM	0****	8270D SIM

SPECTRA LABORATORIES



Jeffrey Cooper, Laboratory Manager

08/20/2019

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Seattle, WA 98121

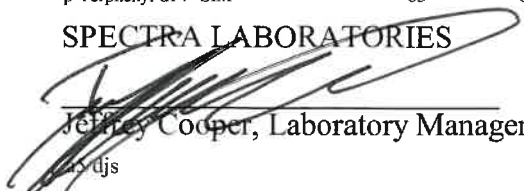
P.O.#: 16-06310-011
Project: Prairie Pit
Client ID: EXC-H9C-5
Sample Matrix: Soil
Date Sampled: 08/02/2019
Date Received: 08/02/2019
Spectra Project: 2019080052
Spectra Number: 4
Rush

Analyte	Result	Units	Method
Benzo(a)Anthracene--SIM	<0.004	mg/Kg	8270D SIM
Benzo(a)Pyrene--SIM	<0.004	mg/Kg	8270D SIM
Benzo(b)Fluoranthene--SIM	<0.004	mg/Kg	8270D SIM
Benzo(k)Fluoranthene--SIM	<0.004	mg/Kg	8270D SIM
Chrysene--SIM	<0.004	mg/Kg	8270D SIM
Dibenz(a,h)Anthracene--SIM	<0.004	mg/Kg	8270D SIM
Indeno(1,2,3-cd)Pyrene--SIM	<0.004	mg/Kg	8270D SIM
Naphthalene--SIM	<0.004	mg/Kg	8270D SIM
Diesel	<10	mg/Kg	NWTPH-D
Oil	75.4*	mg/Kg	NWTPH-D
Total Cadmium	< 0.3	mg/Kg	SW846 6010D
Total Chromium	11.3	mg/Kg	SW846 6010D
Total Lead	15.6	mg/Kg	SW846 6010D
Total Nickel	18.9	mg/Kg	SW846 6010D
Total Zinc	42.8	mg/Kg	SW846 6010D
PCB	<0.01	mg/Kg	SW846 8082A

*Sample was taken through NWTPH cleanup procedures

Surrogate	% Recovery	Method
p-Terphenyl	74	NWTPH-D
2-Fluorobiphenyl--SIM	78	8270D SIM
Nitrobenzene-d5--SIM	75	8270D SIM
p-Terphenyl-d14--SIM	83	8270D SIM

Surrogate	% Recovery	Method
Decachlorobiphenyl	75	SW846 8082A

SPECTRA LABORATORIES

Jeffrey Cooper, Laboratory Manager

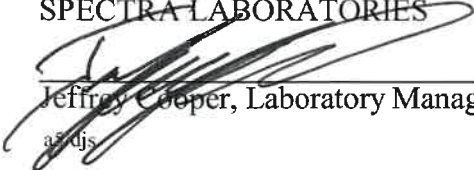
08/20/2019

Herrera Environmental
2200 6th Ave
Ste 1100
Seattle, WA 98121

P.O.#: 16-06310-011
Project: Prairie Pit
Client ID: EXC-H10-2
Sample Matrix: Soil
Date Sampled: 08/02/2019
Date Received: 08/02/2019
Spectra Project: 2019080052
Spectra Number: 5
Rush

Analyte	Result	Units	Method
Benzo(a)Anthracene--SIM	<0.004	mg/Kg	8270D SIM
Benzo(a)Pyrene--SIM	<0.004	mg/Kg	8270D SIM
Benzo(b)Fluoranthene--SIM	<0.004	mg/Kg	8270D SIM
Benzo(k)Fluoranthene--SIM	<0.004	mg/Kg	8270D SIM
Chrysene--SIM	<0.004	mg/Kg	8270D SIM
Dibenz(a,h)Anthracene--SIM	<0.004	mg/Kg	8270D SIM
Indeno(1,2,3-cd)Pyrene--SIM	<0.004	mg/Kg	8270D SIM
Naphthalene--SIM	<0.004	mg/Kg	8270D SIM
Diesel	<10	mg/Kg	NWTPH-D
Oil	<50	mg/Kg	NWTPH-D
Total Cadmium	< 0.3	mg/Kg	SW846 6010D
Total Chromium	13.4	mg/Kg	SW846 6010D
Total Lead	< 2.5	mg/Kg	SW846 6010D
Total Nickel	24.8	mg/Kg	SW846 6010D
Total Zinc	37.4	mg/Kg	SW846 6010D

Surrogate	% Recovery	Method
p-Terphenyl	76	NWTPH-D
2-Fluorobiphenyl--SIM	76	8270D SIM
Nitrobenzene-d5--SIM	75	8270D SIM
p-Terphenyl-d14--SIM	92	8270D SIM

SPECTRA LABORATORIES

Jeffrey Cooper, Laboratory Manager

a7djs

08/20/2019

Herrera Environmental
2200 6th Ave
Ste 1100
Seattle, WA 98121

P.O.#: 16-06310-011
Project: Prairie Pit
Client ID: EXC-H11-1
Sample Matrix: Soil
Date Sampled: 08/02/2019
Date Received: 08/02/2019
Spectra Project: 2019080052
Spectra Number: 6
Rush

Analyte	Result	Units	Method
Benzo(a)Anthracene--SIM	<0.004	mg/Kg	8270D SIM
Benzo(a)Pyrene--SIM	<0.004	mg/Kg	8270D SIM
Benzo(b)Fluoranthene--SIM	<0.004	mg/Kg	8270D SIM
Benzo(k)Fluoranthene--SIM	<0.004	mg/Kg	8270D SIM
Chrysene--SIM	<0.004	mg/Kg	8270D SIM
Dibenz(a,h)Anthracene--SIM	<0.004	mg/Kg	8270D SIM
Indeno(1,2,3-cd)Pyrene--SIM	<0.004	mg/Kg	8270D SIM
Naphthalene--SIM	<0.004	mg/Kg	8270D SIM
Diesel	<10	mg/Kg	NWTPH-D
Oil	<50	mg/Kg	NWTPH-D
Total Cadmium	< 0.3	mg/Kg	SW846 6010D
Total Chromium	11.4	mg/Kg	SW846 6010D
Total Lead	9	mg/Kg	SW846 6010D
Total Nickel	18.1	mg/Kg	SW846 6010D
Total Zinc	30.3	mg/Kg	SW846 6010D

Surrogate	% Recovery	Method
p-Terphenyl	75	NWTPH-D
2-Fluorobiphenyl--SIM	78	8270D SIM
Nitrobenzene-d5--SIM	80	8270D SIM
p-Terphenyl-d14--SIM	80	8270D SIM

SPECTRA LABORATORIES



Jeffrey Cooper, Laboratory Manager

as/djs

08/20/2019

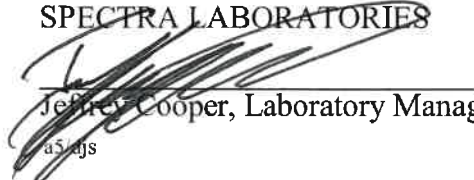
Herrera Environmental
2200 6th Ave
Ste 1100
Seattle, WA 98121

P.O.#: 16-06310-011
Project: Prairie Pit
Client ID: EXC-E2C-2.5
Sample Matrix: Soil
Date Sampled: 08/02/2019
Date Received: 08/02/2019
Spectra Project: 2019080052
Spectra Number: 7
Rush

Analyte	Result	Units	Method
Benzo(a)Anthracene--SIM	<0.004	mg/Kg	8270D SIM
Benzo(a)Pyrene--SIM	<0.004	mg/Kg	8270D SIM
Benzo(b)Fluoranthene--SIM	<0.004	mg/Kg	8270D SIM
Benzo(k)Fluoranthene--SIM	<0.004	mg/Kg	8270D SIM
Chrysene--SIM	<0.004	mg/Kg	8270D SIM
Dibenz(a,h)Anthracene--SIM	<0.004	mg/Kg	8270D SIM
Indeno(1,2,3-cd)Pyrene--SIM	<0.004	mg/Kg	8270D SIM
Naphthalene--SIM	<0.004	mg/Kg	8270D SIM
Diesel	<10	mg/Kg	NWTPH-D
Oil	<50	mg/Kg	NWTPH-D
Total Cadmium	< 0.3	mg/Kg	SW846 6010D
Total Chromium	15.6	mg/Kg	SW846 6010D
Total Lead	7.2	mg/Kg	SW846 6010D
Total Nickel	18.1	mg/Kg	SW846 6010D
Total Zinc	28.2	mg/Kg	SW846 6010D

Surrogate	% Recovery	Method
p-Terphenyl	80	NWTPH-D
2-Fluorobiphenyl--SIM	59	8270D SIM
Nitrobenzene-d5--SIM	52	8270D SIM
p-Terphenyl-d14--SIM	82	8270D SIM

SPECTRA LABORATORIES



Jeffrey Cooper, Laboratory Manager

a5:ajs

08/20/2019

Herrera Environmental
2200 6th Ave
Ste 1100
Seattle, WA 98121

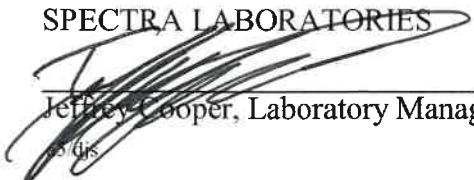
P.O.#: 16-06310-011
Project: Prairie Pit
Client ID: EXC-E3C-1.5
Sample Matrix: Soil
Date Sampled: 08/02/2019
Date Received: 08/02/2019
Spectra Project: 2019080052
Spectra Number: 8
Rush

Analyte	Result	Units	Method
Benzo(a)Anthracene	<0.70**	mg/Kg	EPA 625
Benzo(a)Pyrene	<0.70**	mg/Kg	EPA 625
Benzo(b)Fluoranthene	<0.70**	mg/Kg	EPA 625
Benzo(k)Fluoranthene	<0.70**	mg/Kg	EPA 625
Chrysene	<0.70**	mg/Kg	EPA 625
Dibenz(a,h)Anthracene	<0.70**	mg/Kg	EPA 625
Indeno(1,2,3-cd)Pyrene	<0.70**	mg/Kg	EPA 625
Naphthalene	<0.70**	mg/Kg	EPA 625
Diesel	<10	mg/Kg	NWTPH-D
Oil	136*	mg/Kg	NWTPH-D
Total Cadmium	< 0.3	mg/Kg	SW846 6010D
Total Chromium	9.2	mg/Kg	SW846 6010D
Total Lead	246	mg/Kg	SW846 6010D
Total Nickel	17.5	mg/Kg	SW846 6010D
Total Zinc	67.7	mg/Kg	SW846 6010D

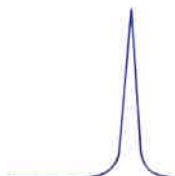
*Sample was taken through NWTPH cleanup procedures **Elevated reporting limit due to sample matrix interference.

***SIM surrogates diluted out of range in scan mode.

Surrogate	% Recovery	Method
p-Terphenyl	83	NWTPH-D
2-Fluorobiphenyl--SIM	0***	8270D SIM
Nitrobenzene-d5--SIM	0***	8270D SIM
p-Terphenyl-d14--SIM	0***	8270D SIM

SPECTRA LABORATORIES

Jeffrey Cooper, Laboratory Manager



SPECTRA Laboratories

...Where experience matters

2221 Ross Way • Tacoma, WA 98421 • (253) 272-4850 • Fax (253) 572-9838 • www.spectra-lab.com

August 20, 2019

Herrera Environmental
2200 6th Ave
Ste 1100
Seattle, WA 98121

Method: NWTPH-Dx
Sample Matrix: Soil
Spectra Project: 2019080052
Applies to Spectra #: 1-8
Units: mg/Kg

HYDROCARBON ANALYSIS QUALITY CONTROL RESULTS

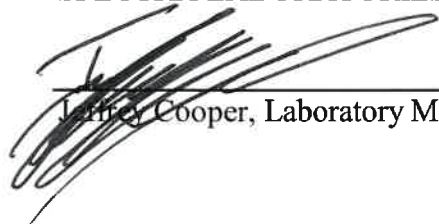
BLANK SPIKE (LCS)

Date Extracted:	8/5/2019		Date Analyzed:	8/6/2019	
	Sample	Spike	Spike	Percent	
<u>Compound</u>	<u>Result</u>	<u>Amount Added</u>	<u>Amount Found</u>	<u>Recovery</u>	
Diesel	<10.0	125	118	94.4	

METHOD BLANK

Date Extracted:	8/5/2019	Date Analyzed:	8/6/2019
Diesel	<10.0	mg/Kg	
Heavy Oil	<50.0	mg/Kg	
Surrogate Recovery:	p-terphenyl	83%	

SPECTRA LABORATORIES


Jeffrey Cooper, Laboratory Manager

August 20, 2019

Herrera Environmental
22006th Ave
Ste 1100
Seattle, WA 98121

Method: EPA Method 8082A
Sample Matrix: Soil
Units: mg/Kg
Spectra Project: 2019080052
Applies to Spectra # 4

PCB ANALYSIS QUALITY CONTROL RESULTS

MS/MSD

Spiked Sample:	2019080403-1			Date Extracted:	8/16/2019		
				Date Analyzed:	8/19/2019		
		Spike	Spike		Dup.		
	Sample	Amount	Amount	Percent	Spike	Percent	
<u>Compound</u>	<u>Result</u>	<u>Added</u>	<u>Found</u>	<u>Recovery</u>	<u>Amount Found</u>	<u>Recovery</u>	<u>RPD</u>
AR1260	<0.01	0.025	0.0191	76%	0.0192	77%	0.5

BLANK SPIKE (LCS)

Date Extracted:	8/16/2019		Date Analyzed:	8/19/2019	
	Sample	Spike	Spike	Percent	
<u>Compound</u>	<u>Result</u>	<u>Amount Added</u>	<u>Amount Found</u>	<u>Recovery</u>	
AR1260	<0.01	0.025	0.0217	87%	

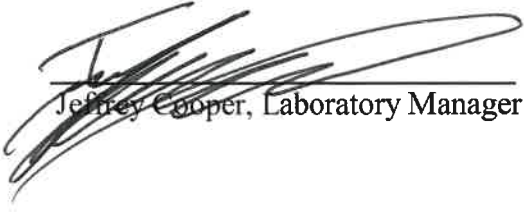
METHOD BLANK

Date Extracted:	8/16/2019	Date Analyzed:	8/19/2019
PCB's	<0.01		

Surrogate Recovery:

Decachlorobiphenyl 67%

SPECTRA LABORATORIES


Jeffrey Cooper, Laboratory Manager

Marie Holt

2019080052

From: Marie Holt
Sent: Thursday, August 15, 2019 11:02 AM
To: George Iftner
Cc: Jeff Cooper
Subject: RE: Request for additional PCB analysis - for Herrera

Hi George,

We will get started on this and on a rush should have results by end of day Monday for you.

Let me know if further needs arise.

Thanks!

Marie Holt

Customer Support and Office Manager

SPECTRA Laboratories

2221 Ross Way
Tacoma, WA 98421
P (253) 272-4850
F (253) 572-9838
marieh@spectra-lab.com

From: George Iftner <giftner@herrerainc.com>
Sent: Thursday, August 15, 2019 10:32 AM
To: Marie Holt <MarieH@spectra-lab.com>
Cc: Jeff Cooper <jeffc@spectra-lab.com>
Subject: Request for additional PCB analysis - for Herrera

Hi Marie,
I'd like you to analyze one sample for PCBs:

Sample **EXC-H9C-5 – run for total PCBs**
Spectra Project: 2019080052

COC attached (ignore the yellow highlights).
TAT: 48 hour (by Monday?)

George



GEORGE IFTNER

From: George Iftner
Sent: Wednesday, August 07, 2019 12:30 PM
To: Marie Holt <MarieH@spectra-lab.com>
Cc: Jeff Cooper <jeffc@spectra-lab.com>
Subject: RE: Information - Prairie Pit

Can you send partial report of everything else that you have today?
-George



GEORGE IFTNER

From: Marie Holt [<mailto:MarieH@spectra-lab.com>]
Sent: Wednesday, August 07, 2019 9:23 AM
To: George Iftner <giftner@herrerainc.com>
Cc: Jeff Cooper <jeffc@spectra-lab.com>
Subject: Information - Prairie Pit

Hi George,

I want to keep you up to date on the Prairie Pit project with 8 soils.

Three of the samples have been ran twice by for PAH/SIM and are causing some issues. We plan to run these three again by scan mode, though results will not be complete today, we should have the complete project to you tomorrow. The three samples causing issues are:

EXC-G6B-3
EXC-H8C-5
EXC-E3C-1.5

Thank you for your patience, we will get the report to you as soon as possible.

2019080052

Marie Holt

Customer Support and Office Manager

SPECTRA Laboratories

2221 Ross Way
Tacoma, WA 98421

SPECTRA Laboratories

2221 Ross Way, Tacoma, WA 98421
(253) 272-4850 Fax (253) 572-9838

www.spectra-lab.com info@spectra-lab.com

SPECIAL INSTRUCTIONS/COMMENTS:

Hold for PCBs don't run
until directed

CHAIN OF CUSTODY

SPECTRA PROJECT #

2019080052

Return Samples: Y ☒

Page 1 of 1

STANDARD ☐

RUSH ☒

CLIENT: Herrera

ADDRESS: 2200 6th Ave., Seattle, WA 98121

ADDRESS
CHANGE ☐

PROJECT: Prairie Pit

CONTACT: George Ifthar

SAMPLED BY: George Ifthar

PHONE: 206 787-8210 FAX:

e-MAIL: giftner@herrerainc.com ☒ Prefer FAX ☐ e-MAIL

PURCHASE ORDER #16-06310-011

NUMBER OF CONTAINERS

HYDROCARBONS

ORGANICS

METALS

OTHER

NWTPH-HCID

BTEX

BTEX/NWTPH-G

NWTPH-G

NWTPH-Dx

1664 SGT-HEM (TPH)

1664 HEM (FOG)

8260/624 VOA

8260 CHLOR SOLVENTS

8270-825 SEMI VOA

8270 PAH/PNA

8082/608 PCB

c-PAHs+Naphth-8270

TOTAL METALS RCRA 8

TOTAL METALS (SPECIFY)
(Cd, Cr, Pb, Ni, Zn)

TCLP METALS RCRA 8

TOTAL METALS (SPECIFY)
(Cd, Cr, Pb, Ni, Zn)

PH 9040/9045

TX/TX/EOX

TURBIDITY

FLASH POINT

BOD

SOLIDS (SPECIFY)

SAMPLE ID

DATE
SAMPLED

TIME
SAMPLED

MATRIX

1	Exc-G2B-1	8/2/19	11:00
2	Exc-G6B-3	8/2/19	11:10
3	Exc-H8C-5		10:15
4	Exc-H9C-5		10:30
5	Exc-H10-2		10:00
6	Exc-H11-1		10:45
7	Exc-E2C-2.5		12:30
8	Exc-E3C-1.5		12:40
9			
10			

LAB USE ONLY

SIGNATURE

PRINTED NAME

COMPANY

DATE

TIME

RELINQUISHED BY

George Ifthar

George Ifthar

Herrera

8/2/19

15:22

RECEIVED BY

Lori Hamilton

Lori Hamilton

Spectra

8-2-19

15:22

RELINQUISHED BY

RECEIVED BY

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2% per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. Spectra Laboratories, LLC

08/28/2019

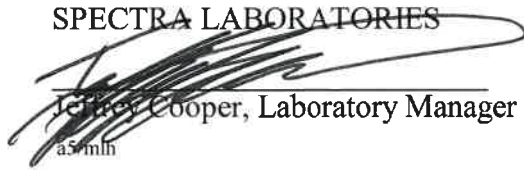
Herrera Environmental
2200 6th Ave
Ste 1100
Seattle, WA 98121

Project: Prairie Pit
Client ID: Exc-H8C2-5
Sample Matrix: Soil
Date Sampled: 08/12/2019
Date Received: 08/13/2019
Spectra Project: 2019080316
Spectra Number: 1
Rush

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Diesel	<10	mg/Kg	NWTPH-D
Oil	<50	mg/Kg	NWTPH-D
Total Cadmium	< 0.3	mg/Kg	SW846 6010D
Total Chromium	17.8	mg/Kg	SW846 6010D
Total Lead	< 2.5	mg/Kg	SW846 6010D
Total Nickel	20.8	mg/Kg	SW846 6010D
Total Zinc	31.3	mg/Kg	SW846 6010D
Benzo(a)Anthracene	<0.036	mg/Kg	SW846 8270D
Benzo(a)Pyrene	<0.036	mg/Kg	SW846 8270D
Benzo(b)Fluoranthene	<0.036	mg/Kg	SW846 8270D
Benzo(k)Fluoranthene	<0.036	mg/Kg	SW846 8270D
Chrysene	<0.036	mg/Kg	SW846 8270D
Dibenz(a,h)Anthracene	<0.036	mg/Kg	SW846 8270D
Indeno(1,2,3-cd)Pyrene	<0.036	mg/Kg	SW846 8270D

<u>Surrogate</u>	<u>% Recovery</u>	<u>Method</u>
p-Terphenyl	59	NWTPH-D
Nitrobenzene-d5	26	SW846 8270D
2-Fluorobiphenyl	25	SW846 8270D
p-Terphenyl-d14	67	SW846 8270D

SPECTRA LABORATORIES



Jeremy Cooper, Laboratory Manager

a.s.mlh

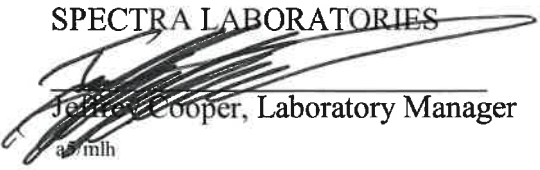
08/28/2019

Herrera Environmental
2200 6th Ave
Ste 1100
Seattle, WA 98121

Project: Prairie Pit
Client ID: Exc-G6B2-4
Sample Matrix: Soil
Date Sampled: 08/13/2019
Date Received: 08/13/2019
Spectra Project: 2019080316
Spectra Number: 2
Rush

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Diesel	<10	mg/Kg	NWTPH-D
Oil	<50	mg/Kg	NWTPH-D
Total Cadmium	< 0.3	mg/Kg	SW846 6010D
Total Chromium	13.1	mg/Kg	SW846 6010D
Total Lead	36.4	mg/Kg	SW846 6010D
Total Nickel	12.1	mg/Kg	SW846 6010D
Total Zinc	40.2	mg/Kg	SW846 6010D
Benzo(a)Anthracene	<0.036	mg/Kg	SW846 8270D
Benzo(a)Pyrene	<0.036	mg/Kg	SW846 8270D
Benzo(b)Fluoranthene	<0.036	mg/Kg	SW846 8270D
Benzo(k)Fluoranthene	<0.036	mg/Kg	SW846 8270D
Chrysene	<0.036	mg/Kg	SW846 8270D
Dibenz(a,h)Anthracene	<0.036	mg/Kg	SW846 8270D
Indeno(1,2,3-cd)Pyrene	<0.036	mg/Kg	SW846 8270D

<u>Surrogate</u>	<u>% Recovery</u>	<u>Method</u>
p-Terphenyl	56	NWTPH-D
Nitrobenzene-d5	28	SW846 8270D
2-Fluorobiphenyl	30	SW846 8270D
p-Terphenyl-d14	61	SW846 8270D

SPECTRA LABORATORIES

Jeffrey Cooper, Laboratory Manager

a/mlh

08/28/2019

Herrera Environmental
2200 6th Ave
Ste 1100
Seattle, WA 98121

Project: Prairie Pit
Client ID: Exc-E3C2-2
Sample Matrix: Soil
Date Sampled: 08/13/2019
Date Received: 08/13/2019
Spectra Project: 2019080316
Spectra Number: 3
Rush

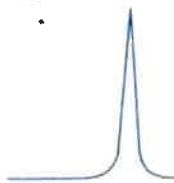
<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Diesel	<10	mg/Kg	NWTPH-D
Oil	<50	mg/Kg	NWTPH-D
Total Cadmium	< 0.3	mg/Kg	SW846 6010D
Total Chromium	13.8	mg/Kg	SW846 6010D
Total Lead	< 2.5	mg/Kg	SW846 6010D
Total Nickel	14.6	mg/Kg	SW846 6010D
Total Zinc	23.6	mg/Kg	SW846 6010D
Benzo(a)Anthracene	<0.036	mg/Kg	SW846 8270D
Benzo(a)Pyrene	<0.036	mg/Kg	SW846 8270D
Benzo(b)Fluoranthene	<0.036	mg/Kg	SW846 8270D
Benzo(k)Fluoranthene	<0.036	mg/Kg	SW846 8270D
Chrysene	<0.036	mg/Kg	SW846 8270D
Dibenz(a,h)Anthracene	<0.036	mg/Kg	SW846 8270D
Indeno(1,2,3-cd)Pyrene	<0.036	mg/Kg	SW846 8270D

<u>Surrogate</u>	<u>% Recovery</u>	<u>Method</u>
p-Terphenyl	54	NWTPH-D
Nitrobenzene-d5	29	SW846 8270D
2-Fluorobiphenyl	28	SW846 8270D
p-Terphenyl-d14	64	SW846 8270D

SPECTRA LABORATORIES

Jeffrey Cooper, Laboratory Manager

45 mlh



August 15, 2019

Herrera Environmental	Method:	NWTPH-Dx
2200 6th Ave	Sample Matrix:	Soil
Ste 1100	Spectra Project:	2019080316
Seattle, WA 98121	Applies to Spectra #:	1-3
	Units:	mg/Kg

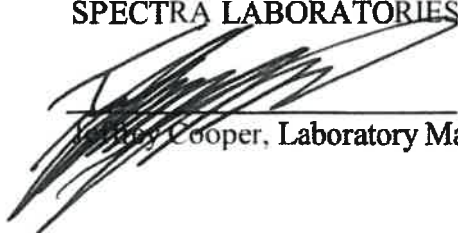
HYDROCARBON ANALYSIS QUALITY CONTROL RESULTS

MS/MSD							
Spiked Sample:	2019080316-2	Date Extracted:		8/14/2019		Date Analyzed:	
				8/14/2019			
Compound	Sample Result	Spike Amount Added	Spike Amount Found	Percent Recovery	Dup. Spike Amount Found	Percent Recovery	% RPD
Diesel	<10	83	52.3	63	56.1	68	7.0

BLANK SPIKE (LCS)				
Date Extracted:	8/14/2019	Date Analyzed:		8/14/2019
Compound	Sample Result	Spike Amount Added	Spike Amount Found	Percent Recovery
Diesel	<10.0	125	65	52

METHOD BLANK				
Date Extracted:	8/14/2019		Date Analyzed:	8/14/2019
Diesel	<10.0	mg/Kg		
Heavy Oil	<50.0	mg/Kg		
Surrogate Recovery:				
	p-terphenyl	67%		

SPECTRA LABORATORIES


Kathy Cooper, Laboratory Manager

8/14/2019

Herrera Environmental
2200 6th Ave.
Ste 1100
Seattle, WA 98121

Units: mg/Kg
Spectra Project: 2019080316
Applies to Spectra #'s 1-3
Analyst: SCJ

QUALITY CONTROL RESULTS

ICP Metals SW846 6010D - Soil/Solid

Method Blank

Date Digested: 8/14/2019

Date Analyzed: 8/14/2019

Element	Blank Result
Cadmium	< 0.3
Chromium	< 0.7
Copper	< 0.7
Lead	< 2.5
Nickel	< 1.5
Zinc	< 0.6

Laboratory Control Sample (LCS)

Date Digested: 8/14/2019

Date Analyzed: 8/14/2019

Element	Spike Added	LCS Conc.	LCS %Rec
Cadmium	200.0	194.4	97.2
Chromium	200.0	195.7	97.9
Copper	200.0	200.1	100.1
Lead	200.0	198.2	99.1
Nickel	200.0	190.9	95.5
Zinc	200.0	187.7	93.9

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 8/14/2019

Date Analyzed: 8/14/2019

Sample Spiked: 2019080318-1

Element	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc.	MSD %Rec	RPD
Cadmium	0.0	200.0	194.8	97.4	194.6	97.3	0.1
Chromium	47.5	200.0	226.1	89.3	220.8	86.7	3.0
Copper	20.0	200.0	218.9	99.5	213.2	96.6	2.9
Lead	19.1	200.0	212.1	96.5	210.9	95.9	0.6
Nickel	43.1	200.0	224.6	90.8	214.3	85.6	5.8
Zinc	94.8	200.0	292.9	99.1	282.6	93.9	5.3

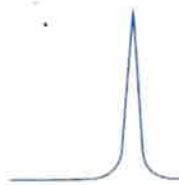
Comment:

Recovery Limits 75-125%

RPD Limit 20

Spectra Laboratories


Laboratory Manager



August 15, 2019

Herrera Environmental
2200 6th Ave
Ste 1100
Seattle, WA 98121

Sample Matrix:
Spectra Project:
Applies to:

Soil
2019080316
#1-3

Date Extracted:
Date Analyzed:
Dilution:
< = less than

8/14/2019
8/14/2019
1

SEMIVOLATILE ORGANIC ANALYSIS METHOD BLANK RESULTS

Compound	mg/Kg
Pyridine	< 0.33
N-Nitrosodimethylamine	< 0.08
Aniline	< 0.33
Phenol	< 0.08
bis(2-Chloroethyl)Ether	< 0.08
2-Chlorophenol	< 0.08
1,3-Dichlorobenzene	< 0.08
1,4-Dichlorobenzene	< 0.08
Benzyl Alcohol	< 0.08
1,2-Dichlorobenzene	< 0.08
2-Methylphenol	< 0.08
bis(2-Chloroisopropyl)Ether	< 0.08
4-Methylphenol	< 0.08
N-Nitroso-di-n-Propylamine	< 0.08
Hexachloroethane	< 0.08
Nitrobenzene	< 0.08
Isophorone	< 0.08
2-Nitrophenol	< 0.08
2,4-Dimethylphenol	< 0.08
Benzoic Acid	< 0.33
bis(2-Chloroethoxy)methane	< 0.08
2,4-Dichlorophenol	< 0.08
1,2,4-Trichlorobenzene	< 0.08
Naphthalene	< 0.03
4-Chloroaniline	< 0.08
Hexachlorobutadiene	< 0.08
4-Chloro-3-Methylphenol	< 0.08
2-Methylnaphthalene	< 0.03
Hexachlorocyclopentadiene	< 0.08
2,4,6-Trichlorophenol	< 0.08
2,4,5-Trichlorophenol	< 0.08
2-Chloronaphthalene	< 0.08
2-Nitroaniline	< 0.08
Dimethyl Phthalate	< 0.08
Acenaphthylene	< 0.03
3-Nitroaniline	< 0.08

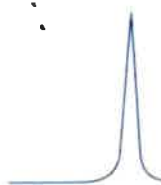
METHOD 8270

Compound	mg/Kg
Acenaphthene	< 0.03
2,4-Dinitrophenol	< 0.33
4-Nitrophenol	< 0.08
Dibenzofuran	< 0.08
2,4-Dinitrotoluene	< 0.08
2,6-Dinitrotoluene	< 0.08
Diethylphthalate	< 0.08
4-Chlorophenyl-phenylether	< 0.08
Fluorene	< 0.03
4-Nitroaniline	< 0.08
4,6-Dinitro-2-Methylphenol	< 0.33
Ni-Nitrosodiphenylamine	< 0.08
4-Bromophenyl-phenylether	< 0.08
Hexachlorobenzene	< 0.08
Pentachlorophenol	< 0.08
Phenanthrene	< 0.03
Anthracene	< 0.03
Di-n-butylphthalate	< 0.08
Fluoranthene	< 0.03
Benzidine	< 0.66
Pyrene	< 0.03
Butylbenzylphthalate	< 0.08
3,3-Dichlorobenzidine	< 0.66
Benzo(a)anthracene	< 0.03
bis(2-ethylhexyl)phthalate	< 0.08
Chrysene	< 0.03
Di-n-octyl phthalate	< 0.08
Benzo(b)Fluoranthene	< 0.03
Benzo(k)Fluoranthene	< 0.03
Benzo(a)pyrene	< 0.03
Indeno(1,2,3-c,d)pyrene	< 0.03
Dibenzo(a,h)anthracene	< 0.03
Benzo(g,h,i)perylene	< 0.03
Carbazole	< 0.08
Biphenyl	< 0.08
1-Methylnaphthalene	< 0.08
Dibenzothiophene	< 0.08
Tetrachlorophenol	< 0.08

SURROGATE RECOVERIES

Nitrobenzene-d5	38	%	2-Fluorophenol	35	%
2-Fluorobiphenyl	36	%	Phenol-d5	36	%
p-Terphenyl-d14	73	%	2,4,6-Tribromophenol	28	%


Jeffrey Cooker
Laboratory Manager



August 15, 2019

Herrera Environmental
2200 6th Ave
Ste 1100
Seattle, WA 98121

Spectra Project # 2019080316
Sample Spiked: Method Blank
Date Extracted: 8/14/2019
Date Analyzed: 8/14/2019
Units: mg/Kg
Applies to Spectra #'s: #1-3

GCMS Semi-Volatile Organic Analysis, Method 8270D (Scan Mode)
Blank Spike (LCS) Results in Soil/ Solids

Compound	Blank Conc.	Spike Added	LCS Conc.	LCS %Rec	Rec. Limits
Phenol	<0.08	2.50	0.62	25	32-84
2-Chlorophenol	<0.08	2.50	0.63	25	35-84
1,4-Dichlorobenzene	<0.08	1.67	0.41	24	15-90
N-Nitroso-Di-N-Propylamine	<0.08	1.67	0.45	27	31-104
1,2,4-Trichlorobenzene	<0.08	1.67	0.42	25	24-82
4-Chloro-3-Methylphenol	<0.08	2.50	0.65	26	34-107
Acenaphthene	<0.03	1.67	0.49	30	34-98
2,4-Dinitrotoluene	<0.08	1.67	0.51	30	32-105
4-Nitrophenol	<0.08	2.50	1.05	42	26-156
Pentachlorophenol	<0.08	2.50	0.11	5	0-85
Pyrene	<0.03	1.67	0.98	59	40-135

Surrogates	%Rec
2-Fluorophenol	24
Phenol-d5	25
Nitrobenzene-d5	30
2-Fluorobiphenyl	28
2,4,6-Tribromophenol	28
p-Terphenyl-d14	65


Jeffrey Cooper
Laboratory Manager

Marie Holt

2019080316

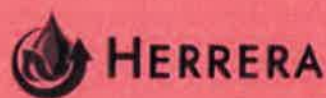
From: George Iftner <giftner@herrerainc.com>
Sent: Thursday, August 15, 2019 3:46 PM
To: Marie Holt
Cc: Jeff Cooper
Subject: RE: 2019080316 - Prairie Pit report fix?

Hi Marie,

I saw a couple of typos in the sample IDs (due to my poor handwriting I'm sure!) – can you fix and resend?

- Instead of Exc-G6B2-4, should be Exc-G6B2-4
- Instead of Exc-E3C2-2, should be Exc-E3C2-2

Thanks,
George



GEORGE IFTNER

From: Marie Holt [mailto:MarieH@spectra-lab.com]
Sent: Thursday, August 15, 2019 3:33 PM
To: George Iftner <giftner@herrerainc.com>
Subject: 2019080316 - Prairie Pit

Hello,

I hope you're having a great day! Attached are the results for the above referenced project. Please let us know if you have any questions.

Thank you for your business!

Marie Holt

Customer Support and Office Manager

SPECTRA Laboratories

2221 Ross Way
Tacoma, WA 98421
P (253) 272-4850
F (253) 572-9838
marieh@spectra-lab.com

SPECTRA Laboratories

2221 Ross Way, Tacoma, WA 98421

(253) 272-4850 Fax (253) 572-9838

www.spectra-lab.com info@spectra-lab.com

SPECIAL INSTRUCTIONS/COMMENTS:

Hold for PCBs until requested

Results by Thursday if possible

CHAIN OF CUSTODY

SPECTRA PROJECT #

2019080314

Return Samples: Y ☒ N

Page 1 of 1

STANDARD ☐

RUSH ☒

CLIENT: Herrera

ADDRESS: 2200 6th Ave., Seattle 98121

ADDRESS CHANGE ☐

PROJECT: Prairie Pit

CONTACT: George Ifthar

SAMPLED BY: George Ifthar

PHONE: 206-787-8210 FAX:

e-MAIL: giftner@herrera-inc.com Prefer FAX ☐ or e-MAIL ☒

PURCHASE ORDER # 16-06310-011 Task 105

HYDROCARBONS				ORGANICS				METALS				OTHER			
NWTPH-HCID	BTEX	BTEX/NWTPH-G	NWTPH-G	NWTPH-Dx	1664 SGT-HEM (TPH)	1664 HEM (FOG)	8260/624 VOA	8260 CHLOR SOLVENTS	8270-625 SEMI VOA	8270 PAHs	8082/608 PCB	TOTAL METALS RCRA 8	TOTAL METALS (SPECIFY) Cd, Cr, Pb, Ni, Zn	TCLP METALS RCRA 8	TCLP METALS (SPECIFY)
PH 9040/9045	TX/TX/EOX	TURBIDITY	FLASH POINT	BOD	SOLIDS (SPECIFY)										

SAMPLE ID	DATE SAMPLED	TIME SAMPLED	MATRIX	NUMBER OF CONTAINERS											
1 EXC-H8C2-5	8/12/19	14:20	Soil	1						X			X		
2 EXC-G6B2-4	8/13/19	10:00	↓	1						X			X		
3 EXC-E3C2-2	↓	15:10	↓	1						X			X		
4															
5															
6															
7															
8															
9															
10															

LAB USE ONLY

SIGNATURE

PRINTED NAME

COMPANY

DATE

TIME

RELINQUISHED BY

George Ifthar

George Ifthar

Herrera

8/13/19

16:15

RECEIVED BY

[Signature]

Kathryn Reilly

Spectra

8/13/19

16:15

RELINQUISHED BY

RECEIVED BY

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2% per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. Spectra Laboratories, LLC



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

August 8, 2019

George Iftner
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 16-06310-011
Laboratory Reference No. 1908-056

Dear George:

Enclosed are the analytical results and associated quality control data for samples submitted on August 5, 2019.

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

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

Sincerely,

A handwritten signature in black ink, appearing to read 'DB', with a long horizontal flourish extending to the right.

David Baumeister
Project Manager

Enclosures



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

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: August 8, 2019
Samples Submitted: August 5, 2019
Laboratory Reference: 1908-056
Project: 16-06310-011

Case Narrative

Samples were collected on August 5, 2019 and received by the laboratory on August 5, 2019. They were maintained at the laboratory at a temperature of 2°C to 6°C.

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

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



Date of Report: August 8, 2019
 Samples Submitted: August 5, 2019
 Laboratory Reference: 1908-056
 Project: 16-06310-011

GASOLINE RANGE ORGANICS
NWTPH-Gx

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-1					
Laboratory ID:	08-056-01					
Gasoline	ND	100	NWTPH-Gx	8-6-19	8-6-19	
Surrogate:	<i>Percent Recovery</i>	<i>Control Limits</i>				
Fluorobenzene	102	59-122				
Client ID:	MW-2					
Laboratory ID:	08-056-02					
Gasoline	ND	100	NWTPH-Gx	8-6-19	8-6-19	
Surrogate:	<i>Percent Recovery</i>	<i>Control Limits</i>				
Fluorobenzene	100	59-122				
Client ID:	MW-3					
Laboratory ID:	08-056-03					
Gasoline	ND	100	NWTPH-Gx	8-6-19	8-6-19	
Surrogate:	<i>Percent Recovery</i>	<i>Control Limits</i>				
Fluorobenzene	101	59-122				



Date of Report: August 8, 2019
 Samples Submitted: August 5, 2019
 Laboratory Reference: 1908-056
 Project: 16-06310-011

**GASOLINE RANGE ORGANICS
 NWTPH-Gx
 QUALITY CONTROL**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0806W1					
Gasoline	ND	100	NWTPH-Gx	8-6-19	8-6-19	
Surrogate:	<i>Percent Recovery</i>	<i>Control Limits</i>				
Fluorobenzene	99	59-122				

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	08-056-01							
	ORIG	DUP						
Gasoline	ND	ND	NA	NA	NA	NA	NA	30
Surrogate:								
Fluorobenzene				102	99	59-122		



Date of Report: August 8, 2019
 Samples Submitted: August 5, 2019
 Laboratory Reference: 1908-056
 Project: 16-06310-011

VOLATILE ORGANICS EPA 8260C

Matrix: Water

Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-1					
Laboratory ID:	08-056-01					
tert-Amyl Methyl Ether (TAME)	ND	1.0	EPA 8260C	8-7-19	8-7-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	98	75-127				
<i>Toluene-d8</i>	102	80-127				
<i>4-Bromofluorobenzene</i>	106	78-125				



Date of Report: August 8, 2019
 Samples Submitted: August 5, 2019
 Laboratory Reference: 1908-056
 Project: 16-06310-011

VOLATILE ORGANICS EPA 8260C

Matrix: Water

Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-2					
Laboratory ID:	08-056-02					
tert-Amyl Methyl Ether (TAME)	ND	1.0	EPA 8260C	8-7-19	8-7-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	95	75-127				
<i>Toluene-d8</i>	102	80-127				
<i>4-Bromofluorobenzene</i>	101	78-125				



Date of Report: August 8, 2019
 Samples Submitted: August 5, 2019
 Laboratory Reference: 1908-056
 Project: 16-06310-011

VOLATILE ORGANICS EPA 8260C

Matrix: Water
 Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-3					
Laboratory ID:	08-056-03					
tert-Amyl Methyl Ether (TAME)	ND	1.0	EPA 8260C	8-7-19	8-7-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
Dibromofluoromethane	95	75-127				
Toluene-d8	103	80-127				
4-Bromofluorobenzene	104	78-125				



Date of Report: August 8, 2019
 Samples Submitted: August 5, 2019
 Laboratory Reference: 1908-056
 Project: 16-06310-011

**VOLATILE ORGANICS EPA 8260C
 METHOD BLANK QUALITY CONTROL**

Matrix: Water
 Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
<hr/>						
Laboratory ID:	MB0807W2					
tert-Amyl Methyl Ether (TAME)	ND	1.0	EPA 8260C	8-7-19	8-7-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	96	75-127				
<i>Toluene-d8</i>	102	80-127				
<i>4-Bromofluorobenzene</i>	105	78-125				



Date of Report: August 8, 2019
 Samples Submitted: August 5, 2019
 Laboratory Reference: 1908-056
 Project: 16-06310-011

**VOLATILE ORGANICS EPA 8260C
 SB/SBD QUALITY CONTROL**

Matrix: Water

Units: ug/L

Analyte	Result		Spike Level		Percent		Recovery		RPD	
					Recovery		Limits		RPD	Limit
SPIKE BLANKS										
Laboratory ID:	SB0807W1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	10.3	9.85	10.0	10.0	103	99	63-130	4	17	
Benzene	9.95	9.68	10.0	10.0	100	97	76-125	3	19	
Trichloroethene	10.9	10.5	10.0	10.0	109	105	76-121	4	18	
Toluene	10.2	9.90	10.0	10.0	102	99	80-124	3	18	
Chlorobenzene	11.1	10.3	10.0	10.0	111	103	75-120	7	19	
Surrogate:										
Dibromofluoromethane					100	102	75-127			
Toluene-d8					100	100	80-127			
4-Bromofluorobenzene					100	97	78-125			



Date of Report: August 8, 2019
 Samples Submitted: August 5, 2019
 Laboratory Reference: 1908-056
 Project: 16-06310-011

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-1					
Laboratory ID:	08-056-01					
Diesel Range Organics	ND	0.29	NWTPH-Dx	8-6-19	8-6-19	
Lube Oil Range Organics	ND	0.46	NWTPH-Dx	8-6-19	8-6-19	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	95	50-150				
Client ID:	MW-2					
Laboratory ID:	08-056-02					
Diesel Range Organics	ND	0.26	NWTPH-Dx	8-6-19	8-6-19	
Lube Oil Range Organics	ND	0.41	NWTPH-Dx	8-6-19	8-6-19	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	100	50-150				
Client ID:	MW-3					
Laboratory ID:	08-056-03					
Diesel Range Organics	ND	0.25	NWTPH-Dx	8-6-19	8-6-19	
Lube Oil Range Organics	ND	0.40	NWTPH-Dx	8-6-19	8-6-19	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	96	50-150				



Date of Report: August 8, 2019
 Samples Submitted: August 5, 2019
 Laboratory Reference: 1908-056
 Project: 16-06310-011

**DIESEL AND HEAVY OIL RANGE ORGANICS
 NWTPH-Dx
 QUALITY CONTROL**

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0806W1					
Diesel Range Organics	ND	0.25	NWTPH-Dx	8-6-19	8-6-19	
Lube Oil Range Organics	ND	0.40	NWTPH-Dx	8-6-19	8-6-19	
Surrogate:	Percent Recovery	Control Limits				
<i>o</i> -Terphenyl	87	50-150				

Analyte	Result		Spike Level		Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE										
Laboratory ID:	SB0806W1									
	ORIG	DUP								
Diesel Fuel #2	0.775	0.768	NA	NA		NA	NA	1	NA	
Lube Oil Range	ND	ND	NA	NA		NA	NA	NA	NA	
Surrogate:										
o-Terphenyl						91	90	50-150		



Date of Report: August 8, 2019
 Samples Submitted: August 5, 2019
 Laboratory Reference: 1908-056
 Project: 16-06310-011

VOLATILE ORGANICS EPA 8260C
 page 1 of 2

Matrix: Water
 Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-1					
Laboratory ID:	08-056-01					
Dichlorodifluoromethane	ND	0.25	EPA 8260C	8-6-19	8-6-19	
Chloromethane	ND	1.0	EPA 8260C	8-6-19	8-6-19	
Vinyl Chloride	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Bromomethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Chloroethane	ND	1.0	EPA 8260C	8-6-19	8-6-19	
Trichlorofluoromethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,1-Dichloroethene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Iodomethane	ND	1.0	EPA 8260C	8-6-19	8-6-19	
Methylene Chloride	ND	1.0	EPA 8260C	8-6-19	8-6-19	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,1-Dichloroethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
2,2-Dichloropropane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Bromochloromethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Chloroform	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Carbon Tetrachloride	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,1-Dichloropropene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Benzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,2-Dichloroethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Trichloroethene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,2-Dichloropropane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Dibromomethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Bromodichloromethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	8-6-19	8-6-19	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Toluene	ND	1.0	EPA 8260C	8-6-19	8-6-19	
(trans) 1,3-Dichloropropene	ND	0.27	EPA 8260C	8-6-19	8-6-19	



Date of Report: August 8, 2019
 Samples Submitted: August 5, 2019
 Laboratory Reference: 1908-056
 Project: 16-06310-011

VOLATILE ORGANICS EPA 8260C
 page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-1					
Laboratory ID:	08-056-01					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Tetrachloroethene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,3-Dichloropropane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Dibromochloromethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,2-Dibromoethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Chlorobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Ethylbenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
m,p-Xylene	ND	0.40	EPA 8260C	8-6-19	8-6-19	
o-Xylene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Bromoform	ND	1.0	EPA 8260C	8-6-19	8-6-19	
Bromobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,2,3-Trichloropropane	ND	0.25	EPA 8260C	8-6-19	8-6-19	
2-Chlorotoluene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
4-Chlorotoluene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	8-6-19	8-6-19	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Hexachlorobutadiene	ND	1.0	EPA 8260C	8-6-19	8-6-19	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>103</i>	<i>75-127</i>				
<i>Toluene-d8</i>	<i>99</i>	<i>80-127</i>				
<i>4-Bromofluorobenzene</i>	<i>96</i>	<i>78-125</i>				



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Matrix: Water
 Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-2					
Laboratory ID:	08-056-02					
Dichlorodifluoromethane	ND	0.25	EPA 8260C	8-6-19	8-6-19	
Chloromethane	ND	1.0	EPA 8260C	8-6-19	8-6-19	
Vinyl Chloride	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Bromomethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Chloroethane	ND	1.0	EPA 8260C	8-6-19	8-6-19	
Trichlorofluoromethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,1-Dichloroethene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Iodomethane	ND	1.0	EPA 8260C	8-6-19	8-6-19	
Methylene Chloride	ND	1.0	EPA 8260C	8-6-19	8-6-19	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,1-Dichloroethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
2,2-Dichloropropane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Bromochloromethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Chloroform	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Carbon Tetrachloride	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,1-Dichloropropene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Benzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,2-Dichloroethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Trichloroethene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,2-Dichloropropane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Dibromomethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Bromodichloromethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	8-6-19	8-6-19	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Toluene	ND	1.0	EPA 8260C	8-6-19	8-6-19	
(trans) 1,3-Dichloropropene	ND	0.27	EPA 8260C	8-6-19	8-6-19	



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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-2					
Laboratory ID:	08-056-02					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Tetrachloroethene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,3-Dichloropropane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Dibromochloromethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,2-Dibromoethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Chlorobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Ethylbenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
m,p-Xylene	ND	0.40	EPA 8260C	8-6-19	8-6-19	
o-Xylene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Bromoform	ND	1.0	EPA 8260C	8-6-19	8-6-19	
Bromobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,2,3-Trichloropropane	ND	0.25	EPA 8260C	8-6-19	8-6-19	
2-Chlorotoluene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
4-Chlorotoluene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	8-6-19	8-6-19	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Hexachlorobutadiene	ND	1.0	EPA 8260C	8-6-19	8-6-19	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>102</i>	<i>75-127</i>				
<i>Toluene-d8</i>	<i>99</i>	<i>80-127</i>				
<i>4-Bromofluorobenzene</i>	<i>98</i>	<i>78-125</i>				



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Matrix: Water
 Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-3					
Laboratory ID:	08-056-03					
Dichlorodifluoromethane	ND	0.25	EPA 8260C	8-6-19	8-6-19	
Chloromethane	ND	1.0	EPA 8260C	8-6-19	8-6-19	
Vinyl Chloride	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Bromomethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Chloroethane	ND	1.0	EPA 8260C	8-6-19	8-6-19	
Trichlorofluoromethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,1-Dichloroethene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Iodomethane	ND	1.0	EPA 8260C	8-6-19	8-6-19	
Methylene Chloride	ND	1.0	EPA 8260C	8-6-19	8-6-19	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,1-Dichloroethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
2,2-Dichloropropane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Bromochloromethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Chloroform	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Carbon Tetrachloride	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,1-Dichloropropene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Benzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,2-Dichloroethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Trichloroethene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,2-Dichloropropane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Dibromomethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Bromodichloromethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	8-6-19	8-6-19	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Toluene	ND	1.0	EPA 8260C	8-6-19	8-6-19	
(trans) 1,3-Dichloropropene	ND	0.27	EPA 8260C	8-6-19	8-6-19	



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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-3					
Laboratory ID:	08-056-03					
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Tetrachloroethene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,3-Dichloropropane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Dibromochloromethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,2-Dibromoethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Chlorobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Ethylbenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
m,p-Xylene	ND	0.40	EPA 8260C	8-6-19	8-6-19	
o-Xylene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Bromoform	ND	1.0	EPA 8260C	8-6-19	8-6-19	
Bromobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,2,3-Trichloropropane	ND	0.25	EPA 8260C	8-6-19	8-6-19	
2-Chlorotoluene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
4-Chlorotoluene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	8-6-19	8-6-19	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Hexachlorobutadiene	ND	1.0	EPA 8260C	8-6-19	8-6-19	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>102</i>	<i>75-127</i>				
<i>Toluene-d8</i>	<i>98</i>	<i>80-127</i>				
<i>4-Bromofluorobenzene</i>	<i>96</i>	<i>78-125</i>				



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VOLATILE ORGANICS EPA 8260C
METHOD BLANK QUALITY CONTROL
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Matrix: Water
 Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
<hr/>						
Laboratory ID:	MB0806W1					
Dichlorodifluoromethane	ND	0.25	EPA 8260C	8-6-19	8-6-19	
Chloromethane	ND	1.0	EPA 8260C	8-6-19	8-6-19	
Vinyl Chloride	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Bromomethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Chloroethane	ND	1.0	EPA 8260C	8-6-19	8-6-19	
Trichlorofluoromethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,1-Dichloroethene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Iodomethane	ND	1.0	EPA 8260C	8-6-19	8-6-19	
Methylene Chloride	ND	1.0	EPA 8260C	8-6-19	8-6-19	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,1-Dichloroethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
2,2-Dichloropropane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Bromochloromethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Chloroform	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,1,1-Trichloroethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Carbon Tetrachloride	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,1-Dichloropropene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Benzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,2-Dichloroethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Trichloroethene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,2-Dichloropropane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Dibromomethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Bromodichloromethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
2-Chloroethyl Vinyl Ether	ND	1.0	EPA 8260C	8-6-19	8-6-19	
(cis) 1,3-Dichloropropene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Toluene	ND	1.0	EPA 8260C	8-6-19	8-6-19	
(trans) 1,3-Dichloropropene	ND	0.27	EPA 8260C	8-6-19	8-6-19	



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METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID: MB0806W1						
1,1,2-Trichloroethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Tetrachloroethene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,3-Dichloropropane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Dibromochloromethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,2-Dibromoethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Chlorobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Ethylbenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
m,p-Xylene	ND	0.40	EPA 8260C	8-6-19	8-6-19	
o-Xylene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Bromoform	ND	1.0	EPA 8260C	8-6-19	8-6-19	
Bromobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,2,3-Trichloropropane	ND	0.25	EPA 8260C	8-6-19	8-6-19	
2-Chlorotoluene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
4-Chlorotoluene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,3-Dichlorobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,4-Dichlorobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,2-Dichlorobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260C	8-6-19	8-6-19	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
Hexachlorobutadiene	ND	1.0	EPA 8260C	8-6-19	8-6-19	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260C	8-6-19	8-6-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>105</i>	<i>75-127</i>				
<i>Toluene-d8</i>	<i>100</i>	<i>80-127</i>				
<i>4-Bromofluorobenzene</i>	<i>100</i>	<i>78-125</i>				



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**VOLATILE ORGANICS EPA 8260C
 SB/SBD QUALITY CONTROL**

Matrix: Water

Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0806W1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	10.2	10.3	10.0	10.0	102	103	63-130	1	17	
Benzene	10.2	10.2	10.0	10.0	102	102	76-125	0	19	
Trichloroethene	10.9	10.8	10.0	10.0	109	108	76-121	1	18	
Toluene	10.3	10.1	10.0	10.0	103	101	80-124	2	18	
Chlorobenzene	11.0	10.9	10.0	10.0	110	109	75-120	1	19	
Surrogate:										
Dibromofluoromethane					104	106	75-127			
Toluene-d8					102	101	80-127			
4-Bromofluorobenzene					101	100	78-125			



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**1,2-DIBROMOETHANE (EDB)
 EPA 8011**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-1					
Laboratory ID:	08-056-01					
EDB	ND	0.0096	EPA 8011	8-8-19	8-8-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
TCMX	99	25-143				
Client ID:	MW-2					
Laboratory ID:	08-056-02					
EDB	ND	0.0096	EPA 8011	8-8-19	8-8-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
TCMX	103	25-143				
Client ID:	MW-3					
Laboratory ID:	08-056-03					
EDB	ND	0.0097	EPA 8011	8-8-19	8-8-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
TCMX	64	25-143				



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**1,2-DIBROMOETHANE (EDB)
 EPA 8011
 QUALITY CONTROL**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0808W1					
EDB	ND	0.010	EPA 8011	8-8-19	8-8-19	
Surrogate:	Percent Recovery	Control Limits				
TCMX	74	25-143				

Analyte	Result		Spike Level		Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0808W1									
	SB	SBD	SB	SBD		SB	SBD			
EDB	0.0803	0.0787	0.100	0.100	N/A	80	79	57-124	2	15
Surrogate:										
TCMX						59	67	25-143		



Date of Report: August 8, 2019
 Samples Submitted: August 5, 2019
 Laboratory Reference: 1908-056
 Project: 16-06310-011

PCBs EPA 8082A

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-1					
Laboratory ID:	08-056-01					
Aroclor 1016	ND	0.054	EPA 8082A	8-7-19	8-8-19	
Aroclor 1221	ND	0.054	EPA 8082A	8-7-19	8-8-19	
Aroclor 1232	ND	0.054	EPA 8082A	8-7-19	8-8-19	
Aroclor 1242	ND	0.054	EPA 8082A	8-7-19	8-8-19	
Aroclor 1248	ND	0.054	EPA 8082A	8-7-19	8-8-19	
Aroclor 1254	ND	0.054	EPA 8082A	8-7-19	8-8-19	
Aroclor 1260	ND	0.054	EPA 8082A	8-7-19	8-8-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	87	50-153				
Client ID:	MW-2					
Laboratory ID:	08-056-02					
Aroclor 1016	ND	0.051	EPA 8082A	8-7-19	8-8-19	
Aroclor 1221	ND	0.051	EPA 8082A	8-7-19	8-8-19	
Aroclor 1232	ND	0.051	EPA 8082A	8-7-19	8-8-19	
Aroclor 1242	ND	0.051	EPA 8082A	8-7-19	8-8-19	
Aroclor 1248	ND	0.051	EPA 8082A	8-7-19	8-8-19	
Aroclor 1254	ND	0.051	EPA 8082A	8-7-19	8-8-19	
Aroclor 1260	ND	0.051	EPA 8082A	8-7-19	8-8-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	101	50-153				
Client ID:	MW-3					
Laboratory ID:	08-056-03					
Aroclor 1016	ND	0.050	EPA 8082A	8-7-19	8-8-19	
Aroclor 1221	ND	0.050	EPA 8082A	8-7-19	8-8-19	
Aroclor 1232	ND	0.050	EPA 8082A	8-7-19	8-8-19	
Aroclor 1242	ND	0.050	EPA 8082A	8-7-19	8-8-19	
Aroclor 1248	ND	0.050	EPA 8082A	8-7-19	8-8-19	
Aroclor 1254	ND	0.050	EPA 8082A	8-7-19	8-8-19	
Aroclor 1260	ND	0.050	EPA 8082A	8-7-19	8-8-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	101	50-153				



Date of Report: August 8, 2019
 Samples Submitted: August 5, 2019
 Laboratory Reference: 1908-056
 Project: 16-06310-011

**PCBs EPA 8082A
 QUALITY CONTROL**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0807W1					
Aroclor 1016	ND	0.050	EPA 8082A	8-7-19	8-8-19	
Aroclor 1221	ND	0.050	EPA 8082A	8-7-19	8-8-19	
Aroclor 1232	ND	0.050	EPA 8082A	8-7-19	8-8-19	
Aroclor 1242	ND	0.050	EPA 8082A	8-7-19	8-8-19	
Aroclor 1248	ND	0.050	EPA 8082A	8-7-19	8-8-19	
Aroclor 1254	ND	0.050	EPA 8082A	8-7-19	8-8-19	
Aroclor 1260	ND	0.050	EPA 8082A	8-7-19	8-8-19	
Surrogate:	Percent Recovery	Control Limits				
DCB	110	50-153				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS											
Laboratory ID:	SB0807W1										
	SB	SBD	SB	SBD		SB	SBD				
Aroclor 1260	0.503	0.528	0.500	0.500	N/A	101	106	78-129	5	12	
Surrogate:											
DCB						107	111	50-153			



Date of Report: August 8, 2019
 Samples Submitted: August 5, 2019
 Laboratory Reference: 1908-056
 Project: 16-06310-011

TOTAL METALS
EPA 200.8

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID: MW-1						
Laboratory ID: 08-056-01						
Cadmium	ND	4.4	EPA 200.8	8-7-19	8-7-19	
Chromium	22	11	EPA 200.8	8-7-19	8-8-19	
Lead	4.6	1.1	EPA 200.8	8-7-19	8-7-19	
Nickel	ND	22	EPA 200.8	8-7-19	8-7-19	
Zinc	40	28	EPA 200.8	8-7-19	8-7-19	

Client ID: MW-2						
Laboratory ID: 08-056-02						
Cadmium	ND	4.4	EPA 200.8	8-7-19	8-7-19	
Chromium	ND	11	EPA 200.8	8-7-19	8-8-19	
Lead	ND	1.1	EPA 200.8	8-7-19	8-7-19	
Nickel	ND	22	EPA 200.8	8-7-19	8-7-19	
Zinc	ND	28	EPA 200.8	8-7-19	8-7-19	

Client ID: MW-3						
Laboratory ID: 08-056-03						
Cadmium	ND	4.4	EPA 200.8	8-7-19	8-7-19	
Chromium	ND	11	EPA 200.8	8-7-19	8-8-19	
Lead	ND	1.1	EPA 200.8	8-7-19	8-7-19	
Nickel	ND	22	EPA 200.8	8-7-19	8-7-19	
Zinc	ND	28	EPA 200.8	8-7-19	8-7-19	



Date of Report: August 8, 2019
 Samples Submitted: August 5, 2019
 Laboratory Reference: 1908-056
 Project: 16-06310-011

**TOTAL METALS
 EPA 200.8
 QUALITY CONTROL**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0807WH1					
Cadmium	ND	4.4	EPA 200.8	8-7-19	8-7-19	
Chromium	ND	11	EPA 200.8	8-7-19	8-7-19	
Lead	ND	1.1	EPA 200.8	8-7-19	8-7-19	
Nickel	ND	22	EPA 200.8	8-7-19	8-7-19	
Zinc	ND	28	EPA 200.8	8-7-19	8-7-19	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	08-049-01							
	ORIG	DUP						
Cadmium	ND	ND	NA	NA	NA	NA	NA	20
Chromium	ND	ND	NA	NA	NA	NA	NA	20
Lead	ND	ND	NA	NA	NA	NA	NA	20
Nickel	ND	ND	NA	NA	NA	NA	NA	20
Zinc	ND	ND	NA	NA	NA	NA	NA	20

MATRIX SPIKES

Laboratory ID:	08-049-01									
	MS	MSD	MS	MSD		MS	MSD			
Cadmium	118	116	111	111	ND	107	105	75-125	2	20
Chromium	103	106	111	111	ND	93	95	75-125	2	20
Lead	112	112	111	111	ND	101	101	75-125	0	20
Nickel	108	107	111	111	ND	98	96	75-125	1	20
Zinc	110	111	111	111	ND	99	100	75-125	1	20



Date of Report: August 8, 2019
 Samples Submitted: August 5, 2019
 Laboratory Reference: 1908-056
 Project: 16-06310-011

PAHs EPA 8270D/SIM

Matrix: Water
 Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-1					
Laboratory ID:	08-056-01					
Naphthalene	ND	0.11	EPA 8270D/SIM	8-8-19	8-8-19	
2-Methylnaphthalene	ND	0.11	EPA 8270D/SIM	8-8-19	8-8-19	
1-Methylnaphthalene	ND	0.11	EPA 8270D/SIM	8-8-19	8-8-19	
Benzo[a]anthracene	ND	0.011	EPA 8270D/SIM	8-8-19	8-8-19	
Chrysene	ND	0.011	EPA 8270D/SIM	8-8-19	8-8-19	
Benzo[b]fluoranthene	ND	0.011	EPA 8270D/SIM	8-8-19	8-8-19	
Benzo(j,k)fluoranthene	ND	0.011	EPA 8270D/SIM	8-8-19	8-8-19	
Benzo[a]pyrene	ND	0.011	EPA 8270D/SIM	8-8-19	8-8-19	
Indeno(1,2,3-c,d)pyrene	ND	0.011	EPA 8270D/SIM	8-8-19	8-8-19	
Dibenz[a,h]anthracene	ND	0.011	EPA 8270D/SIM	8-8-19	8-8-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
2-Fluorobiphenyl	78	27 - 106				
Pyrene-d10	83	35 - 98				
Terphenyl-d14	85	41 - 129				



Date of Report: August 8, 2019
 Samples Submitted: August 5, 2019
 Laboratory Reference: 1908-056
 Project: 16-06310-011

PAHs EPA 8270D/SIM

Matrix: Water
 Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-2					
Laboratory ID:	08-056-02					
Naphthalene	ND	0.10	EPA 8270D/SIM	8-8-19	8-8-19	
2-Methylnaphthalene	ND	0.10	EPA 8270D/SIM	8-8-19	8-8-19	
1-Methylnaphthalene	ND	0.10	EPA 8270D/SIM	8-8-19	8-8-19	
Benzo[a]anthracene	ND	0.010	EPA 8270D/SIM	8-8-19	8-8-19	
Chrysene	ND	0.010	EPA 8270D/SIM	8-8-19	8-8-19	
Benzo[b]fluoranthene	ND	0.010	EPA 8270D/SIM	8-8-19	8-8-19	
Benzo(j,k)fluoranthene	ND	0.010	EPA 8270D/SIM	8-8-19	8-8-19	
Benzo[a]pyrene	ND	0.010	EPA 8270D/SIM	8-8-19	8-8-19	
Indeno(1,2,3-c,d)pyrene	ND	0.010	EPA 8270D/SIM	8-8-19	8-8-19	
Dibenz[a,h]anthracene	ND	0.010	EPA 8270D/SIM	8-8-19	8-8-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
2-Fluorobiphenyl	58	27 - 106				
Pyrene-d10	73	35 - 98				
Terphenyl-d14	75	41 - 129				



Date of Report: August 8, 2019
 Samples Submitted: August 5, 2019
 Laboratory Reference: 1908-056
 Project: 16-06310-011

PAHs EPA 8270D/SIM

Matrix: Water
 Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-3					
Laboratory ID:	08-056-03					
Naphthalene	ND	0.11	EPA 8270D/SIM	8-8-19	8-8-19	
2-Methylnaphthalene	ND	0.11	EPA 8270D/SIM	8-8-19	8-8-19	
1-Methylnaphthalene	ND	0.11	EPA 8270D/SIM	8-8-19	8-8-19	
Benzo[a]anthracene	ND	0.011	EPA 8270D/SIM	8-8-19	8-8-19	
Chrysene	ND	0.011	EPA 8270D/SIM	8-8-19	8-8-19	
Benzo[b]fluoranthene	ND	0.011	EPA 8270D/SIM	8-8-19	8-8-19	
Benzo(j,k)fluoranthene	ND	0.011	EPA 8270D/SIM	8-8-19	8-8-19	
Benzo[a]pyrene	ND	0.011	EPA 8270D/SIM	8-8-19	8-8-19	
Indeno(1,2,3-c,d)pyrene	ND	0.011	EPA 8270D/SIM	8-8-19	8-8-19	
Dibenz[a,h]anthracene	ND	0.011	EPA 8270D/SIM	8-8-19	8-8-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
2-Fluorobiphenyl	60	27 - 106				
Pyrene-d10	68	35 - 98				
Terphenyl-d14	69	41 - 129				



Date of Report: August 8, 2019
 Samples Submitted: August 5, 2019
 Laboratory Reference: 1908-056
 Project: 16-06310-011

**PAHs EPA 8270D/SIM
 METHOD BLANK QUALITY CONTROL**

Matrix: Water
 Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
<hr/>						
Laboratory ID:	MB0808W1					
Naphthalene	ND	0.10	EPA 8270D/SIM	8-8-19	8-8-19	
2-Methylnaphthalene	ND	0.10	EPA 8270D/SIM	8-8-19	8-8-19	
1-Methylnaphthalene	ND	0.10	EPA 8270D/SIM	8-8-19	8-8-19	
Benzo[a]anthracene	ND	0.010	EPA 8270D/SIM	8-8-19	8-8-19	
Chrysene	ND	0.010	EPA 8270D/SIM	8-8-19	8-8-19	
Benzo[b]fluoranthene	ND	0.010	EPA 8270D/SIM	8-8-19	8-8-19	
Benzo(j,k)fluoranthene	ND	0.010	EPA 8270D/SIM	8-8-19	8-8-19	
Benzo[a]pyrene	ND	0.010	EPA 8270D/SIM	8-8-19	8-8-19	
Indeno(1,2,3-c,d)pyrene	ND	0.010	EPA 8270D/SIM	8-8-19	8-8-19	
Dibenz[a,h]anthracene	ND	0.010	EPA 8270D/SIM	8-8-19	8-8-19	
<hr/>						
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>2-Fluorobiphenyl</i>	<i>69</i>	<i>27 - 106</i>				
<i>Pyrene-d10</i>	<i>90</i>	<i>35 - 98</i>				
<i>Terphenyl-d14</i>	<i>93</i>	<i>41 - 129</i>				



Date of Report: August 8, 2019
 Samples Submitted: August 5, 2019
 Laboratory Reference: 1908-056
 Project: 16-06310-011

**PAHs EPA 8270D/SIM
 SB/SBD QUALITY CONTROL**

Matrix: Water
 Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0808W1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	0.311	0.323	0.500	0.500	62	65	36 - 99	4	40	
Benzo[a]anthracene	0.451	0.463	0.500	0.500	90	93	59 - 127	3	24	
Chrysene	0.373	0.396	0.500	0.500	75	79	57 - 122	6	24	
Benzo[b]fluoranthene	0.439	0.483	0.500	0.500	88	97	58 - 123	10	26	
Benzo(j,k)fluoranthene	0.425	0.423	0.500	0.500	85	85	60 - 123	0	22	
Benzo[a]pyrene	0.405	0.423	0.500	0.500	81	85	54 - 121	4	24	
Indeno(1,2,3-c,d)pyrene	0.429	0.445	0.500	0.500	86	89	55 - 125	4	26	
Dibenz[a,h]anthracene	0.422	0.443	0.500	0.500	84	89	57 - 127	5	25	
Surrogate:										
2-Fluorobiphenyl					64	70	27 - 106			
Pyrene-d10					77	83	35 - 98			
Terphenyl-d14					88	93	41 - 129			



Date of Report: August 8, 2019
 Samples Submitted: August 5, 2019
 Laboratory Reference: 1908-056
 Project: 16-06310-011

DISSOLVED METALS
EPA 200.8

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-1					
Laboratory ID:	08-056-01					
Cadmium	ND	4.0	EPA 200.8	8-7-19	8-7-19	
Chromium	ND	10	EPA 200.8	8-7-19	8-7-19	
Lead	ND	1.0	EPA 200.8	8-7-19	8-7-19	
Nickel	ND	20	EPA 200.8	8-7-19	8-7-19	
Zinc	ND	25	EPA 200.8	8-7-19	8-7-19	

Client ID:	MW-2					
Laboratory ID:	08-056-02					
Cadmium	ND	4.0	EPA 200.8	8-7-19	8-7-19	
Chromium	ND	10	EPA 200.8	8-7-19	8-7-19	
Lead	ND	1.0	EPA 200.8	8-7-19	8-7-19	
Nickel	ND	20	EPA 200.8	8-7-19	8-7-19	
Zinc	ND	25	EPA 200.8	8-7-19	8-7-19	

Client ID:	MW-3					
Laboratory ID:	08-056-03					
Cadmium	ND	4.0	EPA 200.8	8-7-19	8-7-19	
Chromium	ND	10	EPA 200.8	8-7-19	8-7-19	
Lead	ND	1.0	EPA 200.8	8-7-19	8-7-19	
Nickel	ND	20	EPA 200.8	8-7-19	8-7-19	
Zinc	ND	25	EPA 200.8	8-7-19	8-7-19	



Date of Report: August 8, 2019
 Samples Submitted: August 5, 2019
 Laboratory Reference: 1908-056
 Project: 16-06310-011

**DISSOLVED METALS
 EPA 200.8
 QUALITY CONTROL**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0807D1					
Cadmium	ND	4.0	EPA 200.8	8-7-19	8-7-19	
Chromium	ND	10	EPA 200.8	8-7-19	8-7-19	
Lead	ND	1.0	EPA 200.8	8-7-19	8-7-19	
Nickel	ND	20	EPA 200.8	8-7-19	8-7-19	
Zinc	ND	25	EPA 200.8	8-7-19	8-7-19	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	08-015-01							
	ORIG	DUP						
Cadmium	ND	ND	NA	NA	NA	NA	NA	20
Chromium	ND	ND	NA	NA	NA	NA	NA	20
Lead	ND	ND	NA	NA	NA	NA	NA	20
Nickel	ND	ND	NA	NA	NA	NA	NA	20
Zinc	36.2	36.2	NA	NA	NA	NA	0	20

MATRIX SPIKES

Laboratory ID:	08-015-02									
	MS	MSD	MS	MSD		MS	MSD			
Cadmium	76.4	77.6	80.0	80.0	ND	96	97	75-125	2	20
Chromium	65.8	65.4	80.0	80.0	ND	82	82	75-125	1	20
Lead	77.4	78.8	80.0	80.0	ND	97	99	75-125	2	20
Nickel	68.6	68.2	80.0	80.0	ND	86	85	75-125	1	20
Zinc	107	103	80.0	80.0	36.2	88	84	75-125	3	20





Data Qualifiers and Abbreviations

- A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
- B - The analyte indicated was also found in the blank sample.
- C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
- E - The value reported exceeds the quantitation range and is an estimate.
- F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
- H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
- I - Compound recovery is outside of the control limits.
- J - The value reported was below the practical quantitation limit. The value is an estimate.
- K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
- L - The RPD is outside of the control limits.
- M - Hydrocarbons in the gasoline range are impacting the diesel range result.
- M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
- N - Hydrocarbons in the lube oil range are impacting the diesel range result.
- N1 - Hydrocarbons in diesel range are impacting lube oil range results.
- O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
- P - The RPD of the detected concentrations between the two columns is greater than 40.
- Q - Surrogate recovery is outside of the control limits.
- S - Surrogate recovery data is not available due to the necessary dilution of the sample.
- T - The sample chromatogram is not similar to a typical _____.
- U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- U1 - The practical quantitation limit is elevated due to interferences present in the sample.
- V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
- W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
- X - Sample extract treated with a mercury cleanup procedure.
- X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.
- Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.
- Z -
- ND - Not Detected at PQL
- PQL - Practical Quantitation Limit
- RPD - Relative Percent Difference





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

November 8, 2019

George Iftner
Herrera Environmental Consultants, Inc.
2200 6th Avenue, Suite 1100
Seattle, WA 98121

Re: Analytical Data for Project 16-06310-011
Laboratory Reference No. 1911-015

Dear George:

Enclosed are the analytical results and associated quality control data for samples submitted on November 1, 2019.

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

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

Sincerely,

A handwritten signature in black ink, appearing to read 'DB', with a long horizontal flourish extending to the right.

David Baumeister
Project Manager

Enclosures



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

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: November 8, 2019
Samples Submitted: November 1, 2019
Laboratory Reference: 1911-015
Project: 16-06310-011

Case Narrative

Samples were collected on November 1, 2019 and received by the laboratory on November 1, 2019. They were maintained at the laboratory at a temperature of 2°C to 6°C.

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

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

PAHs EPA 8270E/SIM:

Sample MW-3, the method blank and spike blanks each had one surrogate recovery out of control limits. This is within allowance of our standard operating procedure as long as the recovery is above 10%.

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



Date of Report: November 8, 2019
 Samples Submitted: November 1, 2019
 Laboratory Reference: 1911-015
 Project: 16-06310-011

GASOLINE RANGE ORGANICS
NWTPH-Gx

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-1					
Laboratory ID:	11-015-01					
Gasoline	ND	100	NWTPH-Gx	11-4-19	11-4-19	
Surrogate:	<i>Percent Recovery</i>	<i>Control Limits</i>				
Fluorobenzene	89	59-122				
Client ID:	MW-2					
Laboratory ID:	11-015-02					
Gasoline	ND	100	NWTPH-Gx	11-4-19	11-4-19	
Surrogate:	<i>Percent Recovery</i>	<i>Control Limits</i>				
Fluorobenzene	89	59-122				
Client ID:	MW-3					
Laboratory ID:	11-015-03					
Gasoline	ND	100	NWTPH-Gx	11-4-19	11-4-19	
Surrogate:	<i>Percent Recovery</i>	<i>Control Limits</i>				
Fluorobenzene	88	59-122				
Client ID:	Trip Blank					
Laboratory ID:	11-015-04					
Gasoline	ND	100	NWTPH-Gx	11-4-19	11-4-19	
Surrogate:	<i>Percent Recovery</i>	<i>Control Limits</i>				
Fluorobenzene	92	59-122				



Date of Report: November 8, 2019
 Samples Submitted: November 1, 2019
 Laboratory Reference: 1911-015
 Project: 16-06310-011

**GASOLINE RANGE ORGANICS
 NWTPH-Gx
 QUALITY CONTROL**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1104W1					
Gasoline	ND	100	NWTPH-Gx	11-4-19	11-4-19	
Surrogate:	Percent Recovery	Control Limits				
Fluorobenzene	89	59-122				

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	11-015-01							
	ORIG	DUP						
Gasoline	ND	ND	NA	NA	NA	NA	30	
Surrogate:								
Fluorobenzene				89	87	59-122		



Date of Report: November 8, 2019
 Samples Submitted: November 1, 2019
 Laboratory Reference: 1911-015
 Project: 16-06310-011

VOLATILE ORGANICS EPA 8260D

Matrix: Water
 Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-1					
Laboratory ID:	11-015-01					
Benzene	ND	0.20	EPA 8260D	11-4-19	11-4-19	
1,2-Dichloroethane	ND	0.20	EPA 8260D	11-4-19	11-4-19	
Toluene	ND	1.0	EPA 8260D	11-4-19	11-4-19	
Ethylbenzene	ND	0.20	EPA 8260D	11-4-19	11-4-19	
m,p-Xylene	ND	0.40	EPA 8260D	11-4-19	11-4-19	
o-Xylene	ND	0.20	EPA 8260D	11-4-19	11-4-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>111</i>	<i>75-127</i>				
<i>Toluene-d8</i>	<i>102</i>	<i>80-127</i>				
<i>4-Bromofluorobenzene</i>	<i>89</i>	<i>78-125</i>				



Date of Report: November 8, 2019
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 Project: 16-06310-011

VOLATILE ORGANICS EPA 8260D

Matrix: Water
 Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-2					
Laboratory ID:	11-015-02					
Benzene	ND	0.20	EPA 8260D	11-4-19	11-4-19	
1,2-Dichloroethane	ND	0.20	EPA 8260D	11-4-19	11-4-19	
Toluene	ND	1.0	EPA 8260D	11-4-19	11-4-19	
Ethylbenzene	ND	0.20	EPA 8260D	11-4-19	11-4-19	
m,p-Xylene	ND	0.40	EPA 8260D	11-4-19	11-4-19	
o-Xylene	ND	0.20	EPA 8260D	11-4-19	11-4-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>114</i>	<i>75-127</i>				
<i>Toluene-d8</i>	<i>105</i>	<i>80-127</i>				
<i>4-Bromofluorobenzene</i>	<i>98</i>	<i>78-125</i>				



Date of Report: November 8, 2019
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VOLATILE ORGANICS EPA 8260D

Matrix: Water
 Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-3					
Laboratory ID:	11-015-03					
Benzene	ND	0.20	EPA 8260D	11-4-19	11-4-19	
1,2-Dichloroethane	ND	0.20	EPA 8260D	11-4-19	11-4-19	
Toluene	ND	1.0	EPA 8260D	11-4-19	11-4-19	
Ethylbenzene	ND	0.20	EPA 8260D	11-4-19	11-4-19	
m,p-Xylene	ND	0.40	EPA 8260D	11-4-19	11-4-19	
o-Xylene	ND	0.20	EPA 8260D	11-4-19	11-4-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>116</i>	<i>75-127</i>				
<i>Toluene-d8</i>	<i>105</i>	<i>80-127</i>				
<i>4-Bromofluorobenzene</i>	<i>97</i>	<i>78-125</i>				



Date of Report: November 8, 2019
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VOLATILE ORGANICS EPA 8260D

Matrix: Water
 Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	Trip Blank					
Laboratory ID:	11-015-04					
Benzene	ND	0.20	EPA 8260D	11-4-19	11-4-19	
1,2-Dichloroethane	ND	0.20	EPA 8260D	11-4-19	11-4-19	
Toluene	ND	1.0	EPA 8260D	11-4-19	11-4-19	
Ethylbenzene	ND	0.20	EPA 8260D	11-4-19	11-4-19	
m,p-Xylene	ND	0.40	EPA 8260D	11-4-19	11-4-19	
o-Xylene	ND	0.20	EPA 8260D	11-4-19	11-4-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>109</i>	<i>75-127</i>				
<i>Toluene-d8</i>	<i>103</i>	<i>80-127</i>				
<i>4-Bromofluorobenzene</i>	<i>92</i>	<i>78-125</i>				



Date of Report: November 8, 2019
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**VOLATILE ORGANICS EPA 8260D
 QUALITY CONTROL**

Matrix: Water

Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1104W1					
Benzene	ND	0.20	EPA 8260D	11-4-19	11-4-19	
1,2-Dichloroethane	ND	0.20	EPA 8260D	11-4-19	11-4-19	
Toluene	ND	1.0	EPA 8260D	11-4-19	11-4-19	
Ethylbenzene	ND	0.20	EPA 8260D	11-4-19	11-4-19	
m,p-Xylene	ND	0.40	EPA 8260D	11-4-19	11-4-19	
o-Xylene	ND	0.20	EPA 8260D	11-4-19	11-4-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Dibromofluoromethane</i>	<i>112</i>	<i>75-127</i>				
<i>Toluene-d8</i>	<i>103</i>	<i>80-127</i>				
<i>4-Bromofluorobenzene</i>	<i>89</i>	<i>78-125</i>				



Date of Report: November 8, 2019
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**VOLATILE ORGANICS EPA 8260D
 QUALITY CONTROL**

Matrix: Water

Units: ug/L

Analyte	Result		Spike Level		Percent		Recovery		RPD	
					Recovery		Limits		RPD	Limit
SPIKE BLANKS										
Laboratory ID:	SB1104W1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	9.13	9.30	10.0	10.0	91	93	63-130	2	17	
Benzene	10.3	10.6	10.0	10.0	103	106	76-125	3	19	
Trichloroethene	11.1	11.2	10.0	10.0	111	112	76-121	1	18	
Toluene	10.6	10.9	10.0	10.0	106	109	80-124	3	18	
Chlorobenzene	10.1	10.1	10.0	10.0	101	101	75-120	0	19	
Surrogate:										
Dibromofluoromethane					107	112	75-127			
Toluene-d8					103	106	80-127			
4-Bromofluorobenzene					95	93	78-125			



Date of Report: November 8, 2019
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 Laboratory Reference: 1911-015
 Project: 16-06310-011

DIESEL AND HEAVY OIL RANGE ORGANICS
NWTPH-Dx

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-1					
Laboratory ID:	11-015-01					
Diesel Range Organics	ND	0.21	NWTPH-Dx	11-4-19	11-5-19	
Lube Oil Range Organics	ND	0.21	NWTPH-Dx	11-4-19	11-5-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	111	50-150				

Client ID:	MW-2					
Laboratory ID:	11-015-02					
Diesel Range Organics	ND	0.21	NWTPH-Dx	11-4-19	11-5-19	
Lube Oil Range Organics	ND	0.21	NWTPH-Dx	11-4-19	11-5-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	106	50-150				

Client ID:	MW-3					
Laboratory ID:	11-015-03					
Diesel Range Organics	ND	0.20	NWTPH-Dx	11-4-19	11-5-19	
Lube Oil Range Organics	ND	0.20	NWTPH-Dx	11-4-19	11-5-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	116	50-150				



Date of Report: November 8, 2019
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 Project: 16-06310-011

**DIESEL AND HEAVY OIL RANGE ORGANICS
 NWTPH-Dx
 QUALITY CONTROL**

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1104W1					
Diesel Range Organics	ND	0.20	NWTPH-Dx	11-4-19	11-5-19	
Lube Oil Range Organics	ND	0.20	NWTPH-Dx	11-4-19	11-5-19	
Surrogate:	Percent Recovery	Control Limits				
o-Terphenyl	120	50-150				

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	11-015-03							
	ORIG	DUP						
Diesel Range	ND	ND	NA	NA	NA	NA	NA	
Lube Oil Range	ND	ND	NA	NA	NA	NA	NA	
Surrogate:								
o-Terphenyl				116	110	50-150		



Date of Report: November 8, 2019
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PAHs EPA 8270E/SIM

Matrix: Water
 Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-1					
Laboratory ID:	11-015-01					
Naphthalene	ND	0.097	EPA 8270E/SIM	11-6-19	11-7-19	
2-Methylnaphthalene	ND	0.097	EPA 8270E/SIM	11-6-19	11-7-19	
1-Methylnaphthalene	ND	0.097	EPA 8270E/SIM	11-6-19	11-7-19	
Benzo[a]anthracene	ND	0.0097	EPA 8270E/SIM	11-6-19	11-7-19	
Chrysene	ND	0.0097	EPA 8270E/SIM	11-6-19	11-7-19	
Benzo[b]fluoranthene	ND	0.0097	EPA 8270E/SIM	11-6-19	11-7-19	
Benzo(j,k)fluoranthene	ND	0.0097	EPA 8270E/SIM	11-6-19	11-7-19	
Benzo[a]pyrene	ND	0.0097	EPA 8270E/SIM	11-6-19	11-7-19	
Indeno(1,2,3-c,d)pyrene	ND	0.0097	EPA 8270E/SIM	11-6-19	11-7-19	
Dibenz[a,h]anthracene	ND	0.0097	EPA 8270E/SIM	11-6-19	11-7-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>2-Fluorobiphenyl</i>	<i>76</i>	<i>27 - 106</i>				
<i>Pyrene-d10</i>	<i>87</i>	<i>35 - 98</i>				
<i>Terphenyl-d14</i>	<i>92</i>	<i>41 - 129</i>				



Date of Report: November 8, 2019
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PAHs EPA 8270E/SIM

Matrix: Water
 Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-2					
Laboratory ID:	11-015-02					
Naphthalene	ND	0.10	EPA 8270E/SIM	11-6-19	11-7-19	
2-Methylnaphthalene	ND	0.10	EPA 8270E/SIM	11-6-19	11-7-19	
1-Methylnaphthalene	ND	0.10	EPA 8270E/SIM	11-6-19	11-7-19	
Benzo[a]anthracene	ND	0.010	EPA 8270E/SIM	11-6-19	11-7-19	
Chrysene	ND	0.010	EPA 8270E/SIM	11-6-19	11-7-19	
Benzo[b]fluoranthene	ND	0.010	EPA 8270E/SIM	11-6-19	11-7-19	
Benzo(j,k)fluoranthene	ND	0.010	EPA 8270E/SIM	11-6-19	11-7-19	
Benzo[a]pyrene	ND	0.010	EPA 8270E/SIM	11-6-19	11-7-19	
Indeno(1,2,3-c,d)pyrene	ND	0.010	EPA 8270E/SIM	11-6-19	11-7-19	
Dibenz[a,h]anthracene	ND	0.010	EPA 8270E/SIM	11-6-19	11-7-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
2-Fluorobiphenyl	75	27 - 106				
Pyrene-d10	93	35 - 98				
Terphenyl-d14	103	41 - 129				



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PAHs EPA 8270E/SIM

Matrix: Water
 Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-3					
Laboratory ID:	11-015-03					
Naphthalene	ND	0.095	EPA 8270E/SIM	11-6-19	11-7-19	
2-Methylnaphthalene	ND	0.095	EPA 8270E/SIM	11-6-19	11-7-19	
1-Methylnaphthalene	ND	0.095	EPA 8270E/SIM	11-6-19	11-7-19	
Benzo[a]anthracene	ND	0.0095	EPA 8270E/SIM	11-6-19	11-7-19	
Chrysene	ND	0.0095	EPA 8270E/SIM	11-6-19	11-7-19	
Benzo[b]fluoranthene	ND	0.0095	EPA 8270E/SIM	11-6-19	11-7-19	
Benzo(j,k)fluoranthene	ND	0.0095	EPA 8270E/SIM	11-6-19	11-7-19	
Benzo[a]pyrene	ND	0.0095	EPA 8270E/SIM	11-6-19	11-7-19	
Indeno(1,2,3-c,d)pyrene	ND	0.0095	EPA 8270E/SIM	11-6-19	11-7-19	
Dibenz[a,h]anthracene	ND	0.0095	EPA 8270E/SIM	11-6-19	11-7-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
2-Fluorobiphenyl	64	27 - 106				
Pyrene-d10	99	35 - 98				Q
Terphenyl-d14	85	41 - 129				



Date of Report: November 8, 2019
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**PAHs EPA 8270E/SIM
 QUALITY CONTROL**

Matrix: Water

Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1106W2					
Naphthalene	ND	0.10	EPA 8270E/SIM	11-6-19	11-6-19	
2-Methylnaphthalene	ND	0.10	EPA 8270E/SIM	11-6-19	11-6-19	
1-Methylnaphthalene	ND	0.10	EPA 8270E/SIM	11-6-19	11-6-19	
Benzo[a]anthracene	ND	0.010	EPA 8270E/SIM	11-6-19	11-6-19	
Chrysene	ND	0.010	EPA 8270E/SIM	11-6-19	11-6-19	
Benzo[b]fluoranthene	ND	0.010	EPA 8270E/SIM	11-6-19	11-6-19	
Benzo(j,k)fluoranthene	ND	0.010	EPA 8270E/SIM	11-6-19	11-6-19	
Benzo[a]pyrene	ND	0.010	EPA 8270E/SIM	11-6-19	11-6-19	
Indeno(1,2,3-c,d)pyrene	ND	0.010	EPA 8270E/SIM	11-6-19	11-6-19	
Dibenz[a,h]anthracene	ND	0.010	EPA 8270E/SIM	11-6-19	11-6-19	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
2-Fluorobiphenyl	90	27 - 106				
Pyrene-d10	107	35 - 98				Q
Terphenyl-d14	118	41 - 129				



Date of Report: November 8, 2019
 Samples Submitted: November 1, 2019
 Laboratory Reference: 1911-015
 Project: 16-06310-011

**PAHs EPA 8270E/SIM
 QUALITY CONTROL**

Matrix: Water

Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB1106W2									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	0.364	0.362	0.500	0.500	73	72	36 - 99	1	40	
Benzo[a]anthracene	0.493	0.478	0.500	0.500	99	96	59 - 127	3	24	
Chrysene	0.513	0.499	0.500	0.500	103	100	57 - 122	3	24	
Benzo[b]fluoranthene	0.496	0.497	0.500	0.500	99	99	58 - 123	0	26	
Benzo(j,k)fluoranthene	0.507	0.500	0.500	0.500	101	100	60 - 123	1	22	
Benzo[a]pyrene	0.484	0.478	0.500	0.500	97	96	54 - 121	1	24	
Indeno(1,2,3-c,d)pyrene	0.478	0.482	0.500	0.500	96	96	55 - 125	1	26	
Dibenz[a,h]anthracene	0.501	0.503	0.500	0.500	100	101	57 - 127	0	25	
Surrogate:										
2-Fluorobiphenyl					93	91	27 - 106			
Pyrene-d10					110	105	35 - 98			Q,Q
Terphenyl-d14					116	125	41 - 129			



Date of Report: November 8, 2019
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TOTAL METALS
EPA 200.8

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-1					
Laboratory ID:	11-015-01					
Cadmium	ND	4.4	EPA 200.8	11-5-19	11-5-19	
Chromium	ND	11	EPA 200.8	11-5-19	11-5-19	
Lead	ND	1.1	EPA 200.8	11-5-19	11-5-19	
Nickel	ND	22	EPA 200.8	11-5-19	11-5-19	
Zinc	ND	28	EPA 200.8	11-5-19	11-5-19	

Client ID:	MW-2					
Laboratory ID:	11-015-02					
Cadmium	ND	4.4	EPA 200.8	11-5-19	11-5-19	
Chromium	ND	11	EPA 200.8	11-5-19	11-5-19	
Lead	ND	1.1	EPA 200.8	11-5-19	11-5-19	
Nickel	ND	22	EPA 200.8	11-5-19	11-5-19	
Zinc	ND	28	EPA 200.8	11-5-19	11-5-19	

Client ID:	MW-3					
Laboratory ID:	11-015-03					
Cadmium	ND	4.4	EPA 200.8	11-5-19	11-5-19	
Chromium	ND	11	EPA 200.8	11-5-19	11-5-19	
Lead	ND	1.1	EPA 200.8	11-5-19	11-5-19	
Nickel	ND	22	EPA 200.8	11-5-19	11-5-19	
Zinc	ND	28	EPA 200.8	11-5-19	11-5-19	



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**TOTAL METALS
 EPA 200.8
 QUALITY CONTROL**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1105WM1					
Cadmium	ND	4.4	EPA 200.8	11-5-19	11-5-19	
Chromium	ND	11	EPA 200.8	11-5-19	11-5-19	
Lead	ND	1.1	EPA 200.8	11-5-19	11-5-19	
Nickel	ND	22	EPA 200.8	11-5-19	11-5-19	
Zinc	ND	28	EPA 200.8	11-5-19	11-5-19	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	11-015-03							
	ORIG	DUP						
Cadmium	ND	ND	NA	NA	NA	NA	NA	20
Chromium	ND	ND	NA	NA	NA	NA	NA	20
Lead	ND	ND	NA	NA	NA	NA	NA	20
Nickel	ND	ND	NA	NA	NA	NA	NA	20
Zinc	ND	ND	NA	NA	NA	NA	NA	20

MATRIX SPIKES

Laboratory ID:	11-015-03									
	MS	MSD	MS	MSD		MS	MSD			
Cadmium	106	107	111	111	ND	95	96	75-125	1	20
Chromium	115	112	111	111	ND	104	101	75-125	3	20
Lead	107	109	111	111	ND	97	98	75-125	2	20
Nickel	109	106	111	111	ND	98	96	75-125	2	20
Zinc	117	113	111	111	ND	105	102	75-125	3	20



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DISSOLVED METALS
EPA 200.8

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	MW-1					
Laboratory ID:	11-015-01					
Cadmium	ND	4.0	EPA 200.8		11-4-19	
Chromium	ND	10	EPA 200.8		11-4-19	
Lead	ND	1.0	EPA 200.8		11-4-19	
Nickel	ND	20	EPA 200.8		11-4-19	
Zinc	ND	25	EPA 200.8		11-4-19	

Client ID:	MW-2					
Laboratory ID:	11-015-02					
Cadmium	ND	4.0	EPA 200.8		11-4-19	
Chromium	ND	10	EPA 200.8		11-4-19	
Lead	ND	1.0	EPA 200.8		11-4-19	
Nickel	ND	20	EPA 200.8		11-4-19	
Zinc	ND	25	EPA 200.8		11-4-19	

Client ID:	MW-3					
Laboratory ID:	11-015-03					
Cadmium	ND	4.0	EPA 200.8		11-4-19	
Chromium	ND	10	EPA 200.8		11-4-19	
Lead	ND	1.0	EPA 200.8		11-4-19	
Nickel	ND	20	EPA 200.8		11-4-19	
Zinc	ND	25	EPA 200.8		11-4-19	



Date of Report: November 8, 2019
 Samples Submitted: November 1, 2019
 Laboratory Reference: 1911-015
 Project: 16-06310-011

**DISSOLVED METALS
 EPA 200.8
 QUALITY CONTROL**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1101F1					
Cadmium	ND	4.0	EPA 200.8	11-1-19	11-4-19	
Chromium	ND	10	EPA 200.8	11-1-19	11-4-19	
Lead	ND	1.0	EPA 200.8	11-1-19	11-4-19	
Nickel	ND	20	EPA 200.8	11-1-19	11-4-19	
Zinc	ND	25	EPA 200.8	11-1-19	11-4-19	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	11-015-03							
	ORIG	DUP						
Cadmium	ND	ND	NA	NA	NA	NA	NA	20
Chromium	ND	ND	NA	NA	NA	NA	NA	20
Lead	ND	ND	NA	NA	NA	NA	NA	20
Nickel	ND	ND	NA	NA	NA	NA	NA	20
Zinc	ND	ND	NA	NA	NA	NA	NA	20

MATRIX SPIKES

Laboratory ID:	11-015-03									
	MS	MSD	MS	MSD		MS	MSD			
Cadmium	80.4	68.8	80.0	80.0	ND	101	86	75-125	16	20
Chromium	76.6	69.4	80.0	80.0	ND	96	87	75-125	10	20
Lead	78.8	70.8	80.0	80.0	ND	99	89	75-125	11	20
Nickel	75.2	67.0	80.0	80.0	ND	94	84	75-125	12	20
Zinc	78.2	68.8	80.0	80.0	ND	98	86	75-125	13	20





Data Qualifiers and Abbreviations

- A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
- B - The analyte indicated was also found in the blank sample.
- C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
- E - The value reported exceeds the quantitation range and is an estimate.
- F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
- H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
- I - Compound recovery is outside of the control limits.
- J - The value reported was below the practical quantitation limit. The value is an estimate.
- K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
- L - The RPD is outside of the control limits.
- M - Hydrocarbons in the gasoline range are impacting the diesel range result.
- M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
- N - Hydrocarbons in the lube oil range are impacting the diesel range result.
- N1 - Hydrocarbons in diesel range are impacting lube oil range results.
- O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
- P - The RPD of the detected concentrations between the two columns is greater than 40.
- Q - Surrogate recovery is outside of the control limits.
- S - Surrogate recovery data is not available due to the necessary dilution of the sample.
- T - The sample chromatogram is not similar to a typical _____.
- U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
- U1 - The practical quantitation limit is elevated due to interferences present in the sample.
- V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
- W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
- X - Sample extract treated with a mercury cleanup procedure.
- X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.
- Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.
- Z -
- ND - Not Detected at PQL
- PQL - Practical Quantitation Limit
- RPD - Relative Percent Difference



Page 1 of 1

Laboratory Number:					
NWTPH-HCID					
NWTPH-Gx/BTEX / EDC 8260	X	X	X	X	X
NWTPH-Gx					
NWTPH-Dx (<input type="checkbox"/> Acid / SG Clean-up)	X	X	X	X	X
Volatiles 8260C					
Halogenated Volatiles 8260C					
EDB EPA 8011 (Waters Only)					
Semivolatiles 8270D/SIM (with low-level PAHs)					
PAHs 8270D/SIM (low-level)					
PCBs 8082A					
Organochlorine Pesticides 8081B					
Organophosphorus Pesticides 8270D/SIM					
Chlorinated Acid Herbicides 8151A					
Total RCRA Metals					
Total MTCA Metals					
TCLP Metals					
HEM (oil and grease) 1664A					
c-PAHS + Naphthalenes	X	X	X	X	X
Diss+Total metals (Cd, Cr, Ni, Pb, Zn)	X	X	X	X	X
% Moisture					

Signature	Company	Date	Time	Comments/Special Instructions
Relinquished	Herren Env. Cons.	11-1-19	1330	① Dissolved Metals were field filtered. ② <u>HOLD</u> for PCBs
Received	COE	11/1/19	1330	
Relinquished				
Received				
Relinquished				
Received				
Data Package: Standard <input type="checkbox"/> Level III <input type="checkbox"/> Level IV <input type="checkbox"/>				
Reviewed/Date	Reviewed/Date			Chromatograms with final report <input type="checkbox"/> Electronic Data Deliverables (EDDs) <input type="checkbox"/>

APPENDIX H

Data Quality Assurance Review Memoranda

Herrera Environmental Consultants, Inc.

Internal Memorandum

Date: November 25, 2019
To: Project File 16-06310-011
Copy To:
From: Gina Catarra
Subject: Data Quality Assurance Review of the Prairie Pit Data

This memorandum presents a review of data quality for 51 soil samples and six groundwater samples collected for the Prairie Pit Project between June 27 and November 1, 2019. OnSite Environmental, Inc. (OnSite), of Redmond, Washington, Libby Environmental of Olympia, Washington, Fremont Analytical of Seattle, Washington, or Spectra Laboratories of Tacoma, Washington analyzed the samples for:

- Total petroleum hydrocarbon identification (HCID) by Ecology's NWTPH-HCID method
- Gasoline-range petroleum hydrocarbons by Ecology's NWPTH-Gx method
- Diesel- and lube oil-range petroleum hydrocarbons by Ecology's NWTPH-Dx method
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8021B
- Polycyclic aromatic hydrocarbons (PAHs) and naphthalene by EPA Method 8270D/SIM
- Volatile organic compounds (VOCs) by EPA Method 8260C
- Polychlorinated biphenyls (PCBs) by EPA Method 8082A
- Total metals (arsenic, cadmium, chromium, lead, nickel, and mercury) by EPA Methods 6010D/7471B
- Total and dissolved metals Total chromium (Cr) and lead (Pb) by toxicity characteristic leaching procedure (TCLP) by EPA Methods 1311/6010D
- Hexavalent chromium [Cr(VI)] by EPA Method 7196A

- Total and dissolved metals (cadmium, chromium, lead, nickel, and zinc) by EPA Method 200.8.
- 1,2-Dibromoethane (EDB) by EPA Method 8011

Results for the following samples were validated.

Sample ID	Lab SDG	Date Collected	Analyses
TP-A-3	1906-324	6/27/19	HCID, Dx, PAHs, PCBs, metals
TP-B-4	1906-324	6/27/19	HCID, Dx, PAHs, PCBs, metals
TP-C-2	1906-324	6/27/19	HCID, metals
TP-D-1.5	1906-324	6/27/19	HCID, Gx/BTEX, Dx, VOCs, PAHs, PCBs, metals
TP-E-2	1906-324	6/27/19	HCID, Gx/BTEX, Dx, VOCs, PAHs, PCBs, metals, Cr(VI)
TP-F-2.5	1906-324	6/27/19	HCID, Gx/BTEX, Dx, VOCs, PAHs, PCBs, metals, TCLP (Pb), Cr(VI)
TP-K-1	1906-324	6/27/19	HCID, Dx, PAHs, PCBs, metals, TCLP (Pb), Cr(VI)
Ditch-1-0	1906-324	6/27/19	HCID, metals
Ditch-2-0	1906-324	6/27/19	HCID, Gx/BTEX, Dx, PAHs, PCBs, metals, Cr(VI)
Ditch-3-0	1906-324	6/27/19	Gx/BTEX, Dx, VOCs, PAHs, PCBs, metals
Ditch-4-0	1906-324	6/27/19	Gx/BTEX, Dx, VOCs, PAHs, PCBs, metals, Cr(VI)
TP-J-0	L190725-40	7/22/19	VOC, Gx, Dx
TP-L-0	L190725-40	7/23/19	VOC, Gx, Dx, cPAHs, naphthalenes, PCB, metals
Ditch-5-0	L190725-40	7/23/19	VOC, Gx, Dx
Ditch-6-0	L190725-40	7/23/19	VOC, Gx, Dx, cPAHs, naphthalenes, metals
EXC-E-SP2	L190725-40	7/23/19	VOC, Gx, Dx
EXC-E1-4	L190725-40	7/23/19	VOC, Gx, Dx, cPAHs, naphthalenes, PCB, metals
EXC-E2-0	L190725-40	7/23/19	VOC, Gx, Dx
EXC-F1-0	L190725-40	7/23/19	VOC, Gx, Dx, cPAHs, naphthalenes, PCB, metals, TCLP (Pb)
EXC-F2-0	L190725-40	7/23/19	VOC, Gx, Dx
EXC-G1-1	L190725-40	7/24/19	VOC, Gx, Dx, cPAHs, naphthalenes, metals
EXC-G2-1	L190725-40	7/24/19	VOC, Gx, Dx
EXC-G3-2.5	L190725-40	7/24/19	VOC, Gx, Dx, cPAHs, naphthalenes, metals
EXC-G6-2.5	L190725-40	7/24/19	VOC, Gx, Dx
EXC-G4-1	L190725-40	7/25/19	VOC, Gx, Dx, cPAHs, naphthalenes, metals
EXC-G5-1	L190725-40	7/25/19	VOC, Gx, Dx, cPAHs, naphthalenes, metals, TCLP (Pb)
EXC-G7-1	L190725-40	7/25/19	VOC, Gx, Dx
EXC-G7B-1	L190726-40	7/26/19	VOCs, Gx, Dx, cPAHs, naphthalenes, metals
EXC-H1-1	L190726-40	7/26/19	VOCs, Gx, Dx
EXC-H2-1	L190726-40	7/26/19	VOCs, Gx, Dx, cPAHs, naphthalenes, metals
WXC-H3-1	L190726-40	7/26/19	VOCs, Gx, Dx, cPAHs, naphthalenes, metals
WXC-H5A-5	L190726-40	7/26/19	VOCs, Gx

Sample ID	Lab SDG	Date Collected	Analyses
EXC-H5B-5	L190726-40	7/26/19	VOCs, Gx
EXC-H5C-5	L190726-40	7/26/19	Dx, cPAHs, naphthalenes, PCBs, metals
EXC-H1B-1.5	L190726-40	7/26/19	Dx, cPAHs, naphthalenes, metals
EXC-H7-8	L190726-40	7/26/19	VOCs, Gx, Dx, cPAHs, naphthalenes, metals
EXC-H6-6	L190726-40	7/26/19	VOCs, Gx, Dx, cPAHs, naphthalenes, metals
Ditch-5B-1	L190726-40	7/26/19	Dx, cPAHs, naphthalenes, metals
EXC-H4-1	L190726-40	7/26/19	VOCs, Gx, Dx, cPAHs, naphthalenes, metals
EXC-F2B-1.5	L190726-40	7/26/19	Dx, cPAHs, naphthalenes, PCBs, metals
EXC-G2B-1	2019080052	8/02/2019	Dx, cPAHs, metals
EXC-G6B-3	2019080052	8/02/2019	Dx, cPAHs, metals
EXC-H8C-5	2019080052	8/02/2019	Dx, cPAHs, metals
EXCc-H9C-5	2019080052	8/02/2019	Dx, cPAHs, metals
EXC-H10-2	2019080052	8/02/2019	Dx, cPAHs, metals
EXC-H11-1	2019080052	8/02/2019	Dx, cPAHs, metals
EXC-E2C-2.5	2019080052	8/02/2019	Dx, cPAHs, metals
EXC-E3C-1.5	2019080052	8/02/2019	Dx, cPAHs, metals
MW-1	1908-056	8/05/2019	Gx/BTEX, Dx, VOCs, EDB, PCBs, total and dissolved metals, cPAHs, naphthalene
MW-2	1908-056	8/05/2019	Gx/BTEX, Dx, VOCs, EDB, PCBs, total and dissolved metals, cPAHs, naphthalene
MW-3	1908-056	8/05/2019	Gx/BTEX, Dx, VOCs, EDB, PCBs, total and dissolved metals, cPAHs, naphthalene
EXC-H8C2-5	2019080316	8/12/2019	Dx, cPAHs, metals
EXC-G6B2-4	2019080316	8/13/2019	Dx, cPAHs, metals
EXC-E3C2-2	2019080316	8/13/2019	Dx, cPAHs, metals
MW-1	1911-015	11/01/2019	Gx/BTEX, Dx, VOCs, total and dissolved metals, cPAHs, naphthalene
MW-2	1911-015	11/01/2019	Gx/BTEX, Dx, VOCs, total and dissolved metals, cPAHs, naphthalene
MW-3	1911-015	11/01/2019	Gx/BTEX, Dx, VOCs, total and dissolved metals, cPAHs, naphthalene

The laboratory's performance was reviewed in accordance with quality control (QC) criteria by the laboratory and in the specified methods.

Quality control data summaries submitted by the laboratories were reviewed; raw data were not submitted by the laboratories. Data qualifiers (flags) were added to the sample results in the laboratory reports. Data validation results are summarized below, followed by definitions of data qualifiers.

Custody, Preservation, Holding Times, and Completeness—Acceptable

The samples were properly preserved, and sample custody was maintained from sample collection to receipt at the laboratories. Samples were analyzed within the required method holding times. The laboratory reports were complete and contained results for all samples and tests requested on the chain-of-custody (COC) forms.

Laboratory Reporting Limits—Acceptable

The laboratory reporting limits were reasonable for the methods. No data were qualified based on laboratory reporting limits.

Method Blank Analysis—Acceptable

Method blanks were analyzed at the required frequency. Method blanks did not contain levels of target analytes above the laboratory reporting limits.

Laboratory Control Sample Analysis—Acceptable

Laboratory control samples were analyzed at the required frequency. The percent recovery values met the criteria established by the laboratory or specified method.

Matrix Spike Analysis—Acceptable

Matrix spike samples were analyzed at the required frequency. The percent recovery values met the criteria established by the laboratory or specified method.

Laboratory Duplicate Analysis—Acceptable

Laboratory duplicate samples were analyzed for total and dissolved iron; laboratory duplicate samples were also analyzed for TSS samples analyzed by ARI. The relative percent difference (RPD) values (ranging from 0.1 to 2.7 percent) met the control limits (less than 20 percent for metals, and less than 25 percent for TSS) established in the SAP.

Field Duplicate Analysis—Not Analyzed

Field duplicates were not collected for this field effort.

APPENDIX I


Offsite Groundwater Well Logs

File: Orig. & First Copy - Dept of Ecology
Second Copy - Owner; Third Copy - Driller

WATER WELL REPORT
State of Washington

Start Card No. A07782
Unique Well ID 1
Water Right Permit No.

(1) OWNER: Name CREST BUILDERS Address 5516 75TH ST W LAKEWOOD WA 98467 Page 1 of
(2) LOCATION OF WELL: County PIERCE NE 1/4 SW 1/4 Sec 26 T 19 N R 3 E
(2a) STREET ADDRESS OF WELL (or nearest address) 17215 E 27TH AVE SPANAWAY WA

(3) PROPOSED USE: DECOMMISSION		(10) WELL LOG or DECOMMISSIONING PROCEDURE DESCRIPTION	
(4) Type of work: ABANDONED Method: ROTARY		Material	From To
(5) DIMENSIONS: Diameter of well 6 inches. Drilled 0 feet. Depth of completed well 0 ft.		ABANDON WELL AS PER WAC 173-160-415 PARAGRAPH	
(6) CONSTRUCTION DETAILS: Casing instld: " Diam. from ft. to ft. Welded " Diam. from ft. to ft. Liner " Diam. from ft. to ft. Threaded "		PULLED 61' OF CASING FROM GROUND AND USED 20-50# BAGS OF MEDIAM CHIPS FROM BOTTOM TO TOP	
Perforations: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Type of perforator used Size of perforations in. by in. perforations from ft. to in. perforations from ft. to in. perforations from ft. to in.			
Screens: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Manufacturer's Name Type Model No Diam Slot size from ft. to ft. Diam Slot size from ft. to ft.			
Gravel packed: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Size of gravel Gravel placed from ft. to ft.			
Surface seal: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> To what depth? Material used in seal Did any strata contain unusable water? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Type of water? Depth of strata Method of sealing strata off			
(7) PUMP: Manufacturer's Name Type H.P. 0			
(8) WATER LEVELS: Surface elev above mean sea level ft. Static level ft. below top of well Date Artesian pressure lbs. per sq. in. Date Artesian pressure is controlled by			
(9) WELL TESTS: Pump test made? <input type="checkbox"/> By whom? Yield 0 gal./min. with ft. drawdown after hrs Yield 0 gal./min. with ft. drawdown after hrs Yield 0 gal./min. with ft. drawdown after hrs Recovery data: Time Wtr. Lvl. Time Wtr. Lvl. Time Wtr. Lvl.		Work Started 08/06/97 Completed 08/06/97	
Date of test Bailer test 0 gal/min with ft. drawdown after hr Airtest 0 gal/min with stem set at ft. for hrs Artesian flow 0 gal/min Date Temperature of water Was chemical analysis made? NO		WELL CONSTRUCTOR CERTIFICATION: I constructed and/or accept responsibility for construction this well, and its compliance with all Washington well const ruction standards. Materials used and the information report above are true to my best knowledge and belief. Name RICHARDSON WELL DRILLING Address P.O. Box 44427 Tacoma WA 98444 (Signed)  Lic. No 2017 (Well Driller) Contractor's Registration No. RICHAW*3210B Date 08/29/ Based on form ECL 050-1-20 (2/93)**f-1329- by Speed Systems Co	

File Original and First Copy with
Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Application No.

Permit No.

(1) OWNER: Name E. L. Milton Address 3109 176 St. E.(2) LOCATION OF WELL: County Pierce $\frac{1}{4}$ Sec. 26 T. 19N. R. 3 E.W.M.

Bearing and distance from section or subdivision corner

(3) PROPOSED USE: Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐(4) TYPE OF WORK: Owner's number of well
(if more than one)
New well ☐ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐(5) DIMENSIONS: Diameter of well 6 inches.
Drilled 47 ft. Depth of completed well 47 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: " Diam. from " ft. to " ft.
Threaded ☐ " Diam. from " ft. to " ft.
Welded ☒ 6 " Diam. from 0 ft. to 47 ft.Perforations: Yes ☐ No ☒Type of perforator used
SIZE of perforations " in. by " in.
perforations from " ft. to " ft.
perforations from " ft. to " ft.
perforations from " ft. to " ft.Screens: Yes ☐ No ☒Manufacturer's Name
Type Model No
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.Surface seal: Yes ☒ No ☐ To what depth? 18 ft.
Material used in seal. sand & bentonite mix
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? Depth of strata
Method of sealing strata off(7) PUMP: Manufacturer's Name Ruth Berry
Type: submersible 3 H.P.(8) WATER LEVELS: Land-surface elevation
above mean sea level. ft.
Static level 21 ft. below top of well Date
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)(9) WELL TESTS: Drawdown is amount water level is
lowered below static levelWas a pump test made? Yes ☒ No ☐ If yes, by whom? Western
Yield: 10 gal./min. with none ft. drawdown after 1 hrs." " " " " "
" " " " " "Recovery data (time taken as zero when pump turned off) (water level
measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test 9-18-78Bailer test 10 gal./min. with none ft. drawdown after 1 hrs.

Artesian flow g.p.m. Date

Temperature of water Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and
show thickness of aquifers and the kind and nature of the material in each
stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
surface soil	0	5
sandstone	5	20
sand	20	30
hardpan	30	40
course gravel (water)	40	47

RECEIVED

JAN 10 1979

RECEIVED
JAN 10 1979
DIVISION OF REVENUEWork started 9-18-78 19..... Completed 9-21 1978..

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is
true to the best of my knowledge and belief.NAME Western Well Drilling Company
(Person, firm, or corporation) (Type or print)Address 8902 41st St. W. Tacoma, Wa. 98466[Signed] Jack L McDonald
(Well Driller)License No. 0283 Date 12-12 1978..

(USE ADDITIONAL SHEETS IF NECESSARY)

(1) OWNER: Name E. L. Milton **X** Address 3115 176th St. E.

(2) LOCATION OF WELL: County Pierce — 1/4 1/4 Sec 26 T 19 N, R. 3-E W.M.

Bearing and distance from section or subdivision corner

(3) PROPOSED USE: Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(4) TYPE OF WORK: Owner's number of well (if more than one).....

New well	<input type="checkbox"/>	Method: Dug	<input type="checkbox"/>	Bored	<input type="checkbox"/>
Deepened	<input type="checkbox"/>	Cable	<input checked="" type="checkbox"/>	Driven	<input type="checkbox"/>
Reconditioned	<input type="checkbox"/>	Rotary	<input type="checkbox"/>	Jetted	<input type="checkbox"/>

(5) **DIMENSIONS:** Diameter of well 6 inches.
Drilled 47 ft. Depth of completed well 47 ft.

(6) CONSTRUCTION DETAILS:

Casing installed: _____ " Diam. from _____ ft. to _____ ft.
 Threaded ☐ _____ " Diam. from _____ ft. to _____ ft.
 Welded ☒ 6 " Diam. from 0 ft. to 47 ft.

Perforations: Yes ☐ No ☒

Type of perforator used			
SIZE of perforations		in. by	
..... perforations from	ft. to	ft. to	ft. to
..... perforations from	ft. to	ft. to	ft. to
..... perforations from	ft. to	ft. to	ft. to

Screens: Yes ☐ No ☒

Manufacturer's Name **Model No.**
Type **Diam.** **Slot size** **from** **ft. to** **ft.**
Diam. **Slot size** **from** **ft. to** **ft.**

Gravel packed: Yes ☐ No ☒ Size of gravel: _____
Gravel placed from _____ ft. to _____ ft.

Surface seal: Yes ☒ No ☐ To what depth? 18 ft
Material used in seal: sand & bentonite mix
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? _____ Depth of strata _____
Method of sealing strata off _____

(7) PUMP: Manufacturer's Name Ruth Barry
Type: submersible $\frac{1}{2}$ HP

(8) WATER LEVELS: Land-surface elevation above mean sea level. ft.
 Static level 20 ft. below top of well Date.
 Artesian pressure lbs. per square inch Date.
 Artesian water is controlled by (Cap. valve, etc.)

(9) WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? Yes ☒ No ☐ If yes, by whom? Western
Yield: 10 gal./min. with none ft. drawdown after 1 hrs

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level
-----	-----	-----	-----	-----	-----
-----	-----	-----	-----	-----	-----
-----	-----	-----	-----	-----	-----
-----	-----	-----	-----	-----	-----

Date of test 9-15-78

Bailer test 10 gal./min. with none ft. drawdown after 1 hr.
Arterian flow _____ g.p.m. Date _____

Temperature of water..... Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
surface soil	0	5
sandstone	5	20
sand	20	30
hardpan	30	40
course gravel (water)	40	47

RECEIVED

JAN 10 1979

DEPARTMENT OF GEOLOGY
SOUTHWEST REGIONAL OFFICE

Work started 9-12, 1978. Completed 9-15, 1978.

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Western Well Drilling Company C-210
(Person, firm, or corporation) (Type or print)

Address 8902 41 St. W. Tacoma, Wa. 98466

[Signed] Jack E. McDonald
(Well Driller)

License No. 0283 Date 12-12, 1978

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

(USE ADDITIONAL SHEETS IF NECESSARY)

E: ORIG. & FIRST COPY - DEPT. OF ECOLOGY
SECOND COPY - OWNER; THIRD COPY - DRILLER

WATER WELL REPORT
STATE OF WASHINGTON

START CARD NO. AE25436
UNIQUE WELL ID N/A
WATER RIGHT PERMIT NO N/A

(1) OWNER NAME: BENJAMIN RYAN COMMUNITIES ADDRESS: 20209 BRIDGEPORT WAY SW LAKEWOOD WA 98499
(2) LOCATION OF WELL: County PIERCE SW 1/4 NE 1/4 SEC 26 TWP 19N R 3E
(3a) STREET ADDRESS OF WELL (or nearest address): 16903 32ND AVE E TACOMA PARCEL 03192268030

(3) PROPOSED USE: ABANDONED
(4) TYPE OF WORK: DECOMMISSIONING
METHOD: PERFORATE / GROUT

(10) WELL LOG OR DECOMMISSIONING PROCEDURE DESCRIPTION

(5) DIMENSIONS: Diameter of well 6 inches
Drilled feet Depth of completed well ft.

MATERIAL

FROM

TO

EXISTING WELL
DIAMETER - 6" STEEL
DEPTH 48'

DECOMMISSIONED PER TPCD AND DOE REG'S
WAC 173-160-381-1A

(6) CONSTRUCTION DETAILS

Casing instld: " Diam. From ft. to ft.
Welded ☐ " Diam. From ft. to ft.
Liner ☒ " Diam. From ft. to ft.
Threaded ☒

PERFORATED CASING 4 CUTS PER ROW, ONE ROW
PER FOOT
TREMMIED 20% + BENTONITE QUICKGROUT FROM THE
BOTTOM TO TOP.

Perforations: Yes ☒ No ☐
Type of perforator used MILLS KNIFE
Size of perforations 0.3 in. by 2 in.
184 perforations from 2 ft. to 48' in.
perforations from ft. to in.
perforations from ft. to in.

Screens: Yes ☐ No ☒

Manufacturer's Name:

Type Model No.
Diam Slot size from ft. to ft.
Diam Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☒ Size of gravel? ft. to ft.
Gravel packed from ft. to ft.

Surface seal: Yes ☐ No ☐ To what depth? ft.
Material used in seal
Did any strata contain unusable water? Yes ☐ No ☒
Type of water? Depth of Strata ft.
Method of sealing strata off

(7) PUMP: Manufacturer's Name
Type H. P.

(8) WATER LEVELS: Surface elev above mean sea level ft.
Static level below top of well Date
Artesian pressure lbs. Per sq. in. Date
Artesian pressure is controlled by

(9) WELL TESTS: Pump test made? By Whom
Yield gal./min with ft. drawdown after hrs.
Yield gal./min with ft. drawdown after hrs.
Yield gal./min with ft. drawdown after hrs.
Recovery data:
ne Wtr Lvl. Time Wtr Lvl. Time Wtr Lvl.

Work Started 06/10/15 Completed: 06/10/15

WELL CONSTRUCTOR CERTIFICATION:

I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Name: RICHARDSON WELL DRILLING COMPANY INC.
Address: P.O. BOX 44437 TACOMA, WA 98444

(Signed)

Lic No. 2246

(Well Driller)

Contractor's Registration No. RICHAW*3210B

DATE 6/16/15

Date of test:
Pier test gal./min with ft. drawdown after
test gal./min stem set at ft. for
seepage flow gal./min Date
Temperature of water Was chemical analysis made?

RECEIVED

JUN 24 2015

WA State Department
of Ecology (SWRO)

The Department of Ecology does NOT warrant the Data and/or the Information on this Well Report

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report.

Application No. _____
Permit No. 02-265375

FCY 050-1-20

File Original and First Copy with
Department of Ecology
Second Copy — Owner's Copy
Third Copy — Driller's Copy

WATER WELL REPORT

STATE OF WASHINGTON

Application No.

Permit No.

(1) **OWNER:** Name Ben Wade Address 17016-32nd Ave. E. Tacoma, Wa. 98446
(2) **LOCATION OF WELL:** County Pierce — NW 1/4 SE 1/4 Sec. 26 T. 19 N. R. 3E W.M.
Bearing and distance from section or subdivision corner

(3) **PROPOSED USE:** Domestic ☒ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(4) **TYPE OF WORK:** Owner's number of well (if more than one) 1
New well ☐ Method: Dug ☐ Bored ☐
Deepened ☐ Cable ☒ Driven ☐
Reconditioned ☐ Rotary ☐ Jetted ☐

(5) **DIMENSIONS:** Diameter of well 6 inches.
Drilled 80 ft. Depth of completed well 80 ft.

(6) **CONSTRUCTION DETAILS:**
Casing installed: 6 " Diam. from 0 ft. to 80 ft.
Threaded ☐ " Diam. from ft. to ft.
Welded ☒ " Diam. from ft. to ft.

Perforations: Yes ☐ No ☒
Type of perforator used
SIZE of perforations in. by in.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

Screens: Yes ☐ No ☒
Manufacturer's Name Model No.
Type
Diam. Slot size from ft. to ft.
Diam. Slot size from ft. to ft.

Gravel packed: Yes ☐ No ☒ Size of gravel:
Gravel placed from ft. to ft.

Surface seal: Yes ☐ No ☐ To what depth? ft.
Material used in seal
Did any strata contain unusable water? Yes ☐ No ☐
Type of water? Depth of strata
Method of sealing strata off

(7) **PUMP:** Manufacturer's Name H.P.
Type:

(8) **WATER LEVELS:** Land-surface elevation above mean sea level ft.
Static level 31 ft. below top of well Date 9-30-58
Artesian pressure lbs. per square inch Date
Artesian water is controlled by (Cap, valve, etc.)

(9) **WELL TESTS:** Drawdown is amount water level is lowered below static level
Was a pump test made? Yes ☒ No ☐ If yes, by whom?
Yield: 15 gal./min. with 10 ft. drawdown after 4 hrs.
" " " " " "
" " " " " "

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)
Time Water Level Time Water Level Time Water Level
Date of test 9-30-58
Bailer test gal./min. with ft. drawdown after hrs.
Artesian flow g.p.m. Date
Temperature of water Was a chemical analysis made? Yes ☐ No ☐

(10) WELL LOG:

Formation: Describe by color, character, size of material and structure, and show thickness of aquifers and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of formation.

MATERIAL	FROM	TO
Clay & gravel	0	13
Hardpan	13	42
Clay & gravel seepage (42')	42	43
Hardpan	43	73
Sand	73	74
Hardpan	74	79
Gravel & coarse sand	79	80

Work started 9-24 1958 Completed 9-30 1958

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Richardson Well Drilling Co.
(Person, firm, or corporation) (Type or print)

Address P.O. Box 44427 Tacoma, Wa. 98444

[Signed] (Well Driller)

License No. 0419 Date 5-6 1985

(USE ADDITIONAL SHEETS IF NECESSARY)

IMPORTANT INFORMATION

Important Information

About Your Geotechnical/Environmental Report

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors that were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining

your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims

being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland