Report
Limited Phase II Environmental Site Assessment
South 35th Street and Pacific Avenue
Tacoma, Washington

March 31, 2021

Prepared for

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Limited Phase II Environmental Site Assessment Report
South 35th Street and Pacific Avenue
Tacoma, Washington

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LIST OF ABBREVIATIONS AND ACRONYMS

bgs ..... below ground surface
CAP ..... Cleanup Action Plan
COC ..... contaminants of concern
cPAH ..... carcinogenic polycyclic aromatic hydrocarbons
CUL ..... cleanup level
Ecology ..... Washington State Department of Ecology
EDR ..... Engineering Design Report
EPA ..... US Environmental Protection Agency
ESA ..... environmental site assessment
eVCP ..... Expedited Volunteer Cleanup Program
FS ..... feasibility study
HASP ..... health and safety plan
I-5 ..... Interstate 5
I-705 ..... Interstate 705
LAI ..... Landau Associates, Inc.
mg/kg ..... milligrams per kilogram
MTCA ..... Model Toxics Control Act
NFA ..... no further action
NWTPH-Dx ..... Northwest diesel-range total petroleum hydrocarbon extended
O&M ..... operation and maintenance
RCRA ..... Resource Conservation and Recovery Act
REC ..... *recognized environmental condition*
RI ..... remedial investigation
SVOC ..... semi-volatile organic compounds
TCRA ..... Tacoma Community Redevelopment Authority
TEQ ..... toxicity equivalence
TPCHD ..... Tacoma-Pierce County Health Department
TPH ..... total petroleum hydrocarbon
TPH-D ..... diesel-range total petroleum hydrocarbons
TPH-G ..... gasoline-range total petroleum hydrocarbons
TPH-O ..... oil-range total petroleum hydrocarbons
VOC ..... volatile organic compound
VCP ..... Ecology's Voluntary Cleanup Program
WAC ..... Washington Administrative Code

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1.0 INTRODUCTION

At the request of Tacoma Community Redevelopment Authority (TCRA), Landau Associates, Inc. (LAI) conducted a Limited Phase II environmental site assessment (ESA) of six parcels currently owned by the City of Tacoma, located east of South 35th Street and Pacific Avenue in Tacoma, Washington. These six parcels (Pierce County Parcel Nos. 2086130020, 2086130030, 2085140040, 2085140070, 2086140010, and 2086140020) are referred to collectively as the subject property (Figures 1 and 2). LAI previously conducted a Phase I ESA for the subject property during the first quarter of 2021 (LAI 2021).

The Limited Phase II ESA was completed on behalf of TCRA to assess potential environmental liability, current conditions, and potential impacts to future development on the subject property. This Limited Phase II ESA was conducted in general accordance with ASTM International's Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process E1903 – 11 and LAI's site-specific directives regarding follow up on Phase I ESA results. The scope of this investigation included evaluation of soil conditions to assess the presence of contamination associated with historical uses of the subject property.

The Phase I ESA report identified the following *recognized environmental conditions* (RECs):

- The presence of prior filling activities, which included placement of construction debris, organic materials, vactor waste (i.e., material from street catch basins), and street sweeping material within the fill at the subject property.
- The known presence of carcinogenic polycyclic aromatic hydrocarbon (cPAH)-contaminated soil above Model Toxics Control Act (MTCA) Method A cleanup levels, and residual arsenic and total petroleum hydrocarbon (TPH)-impacted soil at the subject property.
- The presence and degradation of organic debris (i.e., leaves, branches, yard waste, etc.) within the fill as the suspected source of the known presence of elevated methane gas levels at the subject property.

The Phase I ESA report provided the opinion that the identified *recognized environmental conditions* indicate the potential for concentrations of cPAHs in soil above MTCA Method A cleanup levels, residual TPH- and arsenic-impacted soil, and the elevated presence of methane gas to be present at the subject property. The potential exists for soil contamination to be present beneath the subject property from the above-stated RECs that may impact potential redevelopment strategies.

Based on the needs of redevelopment, further investigation was recommended in the Phase I ESA to evaluate the need for contaminated media management in association with the planned elements of redevelopment. The recommended further investigation would supplement the results of the remedial investigation (RI), feasibility study (FS), and Cleanup Action Plan (CAP; LAI 2008c) previously prepared for the landfill, which included a portion of the subject property. Most of the prior environmental investigation work was conducted on the northernmost parcels of the subject property

(LAI 2008c); therefore, the additional investigation conducted under this limited Phase II ESA scope focuses on the southern half of the subject property.

1.1 Subject Property Conditions and Background

Based on information collected during the Phase I ESA, LAI understands that a portion of the subject property was used as a landfill from the early 1960s through 1992 and often is referred to as "the 35th Street Landfill City Fill" or the "Former City of Tacoma's Street and Grounds Fill Site." Fill material was placed at the subject property in the 1960s. The fill was derived, primarily, from the Interstate-5 (I-5), Interstate-705 (I-705), and Highway 7 extensions; City of Tacoma Public Utilities construction projects; and various large private construction projects.

Between 1985 and 1990, the City of Tacoma disposed of street sweepings, vactor truck waste, and catch basin debris at the subject property and at adjacent properties to the north. By 1992, regrading activities had mixed the waste and debris into the fill material. Site characterization studies between 1990 and 2008 identified this fill material as the primary contributor to methane, metals, TPH, and cPAHs contamination at the subject property (LAI 2008c).

The subject property is currently undeveloped, vacant, land with high to moderate transient activity which consists of overnight camping. The subject property is bordered to the north by undeveloped forested land and to the south by an undeveloped field. To the east and northwest, the subject property is bordered by residential properties. Pacific Avenue is adjacent to the western property boundary and beyond the roadway, farther west, are commercial properties.

The subject property generally slopes gently downward to the northeast, with steeper north and northeast facing slopes descending into ravine at the northern property boundary. The subject property is underlain by Pleistocene-age glacial till, which typically consists of an unsorted, glacially transported and deposited mixture of sub-rounded to well-rounded clasts in a massive, silt- or sand-rich matrix (Minard 1985). Groundwater is expected to accumulate on the original ground surface soil horizon or relatively lower permeability layers below this surface to form isolated areas of perched groundwater and flow along the pre-existing grade northward towards the Thea Foss Waterway, and subsequently to Commencement Bay (LAI 2008c).

1.2 Prior Investigations

Previous investigations of the subject property were conducted by the City of Tacoma (City) and the Tacoma-Pierce County Health Department (TPCHD) from approximately 1990 to 2006. These investigations included soil, groundwater, seeps, and air sampling. These investigations confirmed that much of the near-surface fill consists of soil mixed with inert material such as waste concrete, asphalt, and brick. Data results also identified minor arsenic and TPH impacts to soil and the presence of low levels of methane (LAI 2008a).

LAI worked with the City to further investigate and characterize the landfill site, which includes the parcels comprising the subject property. The landfill site was included on the Washington State Department of Ecology's (Ecology) Confirmed and Suspected Contaminated Sites List after an initial investigation by the TPCHD in August 2005. LAI submitted a Voluntary Cleanup Program (VCP) application to Ecology on behalf of the City on February 27, 2008 to conduct independent remedial actions under Ecology supervision. LAI subsequently submitted an independent remedial action report on March 11, 2008 (LAI 2008a) and requested a no further action (NFA) determination for the landfill site based on previously collected data.

After reviewing the data, Ecology issued a further action determination on April 19, 2008 (Ecology 2008b) requiring additional remedial actions to characterize the landfill site. Based on previous investigations and site history, Ecology defined the primary contaminants of concern (COCs) at the site as TPH and cPAHs in soil (Ecology 2008b). These contaminants are consistent with the type of constituents related to vactor waste (i.e., material from street catch basins) and street sweeping material. Methane was also detected in soil gas and was likely generated from decomposition of organic debris (e.g., leaves, branches, yard waste, etc.) disposed along with soil and inert material.

In 2008, LAI provided a remedial investigation work plan (LAI 2008b), and subsequently completed a Remedial Investigation/Feasibility Study (RI/FS) and prepared a CAP in response to the Ecology's further action determination (LAI 2008c). The RI/FS/CAP report was prepared in accordance with MTCA (Washington Administrative Code [WAC] 173-340) under the VCP. The RI/FS/CAP was conducted to document current site soil, groundwater, surface water, and air conditions and to identify a final cleanup action that would be protective of human health and the environment and consistent with future development plans.

The results of the RI included the following:

- Based on the RI sampling data set, the only constituent that exceeded MTCA cleanup levels was cPAHs in soil. CPAHs were detected above the cleanup level from between 4 and 20 feet below ground surface (bgs) in eight of eleven samples. Three of the eight exceedances were from samples below the point of compliance (i.e., below 15 feet bgs). Overall, cPAH impacts to the landfill site, while above the cleanup standard, are considered low to moderate. CPAHs are relatively common constituents in urban environments and would be expected in vactor waste and street sweepings. The occurrence of cPAHs at the site is consistent with the historical use of this site as an area where these materials were placed.
- Based on the historical data set, some arsenic concentrations were detected above the MTCA soil cleanup level. However, the RI data set did not indicate an exceedance of arsenic in soil. For the purposes of site characterization, the RI data set is considered higher quality and therefore more representative.
- Impacts to groundwater are not a concern at the landfill site. Groundwater was not encountered in fill soil. The groundwater seep sample collected at the toe of the fill slope did not have detected constituents above cleanup levels. Evaluation of TPH-related constituents

and arsenic indicate soil concentrations are below levels that would impact groundwater through the soil to groundwater pathway.

- Methane being generated at the site is likely from decaying organic matter within the fill material. The source of the organic matter was not identified in site explorations and is assumed to be distributed throughout the fill. Methane concentrations in RI wells are generally low but variable. Concentrations were detected above the lower explosive limit during at least one sampling event in three locations. These data indicate the potential for methane to accumulate in onsite structures without appropriate mitigation. Previous investigations suggest that methane concentrations are declining over time and are not present offsite.

The results of the FS and CAP are presented below:

- Potential cleanup actions were divided into active and passive actions. Cleanup actions were evaluated based on effectiveness, implementability, and cost. Applicable actions were combined into proposed cleanup action alternatives.
- Potentially viable active cleanup actions identified for the site were:
  - excavation and offsite disposal, soil stabilization or encapsulation, and containment.
- Potentially viable passive cleanup actions identified for the site were:
  - soil gas venting and monitoring, institutional controls, education, fencing or other access constraints.
- The recommended cleanup action alternative consisted of the following combination of active and passive cleanup actions:
  - *In-situ* containment of impacted soil left in place
  - Venting and monitoring of soil gas for methane
  - Deed restrictions in the form of a restrictive environmental covenant
  - Preparation of an operation and maintenance manual for the site for compliance monitoring
  - Preparation of a health and safety plan.

The RI/FS/CAP report was reviewed by TPCHD and Ecology, and both agencies provided formal letter responses. The TPCHD letter states: *the recommendation of the installation of a soil gas venting system with follow-up monitoring is adequate with the condition (noted in the report) that the technology would be flexible to allow for the inclusion of active pumping if deemed necessary based upon future monitoring* (TPCHD 2008). Ecology issued an opinion letter, which states: *Ecology has determined that, upon completion of your proposed cleanup, no further remedial action will likely be necessary to clean up contamination at the Site* (Ecology 2008a).

1.3 Summary of Phase II ESA Work

LAI conducted a field investigation to assess current conditions associated with the identified RECs, supplement the prior RI/FS/CAP work, and assess potential impacts to future development on the

subject property. Subsurface samples were collected at three locations using Rotosonic™ drilling technology. Rotosonic borings were advanced to a maximum depth of approximately 31.5 feet bgs. Groundwater was not encountered during this investigation nor was the extent of methane investigated. The results of the Phase II investigation are included in Section 2.0 and conclusions and recommendations are in Section 3.0.

2.0 LIMITED PHASE II INVESTIGATION

Limited Phase II investigation activities were conducted on January 26, 2021. Exploration locations are shown on Figure 2. Soil samples collected for chemical testing were analyzed by Libby Environmental, Inc. located in Olympia, Washington.

2.1 Utility Locate

Prior to the completion of sampling and drilling activities, both a public and private utility locate were completed to identify utilities within the vicinity of the exploration locations. No underground utilities were identified within the proposed exploration areas.

2.2 Rotosonic™ Drilling

Rotosonic borings were advanced at three locations throughout the subject property (B-1 through B-3). Boring locations were chosen to supplement previous investigations conducted by LAI. Borings B-1 and B-2 were advanced near the center portion of the subject property. Boring B-3 was advanced along the southern boundary of the subject property.

2.2.1 Investigation Methods

Groundwater was not encountered at the maximum explored depth (approximately 31.5 feet bgs); therefore, groundwater sampling was not conducted. Soil samples were collected and field-screened at each boring location. Soil samples were visually classified for soil type. Where field screening indicated no evidence of contamination, one shallow soil sample and one sample from the bottom of the soil boring were collected for chemical analysis. If evidence of contamination was encountered in a boring, two samples were collected, one from the area with the highest apparent contamination (based on field-screening results) and one from a location within the upper 15 feet of each boring.

Soil samples were appropriately preserved and submitted under chain-of-custody procedures for the following analyses:

- Gasoline-range, diesel-range, and oil-range total petroleum hydrocarbons (TPH-G, TPH-D, and TPH-O, respectively), by Ecology-approved Methods Northwest gasoline-range and diesel-range total petroleum hydrocarbon extended (NWTPH-G and NWTPH-Dx; without silica gel sample preparation at laboratory)
- Volatile organic compounds (VOCs) by US Environmental Protection Agency (EPA) Method 8260D
- Resource Conservation and Recovery Act (RCRA) 8 Metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) by EPA Method 6010A and 7471B
- Semi-volatile organic compounds (SVOCs) by EPA Method 8270E.

2.2.2 Sampling Results

Subsurface soil analytical results and associated sampling depths are presented in Table 1 and discussed below. Soil boring logs and the laboratory analytical report are provided as Appendices A and B, respectively. The boring logs indicated the presence of construction debris including concrete, asphalt, and brick, and organic soils including woody debris. Field screening did not indicate the potential for contamination at the three boring locations, therefore two samples were collected at each boring location: one at approximately 5 feet bgs and one at approximately 30 feet bgs, which was near each boring's total exploratory depth.

The results from soil borings B-1 through B-3 were compared to MTCA Method A soil cleanup levels (CULs) for unrestricted land use, as summarized below.

- TPH: TPH-G, TPH-D, and TPH-O were not detected at concentrations exceeding the MTCA Method A soil CULs in all three sample locations. Sample B-2-05 did have a detection of TPH-O at 5 feet bgs of 1,400 milligrams per kilogram (mg/kg). The MTCA Method A soil CUL for TPH-O is 2,000 mg/kg. The other five samples did not have detections above the level of the laboratory reported sample quantitation limit.
- Metals: RCRA-8 metals, including arsenic, were not detected at concentrations exceeding their respective MTCA Method A soil CULs at all three sample locations.
- VOCs: VOCs were not detected at concentrations exceeding the laboratory reported sample quantitation limits and correspondingly their respective MTCA Method A soil CULs.
- SVOCs: SVOCs, including cPAHs, were not detected at concentrations exceeding their respective MTCA Method A soil CULs at all three sample locations, except in sample B2-05.
    - Benzo(a)pyrene and the cPAH toxicity equivalence (TEQ) were detected in sample B-2-05 at concentrations of 0.506 mg/kg and 0.672 mg/kg, respectively; these results exceed the MTCA Method A CUL of 0.1 mg/kg.

Analytical results indicate that shallow soil in the vicinity of B-2 is impacted with low to moderate levels of cPAHs exceeding MTCA Method A CULs. The other constituents analyzed were below their respective MTCA Method A soil CULs.

2.2.3 Equipment Decontamination and Investigation-Derived Waste

Non-dedicated sampling equipment was decontaminated between locations using an Alconox®/tap water solution, followed by a tap water rinse and a de-ionized water rinse. Downhole drilling equipment was decontaminated between borings using a pressure washer. Investigation-derived waste, including soil cuttings and decontamination water, was contained and stored in three 55-gallon Washington State Department of Transportation-approved drums, of which two contain soil and one water.

3.0 CONCLUSIONS AND RECOMMENDATIONS

The results of the Limited Phase II ESA indicate the presence of cPAH contamination in shallow soil at the subject property that poses environmental liability and will impact potential redevelopment strategies. TPH, metals, and SVOCs were detected but did not exceed their respective MTCA Method A soil CULs. VOCs were analyzed in the six soil samples but were not detected above the level of the laboratory reported sample quantitation limit.

The analytical results of this limited Phase II ESA are similar to prior investigations, which also showed elevated cPAHs in soil above CULs, residual TPH-impacted soil below CULs, and residual arsenic-impacted soil below CULs. Overall, cPAH impacts to the subject property, while above the cleanup standard, are considered low to moderate. CPAHs are relatively common constituents in urban environments and would be expected in vactor waste and street sweepings. The occurrence of cPAHs at the subject property is consistent with the historical use of this site as an area where these materials were placed.

The cleanup action previously prepared in the RI/FS/CAP (LAI 2008c) is still relevant and recommended based on the results of this limited Phase II ESA. The recommended cleanup action alternative consisted of the following combination of active and passive cleanup actions:

- *In-situ* containment of impacted soil left in place
- Venting and monitoring of soil gas for methane
- Deed restrictions in the form of a restrictive environmental covenant
- Preparation of an operation and maintenance manual for the site for compliance monitoring
- Preparation of a health and safety plan.

The overall cleanup action plan was reviewed by TPCHD (TPCHD 2008) and Ecology (Ecology 2008b), and both agencies provided formal letter responses concurring that upon completion of the proposed cleanup, no further remedial action will likely be necessary to clean up contamination at the subject property.

3.1.1 Cleanup Action Implementation During Subject Property Development

The cleanup action can be implemented during subject property development activities. The subject property will likely be required to implement the following items during redevelopment activities:

- Re-enrollment of the site into Ecology's Volunteer Cleanup Program (VCP) or newly formed Expedited Volunteer Cleanup Program (eVCP).
- Preparation of an Engineering Design Report (EDR) to support proper engineering design of the *in-situ* containment, methane gas venting, and management of contaminated soil during construction activities. The EDR should include a health and safety plan and contaminated media management plan for use during construction activities and an operation and maintenance (O&M) manual for site compliance monitoring.

- Preparation of a final cleanup action report post-construction with a formal request to receive an NFA determination from Ecology.
- Implementation of long-term compliance monitoring, as required.

Specific conceptual details of each recommended item of the cleanup action are summarized below and provided in further detail in the RI/FS/CAP (LAI 2008). Some details may be revised pending development of actual redevelopment plan for the subject property.

3.1.2 *In-situ* Containment

The recommended *in-situ* containment activities consist of placing and maintaining a soil and vegetative cover over areas across the subject property where cPAH concentrations exceed MTCA cleanup standards in the upper 15 feet. Additional surface soil testing should be conducted to limit the extent of containment capping necessary. For now, it is assumed the entire subject property will require some level of *in-situ* containment.

The selected *in-situ* containment option for the subject property includes:

- Removal of any vegetation in areas where containment is necessary
- Placement of a 1.5-foot-thick soil layer consisting of clean soil or structural fill and placement of a vegetative surface layer over the fill. This cap would be placed in areas where cPAHs exceed cleanup levels but not in areas occupied by future buildings or paved surfaces or in areas where cPAHs are not present above cleanup levels, if additional shallow soil testing were completed.

3.1.3 Soil Gas Venting and Monitoring

The final design of the gas venting system would be developed as part of the building design with the primary objective of preventing the occurrence of methane gas within future buildings. It is anticipated that passive or active gas vents will be utilized beneath buildings in combination with a methane gas vapor barrier system for residential development or constructed building areas. Venting strategies will vary based on actual subject property development plans.

The gas vents will be installed within permeable backfill and will extend beneath the buildings. The permeable backfill should facilitate the development of positive pressure gradients towards the vents underneath the buildings, thereby passively intercepting methane gas before it migrates into the structure. If during building design its determined that passive venting may not be effective in preventing methane gas from entering the structure, a manifold and blower system will be installed for each constructed building within the development area.

Within the first month after the containment cap is installed, methane soil gas and/or air monitoring should be initiated to verify the effectiveness of soil gas venting construction. Methane monitoring procedures, frequency, and reporting requirements will be defined in the O&M manual.

3.1.4 Deed Restrictions

The subject property deed will be amended with a restrictive environmental covenant. The covenant will be consistent with the Uniform Environmental Covenants Act (Revised Code of Washington 64.70.040) and be signed by the property owner and Ecology. The covenant will document the occurrence of elevated cPAHs in soil and methane in soil gas, identify the locations of *in-situ* containment areas, require the maintenance of the *in-situ* containment areas, and outline protection requirements for site workers and the proper disposal of contaminated media, if generated during future construction work. The requirement for an O&M manual will also be included in the restrictive environmental covenant.

3.1.5 Operations and Maintenance Manual

An O&M manual will be prepared for the subject property. The purpose of the manual will be to document current contamination conditions at the subject property and identify appropriate health and safety procedures and requirements for construction activities. The O&M manual will document the location and as-built specification of the *in-situ* containment areas and define specific procedures for their maintenance, define specific procedures for methane monitoring, and define worker health and safety procedures. The manual will also include procedures for documenting and maintaining subject property monitoring data. The subject property owner will maintain and implement the manual. The manual will be prepared as part of development activities and updated as appropriate during and following construction phases.

3.1.6 Health and Safety Plan

A health and safety plan (HASP) consistent with MTCA requirements in WAC 173-340-810 will be developed for construction activities at the subject property once the CAP is approved by Ecology. Appropriate health and safety protocols in the HASP will be implemented by the contractors and consultants working onsite during remedial actions. The HASP will address the potential for physical and chemical hazards.

The purpose of the plan will be to limit construction worker and site visitor exposure to environmental hazards while employed at the subject property. Elements of the HASP will include:

- Development of an air monitoring plan to monitor air emissions (e.g., methane) during construction activities. The plan will also include development of compliance criteria for methane in air based on potential worker exposure. The air monitoring plan will be consistent with the Puget Sound Clean Air Agency regulations for controlling air emissions for workers during construction activities.
- Requirements for worker education, training, and certification.
- Procedures for maintaining personal hygiene and associated facility requirements (i.e., hand and boot wash stations).
- Identification of applicable construction areas where the plan applies.

The HASP will be developed and approved prior to the beginning of construction activities. The plan will be incorporated into the subject property O&M Manual.

4.0 USE OF THIS REPORT

This Limited Phase II ESA has been prepared for the exclusive use of the Tacoma Community Redevelopment Authority for specific application to the South 35th Street and Pacific Avenue project. No other party is entitled to rely on the information, conclusions, and recommendations included in this document without the express written consent of LAI. Further, the reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and authorization by LAI, shall be at the user's sole risk. LAI warrants that within the limitations of scope, schedule, and budget, these services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. LAI makes no other warranty, either express or implied.

5.0 REFERENCES

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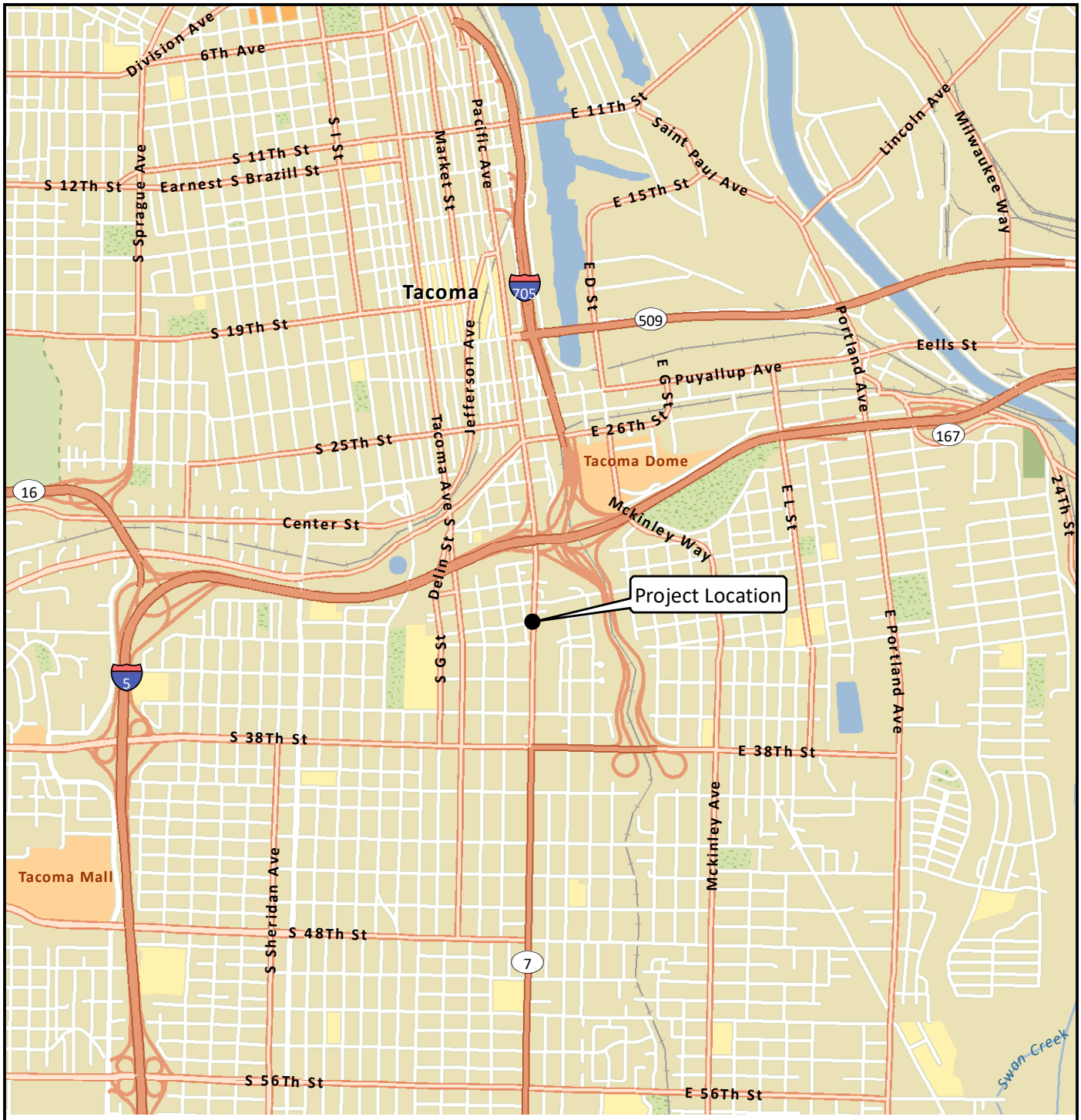

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Data Source: Esri 2012

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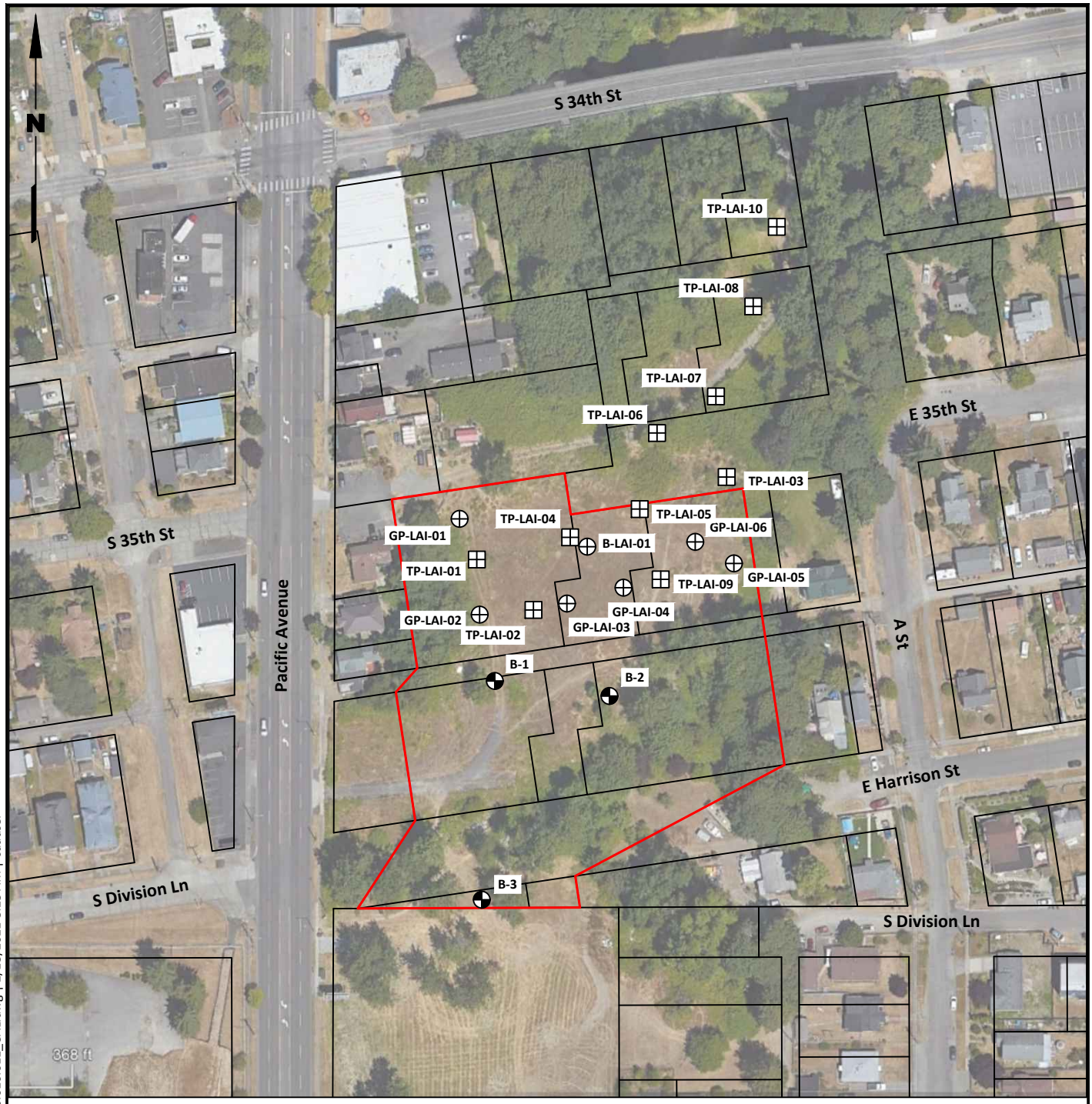
South 35th Street and Pacific Avenue Limited Phase II ESA Tacoma, Washington	**Vicinity Map**	Figure 1



Legend

- **B-1** Approximate Boring Location and Designation
- **B-1** Approximate Historical Boring/Geo-Probe Location and Designation
- **TP-1** Approximate Historical Test Pit Location and Designation
- Approximate Pierce County Parcel Boundaries
- Approximate Subject Property Parcel Boundaries

0 150 300

Scale in Feet

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Source: Google Imagery, 2018

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South 35th Street and Pacific Avenue Limited Phase II ESA Tacoma, Washington	**Site and Exploration Location Plan**	Figure 2

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Table 1
Soil Analytical Data
South 35th Street and Pacific Avenue
Tacoma, Washington

Analyte	MTCA Method A Cleanup Levels for Unrestricted Uses	Sample Location, Depth, and Date					
		B1-05 1/26/2021	B1-30 1/26/2021	B2-05 1/26/2021	B2-30 1/26/2021	B3-05 1/26/2021	B3-30 1/26/2021
Petroleum Hydrocarbons (mg/kg; NWTPH-Gx, -Dx)							
Gasoline Range Organics	30/100 (a)	10 U	10 U	10 U	10 U	10 U	10 U
Diesel Range Organics	2,000	50 U	50 U	50 U	50 U	50 U	50 U
Oil Range Organics	2,000	250 U	250 U	**1,400**	250 U	250 U	250 U
Metals (mg/kg; SW-846 6020A, SW-846 7471B, SM 3500-CR-B)							
Lead	250	**26**	**19**	**17**	**20**	5.0 U	5.0 U
Cadmium	2	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Chromium, Total	2,000 (b)	**12**	**8.5**	**7.7**	**8.3**	**9.0**	5.0 U
Arsenic	20	**5.0**	**6.2**	5.0 U	**5.4**	**5.9**	**5.1**
Barium	NL	**84.1**	**91.3**	**55.2**	**72.9**	**68.2**	**57.5**
Mercury	2	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Selenium	NL	**1.17**	**1.04**	**1.02**	**0.985**	**0.903**	**0.865**
Silver	NL	0.0862 U	0.0897 U	0.0786 U	0.0902 U	0.0841 U	0.0843 U
Volatile Organic Compounds (mg/kg; SW-846 8260D)							
Dichlorodifluoromethane	NL	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
Chloromethane	NL	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
Vinyl Chloride	NL	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Bromomethane	NL	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U	0.09 U
Chloroethane	NL	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
Trichlorofluoromethane (CFC 11)	NL	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,1-Dichloroethene	NL	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Methylene Chloride	0.02	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Methyl-tert-butyl ether	0.1	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
trans-1,2-Dichloroethene	NL	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
1,1-Dichloroethane	NL	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
2,2-Dichloropropane	NL	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
cis-1,2-Dichloroethene	NL	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Chloroform	NL	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
1,1,1-Trichloroethane	2	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Carbon Tetrachloride	NL	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
1,1-Dichloropropene	NL	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Benzene	0.03	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
1,2-Dichloroethane	NL	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Trichloroethene	0.03	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
1,2-Dichloropropane	NL	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Dibromomethane	NL	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Bromodichloromethane	NL	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
cis-1,3-Dichloropropene	NL	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Toluene	7	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
trans-1,3-Dichloropropene	NL	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
1,1,2-Trichloroethane	NL	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Tetrachloroethene	0.05	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
1,3-Dichloropropane	NL	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Dibromochloromethane	NL	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U

Table 1
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Ethylene Dibromide	0.005	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Chlorobenzene	NL	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Ethylbenzene	6	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,1,1,2-Tetrachloroethane	NL	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
Total Xylenes	9	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
Styrene	NL	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U
Bromoform	NL	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
Isopropylbenzene	NL	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
1,1,2,2-Tetrachloroethane	NL	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
Bromobenzene	NL	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
n-Propylbenzene	NL	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
1,2,3-Trichloropropane	NL	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
2-Chlorotoluene	NL	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
1,3,5-Trimethylbenzene	NL	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
4-Chlorotoluene	NL	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
tert-Butylbenzene	NL	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
1,2,4-Trimethylbenzene	NL	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
sec-Butylbenzene	NL	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
4-Isopropyltoluene	NL	0.04 UJ	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
1,3-Dichlorobenzene	NL	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
1,4-Dichlorobenzene	NL	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
n-Butylbenzene	NL	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
1,2-Dichlorobenzene	NL	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
1,2-Dibromo-3-chloropropane	NL	0.15 UJ	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
1,2,4-Trichlorobenzene	NL	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
Hexachlorobutadiene	NL	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
Naphthalene	5 (c)	0.15 UJ	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
1,2,3-Trichlorobenzene	NL	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U
Semivolatile Organic Compounds (mg/kg; SW-846 8270E)							
Phenol	NL	0.109 U	0.104 U	0.0964 U	0.104 U	0.106 U	0.0989 U
bis(2-Chloroethyl) Ether	NL	0.109 U	0.104 U	0.0964 U	0.104 U	0.106 U	0.0989 U
2-Chlorophenol	NL	0.109 U	0.104 U	0.0964 U	0.104 U	0.106 U	0.0989 U
1,3-Dichlorobenzene	NL	0.0819 U	0.0782 U	0.0723 U	0.0781 U	0.0797 U	0.0742 U
1,4-Dichlorobenzene	NL	0.0819 U	0.0782 U	0.0723 U	0.0781 U	0.0797 U	0.0742 U
1,2-Dichlorobenzene	NL	0.0819 U	0.0782 U	0.0723 U	0.0781 U	0.0797 U	0.0742 U
Benzyl Alcohol	NL	0.109 UJ	0.104 UJ	0.0964 UJ	0.104 UJ	0.106 UJ	0.0989 UJ
2-Methylphenol	NL	0.109 U	0.104 U	0.0964 U	0.104 U	0.106 U	0.0989 U
Hexachloroethane	NL	0.109 U	0.104 U	0.0964 U	0.104 U	0.106 U	0.0989 U
N-Nitrosodi-n-propylamine	NL	0.109 U	0.104 U	0.0964 U	0.104 U	0.106 U	0.0989 U
4-Methylphenol	NL	0.109 U	0.104 U	0.0964 U	0.104 U	0.106 U	0.0989 U
Nitrobenzene	NL	0.109 U	0.104 U	0.0964 U	0.104 U	0.106 U	0.0989 U
Isophorone	NL	0.109 U	0.104 U	0.0964 U	0.104 U	0.106 U	0.0989 U
2-Nitrophenol	NL	0.109 U	0.104 U	0.0964 U	0.104 U	0.106 U	0.0989 U
2,4-Dimethylphenol	NL	0.109 U	0.104 U	0.0964 U	0.104 U	0.106 U	0.0989 U

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bis(2-Chloroethoxy) Methane	NL	0.0819 U	0.0782 U	0.0723 U	0.0781 U	0.0797 U	0.0742 U
2,4-Dichlorophenol	NL	0.109 U	0.104 U	0.0964 U	0.104 U	0.106 U	0.0989 U
1,2,4-Trichlorobenzene	NL	0.0819 U	0.0782 U	0.0723 U	0.0781 U	0.0797 U	0.0742 U
Naphthalene	5 (c)	0.0546 U	0.0521 U	**0.0979**	0.0521 U	0.0532 U	0.0495 U
4-Chloroaniline	NL	0.0819 U	0.0782 U	0.0723 U	0.0781 U	0.0797 U	0.0742 U
Hexachlorobutadiene	NL	0.0819 U	0.0782 U	0.0723 U	0.0781 U	0.0797 U	0.0742 U
4-Chloro-3-methylphenol	NL	0.218 U	0.208 U	0.193 U	0.208 U	0.213 U	0.198 U
2-Methylnaphthalene	5 (c)	0.0546 U	0.0521 U	0.0482 U	0.0521 U	0.0532 U	0.0495 U
1-Methylnaphthalene	5 (c)	0.0546 U	0.0521 U	0.0482 U	0.0521 U	0.0532 U	0.0495 U
Hexachlorocyclopentadiene	NL	0.109 UJ	0.104 UJ	0.0964 UJ	0.104 UJ	0.106 UJ	0.0989 UJ
2,4,6-Trichlorophenol	NL	0.109 U	0.104 U	0.0964 U	0.104 U	0.106 U	0.0989 U
2,4,5-Trichlorophenol	NL	0.109 U	0.104 U	0.0964 U	0.104 U	0.106 U	0.0989 U
2-Chloronaphthalene	NL	0.0819 U	0.0782 U	0.0723 U	0.0781 U	0.0797 U	0.0742 U
2-Nitroaniline	NL	0.109 U	0.104 U	0.0964 U	0.104 U	0.106 U	0.0989 U
Acenaphthene	NL	0.0546 U	0.0521 U	0.0482 U	0.0521 U	0.0532 U	0.0495 U
Dimethyl Phthalate	NL	0.109 U	0.104 U	0.0964 U	0.104 U	0.106 U	0.0989 U
2,6-Dinitrotoluene	NL	0.109 U	0.104 U	0.0964 U	0.104 U	0.106 U	0.0989 U
Acenaphthylene	NL	0.0546 U	0.0521 U	**0.191**	0.0521 U	0.0532 U	0.0495 U
2,4-Dinitrophenol	NL	0.573 UJ	0.547 UJ	0.506 UJ	0.547 UJ	0.558 UJ	0.519 UJ
Dibenzofuran	NL	0.0819 U	0.0782 U	0.0723 U	0.0781 U	0.0797 U	0.0742 U
2,4-Dinitrotoluene	NL	0.109 U	0.104 U	0.0964 U	0.104 U	0.106 U	0.0989 U
4-Nitrophenol	NL	0.546 U	0.521 U	0.482 U	0.521 U	0.532 U	0.495 U
Fluorene	NL	0.0546 U	0.0521 U	0.0482 U	0.0521 U	0.0532 U	0.0495 U
4-Chlorophenyl phenyl ether	NL	0.0819 U	0.0782 U	0.0723 U	0.0781 U	0.0797 U	0.0742 U
Diethyl Phthalate	NL	0.109 U	0.104 U	0.0964 U	0.104 U	0.106 U	0.0989 U
4,6-Dinitro-2-methylphenol	NL	0.218 UJ	0.208 UJ	0.193 UJ	0.208 UJ	0.213 UJ	0.198 UJ
4-Bromophenyl phenyl ether	NL	0.0819 U	0.0782 U	0.0723 U	0.0781 U	0.0797 U	0.0742 U
Hexachlorobenzene	NL	0.0819 U	0.0782 U	0.0723 U	0.0781 U	0.0797 U	0.0742 U
Pentachlorophenol	NL	0.109 U	0.104 U	0.0964 U	0.104 U	0.106 U	0.0989 U
Phenanthrene	NL	0.0546 U	0.0521 U	**0.134**	**0.059**	0.0532 U	0.0495 U
Anthracene	NL	0.0546 U	0.0521 U	**0.117**	0.0521 U	0.0532 U	0.0495 U
Carbazole	NL	0.0819 U	0.0782 U	0.0723 U	0.0781 U	0.0797 U	0.0742 U
Di-N-Butyl Phthalate	NL	0.109 U	**0.147**	0.0964 U	0.104 U	0.106 U	0.0989 U
Fluoranthene	NL	0.0546 U	0.0521 U	**0.557**	**0.0946**	0.0532 U	0.0495 U
Pyrene	NL	0.0546 U	0.0521 U	**0.615**	**0.103**	0.0532 U	0.0495 U
Butyl Benzyl Phthalate	NL	0.109 U	0.104 U	0.0964 U	0.104 U	0.106 U	0.0989 U
bis(2-Ethylhexyl) adipate	NL	0.109 U	0.104 U	0.0964 U	0.104 U	0.106 U	0.0989 U
Benzo(a)anthracene	NL	0.0546 U	0.0521 U	**0.359**	0.0521 U	0.0532 U	0.0495 U
Chrysene	NL	0.0546 U	0.0521 U	**0.429**	0.0521 U	0.0532 U	0.0495 U
bis(2-Ethylhexyl) Phthalate	NL	0.109 U	0.104 U	0.0964 U	0.104 U	0.106 U	0.0989 U
Di-n-octyl Phthalate	NL	0.109 U	0.104 U	0.0964 U	0.104 U	0.106 U	0.0989 U
Benzo(b)fluoranthene	NL	0.0546 U	0.0521 U	**0.501**	0.0521 U	0.0532 U	0.0495 U
Benzo(k)fluoranthene	NL	0.0546 U	0.0521 U	**0.363**	0.0521 U	0.0532 U	0.0495 U
Benzo(a)pyrene	0.1	0.0546 U	0.0521 U	**0.506**	0.0521 U	0.0532 U	0.0495 U

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Indeno(1,2,3-cd)pyrene	NL	0.0546 U	0.0521 U	**0.266**	0.0521 U	0.0532 U	0.0495 U
Dibenzo(a,h)anthracene	NL	0.0546 U	0.0521 U	**0.128**	0.0521 U	0.0532 U	0.0495 U
Benzo(g,h,i)perylene	NL	0.0546 U	0.0521 U	**0.301**	0.0521 U	0.0532 U	0.0495 U
Total Benzofluoranthenes	NL	0.0546 U	0.0521 U	**0.864**	0.0521 U	0.0532 U	0.0495 U
cPAH TEQ	0.1	0.077 U	0.0735 U	**0.672**	0.0735 U	0.075 U	0.0698 U

Notes:
Bold text indicates detected analyte
Green shading indicates observed value exceeds its MTCA Soil Cleanup Level
U = The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
UJ = The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
(a) MTCA Method A cleanup level is 100 mg/kg if benzene is not present and the total of ethylbenzene, toluene, and xylenes is less than 1 percent of the gasoline mixture; otherwise the cleanup level is 30 mg/kg.
(b) MTCA Method A cleanup level for chromium III.
(c) MTCA Method A cleanup level for naphthalenes.

Acronyms/Abbreviations:
cPAH = carcinogenic polycyclic aromatic hydrocarbon
mg/kg = milligrams per kilogram
MTCA = Model Toxics Control Act
NL = not listed
TEQ = toxicity equivalence

APPENDIX A

Boring Logs

Soil Classification System

MAJOR DIVISIONS			GRAPHIC SYMBOL	USCS LETTER SYMBOL[1]	TYPICAL DESCRIPTIONS [2][3]
COARSE-GRAINED SOIL (More than 50% of material is larger than No. 200 sieve size)	GRAVEL AND GRAVELLY SOIL (More than 50% of coarse fraction retained on No. 4 sieve)	CLEAN GRAVEL (Little or no fines)		GW	Well-graded gravel; gravel/sand mixture(s); little or no fines
				GP	Poorly graded gravel; gravel/sand mixture(s); little or no fines
		GRAVEL WITH FINES (Appreciable amount of fines)		GM	Silty gravel; gravel/sand/silt mixture(s)
				GC	Clayey gravel; gravel/sand/clay mixture(s)
	SAND AND SANDY SOIL (More than 50% of coarse fraction passed through No. 4 sieve)	CLEAN SAND (Little or no fines)		SW	Well-graded sand; gravelly sand; little or no fines
				SP	Poorly graded sand; gravelly sand; little or no fines
		SAND WITH FINES (Appreciable amount of fines)		SM	Silty sand; sand/silt mixture(s)
				SC	Clayey sand; sand/clay mixture(s)
FINE-GRAINED SOIL (More than 50% of material is smaller than No. 200 sieve size)	SILT AND CLAY (Liquid limit less than 50)			ML	Inorganic silt and very fine sand; rock flour; silty or clayey fine sand or clayey silt with slight plasticity
				CL	Inorganic clay of low to medium plasticity; gravelly clay; sandy clay; silty clay; lean clay
				OL	Organic silt; organic, silty clay of low plasticity
	SILT AND CLAY (Liquid limit greater than 50)			MH	Inorganic silt; micaceous or diatomaceous fine sand
				CH	Inorganic clay of high plasticity; fat clay
				OH	Organic clay of medium to high plasticity; organic silt
	HIGHLY ORGANIC SOIL			PT	Peat; humus; swamp soil with high organic content

OTHER MATERIALS	GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
PAVEMENT		AC or PC	Asphalt concrete pavement or Portland cement pavement
ROCK		RK	Rock (See Rock Classification)
WOOD		WD	Wood, lumber, wood chips
DEBRIS		DB	Construction debris, garbage

Notes:
1. USCS letter symbols correspond to symbols used by the Unified Soil Classification System and ASTM classification methods. Dual letter symbols (e.g., SP-SM for sand or gravel) indicate soil with an estimated 5-15% fines. Multiple letter symbols (e.g., ML/CL) indicate borderline or multiple soil classifications.
2. Soil descriptions are based on the general approach presented in the Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), outlined in ASTM D 2488. Where laboratory index testing has been conducted, soil classifications are based on the Standard Test Method for Classification of Soils for Engineering Purposes, as outlined in ASTM D 2487.
3. Soil description terminology is based on visual estimates (in the absence of laboratory test data) of the percentages of each soil type and is defined as follows:

Primary Constituent:	> 50%	- "GRAVEL," "SAND," "SILT," "CLAY," etc.
Secondary Constituents:	> 30% and ≤ 50%	- "very gravelly," "very sandy," "very silty," etc.
	> 15% and ≤ 30%	- "gravelly," "sandy," "silty," etc.
Additional Constituents:	> 5% and ≤ 15%	- "with gravel," "with sand," "with silt," etc.
	≤ 5%	- "with trace gravel," "with trace sand," "with trace silt," etc., or not noted.

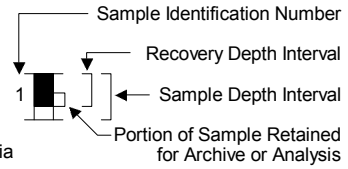
4. Soil density or consistency descriptions are based on judgement using a combination of sampler penetration blow counts, drilling or excavating conditions, field tests, and laboratory tests, as appropriate.

Drilling and Sampling Key

SAMPLER TYPE

Code	Description
a	3.25-inch O.D., 2.42-inch I.D. Split Spoon
b	2.00-inch O.D., 1.50-inch I.D. Split Spoon
c	Shelby Tube
d	Grab Sample
e	Single-Tube Core Barrel
f	Double-Tube Core Barrel
g	2.50-inch O.D., 2.00-inch I.D. WSDOT
h	3.00-inch O.D., 2.375-inch I.D. Mod. California
i	Other - See text if applicable
1	300-lb Hammer, 30-inch Drop
2	140-lb Hammer, 30-inch Drop
3	Pushed
4	Vibrocore (Rotosonic/Geoprobe)
5	Other - See text if applicable

SAMPLE NUMBER & INTERVAL



Field and Lab Test Data

Code	Description
PP = 1.0	Pocket Penetrometer, tsf
TV = 0.5	Torvane, tsf
PID = 100	Photoionization Detector VOC screening, ppm
W = 10	Moisture Content, %
D = 120	Dry Density, pcf
-200 = 60	Material smaller than No. 200 sieve, %
GS	Grain Size - See separate figure for data
AL	Atterberg Limits - See separate figure for data
GT	Other Geotechnical Testing
CA	Chemical Analysis

Groundwater

▽ Approximate water level at time of drilling (ATD)

▼ Approximate water level at time after drilling/excavation/well

LANDAU ASSOCIATES

South 35th Street and Pacific Avenue
Limited Phase II ESA
Tacoma, Washington

Soil Classification System and Key

Figure A-1

B-1

LAI Project No: 0094110.010.012

SAMPLE DATA | **SOIL PROFILE**

Drilling Method: Rotosonic
Ground Elevation (ft): Not Measured
Drilled By: Holocene Drilling Inc.
Logged By: CAL Date: 01/26/21

Moisture Content (%) — Plastic Limit — Liquid Limit — 20 40 60 80
▲ SPT N-Value ▲ △ Non-Standard N-Value △ — 20 40 60 80
× Fines Content (%) × — 20 40 60 80

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Soil Description	Groundwater
0							SP	1 inch of sod over gray-brown to brown, fine to coarse SAND with gravel (loose, moist) **(FILL)**	Groundwater Not Encountered
								- Brick debris observed at 2 ft bgs	
		S-1	b2	32			SP-SM	*** Concrete debris found in the sampler shoe likely affected blow counts ***	
5		S-2 B-1-05	d b2	4				Gray, fine to coarse SAND with silt and gravel (loose, moist)	
								- Grades to gray-brown to light brown at 5 ft bgs	
		S-3A S-3B	b2	4			SM / SP-SM	Dark brown, silty, fine to coarse SAND with gravel and trace organics (loose, moist)	
10		S-4	b2	5			SM	Dark gray to gray, fine to coarse SAND with silt and gravel (loose, moist)	
								Dark gray to gray, gravelly, silty, fine to coarse SAND (loose, moist to wet)	
								- Grades to gray at 12 ft bgs	
								- 3-inch cobble observed at 13 ft bgs	
								- Asphalt debris observed at 14 ft bgs	
15		S-5	b2	5	W = 12 GS			- Grades to moist at 15 ft bgs	
20		S-6	b2	50/ 2"				*** Asphalt debris found in the sampler shoe likely affected blow counts ***	
								- Asphalt and concrete debris observed between 20 and 22 ft bgs	
								- Grades to moist to wet at 23 ft bgs	
25		S-7A S-7B	b2	50/ 3"			ML / SM	Gray-brown to light brown SILT (soft, moist)	
								Dark gray to gray, silty, fine to coarse SAND with gravel (loose, moist)	
								*** Large rock found in the sampler shoe likely affected blow counts ***	
30		B-1-30 S-8	d b2	6				- Concrete debris observed between 27 and 28.5 ft bgs	
								- Grades to moist to wet at 30 ft bgs	
35									

Boring Completed 01/26/21
Total Depth of Boring = 31.5 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

0094110.010.012 3/30/21 \\EDMDATA01\PROJECTS\0094\110.010\T\0094110.010.012.GPJ SOIL BORING LOG WITH GRAPH

LANDAU ASSOCIATES

South 35th Street and Pacific Avenue Limited Geotechnical Assessment Tacoma, Washington

Log of Boring B-1

Figure 4

B-2

LAI Project No: 0094110.010.012

SAMPLE DATA | **SOIL PROFILE**

Drilling Method: Rotosonic
Ground Elevation (ft): Not Measured
Drilled By: Holocene Drilling Inc.
Logged By: CAL Date: 01/26/21

Moisture Content (%) — Plastic Limit — Liquid Limit — 20 40 60 80
▲ SPT N-Value ▲ △ Non-Standard N-Value △ — 20 40 60 80
× Fines Content (%) × — 20 40 60 80

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Soil Description	Groundwater
0		S-1	b2	56	W = 10 GS		SM	1 inch of sod over dark brown to brown, gravelly, silty, fine to coarse SAND with trace organics (loose, damp to moist) **(FILL)**	Groundwater Not Encountered
								*** Brick debris and large rock found in the sampler shoe likely affected blow counts ***	
								- Asphalt, brick, and concrete debris observed intermittently between 2 and 10 ft bgs	
5		S-2 B-2-05	d b2	10				- Grades to gray, with more silt, without organics, and moist at 5 ft bgs	
		S-3	b2	9				*** Large rock found in the sampler shoe likely affected blow counts ***	
10		S-4	b2	9				*** Large rock found in the sampler shoe likely affected blow counts ***	
								- Grades to dark gray and with wood debris at 13 ft bgs	
								- Concrete debris observed between 14 and 15 ft bgs	
15		S-5	b2	26				*** Concrete debris and large rock found in the sampler shoe likely affected blow counts ***	
							SM	- Concrete debris observed at 17 ft bgs	
								Gray, silty, fine to coarse SAND with gravel (loose, moist to wet)	
20		S-6	b2	23				- Sample was a mixture of silty SAND with distinct pockets of oxidized soil (colors ranged from bluish-gray to gray to brown) at 20 ft bgs	
								*** Concrete debris found in the sampler shoe likely affected blow counts ***	
25								- Void space between about 22 and 26 ft bgs (no return on the Rotosonic core and sample tube dropped about 1 ft on the 25-ft-bgs sample)	
		S-7	b2	39			SM	Gray-brown, silty, fine to coarse SAND (loose, moist to wet)	
								*** Asphalt, concrete and wood debris found in the sampler shoe likely affected blow counts ***	
30		S-8 B-2-30	b2 d	8				- Grades to moist to wet at 30 ft bgs	
								- Slight orange-brown mottling observed at 31 ft bgs	
35									

Boring Completed 01/26/21
Total Depth of Boring = 31.5 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

0094110.010.012 3/30/21 \\EDMDATA01\PROJECTS\0094\110.010\T\0094110.010.012.GPJ SOIL BORING LOG WITH GRAPH

LANDAU ASSOCIATES

South 35th Street and Pacific Avenue Limited Geotechnical Assessment Tacoma, Washington

Log of Boring B-2

Figure 5

B-3

LAI Project No: 0094110.010.012

SAMPLE DATA | **SOIL PROFILE**

Drilling Method: Rotosonic
Ground Elevation (ft): Not Measured
Drilled By: Holocene Drilling Inc.
Logged By: CAL Date: 01/26/21

Moisture Content (%) — Plastic Limit — Liquid Limit — 20 40 60 80
▲ SPT N-Value ▲ △ Non-Standard N-Value △ — 20 40 60 80
× Fines Content (%) × — 20 40 60 80

Depth (ft)	Elevation (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Soil Description	Groundwater
0							SM	1 inch of sod over gray-brown to brown, silty, fine to coarse SAND with gravel (medium dense, moist) **(FILL)**	Groundwater Not Encountered
		S-1	b2	53				*** Large rock found in the sampler shoe likely affected blow counts ***	
5		S-2 / B-3-05	d / b2	13	W = 14 GS			- Asphalt, brick, and concrete debris observed intermittently between 2 and 10 ft bgs - Grades to moist at 5 ft bgs	
		S-3	b2	6				- Grades to dark gray and loose at 7.5 ft bgs	
10		S-4	b2	4				- Grades to brown and with organics at 12.5 ft bgs - Grades to without organics at 14 ft bgs	
15		S-5	b2	11			GP-GM	Gray-brown, very sandy, fine to coarse GRAVEL with silt (medium dense, moist)	
20		S-6	b2	7	W = 5 GS			- Concrete debris observed at 19 ft bgs - Grades to loose at 20 ft bgs *** Concrete debris found in the sampler shoe likely affected blow counts ***	
25		S-7	b2	7				- Grades to moist to wet at 24 ft bgs	
30		B-3-30 / S-8	d / b2	48				*** Concrete debris found in the sampler shoe likely affected blow counts ***	
35									

Boring Completed 01/26/21
Total Depth of Boring = 31.5 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

0094110.010.012 3/30/21 \\EDMDATA01\PROJECTS\0094\110.010\T\0094110.010.012.GPJ SOIL BORING LOG WITH GRAPH

LANDAU ASSOCIATES

South 35th Street and Pacific Avenue Limited Geotechnical Assessment Tacoma, Washington

Log of Boring B-3

Figure 6

APPENDIX B

Laboratory Analytical Report

Libby Environmental, Inc.

3322 South Bay Road NE • Olympia, WA 98506-2957

February 10, 2021

Dave Johnson
Landau Associates
500 Columbia St NW, Ste 110
Olympia, WA 98501

Dear Mr. Johnson:

Please find enclosed the analytical data report for the 35th Street Landfill Project located in Tacoma, 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,

Sherry L. Chilcutt
Senior Chemist
Libby Environmental, Inc.

Phone (360) 352-2110 • Fax (360) 352-4154 • libbyenv@gmail.com

LANDAU ASSOCIATES

Chain-of-Custody Record

☐ **Seattle/Edmonds** (425) 778-0907 ☐ **Spokane** (509) 327-9737
☐ **Tacoma** (253) 926-2493 ☐ **Portland** (503) 542-1080
☒ OLYMPIA

Date 1/26/21
Page 1 of 1

Turnaround Time:
(Standard)
Accelerated

Project Name 35TH STREET LANDFILL Project No. 0094110.010.012
Project Location/Event S 35TH ST & PACIFIC AVE, TACOMA, WA
Sampler's Name C. LARAMIE
Project Contact D. JOHNSON, D. JORGENSEN
Send Results To " " , " "

Special Handling Requirements:

Shipment Method:

Stored on ice: Yes / No

Sample I.D.	Date	Time	Matrix	No. of Containers	Testing Parameters: D+D+	G+, VOC	sVOC, RCRA 8	Observations/Comments
B1-05-20210126	1/26/21	940	SOIL	4	X	X	X	
B1-30-20210126		1020			X	X	X	
B2-05-20210126		1120			X	X	X	
B2-30-20210126		1245			X	X	X	
B3-05-20210126		1340			X	X	X	
B3-030-20210126		1430			X	X	X	

Observations/Comments

☐ Allow water samples to settle, collect aliquot from clear portion

☐ NWTPH-Dx - Acid wash cleanup ☐
- Silica gel cleanup ☐

☐ Dissolved metal samples were field filtered

Other

Relinquished by	Received by	Relinquished by	Received by
Signature Cody Laramie	Signature	Signature	Signature
Printed Name CODY LARAMIE	Printed Name Rory Dixon	Printed Name	Printed Name
Company LAI	Company Libby	Company	Company
Date 1/26/21 Time 1615	Date 1/26/21 Time 1610	Date Time	Date Time

WHITE COPY - Laboratory YELLOW COPY - Project File PINK COPY - Client Representative

10/2018

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
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FAX: (360) 352-4154
Email: libbyenv@gmail.com

35TH STREET LANDFILL PROJECT
Landau Associates
Tacoma, Washington
Libby Project # L210126-1
Client Project # 0094110.010.012

Volatile Organic Compounds by EPA Method 8260D in Soil

Sample Description		Method Blank	B1-05-20210126	B1-05-20210126 Dup	B1-30-20210126	B2-05-20210126	B2-30-20210126
Date Sampled	Reporting	N/A	1/25/2021	1/25/2021	1/25/2021	1/25/2021	1/25/2021
Date Analyzed	Limits	1/27/2021	1/27/2021	1/27/2021	1/27/2021	1/27/2021	1/27/2021
	(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 *tert*- Butyl Ether (MTBE)	0.05	nd	nd	nd	nd	nd	nd
trans -1,2-Dichloroethene	0.03	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	0.03	nd	nd	nd	nd	nd	nd
2,2-Dichloropropane	0.05	nd	nd	nd	nd	nd	nd
cis -1,2-Dichloroethene	0.03	nd	nd	nd	nd	nd	nd
Chloroform	0.03	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane (TCA)	0.03	nd	nd	nd	nd	nd	nd
Carbon tetrachloride	0.03	nd	nd	nd	nd	nd	nd
1,1-Dichloropropene	0.03	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	0.03	nd	nd	nd	nd	nd	nd
Dibromomethane	0.04	nd	nd	nd	nd	nd	nd
Bromodichloromethane	0.03	nd	nd	nd	nd	nd	nd
cis-1,3-Dichloropropene	0.03	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)	0.03	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	0.03	nd	nd	nd	nd	nd	nd
Ethylbenzene	0.05	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	0.05	nd	nd	nd	nd	nd	nd
Total Xylenes	0.15	nd	nd	nd	nd	nd	nd
Styrene	0.03	nd	nd	nd	nd	nd	nd

Libby Environmental, Inc.

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35TH STREET LANDFILL PROJECT
Landau Associates
Tacoma, Washington
Libby Project # L210126-1
Client Project # 0094110.010.012

Volatile Organic Compounds by EPA Method 8260D in Soil

Sample Description		Method Blank	B1-05-20210126	B1-05-20210126 Dup	B1-30-20210126	B2-05-20210126	B2-30-20210126
Date Sampled	Reporting	N/A	1/25/2021	1/25/2021	1/25/2021	1/25/2021	1/25/2021
Date Analyzed	Limits	1/27/2021	1/27/2021	1/27/2021	1/27/2021	1/27/2021	1/27/2021
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Bromoform	0.15	nd	nd	nd	nd	nd	nd
Isopropylbenzene	0.05	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	0.15	nd	nd	nd	nd	nd	nd
Bromobenzene	0.04	nd	nd	nd	nd	nd	nd
n-Propylbenzene	0.04	nd	nd	nd	nd	nd	nd
1,2,3-Trichloropropane	0.04	nd	nd	nd	nd	nd	nd
2-Chlorotoluene	0.04	nd	nd	nd	nd	nd	nd
1,3,5-Trimethylbenzene	0.04	nd	nd	nd	nd	nd	nd
4-Chlorotoluene	0.04	nd	nd	nd	nd	nd	nd
tert-Butylbenzene	0.04	nd	nd	nd	nd	nd	nd
1,2,4-Trimethylbenzene	0.04	nd	nd	nd	nd	nd	nd
sec-Butylbenzene	0.04	nd	nd	nd	nd	nd	nd
p-Isopropyltoluene	0.04	nd	nd	nd	nd	nd	nd
1,3-Dichlorobenzene	0.04	nd	nd	nd	nd	nd	nd
1,4-Dichlorobenzene	0.04	nd	nd	nd	nd	nd	nd
n-Butylbenzene	0.04	nd	nd	nd	nd	nd	nd
1,2-Dichlorobenzene	0.04	nd	nd	nd	nd	nd	nd
1,2-Dibromo-3-Chloropropane	0.15	nd	nd	nd	nd	nd	nd
1,2,4-Trichlorolbenzene	0.15	nd	nd	nd	nd	nd	nd
Hexachloro-1,3-butadiene	0.15	nd	nd	nd	nd	nd	nd
Naphthalene	0.15	nd	nd	nd	nd	nd	nd
1,2,3-Trichlorobenzene	0.15	nd	nd	nd	nd	nd	nd
Surrogate Recovery							
Dibromofluoromethane		134	114	108	117	111	107
1,2-Dichloroethane-d4		122	107	109	114	106	104
Toluene-d8		66	66	102	66	97	81
4-Bromofluorobenzene		88	77	79	82	89	78

"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: Melissa Harrington

Libby Environmental, Inc.

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35TH STREET LANDFILL PROJECT
Landau Associates
Tacoma, Washington
Libby Project # L210126-1
Client Project # 0094110.010.012

Volatile Organic Compounds by EPA Method 8260D in Soil

Sample Description		B3-05-20210126	B3-030-20210126
Date Sampled Date Analyzed	Reporting Limits (mg/kg)	1/25/2021 1/27/2021 (mg/kg)	1/25/2021 1/27/2021 (mg/kg)
Dichlorodifluoromethane	0.06	nd	nd
Chloromethane	0.06	nd	nd
Vinyl chloride	0.02	nd	nd
Bromomethane	0.09	nd	nd
Chloroethane	0.06	nd	nd
Trichlorofluoromethane	0.05	nd	nd
1,1-Dichloroethene	0.05	nd	nd
Methylene chloride	0.02	nd	nd
Methyl *tert*- Butyl Ether (MTBE)	0.05	nd	nd
trans -1,2-Dichloroethene	0.03	nd	nd
1,1-Dichloroethane	0.03	nd	nd
2,2-Dichloropropane	0.05	nd	nd
cis -1,2-Dichloroethene	0.03	nd	nd
Chloroform	0.03	nd	nd
1,1,1-Trichloroethane (TCA)	0.03	nd	nd
Carbon tetrachloride	0.03	nd	nd
1,1-Dichloropropene	0.03	nd	nd
Benzene	0.02	nd	nd
1,2-Dichloroethane (EDC)	0.03	nd	nd
Trichloroethene (TCE)	0.02	nd	nd
1,2-Dichloropropane	0.03	nd	nd
Dibromomethane	0.04	nd	nd
Bromodichloromethane	0.03	nd	nd
cis-1,3-Dichloropropene	0.03	nd	nd
Toluene	0.10	nd	nd
Trans-1,3-Dichloropropene	0.03	nd	nd
1,1,2-Trichloroethane	0.03	nd	nd
Tetrachloroethene (PCE)	0.03	nd	nd
1,3-Dichloropropane	0.05	nd	nd
Dibromochloromethane	0.03	nd	nd
1,2-Dibromoethane (EDB) *	0.005	nd	nd
Chlorobenzene	0.03	nd	nd
Ethylbenzene	0.05	nd	nd
1,1,1,2-Tetrachloroethane	0.05	nd	nd
Total Xylenes	0.15	nd	nd
Styrene	0.03	nd	nd

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Client Project # 0094110.010.012

Volatile Organic Compounds by EPA Method 8260D in Soil

Sample Description		B3-05-20210126	B3-030-20210126
Date Sampled	Reporting	1/25/2021	1/25/2021
Date Analyzed	Limits	1/27/2021	1/27/2021
	(mg/kg)	(mg/kg)	(mg/kg)
Bromoform	0.15	nd	nd
Isopropylbenzene	0.05	nd	nd
1,1,2,2-Tetrachloroethane	0.15	nd	nd
Bromobenzene	0.04	nd	nd
n-Propylbenzene	0.04	nd	nd
1,2,3-Trichloropropane	0.04	nd	nd
2-Chlorotoluene	0.04	nd	nd
1,3,5-Trimethylbenzene	0.04	nd	nd
4-Chlorotoluene	0.04	nd	nd
tert-Butylbenzene	0.04	nd	nd
1,2,4-Trimethylbenzene	0.04	nd	nd
sec-Butylbenzene	0.04	nd	nd
p-Isopropyltoluene	0.04	nd	nd
1,3-Dichlorobenzene	0.04	nd	nd
1,4-Dichlorobenzene	0.04	nd	nd
n-Butylbenzene	0.04	nd	nd
1,2-Dichlorobenzene	0.04	nd	nd
1,2-Dibromo-3-Chloropropane	0.15	nd	nd
1,2,4-Trichlorolbenzene	0.15	nd	nd
Hexachloro-1,3-butadiene	0.15	nd	nd
Naphthalene	0.15	nd	nd
1,2,3-Trichlorobenzene	0.15	nd	nd
Surrogate Recovery			
Dibromofluoromethane		134	120
1,2-Dichloroethane-d4		131	114
Toluene-d8		82	97
4-Bromofluorobenzene		77	79

"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: Melissa Harrington

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35TH STREET LANDFILL PROJECT
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Client Project # 0094110.010.012

QA/QC for Volatile Organic Compounds by EPA Method 8260D in Soil

Matrix Spike Sample Identification: B1-05-20210126								
Date Analyzed: 1/27/2021								
	Spiked Conc. (mg/kg)	MS Response (mg/kg)	MSD Response (mg/kg)	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Dichlorodifluoromethane	0.25	0.30	0.23	120	92	26.4	65-135	
Chloromethane	0.25	0.22	0.17	88	68	25.6	65-135	
Vinyl chloride	0.25	0.23	0.18	92	72	24.4	65-135	
Bromomethane	0.25	0.36	0.31	144	124	14.9	65-135	S
Chloroethane	0.25	0.44	0.25	176	100	55.1	65-135	S,R
Trichlorofluoromethane	0.25	0.31	0.22	124	88	34.0	65-135	
1,1-Dichloroethene	0.25	0.27	0.22	108	88	20.4	65-135	
Methylene chloride	0.25	0.29	0.22	116	88	27.5	65-135	
Methyl *tert*- Butyl Ether (MTBE)	0.25	0.24	0.17	96	68	34.1	65-135	
trans -1,2-Dichloroethene	0.25	0.26	0.21	104	84	21.3	65-135	
1,1-Dichloroethane	0.25	0.32	0.26	128	104	20.7	65-135	
2,2-Dichloropropane	0.25	0.33	0.25	132	100	27.6	65-135	
cis -1,2-Dichloroethene	0.25	0.30	0.25	120	100	18.2	65-135	
Chloroform	0.25	0.35	0.27	140	108	25.8	65-135	S
1,1,1-Trichloroethane (TCA)	0.25	0.33	0.26	132	104	23.7	65-135	
Carbon tetrachloride	0.25	0.35	0.27	140	108	25.8	65-135	S
1,1-Dichloropropene	0.25	0.25	0.20	100	80	22.2	65-135	
Benzene	0.25	0.29	0.23	116	92	23.1	65-135	
1,2-Dichloroethane (EDC)	0.25	0.30	0.22	120	88	30.8	65-135	
Trichloroethene (TCE)	0.25	0.16	0.22	64	88	31.6	65-135	S
1,2-Dichloropropane	0.25	0.20	0.19	80	76	5.1	65-135	
Dibromomethane	0.25	0.20	0.21	80	84	4.9	65-135	
Bromodichloromethane	0.25	0.27	0.21	108	84	25.0	65-135	
cis-1,3-Dichloropropene	0.25	0.17	0.11	68	44	42.9	65-135	S, R
Toluene	0.25	0.22	0.15	88	60	37.8	65-135	S, R
Trans-1,3-Dichloropropene	0.25	0.20	0.19	80	76	5.1	65-135	
1,1,2-Trichloroethane	0.25	0.28	0.30	112	120	6.9	65-135	
Tetrachloroethene (PCE)	0.25	0.18	0.21	72	84	15.4	65-135	
1,3-Dichloropropane	0.25	0.22	0.20	88	80	9.5	65-135	
Dibromochloromethane	0.25	0.31	0.28	124	112	10.2	65-135	
1,2-Dibromoethane (EDB)	0.25	0.208	0.20	83	81	2.4	65-135	
Chlorobenzene	0.25	0.29	0.28	116	112	3.5	65-135	
Ethylbenzene	0.25	0.24	0.23	96	92	4.3	65-135	
1,1,1,2-Tetrachloroethane	0.25	0.40	0.36	160	144	10.5	65-135	S
Total Xylenes	0.75	0.67	0.62	89	83	7.8	65-135	
Styrene	0.25	0.19	0.19	76	76	0.0	65-135	

Libby Environmental, Inc.

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35TH STREET LANDFILL PROJECT
Landau Associates
Tacoma, Washington
Libby Project # L210126-1
Client Project # 0094110.010.012

QA/QC for Volatile Organic Compounds by EPA Method 8260D in Soil

Matrix Spike Sample Identification: B1-05-20210126

Date Analyzed: 1/27/2021

	Spiked Conc. (mg/kg)	MS Response (mg/kg)	MSD Response (mg/kg)	MS Recovery (%)	MSD Recovery (%)	RPD (%)	Limits Recovery (%)	Data Flag
Bromoform	0.25	0.30	0.30	120	120	0.0	65-135	
Isopropylbenzene	0.25	0.17	0.16	68	64	6.1	65-135	S
1,1,2,2-Tetrachloroethane	0.25	0.23	0.22	92	88	4.4	65-135	
Bromobenzene	0.25	0.22	0.21	88	84	4.7	65-135	
n-Propylbenzene	0.25	0.20	0.18	80	72	10.5	65-135	
1,2,3-Trichloropropane	0.25	0.21	0.20	84	80	4.9	65-135	
2-Chlorotoluene	0.25	0.19	0.17	76	68	11.1	65-135	
1,3,5-Trimethylbenzene	0.25	0.17	0.16	68	64	6.1	65-135	S
4-Chlorotoluene	0.25	0.17	0.16	68	64	6.1	65-135	S
tert-Butylbenzene	0.25	0.15	0.15	60	60	0.0	65-135	S
1,2,4-Trimethylbenzene	0.25	0.18	0.17	72	68	5.7	65-135	
sec-Butylbenzene	0.25	0.19	0.18	76	72	5.4	65-135	
Isopropyltoluene	0.25	0.16	0.15	64	60	6.5	65-135	S
1,3-Dichlorobenzene	0.25	0.25	0.24	100	96	4.1	65-135	
1,4-Dichlorobenzene	0.25	0.26	0.26	104	104	0.0	65-135	
n-Butylbenzene	0.25	0.20	0.17	80	68	16.2	65-135	
1,2-Dichlorobenzene	0.25	0.22	0.21	88	84	4.7	65-135	
1,2-Dibromo-3-Chloropropane	0.25	0.16	0.14	64	56	13.3	65-135	S
1,2,4-Trichlorolbenzene	0.25	0.17	0.19	68	76	11.1	65-135	
Hexachloro-1,3-butadiene	0.25	0.27	0.26	108	104	3.8	65-135	
Naphthalene	0.25	0.11	0.13	44	52	16.7	65-135	S
1,2,3-Trichlorobenzene	0.25	0.20	0.19	80	76	5.1	65-135	

Surrogate Recovery (%)	MS	MSD	
Dibromofluoromethane	133	114	65-135
1,2-Dichloroethane-d4	126	103	65-135
Toluene-d8	82	66	65-135
4-Bromofluorobenzene	97	104	65-135

ACCEPTABLE RPD IS 35%

"S" Spike compound recovery is outside acceptance limits.
"R" High relative percent difference observed.

ANALYSES PERFORMED BY: Melissa Harrington

Libby Environmental, Inc.

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35TH STREET LANDFILL PROJECT
Landau Associates
Tacoma, Washington
Libby Project # L210126-1
Client Project # 0094110.010.012

Laboratory Control Sample

Date Analyzed: 1/27/2021

	Spiked Conc. (mg/kg)	LCS Response (mg/kg)	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Dichlorodifluoromethane	0.25	0.27	108	80-120	
Chloromethane	0.25	0.20	81	80-120	
Vinyl chloride	0.25	0.22	86	80-120	
Bromomethane	0.25	0.29	116	80-120	
Chloroethane	0.25	0.29	117	80-120	
Trichlorofluoromethane	0.25	0.28	113	80-120	
1,1-Dichloroethene	0.25	0.30	119	80-120	
Methylene chloride	0.25	0.29	116	80-120	
Methyl *tert*- Butyl Ether (MTBE)	0.25	0.25	101	80-120	
trans -1,2-Dichloroethene	0.25	0.28	113	80-120	
1,1-Dichloroethane	0.25	0.30	118	80-120	
2,2-Dichloropropane	0.25	0.29	117	80-120	
cis -1,2-Dichloroethene	0.25	0.29	117	80-120	
Chloroform	0.25	0.29	115	80-120	
1,1,1-Trichloroethane (TCA)	0.25	0.30	119	80-120	
Carbon tetrachloride	0.25	0.30	120	80-120	
1,1-Dichloropropene	0.25	0.29	115	80-120	
Benzene	0.25	0.21	85	80-120	
1,2-Dichloroethane (EDC)	0.25	0.27	107	80-120	
Trichloroethene (TCE)	0.25	0.20	80	80-120	
1,2-Dichloropropane	0.25	0.23	91	80-120	
Dibromomethane	0.25	0.24	96	80-120	
Bromodichloromethane	0.25	0.30	119	80-120	
cis-1,3-Dichloropropene	0.25	0.22	87	80-120	
Toluene	0.25	0.21	82	80-120	
Trans-1,3-Dichloropropene	0.25	0.20	82	80-120	
1,1,2-Trichloroethane	0.25	0.29	115	80-120	
Tetrachloroethene (PCE)	0.25	0.28	113	80-120	
1,3-Dichloropropane	0.25	0.23	90	80-120	
Dibromochloromethane	0.25	0.30	119	80-120	
1,2-Dibromoethane (EDB)	0.25	0.223	89	80-120	
Chlorobenzene	0.25	0.29	116	80-120	
Ethylbenzene	0.25	0.24	96	80-120	
1,1,1,2-Tetrachloroethane	0.25	0.29	114	80-120	
Total Xylenes	0.75	0.70	93	80-120	
Styrene	0.25	0.20	81	80-120	

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35TH STREET LANDFILL PROJECT
Landau Associates
Tacoma, Washington
Libby Project # L210126-1
Client Project # 0094110.010.012

Laboratory Control Sample

Date Analyzed: 1/27/2021

	Spiked Conc. (mg/kg)	LCS Response (mg/kg)	LCS Recovery (%)	LCS Recovery Limits (%)	Data Flag
Bromoform	0.25	0.29	116	80-120	
Isopropylbenzene	0.25	0.20	81	80-120	
1,1,2,2-Tetrachloroethane	0.25	0.27	106	80-120	
Bromobenzene	0.25	0.28	112	80-120	
n-Propylbenzene	0.25	0.24	95	80-120	
1,2,3-Trichloropropane	0.25	0.26	104	80-120	
2-Chlorotoluene	0.25	0.22	89	80-120	
1,3,5-Trimethylbenzene	0.25	0.22	89	80-120	
4-Chlorotoluene	0.25	0.22	88	80-120	
tert-Butylbenzene	0.25	0.21	82	80-120	
1,2,4-Trimethylbenzene	0.25	0.22	86	80-120	
sec-Butylbenzene	0.25	0.27	107	80-120	
Isopropyltoluene	0.25	0.20	82	80-120	
1,3-Dichlorobenzene	0.25	0.30	119	80-120	
1,4-Dichlorobenzene	0.25	0.30	119	80-120	
n-Butylbenzene	0.25	0.21	83	80-120	
1,2-Dichlorobenzene	0.25	0.26	104	80-120	
1,2-Dibromo-3-Chloropropane	0.25	0.21	83	80-120	
1,2,4-Trichlorolbenzene	0.25	0.23	90	80-120	
Hexachloro-1,3-butadiene	0.25	0.29	117	80-120	
Naphthalene	0.25	0.20	80	80-120	
1,2,3-Trichlorobenzene	0.25	0.24	96	80-120	

Surrogate Recovery			
Dibromofluoromethane	134	65-135	
1,2-Dichloroethane-d4	110	65-135	
Toluene-d8	77	65-135	
4-Bromofluorobenzene	108	65-135	

ANALYSES PERFORMED BY: Melissa Harrington

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35TH STREET LANDFILL PROJECT
Landau Associates
Tacoma, Washington
Libby Project # L210126-1
Client Project # 0094110.010.012

Analyses of Gasoline (NWTPH-Gx) in Soil

Sample Number	Date Analyzed	Surrogate Recovery (%)	Gasoline (mg/kg)
Method Blank	1/27/2021	66	nd
B1-05-20210126	1/27/2021	66	nd
B1-05-20210126 Dup	1/27/2021	102	nd
B1-30-20210126	1/27/2021	66	nd
B2-05-20210126	1/27/2021	97	nd
B2-30-20210126	1/27/2021	81	nd
B3-05-20210126	1/27/2021	82	nd
B3-030-20210126	1/27/2021	97	nd
Practical Quantitation Limit			10

"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: Melissa Harrington

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35TH STREET LANDFILL PROJECT
Landau Associates
Tacoma, Washington
Libby Project # L210126-1
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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	1/27/2021	92	nd	nd
B1-05-20210126	1/27/2021	96	nd	nd
B1-05-20210126 Dup	1/27/2021	97	nd	nd
B1-30-20210126	1/27/2021	79	nd	nd
B2-05-20210126	1/27/2021	102	nd	1400
B2-30-20210126	1/27/2021	114	nd	nd
B3-05-20210126	1/27/2021	81	nd	nd
B3-030-20210126	1/27/2021	95	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: Jenny Anderson

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35TH STREET LANDFILL PROJECT
Landau Associates
Tacoma, Washington
Libby Project # L210126-1
Client Project # 0094110.010.012

Analyses of Total Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Arsenic (mg/kg)
Method Blank	1/29/2021	nd	nd	nd	nd
B1-05-20210126	1/29/2021	26	nd	12	5.0
B1-30-20210126	1/29/2021	19	nd	8.5	6.2
B2-05-20210126	1/29/2021	17	nd	7.7	nd
B2-30-20210126	1/29/2021	20	nd	8.3	5.4
B3-05-20210126	1/29/2021	nd	nd	9.0	5.9
B3-030-20210126	1/29/2021	nd	nd	nd	5.1
B3-030-20210126 Dup	1/29/2021	nd	nd	nd	nd
Practical Quantitation Limit		5.0	1.0	5.0	5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Sherry Chilcutt

QA/QC for Total Metals in Soil by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead (% Recovery)	Cadmium (% Recovery)	Chromium (% Recovery)	Arsenic (% Recovery)
LCS	1/29/2021	96%	96%	90%	91%
B3-030-20210126 MS	1/29/2021	103%	83%	111%	96%
B3-030-20210126 MSD	1/29/2021	106%	80%	112%	107%
RPD	1/29/2021	3%	4%	1%	11%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Sherry Chilcutt

Libby Environmental, Inc.

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35TH STREET LANDFILL PROJECT
Landau Associates
Tacoma, Washington
Libby Project # L210126-1
Client Project # 0094110.010.012

Analyses of Total Mercury in Soil by EPA Method 7471

Sample Number	Date Analyzed	Mercury (mg/kg)
Method Blank	2/2/2021	nd
B1-05-20210126	2/2/2021	nd
B1-30-20210126	2/2/2021	nd
B2-05-20210126	2/2/2021	nd
B2-30-20210126	2/2/2021	nd
B3-05-20210126	2/2/2021	nd
B3-030-20210126	2/2/2021	nd
B3-030-20210126 Dup	2/2/2021	nd
Practical Quantitation Limit		0.5

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Sherry Chilcutt

QA/QC for Total Mercury by EPA Method 7471

Sample Number	Date Analyzed	Mercury (% Recovery)
LCS	2/2/2021	105%
B3-030-20210126 MS	2/2/2021	95%
B3-030-20210126 MSD	2/2/2021	105%
RPD	2/2/2021	10%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%
ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Sherry Chilcutt

Libby Environmental, Inc.

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35TH STREET LANDFILL PROJECT
Landau Associates
Libby Project # L210126-1
Date Received 1/26/21 16:10

Received By KD

Sample Receipt Checklist

Chain of Custody

1. Is the Chain of Custody complete?	☑ Yes	☐ No	
2. How was the sample delivered?	☑ Hand Delivered	☐ Picked Up	☐ Shipped

Log In

3. Cooler or Shipping Container is present.	☑ Yes	☐ No	☐ N/A
4. Cooler or Shipping Container is in good condition.	☑ Yes	☐ No	☐ N/A
5. Cooler or Shipping Container has Custody Seals present.	☐ Yes	☑ No	☐ N/A
6. Was an attempt made to cool the samples?	☑ Yes	☐ No	☐ N/A
7. Temperature of cooler (0°C to 8°C recommended)	1.0 °C		
8. Temperature of sample(s) (0°C to 8°C recommended)	3.5 °C		
9. Did all containers arrive in good condition (unbroken)?	☑ Yes	☐ No	
10. Is it clear what analyses were requested?	☑ Yes	☐ No	
11. Did container labels match Chain of Custody?	☑ Yes	☐ No	
12. Are matrices correctly identified on Chain of Custody?	☑ Yes	☐ No	
13. Are correct containers used for the analysis indicated?	☑ Yes	☐ No	
14. Is there sufficient sample volume for indicated analysis?	☑ Yes	☐ No	
15. Were all containers properly preserved per each analysis?	☑ Yes	☐ No	
16. Were VOA vials collected correctly (no headspace)?	☑ Yes	☐ No	☐ N/A
17. Were all holding times able to be met?	☑ Yes	☐ No	

Discrepancies/ Notes

18. Was client notified of all discrepancies? ☐ Yes ☐ No ☑ N/A

Person Notified: _____ Date: _____

By Whom: _____ Via: _____

Regarding: _____

19. Comments. VOAs pre-preserved

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info@fremontanalytical.com

Libby Environmental
Sherry Chilcutt
3322 South Bay Road NE
Olympia, WA 98506

RE: 35th Street Landfill
Work Order Number: 2101416

February 10, 2021

Attention Sherry Chilcutt:

Fremont Analytical, Inc. received 6 sample(s) on 1/27/2021 for the analyses presented in the following report.

Sample Moisture (Percent Moisture)
Semi-Volatile Organic Compounds by EPA Method 8270
Total Metals by EPA Method 6020B

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

Date: *02/10/2021*

CLIENT: Libby Environmental
Project: 35th Street Landfill
Work Order: 2101416

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2101416-001	B1-05-20210126	01/26/2021 9:40 AM	01/27/2021 9:24 AM
2101416-002	B1-30-20210126	01/26/2021 10:20 AM	01/27/2021 9:24 AM
2101416-003	B2-05-20210126	01/26/2021 11:20 AM	01/27/2021 9:24 AM
2101416-004	B2-30-20210126	01/26/2021 12:45 PM	01/27/2021 9:24 AM
2101416-005	B3-05-20210126	01/26/2021 1:40 PM	01/27/2021 9:24 AM
2101416-006	B3-30-20210126	01/26/2021 2:30 PM	01/27/2021 9:24 AM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Case Narrative

WO#: **2101416**
Date: **2/10/2021**

CLIENT: Libby Environmental
Project: 35th Street Landfill

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
DUP - Sample Duplicate
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
REP - Sample Replicate
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Client: Libby Environmental
Collection Date: 1/26/2021 9:40:00 AM
Project: 35th Street Landfill
Lab ID: 2101416-001
Matrix: Soil
Client Sample ID: **B1-05-20210126**

Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 31181 Analyst: SB

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Phenol	ND	109		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Bis(2-chloroethyl) ether	ND	109		µg/Kg-dry	1	2/1/2021 6:25:41 PM
2-Chlorophenol	ND	109		µg/Kg-dry	1	2/1/2021 6:25:41 PM
1,3-Dichlorobenzene	ND	81.9		µg/Kg-dry	1	2/1/2021 6:25:41 PM
1,4-Dichlorobenzene	ND	81.9		µg/Kg-dry	1	2/1/2021 6:25:41 PM
1,2-Dichlorobenzene	ND	81.9		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Benzyl alcohol	ND	109	Q	µg/Kg-dry	1	2/1/2021 6:25:41 PM
2-Methylphenol (o-cresol)	ND	109		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Hexachloroethane	ND	109		µg/Kg-dry	1	2/1/2021 6:25:41 PM
N-Nitrosodi-n-propylamine	ND	109		µg/Kg-dry	1	2/1/2021 6:25:41 PM
3&4-Methylphenol (m, p-cresol)	ND	109		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Nitrobenzene	ND	109		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Isophorone	ND	109		µg/Kg-dry	1	2/1/2021 6:25:41 PM
2-Nitrophenol	ND	109		µg/Kg-dry	1	2/1/2021 6:25:41 PM
2,4-Dimethylphenol	ND	109		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Bis(2-chloroethoxy)methane	ND	81.9		µg/Kg-dry	1	2/1/2021 6:25:41 PM
2,4-Dichlorophenol	ND	109		µg/Kg-dry	1	2/1/2021 6:25:41 PM
1,2,4-Trichlorobenzene	ND	81.9		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Naphthalene	ND	54.6		µg/Kg-dry	1	2/1/2021 6:25:41 PM
4-Chloroaniline	ND	81.9		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Hexachlorobutadiene	ND	81.9		µg/Kg-dry	1	2/1/2021 6:25:41 PM
4-Chloro-3-methylphenol	ND	218		µg/Kg-dry	1	2/1/2021 6:25:41 PM
2-Methylnaphthalene	ND	54.6		µg/Kg-dry	1	2/1/2021 6:25:41 PM
1-Methylnaphthalene	ND	54.6		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Hexachlorocyclopentadiene	ND	109	Q	µg/Kg-dry	1	2/1/2021 6:25:41 PM
2,4,6-Trichlorophenol	ND	109		µg/Kg-dry	1	2/1/2021 6:25:41 PM
2,4,5-Trichlorophenol	ND	109		µg/Kg-dry	1	2/1/2021 6:25:41 PM
2-Chloronaphthalene	ND	81.9		µg/Kg-dry	1	2/1/2021 6:25:41 PM
2-Nitroaniline	ND	109		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Acenaphthene	ND	54.6		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Dimethylphthalate	ND	109		µg/Kg-dry	1	1/27/2021 8:11:20 PM
2,6-Dinitrotoluene	ND	109		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Acenaphthylene	ND	54.6		µg/Kg-dry	1	2/1/2021 6:25:41 PM
2,4-Dinitrophenol	ND	573	Q	µg/Kg-dry	1	2/1/2021 6:25:41 PM
Dibenzofuran	ND	81.9		µg/Kg-dry	1	2/1/2021 6:25:41 PM
2,4-Dinitrotoluene	ND	109		µg/Kg-dry	1	2/1/2021 6:25:41 PM
4-Nitrophenol	ND	546		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Fluorene	ND	54.6		µg/Kg-dry	1	2/1/2021 6:25:41 PM
4-Chlorophenyl phenyl ether	ND	81.9		µg/Kg-dry	1	2/1/2021 6:25:41 PM

Client: Libby Environmental
Collection Date: 1/26/2021 9:40:00 AM
Project: 35th Street Landfill
Lab ID: 2101416-001
Matrix: Soil
Client Sample ID: **B1-05-20210126**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Semi-Volatile Organic Compounds by EPA Method 8270				Batch ID: 31181		Analyst: SB
Diethylphthalate	ND	109		µg/Kg-dry	1	2/1/2021 6:25:41 PM
4,6-Dinitro-2-methylphenol	ND	218	Q	µg/Kg-dry	1	2/1/2021 6:25:41 PM
4-Bromophenyl phenyl ether	ND	81.9		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Hexachlorobenzene	ND	81.9		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Pentachlorophenol	ND	109		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Phenanthrene	ND	54.6		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Anthracene	ND	54.6		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Carbazole	ND	81.9		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Di-n-butylphthalate	ND	109		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Fluoranthene	ND	54.6		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Pyrene	ND	54.6		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Butyl Benzylphthalate	ND	109		µg/Kg-dry	1	2/1/2021 6:25:41 PM
bis(2-Ethylhexyl)adipate	ND	109		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Benz(a)anthracene	ND	54.6		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Chrysene	ND	54.6		µg/Kg-dry	1	2/1/2021 6:25:41 PM
bis (2-Ethylhexyl) phthalate	ND	109		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Di-n-octyl phthalate	ND	109		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Benzo(b)fluoranthene	ND	54.6		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Benzo(k)fluoranthene	ND	54.6		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Benzo(a)pyrene	ND	54.6		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Indeno(1,2,3-cd)pyrene	ND	54.6		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Dibenz(a,h)anthracene	ND	54.6		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Benzo(g,h,i)perylene	ND	54.6		µg/Kg-dry	1	2/1/2021 6:25:41 PM
Surr: 2,4,6-Tribromophenol	75.3	13.4 - 144		%Rec	1	2/1/2021 6:25:41 PM
Surr: 2-Fluorobiphenyl	90.1	5.5 - 130		%Rec	1	2/1/2021 6:25:41 PM
Surr: Nitrobenzene-d5	90.9	5 - 116		%Rec	1	2/1/2021 6:25:41 PM
Surr: Phenol-d6	90.3	21.2 - 117		%Rec	1	2/1/2021 6:25:41 PM
Surr: p-Terphenyl	96.4	41.3 - 151		%Rec	1	2/1/2021 6:25:41 PM

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

Total Metals by EPA Method 6020B				Batch ID: 31198		Analyst: CO
Barium	84.1	0.431		mg/Kg-dry	1	2/1/2021 11:55:39 AM
Selenium	1.17	0.431		mg/Kg-dry	1	1/29/2021 1:16:55 PM
Silver	ND	0.0862		mg/Kg-dry	1	1/28/2021 5:58:20 PM

Analytical Report

Work Order: **2101416**
Date Reported: **2/10/2021**

Client: Libby Environmental
Collection Date: 1/26/2021 9:40:00 AM
Project: 35th Street Landfill
Lab ID: 2101416-001
Matrix: Soil
Client Sample ID: **B1-05-20210126**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Sample Moisture (Percent Moisture)				Batch ID: R64985		Analyst: RL
Percent Moisture	10.1	0.500		wt%	1	1/29/2021 1:46:44 PM

Client: Libby Environmental
Collection Date: 1/26/2021 10:20:00 AM
Project: 35th Street Landfill
Lab ID: 2101416-002
Matrix: Soil
Client Sample ID: **B1-30-20210126**

Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 31181 Analyst: SB

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Phenol	ND	104		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Bis(2-chloroethyl) ether	ND	104		µg/Kg-dry	1	2/1/2021 6:48:03 PM
2-Chlorophenol	ND	104		µg/Kg-dry	1	2/1/2021 6:48:03 PM
1,3-Dichlorobenzene	ND	78.2		µg/Kg-dry	1	2/1/2021 6:48:03 PM
1,4-Dichlorobenzene	ND	78.2		µg/Kg-dry	1	2/1/2021 6:48:03 PM
1,2-Dichlorobenzene	ND	78.2		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Benzyl alcohol	ND	104	Q	µg/Kg-dry	1	2/1/2021 6:48:03 PM
2-Methylphenol (o-cresol)	ND	104		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Hexachloroethane	ND	104		µg/Kg-dry	1	2/1/2021 6:48:03 PM
N-Nitrosodi-n-propylamine	ND	104		µg/Kg-dry	1	2/1/2021 6:48:03 PM
3&4-Methylphenol (m, p-cresol)	ND	104		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Nitrobenzene	ND	104		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Isophorone	ND	104		µg/Kg-dry	1	2/1/2021 6:48:03 PM
2-Nitrophenol	ND	104		µg/Kg-dry	1	2/1/2021 6:48:03 PM
2,4-Dimethylphenol	ND	104		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Bis(2-chloroethoxy)methane	ND	78.2		µg/Kg-dry	1	2/1/2021 6:48:03 PM
2,4-Dichlorophenol	ND	104		µg/Kg-dry	1	2/1/2021 6:48:03 PM
1,2,4-Trichlorobenzene	ND	78.2		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Naphthalene	ND	52.1		µg/Kg-dry	1	2/1/2021 6:48:03 PM
4-Chloroaniline	ND	78.2		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Hexachlorobutadiene	ND	78.2		µg/Kg-dry	1	2/1/2021 6:48:03 PM
4-Chloro-3-methylphenol	ND	208		µg/Kg-dry	1	2/1/2021 6:48:03 PM
2-Methylnaphthalene	ND	52.1		µg/Kg-dry	1	2/1/2021 6:48:03 PM
1-Methylnaphthalene	ND	52.1		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Hexachlorocyclopentadiene	ND	104	Q	µg/Kg-dry	1	2/1/2021 6:48:03 PM
2,4,6-Trichlorophenol	ND	104		µg/Kg-dry	1	2/1/2021 6:48:03 PM
2,4,5-Trichlorophenol	ND	104		µg/Kg-dry	1	2/1/2021 6:48:03 PM
2-Chloronaphthalene	ND	78.2		µg/Kg-dry	1	2/1/2021 6:48:03 PM
2-Nitroaniline	ND	104		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Acenaphthene	ND	52.1		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Dimethylphthalate	ND	104		µg/Kg-dry	1	1/27/2021 8:33:25 PM
2,6-Dinitrotoluene	ND	104		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Acenaphthylene	ND	52.1		µg/Kg-dry	1	2/1/2021 6:48:03 PM
2,4-Dinitrophenol	ND	547	Q	µg/Kg-dry	1	2/1/2021 6:48:03 PM
Dibenzofuran	ND	78.2		µg/Kg-dry	1	2/1/2021 6:48:03 PM
2,4-Dinitrotoluene	ND	104		µg/Kg-dry	1	2/1/2021 6:48:03 PM
4-Nitrophenol	ND	521		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Fluorene	ND	52.1		µg/Kg-dry	1	2/1/2021 6:48:03 PM
4-Chlorophenyl phenyl ether	ND	78.2		µg/Kg-dry	1	2/1/2021 6:48:03 PM

Client: Libby Environmental
Collection Date: 1/26/2021 10:20:00 AM
Project: 35th Street Landfill
Lab ID: 2101416-002
Matrix: Soil
Client Sample ID: **B1-30-20210126**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Semi-Volatile Organic Compounds by EPA Method 8270				Batch ID: 31181		Analyst: SB
Diethylphthalate	ND	104		µg/Kg-dry	1	2/1/2021 6:48:03 PM
4,6-Dinitro-2-methylphenol	ND	208	Q	µg/Kg-dry	1	2/1/2021 6:48:03 PM
4-Bromophenyl phenyl ether	ND	78.2		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Hexachlorobenzene	ND	78.2		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Pentachlorophenol	ND	104		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Phenanthrene	ND	52.1		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Anthracene	ND	52.1		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Carbazole	ND	78.2		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Di-n-butylphthalate	147	104		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Fluoranthene	ND	52.1		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Pyrene	ND	52.1		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Butyl Benzylphthalate	ND	104		µg/Kg-dry	1	2/1/2021 6:48:03 PM
bis(2-Ethylhexyl)adipate	ND	104		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Benz(a)anthracene	ND	52.1		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Chrysene	ND	52.1		µg/Kg-dry	1	2/1/2021 6:48:03 PM
bis (2-Ethylhexyl) phthalate	ND	104		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Di-n-octyl phthalate	ND	104		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Benzo(b)fluoranthene	ND	52.1		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Benzo(k)fluoranthene	ND	52.1		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Benzo(a)pyrene	ND	52.1		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Indeno(1,2,3-cd)pyrene	ND	52.1		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Dibenz(a,h)anthracene	ND	52.1		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Benzo(g,h,i)perylene	ND	52.1		µg/Kg-dry	1	2/1/2021 6:48:03 PM
Surr: 2,4,6-Tribromophenol	64.3	13.4 - 144		%Rec	1	2/1/2021 6:48:03 PM
Surr: 2-Fluorobiphenyl	68.7	5.5 - 130		%Rec	1	2/1/2021 6:48:03 PM
Surr: Nitrobenzene-d5	70.6	5 - 116		%Rec	1	2/1/2021 6:48:03 PM
Surr: Phenol-d6	74.9	21.2 - 117		%Rec	1	2/1/2021 6:48:03 PM
Surr: p-Terphenyl	81.4	41.3 - 151		%Rec	1	2/1/2021 6:48:03 PM

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

Total Metals by EPA Method 6020B				Batch ID: 31198		Analyst: CO
Barium	91.3	0.449		mg/Kg-dry	1	2/1/2021 12:01:12 PM
Selenium	1.04	0.449		mg/Kg-dry	1	1/29/2021 1:22:28 PM
Silver	ND	0.0897		mg/Kg-dry	1	1/28/2021 6:03:54 PM

Analytical Report

Work Order: **2101416**
Date Reported: **2/10/2021**

Client: Libby Environmental
Collection Date: 1/26/2021 10:20:00 AM
Project: 35th Street Landfill
Lab ID: 2101416-002
Matrix: Soil
Client Sample ID: **B1-30-20210126**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Sample Moisture (Percent Moisture)				Batch ID: R64985		Analyst: RL
Percent Moisture	14.9	0.500		wt%	1	1/29/2021 1:46:44 PM

Client: Libby Environmental
Collection Date: 1/26/2021 11:20:00 AM
Project: 35th Street Landfill
Lab ID: 2101416-003
Matrix: Soil
Client Sample ID: **B2-05-20210126**

Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 31181 Analyst: SB

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Phenol	ND	96.4		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Bis(2-chloroethyl) ether	ND	96.4		µg/Kg-dry	1	2/1/2021 7:10:28 PM
2-Chlorophenol	ND	96.4		µg/Kg-dry	1	2/1/2021 7:10:28 PM
1,3-Dichlorobenzene	ND	72.3		µg/Kg-dry	1	2/1/2021 7:10:28 PM
1,4-Dichlorobenzene	ND	72.3		µg/Kg-dry	1	2/1/2021 7:10:28 PM
1,2-Dichlorobenzene	ND	72.3		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Benzyl alcohol	ND	96.4	Q	µg/Kg-dry	1	2/1/2021 7:10:28 PM
2-Methylphenol (o-cresol)	ND	96.4		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Hexachloroethane	ND	96.4		µg/Kg-dry	1	2/1/2021 7:10:28 PM
N-Nitrosodi-n-propylamine	ND	96.4		µg/Kg-dry	1	2/1/2021 7:10:28 PM
3&4-Methylphenol (m, p-cresol)	ND	96.4		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Nitrobenzene	ND	96.4		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Isophorone	ND	96.4		µg/Kg-dry	1	2/1/2021 7:10:28 PM
2-Nitrophenol	ND	96.4		µg/Kg-dry	1	2/1/2021 7:10:28 PM
2,4-Dimethylphenol	ND	96.4		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Bis(2-chloroethoxy)methane	ND	72.3		µg/Kg-dry	1	2/1/2021 7:10:28 PM
2,4-Dichlorophenol	ND	96.4		µg/Kg-dry	1	2/1/2021 7:10:28 PM
1,2,4-Trichlorobenzene	ND	72.3		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Naphthalene	97.9	48.2		µg/Kg-dry	1	2/1/2021 7:10:28 PM
4-Chloroaniline	ND	72.3		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Hexachlorobutadiene	ND	72.3		µg/Kg-dry	1	2/1/2021 7:10:28 PM
4-Chloro-3-methylphenol	ND	193		µg/Kg-dry	1	2/1/2021 7:10:28 PM
2-Methylnaphthalene	ND	48.2		µg/Kg-dry	1	2/1/2021 7:10:28 PM
1-Methylnaphthalene	ND	48.2		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Hexachlorocyclopentadiene	ND	96.4	Q	µg/Kg-dry	1	2/1/2021 7:10:28 PM
2,4,6-Trichlorophenol	ND	96.4		µg/Kg-dry	1	2/1/2021 7:10:28 PM
2,4,5-Trichlorophenol	ND	96.4		µg/Kg-dry	1	2/1/2021 7:10:28 PM
2-Chloronaphthalene	ND	72.3		µg/Kg-dry	1	2/1/2021 7:10:28 PM
2-Nitroaniline	ND	96.4		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Acenaphthene	ND	48.2		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Dimethylphthalate	ND	96.4		µg/Kg-dry	1	1/27/2021 8:55:33 PM
2,6-Dinitrotoluene	ND	96.4		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Acenaphthylene	191	48.2		µg/Kg-dry	1	2/1/2021 7:10:28 PM
2,4-Dinitrophenol	ND	506	Q	µg/Kg-dry	1	2/1/2021 7:10:28 PM
Dibenzofuran	ND	72.3		µg/Kg-dry	1	2/1/2021 7:10:28 PM
2,4-Dinitrotoluene	ND	96.4		µg/Kg-dry	1	2/1/2021 7:10:28 PM
4-Nitrophenol	ND	482		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Fluorene	ND	48.2		µg/Kg-dry	1	2/1/2021 7:10:28 PM
4-Chlorophenyl phenyl ether	ND	72.3		µg/Kg-dry	1	2/1/2021 7:10:28 PM

Client: Libby Environmental
Collection Date: 1/26/2021 11:20:00 AM
Project: 35th Street Landfill
Lab ID: 2101416-003
Matrix: Soil
Client Sample ID: **B2-05-20210126**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Semi-Volatile Organic Compounds by EPA Method 8270				Batch ID: 31181		Analyst: SB
Diethylphthalate	ND	96.4		µg/Kg-dry	1	2/1/2021 7:10:28 PM
4,6-Dinitro-2-methylphenol	ND	193	Q	µg/Kg-dry	1	2/1/2021 7:10:28 PM
4-Bromophenyl phenyl ether	ND	72.3		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Hexachlorobenzene	ND	72.3		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Pentachlorophenol	ND	96.4		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Phenanthrene	134	48.2		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Anthracene	117	48.2		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Carbazole	ND	72.3		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Di-n-butylphthalate	ND	96.4		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Fluoranthene	557	48.2		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Pyrene	615	48.2		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Butyl Benzylphthalate	ND	96.4		µg/Kg-dry	1	2/1/2021 7:10:28 PM
bis(2-Ethylhexyl)adipate	ND	96.4		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Benz(a)anthracene	359	48.2		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Chrysene	429	48.2		µg/Kg-dry	1	2/1/2021 7:10:28 PM
bis (2-Ethylhexyl) phthalate	ND	96.4		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Di-n-octyl phthalate	ND	96.4		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Benzo(b)fluoranthene	501	48.2		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Benzo(k)fluoranthene	363	48.2		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Benzo(a)pyrene	506	48.2		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Indeno(1,2,3-cd)pyrene	266	48.2		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Dibenz(a,h)anthracene	128	48.2		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Benzo(g,h,i)perylene	301	48.2		µg/Kg-dry	1	2/1/2021 7:10:28 PM
Surr: 2,4,6-Tribromophenol	83.2	13.4 - 144		%Rec	1	2/1/2021 7:10:28 PM
Surr: 2-Fluorobiphenyl	95.1	5.5 - 130		%Rec	1	2/1/2021 7:10:28 PM
Surr: Nitrobenzene-d5	107	5 - 116		%Rec	1	2/1/2021 7:10:28 PM
Surr: Phenol-d6	90.7	21.2 - 117		%Rec	1	2/1/2021 7:10:28 PM
Surr: p-Terphenyl	98.4	41.3 - 151		%Rec	1	2/1/2021 7:10:28 PM

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

Total Metals by EPA Method 6020B				Batch ID: 31198		Analyst: CO
Barium	55.2	0.393		mg/Kg-dry	1	2/1/2021 12:06:46 PM
Selenium	1.02	0.393		mg/Kg-dry	1	1/29/2021 1:28:02 PM
Silver	ND	0.0786		mg/Kg-dry	1	1/28/2021 6:09:27 PM

Analytical Report

Work Order: **2101416**
Date Reported: **2/10/2021**

Client: Libby Environmental
Collection Date: 1/26/2021 11:20:00 AM
Project: 35th Street Landfill
Lab ID: 2101416-003
Matrix: Soil
Client Sample ID: **B2-05-20210126**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Sample Moisture (Percent Moisture)				Batch ID: R64985		Analyst: RL
Percent Moisture	6.42	0.500		wt%	1	1/29/2021 1:46:44 PM

Client: Libby Environmental
Collection Date: 1/26/2021 12:45:00 PM
Project: 35th Street Landfill
Lab ID: 2101416-004
Matrix: Soil
Client Sample ID: **B2-30-20210126**

Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 31181 Analyst: SB

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Phenol	ND	104		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Bis(2-chloroethyl) ether	ND	104		µg/Kg-dry	1	2/1/2021 7:32:48 PM
2-Chlorophenol	ND	104		µg/Kg-dry	1	2/1/2021 7:32:48 PM
1,3-Dichlorobenzene	ND	78.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
1,4-Dichlorobenzene	ND	78.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
1,2-Dichlorobenzene	ND	78.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Benzyl alcohol	ND	104	Q	µg/Kg-dry	1	2/1/2021 7:32:48 PM
2-Methylphenol (o-cresol)	ND	104		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Hexachloroethane	ND	104		µg/Kg-dry	1	2/1/2021 7:32:48 PM
N-Nitrosodi-n-propylamine	ND	104		µg/Kg-dry	1	2/1/2021 7:32:48 PM
3&4-Methylphenol (m, p-cresol)	ND	104		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Nitrobenzene	ND	104		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Isophorone	ND	104		µg/Kg-dry	1	2/1/2021 7:32:48 PM
2-Nitrophenol	ND	104		µg/Kg-dry	1	2/1/2021 7:32:48 PM
2,4-Dimethylphenol	ND	104		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Bis(2-chloroethoxy)methane	ND	78.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
2,4-Dichlorophenol	ND	104		µg/Kg-dry	1	2/1/2021 7:32:48 PM
1,2,4-Trichlorobenzene	ND	78.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Naphthalene	ND	52.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
4-Chloroaniline	ND	78.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Hexachlorobutadiene	ND	78.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
4-Chloro-3-methylphenol	ND	208		µg/Kg-dry	1	2/1/2021 7:32:48 PM
2-Methylnaphthalene	ND	52.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
1-Methylnaphthalene	ND	52.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Hexachlorocyclopentadiene	ND	104	Q	µg/Kg-dry	1	2/1/2021 7:32:48 PM
2,4,6-Trichlorophenol	ND	104		µg/Kg-dry	1	2/1/2021 7:32:48 PM
2,4,5-Trichlorophenol	ND	104		µg/Kg-dry	1	2/1/2021 7:32:48 PM
2-Chloronaphthalene	ND	78.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
2-Nitroaniline	ND	104		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Acenaphthene	ND	52.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Dimethylphthalate	ND	104		µg/Kg-dry	1	1/27/2021 9:17:48 PM
2,6-Dinitrotoluene	ND	104		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Acenaphthylene	ND	52.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
2,4-Dinitrophenol	ND	547	Q	µg/Kg-dry	1	2/1/2021 7:32:48 PM
Dibenzofuran	ND	78.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
2,4-Dinitrotoluene	ND	104		µg/Kg-dry	1	2/1/2021 7:32:48 PM
4-Nitrophenol	ND	521		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Fluorene	ND	52.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
4-Chlorophenyl phenyl ether	ND	78.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM

Client: Libby Environmental
Collection Date: 1/26/2021 12:45:00 PM
Project: 35th Street Landfill
Lab ID: 2101416-004
Matrix: Soil
Client Sample ID: **B2-30-20210126**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Semi-Volatile Organic Compounds by EPA Method 8270				Batch ID: 31181		Analyst: SB
Diethylphthalate	ND	104		µg/Kg-dry	1	2/1/2021 7:32:48 PM
4,6-Dinitro-2-methylphenol	ND	208	Q	µg/Kg-dry	1	2/1/2021 7:32:48 PM
4-Bromophenyl phenyl ether	ND	78.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Hexachlorobenzene	ND	78.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Pentachlorophenol	ND	104		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Phenanthrene	59.0	52.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Anthracene	ND	52.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Carbazole	ND	78.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Di-n-butylphthalate	ND	104		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Fluoranthene	94.6	52.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Pyrene	103	52.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Butyl Benzylphthalate	ND	104		µg/Kg-dry	1	2/1/2021 7:32:48 PM
bis(2-Ethylhexyl)adipate	ND	104		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Benz(a)anthracene	ND	52.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Chrysene	ND	52.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
bis (2-Ethylhexyl) phthalate	ND	104		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Di-n-octyl phthalate	ND	104		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Benzo(b)fluoranthene	ND	52.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Benzo(k)fluoranthene	ND	52.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Benzo(a)pyrene	ND	52.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Indeno(1,2,3-cd)pyrene	ND	52.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Dibenz(a,h)anthracene	ND	52.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Benzo(g,h,i)perylene	ND	52.1		µg/Kg-dry	1	2/1/2021 7:32:48 PM
Surr: 2,4,6-Tribromophenol	54.3	13.4 - 144		%Rec	1	2/1/2021 7:32:48 PM
Surr: 2-Fluorobiphenyl	73.2	5.5 - 130		%Rec	1	2/1/2021 7:32:48 PM
Surr: Nitrobenzene-d5	64.0	5 - 116		%Rec	1	2/1/2021 7:32:48 PM
Surr: Phenol-d6	80.2	21.2 - 117		%Rec	1	2/1/2021 7:32:48 PM
Surr: p-Terphenyl	94.0	41.3 - 151		%Rec	1	2/1/2021 7:32:48 PM

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

Total Metals by EPA Method 6020B				Batch ID: 31198		Analyst: CO
Barium	72.9	0.451		mg/Kg-dry	1	2/1/2021 12:12:20 PM
Selenium	0.985	0.451		mg/Kg-dry	1	1/29/2021 1:33:35 PM
Silver	ND	0.0902		mg/Kg-dry	1	1/28/2021 6:15:01 PM

Analytical Report

Work Order: **2101416**
Date Reported: **2/10/2021**

Client: Libby Environmental
Collection Date: 1/26/2021 12:45:00 PM
Project: 35th Street Landfill
Lab ID: 2101416-004
Matrix: Soil
Client Sample ID: **B2-30-20210126**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Sample Moisture (Percent Moisture)				Batch ID: R64985		Analyst: RL
Percent Moisture	12.7	0.500		wt%	1	1/29/2021 1:46:44 PM

Client: Libby Environmental
Collection Date: 1/26/2021 1:40:00 PM
Project: 35th Street Landfill
Lab ID: 2101416-005
Matrix: Soil
Client Sample ID: **B3-05-20210126**

Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 31181 Analyst: SB

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Phenol	ND	106		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Bis(2-chloroethyl) ether	ND	106		µg/Kg-dry	1	2/1/2021 7:55:07 PM
2-Chlorophenol	ND	106		µg/Kg-dry	1	2/1/2021 7:55:07 PM
1,3-Dichlorobenzene	ND	79.7		µg/Kg-dry	1	2/1/2021 7:55:07 PM
1,4-Dichlorobenzene	ND	79.7		µg/Kg-dry	1	2/1/2021 7:55:07 PM
1,2-Dichlorobenzene	ND	79.7		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Benzyl alcohol	ND	106	Q	µg/Kg-dry	1	2/1/2021 7:55:07 PM
2-Methylphenol (o-cresol)	ND	106		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Hexachloroethane	ND	106		µg/Kg-dry	1	2/1/2021 7:55:07 PM
N-Nitrosodi-n-propylamine	ND	106		µg/Kg-dry	1	2/1/2021 7:55:07 PM
3&4-Methylphenol (m, p-cresol)	ND	106		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Nitrobenzene	ND	106		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Isophorone	ND	106		µg/Kg-dry	1	2/1/2021 7:55:07 PM
2-Nitrophenol	ND	106		µg/Kg-dry	1	2/1/2021 7:55:07 PM
2,4-Dimethylphenol	ND	106		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Bis(2-chloroethoxy)methane	ND	79.7		µg/Kg-dry	1	2/1/2021 7:55:07 PM
2,4-Dichlorophenol	ND	106		µg/Kg-dry	1	2/1/2021 7:55:07 PM
1,2,4-Trichlorobenzene	ND	79.7		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Naphthalene	ND	53.2		µg/Kg-dry	1	2/1/2021 7:55:07 PM
4-Chloroaniline	ND	79.7		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Hexachlorobutadiene	ND	79.7		µg/Kg-dry	1	2/1/2021 7:55:07 PM
4-Chloro-3-methylphenol	ND	213		µg/Kg-dry	1	2/1/2021 7:55:07 PM
2-Methylnaphthalene	ND	53.2		µg/Kg-dry	1	2/1/2021 7:55:07 PM
1-Methylnaphthalene	ND	53.2		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Hexachlorocyclopentadiene	ND	106	Q	µg/Kg-dry	1	2/1/2021 7:55:07 PM
2,4,6-Trichlorophenol	ND	106		µg/Kg-dry	1	2/1/2021 7:55:07 PM
2,4,5-Trichlorophenol	ND	106		µg/Kg-dry	1	2/1/2021 7:55:07 PM
2-Chloronaphthalene	ND	79.7		µg/Kg-dry	1	2/1/2021 7:55:07 PM
2-Nitroaniline	ND	106		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Acenaphthene	ND	53.2		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Dimethylphthalate	ND	106		µg/Kg-dry	1	1/27/2021 9:39:55 PM
2,6-Dinitrotoluene	ND	106		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Acenaphthylene	ND	53.2		µg/Kg-dry	1	2/1/2021 7:55:07 PM
2,4-Dinitrophenol	ND	558	Q	µg/Kg-dry	1	2/1/2021 7:55:07 PM
Dibenzofuran	ND	79.7		µg/Kg-dry	1	2/1/2021 7:55:07 PM
2,4-Dinitrotoluene	ND	106		µg/Kg-dry	1	2/1/2021 7:55:07 PM
4-Nitrophenol	ND	532		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Fluorene	ND	53.2		µg/Kg-dry	1	2/1/2021 7:55:07 PM
4-Chlorophenyl phenyl ether	ND	79.7		µg/Kg-dry	1	2/1/2021 7:55:07 PM

Client: Libby Environmental
Collection Date: 1/26/2021 1:40:00 PM
Project: 35th Street Landfill
Lab ID: 2101416-005
Matrix: Soil
Client Sample ID: **B3-05-20210126**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Semi-Volatile Organic Compounds by EPA Method 8270				Batch ID: 31181		Analyst: SB
Diethylphthalate	ND	106		µg/Kg-dry	1	2/1/2021 7:55:07 PM
4,6-Dinitro-2-methylphenol	ND	213	Q	µg/Kg-dry	1	2/1/2021 7:55:07 PM
4-Bromophenyl phenyl ether	ND	79.7		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Hexachlorobenzene	ND	79.7		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Pentachlorophenol	ND	106		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Phenanthrene	ND	53.2		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Anthracene	ND	53.2		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Carbazole	ND	79.7		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Di-n-butylphthalate	ND	106		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Fluoranthene	ND	53.2		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Pyrene	ND	53.2		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Butyl Benzylphthalate	ND	106		µg/Kg-dry	1	2/1/2021 7:55:07 PM
bis(2-Ethylhexyl)adipate	ND	106		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Benz(a)anthracene	ND	53.2		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Chrysene	ND	53.2		µg/Kg-dry	1	2/1/2021 7:55:07 PM
bis (2-Ethylhexyl) phthalate	ND	106		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Di-n-octyl phthalate	ND	106		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Benzo(b)fluoranthene	ND	53.2		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Benzo(k)fluoranthene	ND	53.2		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Benzo(a)pyrene	ND	53.2		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Indeno(1,2,3-cd)pyrene	ND	53.2		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Dibenz(a,h)anthracene	ND	53.2		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Benzo(g,h,i)perylene	ND	53.2		µg/Kg-dry	1	2/1/2021 7:55:07 PM
Surr: 2,4,6-Tribromophenol	61.2	13.4 - 144		%Rec	1	2/1/2021 7:55:07 PM
Surr: 2-Fluorobiphenyl	74.5	5.5 - 130		%Rec	1	2/1/2021 7:55:07 PM
Surr: Nitrobenzene-d5	66.5	5 - 116		%Rec	1	2/1/2021 7:55:07 PM
Surr: Phenol-d6	78.3	21.2 - 117		%Rec	1	2/1/2021 7:55:07 PM
Surr: p-Terphenyl	92.6	41.3 - 151		%Rec	1	2/1/2021 7:55:07 PM

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

Total Metals by EPA Method 6020B				Batch ID: 31198		Analyst: CO
Barium	68.2	0.421		mg/Kg-dry	1	2/1/2021 12:17:54 PM
Selenium	0.903	0.421		mg/Kg-dry	1	1/29/2021 1:39:08 PM
Silver	ND	0.0841		mg/Kg-dry	1	1/28/2021 6:20:35 PM

Analytical Report

Work Order: **2101416**
Date Reported: **2/10/2021**

Client: Libby Environmental
Collection Date: 1/26/2021 1:40:00 PM
Project: 35th Street Landfill
Lab ID: 2101416-005
Matrix: Soil
Client Sample ID: **B3-05-20210126**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Sample Moisture (Percent Moisture)				Batch ID: R64985		Analyst: RL
Percent Moisture	7.86	0.500		wt%	1	1/29/2021 1:46:44 PM

Client: Libby Environmental
Collection Date: 1/26/2021 2:30:00 PM
Project: 35th Street Landfill
Lab ID: 2101416-006
Matrix: Soil
Client Sample ID: **B3-30-20210126**

Semi-Volatile Organic Compounds by EPA Method 8270

Batch ID: 31181 Analyst: SB

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Phenol	ND	98.9		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Bis(2-chloroethyl) ether	ND	98.9		µg/Kg-dry	1	2/1/2021 8:17:32 PM
2-Chlorophenol	ND	98.9		µg/Kg-dry	1	2/1/2021 8:17:32 PM
1,3-Dichlorobenzene	ND	74.2		µg/Kg-dry	1	2/1/2021 8:17:32 PM
1,4-Dichlorobenzene	ND	74.2		µg/Kg-dry	1	2/1/2021 8:17:32 PM
1,2-Dichlorobenzene	ND	74.2		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Benzyl alcohol	ND	98.9	Q	µg/Kg-dry	1	2/1/2021 8:17:32 PM
2-Methylphenol (o-cresol)	ND	98.9		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Hexachloroethane	ND	98.9		µg/Kg-dry	1	2/1/2021 8:17:32 PM
N-Nitrosodi-n-propylamine	ND	98.9		µg/Kg-dry	1	2/1/2021 8:17:32 PM
3&4-Methylphenol (m, p-cresol)	ND	98.9		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Nitrobenzene	ND	98.9		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Isophorone	ND	98.9		µg/Kg-dry	1	2/1/2021 8:17:32 PM
2-Nitrophenol	ND	98.9		µg/Kg-dry	1	2/1/2021 8:17:32 PM
2,4-Dimethylphenol	ND	98.9		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Bis(2-chloroethoxy)methane	ND	74.2		µg/Kg-dry	1	2/1/2021 8:17:32 PM
2,4-Dichlorophenol	ND	98.9		µg/Kg-dry	1	2/1/2021 8:17:32 PM
1,2,4-Trichlorobenzene	ND	74.2		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Naphthalene	ND	49.5		µg/Kg-dry	1	2/1/2021 8:17:32 PM
4-Chloroaniline	ND	74.2		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Hexachlorobutadiene	ND	74.2		µg/Kg-dry	1	2/1/2021 8:17:32 PM
4-Chloro-3-methylphenol	ND	198		µg/Kg-dry	1	2/1/2021 8:17:32 PM
2-Methylnaphthalene	ND	49.5		µg/Kg-dry	1	2/1/2021 8:17:32 PM
1-Methylnaphthalene	ND	49.5		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Hexachlorocyclopentadiene	ND	98.9	Q	µg/Kg-dry	1	2/1/2021 8:17:32 PM
2,4,6-Trichlorophenol	ND	98.9		µg/Kg-dry	1	2/1/2021 8:17:32 PM
2,4,5-Trichlorophenol	ND	98.9		µg/Kg-dry	1	2/1/2021 8:17:32 PM
2-Chloronaphthalene	ND	74.2		µg/Kg-dry	1	2/1/2021 8:17:32 PM
2-Nitroaniline	ND	98.9		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Acenaphthene	ND	49.5		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Dimethylphthalate	ND	98.9		µg/Kg-dry	1	1/27/2021 10:02:03 PM
2,6-Dinitrotoluene	ND	98.9		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Acenaphthylene	ND	49.5		µg/Kg-dry	1	2/1/2021 8:17:32 PM
2,4-Dinitrophenol	ND	519	Q	µg/Kg-dry	1	2/1/2021 8:17:32 PM
Dibenzofuran	ND	74.2		µg/Kg-dry	1	2/1/2021 8:17:32 PM
2,4-Dinitrotoluene	ND	98.9		µg/Kg-dry	1	2/1/2021 8:17:32 PM
4-Nitrophenol	ND	495		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Fluorene	ND	49.5		µg/Kg-dry	1	2/1/2021 8:17:32 PM
4-Chlorophenyl phenyl ether	ND	74.2		µg/Kg-dry	1	2/1/2021 8:17:32 PM

Client: Libby Environmental
Collection Date: 1/26/2021 2:30:00 PM
Project: 35th Street Landfill
Lab ID: 2101416-006
Matrix: Soil
Client Sample ID: **B3-30-20210126**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Semi-Volatile Organic Compounds by EPA Method 8270				Batch ID: 31181		Analyst: SB
Diethylphthalate	ND	98.9		µg/Kg-dry	1	2/1/2021 8:17:32 PM
4,6-Dinitro-2-methylphenol	ND	198	Q	µg/Kg-dry	1	2/1/2021 8:17:32 PM
4-Bromophenyl phenyl ether	ND	74.2		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Hexachlorobenzene	ND	74.2		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Pentachlorophenol	ND	98.9		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Phenanthrene	ND	49.5		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Anthracene	ND	49.5		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Carbazole	ND	74.2		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Di-n-butylphthalate	ND	98.9		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Fluoranthene	ND	49.5		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Pyrene	ND	49.5		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Butyl Benzylphthalate	ND	98.9		µg/Kg-dry	1	2/1/2021 8:17:32 PM
bis(2-Ethylhexyl)adipate	ND	98.9		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Benz(a)anthracene	ND	49.5		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Chrysene	ND	49.5		µg/Kg-dry	1	2/1/2021 8:17:32 PM
bis (2-Ethylhexyl) phthalate	ND	98.9		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Di-n-octyl phthalate	ND	98.9		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Benzo(b)fluoranthene	ND	49.5		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Benzo(k)fluoranthene	ND	49.5		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Benzo(a)pyrene	ND	49.5		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Indeno(1,2,3-cd)pyrene	ND	49.5		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Dibenz(a,h)anthracene	ND	49.5		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Benzo(g,h,i)perylene	ND	49.5		µg/Kg-dry	1	2/1/2021 8:17:32 PM
Surr: 2,4,6-Tribromophenol	80.6	13.4 - 144		%Rec	1	2/1/2021 8:17:32 PM
Surr: 2-Fluorobiphenyl	88.3	5.5 - 130		%Rec	1	2/1/2021 8:17:32 PM
Surr: Nitrobenzene-d5	81.9	5 - 116		%Rec	1	2/1/2021 8:17:32 PM
Surr: Phenol-d6	88.0	21.2 - 117		%Rec	1	2/1/2021 8:17:32 PM
Surr: p-Terphenyl	102	41.3 - 151		%Rec	1	2/1/2021 8:17:32 PM

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

Total Metals by EPA Method 6020B				Batch ID: 31198		Analyst: CO
Barium	57.5	0.421		mg/Kg-dry	1	2/1/2021 12:23:27 PM
Selenium	0.865	0.421		mg/Kg-dry	1	1/29/2021 1:44:42 PM
Silver	ND	0.0843		mg/Kg-dry	1	1/28/2021 6:26:09 PM

Analytical Report

Work Order: **2101416**
Date Reported: **2/10/2021**

Client: Libby Environmental
Collection Date: 1/26/2021 2:30:00 PM
Project: 35th Street Landfill
Lab ID: 2101416-006
Matrix: Soil
Client Sample ID: **B3-30-20210126**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Sample Moisture (Percent Moisture)				Batch ID: R64987		Analyst: RL
Percent Moisture	9.43	0.500		wt%	1	1/29/2021 2:27:21 PM

Work Order: 2101416
CLIENT: Libby Environmental
Project: 35th Street Landfill

QC SUMMARY REPORT

Total Metals by EPA Method 6020B

Sample ID: **MB-31198**	SampType: **MBLK**			Units: **mg/Kg**		Prep Date: **1/28/2021**		RunNo: **64970**			
Client ID: **MBLKS**	Batch ID: **31198**					Analysis Date: **1/28/2021**		SeqNo: **1306982**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	ND	0.403									
Selenium	ND	0.403									
Silver	ND	0.0806									

Sample ID: **LCS-31198**	SampType: **LCS**			Units: **mg/Kg**		Prep Date: **1/28/2021**		RunNo: **64970**			
Client ID: **LCSS**	Batch ID: **31198**					Analysis Date: **1/28/2021**		SeqNo: **1306983**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	36.8	0.376	37.59	0	97.9	80	120				
Silver	1.97	0.0752	1.880	0	105	80	120				

Sample ID: **2101443-001AMS**	SampType: **MS**			Units: **mg/Kg-dry**		Prep Date: **1/28/2021**		RunNo: **64970**			
Client ID: **BATCH**	Batch ID: **31198**					Analysis Date: **1/28/2021**		SeqNo: **1306986**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Silver	1.98	0.0819	2.048	0.05845	94.0	75	125				

Sample ID: **2101443-001AMSD**	SampType: **MSD**			Units: **mg/Kg-dry**		Prep Date: **1/28/2021**		RunNo: **64970**			
Client ID: **BATCH**	Batch ID: **31198**					Analysis Date: **1/28/2021**		SeqNo: **1306987**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Silver	1.86	0.0825	2.064	0.05845	87.5	75	125	1.983	6.17	20	

Sample ID: **LCS-31198**	SampType: **LCS**			Units: **mg/Kg**		Prep Date: **1/28/2021**		RunNo: **64970**			
Client ID: **LCSS**	Batch ID: **31198**					Analysis Date: **1/29/2021**		SeqNo: **1307211**			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	4.02	0.376	3.759	0	107	80	120				

Work Order: 2101416
CLIENT: Libby Environmental
Project: 35th Street Landfill

QC SUMMARY REPORT

Total Metals by EPA Method 6020B

Sample ID: **LCS-31198**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **1/28/2021**	RunNo: **64970**
Client ID: **LCSS**	Batch ID: **31198**		Analysis Date: **1/29/2021**	SeqNo: **1307211**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **2101443-001AMS**	SampType: **MS**	Units: **mg/Kg-dry**	Prep Date: **1/28/2021**	RunNo: **64970**
Client ID: **BATCH**	Batch ID: **31198**		Analysis Date: **1/29/2021**	SeqNo: **1307214**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	183	0.410	40.97	146.8	88.3	75	125				
Selenium	4.98	0.410	4.097	1.038	96.2	75	125				

Sample ID: **2101443-001AMSD**	SampType: **MSD**	Units: **mg/Kg-dry**	Prep Date: **1/28/2021**	RunNo: **64970**
Client ID: **BATCH**	Batch ID: **31198**		Analysis Date: **1/29/2021**	SeqNo: **1307215**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	178	0.413	41.27	146.8	76.7	75	125	183.0	2.49	20	
Selenium	5.33	0.413	4.127	1.038	104	75	125	4.977	6.84	20	

Work Order: 2101416
CLIENT: Libby Environmental
Project: 35th Street Landfill

QC SUMMARY REPORT

Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: **MB-31181** SampType: **MBLK** Units: **µg/Kg** Prep Date: **1/27/2021** RunNo: **65039**
Client ID: **MBLKS** Batch ID: **31181** Analysis Date: **1/27/2021** SeqNo: **1308146**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dimethylphthalate	ND	100									
Surr: 2,4,6-Tribromophenol	495		1,000		49.5	13.4	144				
Surr: 2-Fluorobiphenyl	410		500.0		82.1	5.5	130				
Surr: Nitrobenzene-d5	359		500.0		71.8	5	116				
Surr: Phenol-d6	772		1,000		77.2	21.2	117				
Surr: p-Terphenyl	430		500.0		85.9	41.3	151				

Sample ID: **LCS-31181** SampType: **LCS** Units: **µg/Kg** Prep Date: **1/27/2021** RunNo: **65039**
Client ID: **LCSS** Batch ID: **31181** Analysis Date: **1/27/2021** SeqNo: **1308147**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dimethylphthalate	685	100	1,000	0	68.5	49	150				
Surr: 2,4,6-Tribromophenol	767		1,000		76.7	13.4	144				
Surr: 2-Fluorobiphenyl	468		500.0		93.6	5.5	130				
Surr: Nitrobenzene-d5	403		500.0		80.6	5	116				
Surr: Phenol-d6	835		1,000		83.5	21.2	117				
Surr: p-Terphenyl	444		500.0		88.7	41.3	151				

Sample ID: **2101409-002AMS** SampType: **MS** Units: **µg/Kg-dry** Prep Date: **1/27/2021** RunNo: **65039**
Client ID: **BATCH** Batch ID: **31181** Analysis Date: **1/27/2021** SeqNo: **1308150**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dimethylphthalate	663	98.5	985.0	0	67.3	39.7	127				
Surr: 2,4,6-Tribromophenol	852		985.0		86.5	13.4	144				
Surr: 2-Fluorobiphenyl	459		492.5		93.3	5.5	130				
Surr: Nitrobenzene-d5	393		492.5		79.8	5	116				
Surr: Phenol-d6	780		985.0		79.2	21.2	117				
Surr: p-Terphenyl	425		492.5		86.3	41.3	151				

Work Order: 2101416
CLIENT: Libby Environmental
Project: 35th Street Landfill

QC SUMMARY REPORT

Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: **2101409-002AMSD** SampType: **MSD** Units: **µg/Kg-dry** Prep Date: **1/27/2021** RunNo: **65039**
Client ID: **BATCH** Batch ID: **31181** Analysis Date: **1/27/2021** SeqNo: **1308151**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dimethylphthalate	743	112	1,119	0	66.3	39.7	127	662.8	11.4	50	
Surr: 2,4,6-Tribromophenol	1,010		1,119		90.5	13.4	144		0		
Surr: 2-Fluorobiphenyl	494		559.7		88.3	5.5	130		0		
Surr: Nitrobenzene-d5	507		559.7		90.6	5	116		0		
Surr: Phenol-d6	987		1,119		88.1	21.2	117		0		
Surr: p-Terphenyl	486		559.7		86.9	41.3	151		0		

Sample ID: **MB-31181** SampType: **MBLK** Units: **µg/Kg** Prep Date: **1/27/2021** RunNo: **65035**
Client ID: **MBLKS** Batch ID: **31181** Analysis Date: **2/1/2021** SeqNo: **1308081**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Pyridine	ND	200									
Phenol	ND	100									
Bis(2-chloroethyl) ether	ND	100									
2-Chlorophenol	ND	100									
1,3-Dichlorobenzene	ND	75.0									
1,4-Dichlorobenzene	ND	75.0									
1,2-Dichlorobenzene	ND	75.0									
Benzyl alcohol	ND	100									Q
2-Methylphenol (o-cresol)	ND	100									
Hexachloroethane	ND	100									
N-Nitrosodi-n-propylamine	ND	100									
3&4-Methylphenol (m, p-cresol)	ND	100									
Nitrobenzene	ND	100									
Isophorone	ND	100									
2-Nitrophenol	ND	100									
2,4-Dimethylphenol	ND	100									
Bis(2-chloroethoxy)methane	ND	75.0									
2,4-Dichlorophenol	ND	100									
1,2,4-Trichlorobenzene	ND	75.0									

Work Order: 2101416
CLIENT: Libby Environmental
Project: 35th Street Landfill

QC SUMMARY REPORT

Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: **MB-31181** SampType: **MBLK** Units: **µg/Kg** Prep Date: **1/27/2021** RunNo: **65035**
Client ID: **MBLKS** Batch ID: **31181** Analysis Date: **2/1/2021** SeqNo: **1308081**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	50.0									
4-Chloroaniline	ND	75.0									
Hexachlorobutadiene	ND	75.0									
4-Chloro-3-methylphenol	ND	200									
2-Methylnaphthalene	ND	50.0									
1-Methylnaphthalene	ND	50.0									
Hexachlorocyclopentadiene	ND	100									Q
2,4,6-Trichlorophenol	ND	100									
2,4,5-Trichlorophenol	ND	100									
2-Chloronaphthalene	ND	75.0									
2-Nitroaniline	ND	100									
Acenaphthene	ND	50.0									
2,6-Dinitrotoluene	ND	100									
Acenaphthylene	ND	50.0									
2,4-Dinitrophenol	ND	525									Q
Dibenzofuran	ND	75.0									
2,4-Dinitrotoluene	ND	100									
4-Nitrophenol	ND	500									
Fluorene	ND	50.0									
4-Chlorophenyl phenyl ether	ND	75.0									
Diethylphthalate	ND	100									
4,6-Dinitro-2-methylphenol	ND	200									Q
4-Bromophenyl phenyl ether	ND	75.0									
Hexachlorobenzene	ND	75.0									
Pentachlorophenol	ND	100									
Phenanthrene	ND	50.0									
Anthracene	ND	50.0									
Carbazole	ND	75.0									
Di-n-butylphthalate	ND	100									
Fluoranthene	ND	50.0									

Work Order: 2101416
CLIENT: Libby Environmental
Project: 35th Street Landfill

QC SUMMARY REPORT

Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: **MB-31181** SampType: **MBLK** Units: **µg/Kg** Prep Date: **1/27/2021** RunNo: **65035**
Client ID: **MBLKS** Batch ID: **31181** Analysis Date: **2/1/2021** SeqNo: **1308081**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Pyrene	ND	50.0									
Butyl Benzylphthalate	ND	100									
bis(2-Ethylhexyl)adipate	ND	100									
Benz(a)anthracene	ND	50.0									
Chrysene	ND	50.0									
bis (2-Ethylhexyl) phthalate	ND	100									
Di-n-octyl phthalate	ND	100									
Benzo(b)fluoranthene	ND	50.0									
Benzo(k)fluoranthene	ND	50.0									
Benzo(a)pyrene	ND	50.0									
Indeno(1,2,3-cd)pyrene	ND	50.0									
Dibenz(a,h)anthracene	ND	50.0									
Benzo(g,h,i)perylene	ND	50.0									
Surr: 2,4,6-Tribromophenol	520		1,000		52.0	13.4	144				
Surr: 2-Fluorobiphenyl	495		500.0		98.9	5.5	130				
Surr: Nitrobenzene-d5	439		500.0		87.9	5	116				
Surr: Phenol-d6	893		1,000		89.3	21.2	117				
Surr: p-Terphenyl	569		500.0		114	41.3	151				

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

Sample ID: **LCS-31181** SampType: **LCS** Units: **µg/Kg** Prep Date: **1/27/2021** RunNo: **65035**
Client ID: **LCSS** Batch ID: **31181** Analysis Date: **2/1/2021** SeqNo: **1308082**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Pyridine	965	200	1,000	0	96.5	27.4	134				
Phenol	922	100	1,000	0	92.2	49.4	122				
Bis(2-chloroethyl) ether	865	100	1,000	0	86.5	42.3	129				
2-Chlorophenol	959	100	1,000	0	95.9	51.4	126				
1,3-Dichlorobenzene	911	75.0	1,000	0	91.1	32	119				
1,4-Dichlorobenzene	903	75.0	1,000	0	90.3	30.9	120				

Work Order: 2101416
CLIENT: Libby Environmental
Project: 35th Street Landfill

QC SUMMARY REPORT

Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: **LCS-31181** SampType: **LCS** Units: **µg/Kg** Prep Date: **1/27/2021** RunNo: **65035**
Client ID: **LCSS** Batch ID: **31181** Analysis Date: **2/1/2021** SeqNo: **1308082**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dichlorobenzene	934	75.0	1,000	0	93.4	37.1	124				
Benzyl alcohol	672	100	1,000	0	67.2	5	176				
2-Methylphenol (o-cresol)	845	100	1,000	0	84.5	45.8	135				
Hexachloroethane	898	100	1,000	0	89.8	35	116				
N-Nitrosodi-n-propylamine	1,030	100	1,000	0	103	52.5	138				
3&4-Methylphenol (m, p-cresol)	878	100	1,000	0	87.8	44.4	137				
Nitrobenzene	925	100	1,000	0	92.5	45.5	129				
Isophorone	818	100	1,000	0	81.8	51.3	140				
2-Nitrophenol	907	100	1,000	0	90.7	52.7	132				
2,4-Dimethylphenol	868	100	1,000	0	86.8	45.7	138				
Bis(2-chloroethoxy)methane	900	75.0	1,000	0	90.0	46.6	134				
2,4-Dichlorophenol	923	100	1,000	0	92.3	51.1	138				
1,2,4-Trichlorobenzene	972	75.0	1,000	0	97.2	49.3	133				
Naphthalene	966	50.0	1,000	0	96.6	54.3	127				
4-Chloroaniline	820	75.0	1,000	0	82.0	42.5	135				
Hexachlorobutadiene	934	75.0	1,000	0	93.4	44	138				
4-Chloro-3-methylphenol	791	200	1,000	0	79.1	40	156				
2-Methylnaphthalene	969	50.0	1,000	0	96.9	55.5	134				
1-Methylnaphthalene	948	50.0	1,000	0	94.8	53.7	133				
Hexachlorocyclopentadiene	1,020	100	1,000	0	102	5	184				
2,4,6-Trichlorophenol	848	100	1,000	0	84.8	39.3	135				
2,4,5-Trichlorophenol	948	100	1,000	0	94.8	45.6	149				
2-Chloronaphthalene	1,000	75.0	1,000	0	100	53.6	136				
2-Nitroaniline	903	100	1,000	0	90.3	50.4	143				
Acenaphthene	839	50.0	1,000	0	83.9	54.9	136				
2,6-Dinitrotoluene	945	100	1,000	0	94.5	55.1	144				
Acenaphthylene	855	50.0	1,000	0	85.5	56.4	140				
2,4-Dinitrophenol	939	525	2,000	0	47.0	5	121				
Dibenzofuran	948	75.0	1,000	0	94.8	24.2	162				
2,4-Dinitrotoluene	888	100	1,000	0	88.8	50.7	144				

Work Order: 2101416
CLIENT: Libby Environmental
Project: 35th Street Landfill

QC SUMMARY REPORT

Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: **LCS-31181** SampType: **LCS** Units: **µg/Kg** Prep Date: **1/27/2021** RunNo: **65035**
Client ID: **LCSS** Batch ID: **31181** Analysis Date: **2/1/2021** SeqNo: **1308082**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
4-Nitrophenol	696	500	1,000	0	69.6	5	150				
Fluorene	887	50.0	1,000	0	88.7	52.7	139				
4-Chlorophenyl phenyl ether	991	75.0	1,000	0	99.1	50.6	142				
Diethylphthalate	937	100	1,000	0	93.7	51.9	144				
4,6-Dinitro-2-methylphenol	765	200	1,000	0	76.5	5	132				
4-Bromophenyl phenyl ether	921	75.0	1,000	0	92.1	51.3	140				
Hexachlorobenzene	1,040	75.0	1,000	0	104	46.6	146				
Pentachlorophenol	703	100	1,000	0	70.3	5	135				
Phenanthrene	929	50.0	1,000	0	92.9	47.8	146				
Anthracene	957	50.0	1,000	0	95.7	49.4	149				
Carbazole	898	75.0	1,000	0	89.8	45.8	151				
Di-n-butylphthalate	937	100	1,000	0	93.7	52.8	146				
Fluoranthene	1,010	50.0	1,000	0	101	50	145				
Pyrene	1,010	50.0	1,000	0	101	49	149				
Butyl Benzylphthalate	958	100	1,000	0	95.8	45.7	166				
bis(2-Ethylhexyl)adipate	888	100	1,000	0	88.8	42.3	173				
Benz(a)anthracene	943	50.0	1,000	0	94.3	49.2	149				
Chrysene	928	50.0	1,000	0	92.8	47.3	152				
bis (2-Ethylhexyl) phthalate	869	100	1,000	0	86.9	42.2	168				
Di-n-octyl phthalate	921	100	1,000	0	92.1	42.4	165				
Benzo(b)fluoranthene	874	50.0	1,000	0	87.4	47.1	152				
Benzo(k)fluoranthene	960	50.0	1,000	0	96.0	40.1	149				
Benzo(a)pyrene	989	50.0	1,000	0	98.9	50.3	151				
Indeno(1,2,3-cd)pyrene	955	50.0	1,000	0	95.5	56.1	146				
Dibenz(a,h)anthracene	970	50.0	1,000	0	97.0	56.3	146				
Benzo(g,h,i)perylene	985	50.0	1,000	0	98.5	53	145				
Surr: 2,4,6-Tribromophenol	957		1,000		95.7	13.4	144				
Surr: 2-Fluorobiphenyl	530		500.0		106	5.5	130				
Surr: Nitrobenzene-d5	522		500.0		104	5	116				
Surr: Phenol-d6	945		1,000		94.5	21.2	117				

Work Order: 2101416
CLIENT: Libby Environmental
Project: 35th Street Landfill

QC SUMMARY REPORT

Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: **LCS-31181** SampType: **LCS** Units: **µg/Kg** Prep Date: **1/27/2021** RunNo: **65035**
Client ID: **LCSS** Batch ID: **31181** Analysis Date: **2/1/2021** SeqNo: **1308082**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: p-Terphenyl	502		500.0		100	41.3	151				

Sample ID: **2101409-002AMS** SampType: **MS** Units: **µg/Kg-dry** Prep Date: **1/27/2021** RunNo: **65035**
Client ID: **BATCH** Batch ID: **31181** Analysis Date: **2/1/2021** SeqNo: **1308085**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Pyridine	863	197	985.0	0	87.6	27.4	134				
Phenol	794	98.5	985.0	0	80.6	34.3	109				
Bis(2-chloroethyl) ether	801	98.5	985.0	0	81.3	21.1	115				
2-Chlorophenol	788	98.5	985.0	0	80.0	23.1	120				
1,3-Dichlorobenzene	779	73.9	985.0	0	79.0	5.65	107				
1,4-Dichlorobenzene	768	73.9	985.0	0	77.9	5	111				
1,2-Dichlorobenzene	781	73.9	985.0	0	79.2	4.28	113				
Benzyl alcohol	509	98.5	985.0	0	51.7	5	108				
2-Methylphenol (o-cresol)	769	98.5	985.0	0	78.1	36	116				
Hexachloroethane	708	98.5	985.0	0	71.8	0.976	109				
N-Nitrosodi-n-propylamine	754	98.5	985.0	0	76.6	41.1	126				
3&4-Methylphenol (m, p-cresol)	749	98.5	985.0	0	76.1	32.5	120				
Nitrobenzene	795	98.5	985.0	0	80.7	29.5	117				
Isophorone	691	98.5	985.0	0	70.1	41.5	128				
2-Nitrophenol	827	98.5	985.0	0	84.0	23.9	134				
2,4-Dimethylphenol	797	98.5	985.0	0	80.9	14.2	136				
Bis(2-chloroethoxy)methane	841	73.9	985.0	0	85.3	34.8	122				
2,4-Dichlorophenol	751	98.5	985.0	0	76.2	28.2	130				
1,2,4-Trichlorobenzene	738	73.9	985.0	0	74.9	26.3	120				
Naphthalene	782	49.2	985.0	0	79.4	27.6	120				
4-Chloroaniline	498	73.9	985.0	0	50.5	15.1	109				
Hexachlorobutadiene	788	73.9	985.0	0	80.0	17.5	124				
4-Chloro-3-methylphenol	785	197	985.0	0	79.7	40.2	136				
2-Methylnaphthalene	797	49.2	985.0	0	80.9	36.3	124				

Work Order: 2101416
CLIENT: Libby Environmental
Project: 35th Street Landfill

QC SUMMARY REPORT

Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: **2101409-002AMS** SampType: **MS** Units: **µg/Kg-dry** Prep Date: **1/27/2021** RunNo: **65035**
Client ID: **BATCH** Batch ID: **31181** Analysis Date: **2/1/2021** SeqNo: **1308085**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1-Methylnaphthalene	782	49.2	985.0	0	79.4	38	121				
Hexachlorocyclopentadiene	532	98.5	985.0	0	54.0	5	136				
2,4,6-Trichlorophenol	758	98.5	985.0	0	76.9	36.7	126				
2,4,5-Trichlorophenol	814	98.5	985.0	0	82.7	41.5	123				
2-Chloronaphthalene	828	73.9	985.0	0	84.1	40.3	119				
2-Nitroaniline	853	98.5	985.0	0	86.6	41.5	128				
Acenaphthene	737	49.2	985.0	0	74.8	42.3	124				
2,6-Dinitrotoluene	830	98.5	985.0	0	84.2	43.3	127				
Acenaphthylene	747	49.2	985.0	0	75.8	46.5	122				
2,4-Dinitrophenol	373	517	1,970	0	18.9	5	132				
Dibenzofuran	827	73.9	985.0	0	83.9	38.3	127				
2,4-Dinitrotoluene	751	98.5	985.0	0	76.3	36.3	131				
4-Nitrophenol	620	492	985.0	0	62.9	5	126				
Fluorene	819	49.2	985.0	0	83.1	40.4	127				
4-Chlorophenyl phenyl ether	840	73.9	985.0	0	85.3	41.6	123				
Diethylphthalate	814	98.5	985.0	0	82.7	42.1	127				
4,6-Dinitro-2-methylphenol	290	197	985.0	0	29.4	5	145				
4-Bromophenyl phenyl ether	836	73.9	985.0	0	84.8	41.9	124				
Hexachlorobenzene	848	73.9	985.0	25.02	83.5	39.1	127				
Pentachlorophenol	794	98.5	985.0	0	80.6	6.79	138				
Phenanthrene	805	49.2	985.0	26.56	79.0	37.2	133				
Anthracene	831	49.2	985.0	0	84.4	46.7	124				
Carbazole	756	73.9	985.0	0	76.7	38.9	133				
Di-n-butylphthalate	853	98.5	985.0	40.61	82.5	38.8	144				
Fluoranthene	892	49.2	985.0	77.88	82.6	36	133				
Pyrene	918	49.2	985.0	105.3	82.5	36.5	132				
Butyl Benzylphthalate	842	98.5	985.0	0	85.5	34.8	155				
bis(2-Ethylhexyl)adipate	797	98.5	985.0	0	80.9	26.7	168				
Benz(a)anthracene	788	49.2	985.0	39.88	75.9	33.2	141				
Chrysene	821	49.2	985.0	73.35	75.9	42.1	127				

Work Order: 2101416
CLIENT: Libby Environmental
Project: 35th Street Landfill

QC SUMMARY REPORT

Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: **2101409-002AMS** SampType: **MS** Units: **µg/Kg-dry** Prep Date: **1/27/2021** RunNo: **65035**
Client ID: **BATCH** Batch ID: **31181** Analysis Date: **2/1/2021** SeqNo: **1308085**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
bis (2-Ethylhexyl) phthalate	2,210	98.5	985.0	1,374	85.4	36.1	163				
Di-n-octyl phthalate	854	98.5	985.0	0	86.7	30.7	171				
Benzo(b)fluoranthene	921	49.2	985.0	115.0	81.8	33.1	144				
Benzo(k)fluoranthene	814	49.2	985.0	85.45	73.9	28.8	140				
Benzo(a)pyrene	914	49.2	985.0	88.57	83.8	37.6	140				
Indeno(1,2,3-cd)pyrene	1,010	49.2	985.0	189.0	83.3	33.9	149				
Dibenz(a,h)anthracene	866	49.2	985.0	39.55	83.9	38.6	146				
Benzo(g,h,i)perylene	1,120	49.2	985.0	321.2	81.1	33.4	142				
Surr: 2,4,6-Tribromophenol	842		985.0		85.5	13.4	144				
Surr: 2-Fluorobiphenyl	409		492.5		83.1	5.5	130				
Surr: Nitrobenzene-d5	398		492.5		80.7	5	116				
Surr: Phenol-d6	866		985.0		87.9	21.2	117				
Surr: p-Terphenyl	446		492.5		90.7	41.3	151				

Sample ID: **2101409-002AMSD** SampType: **MSD** Units: **µg/Kg-dry** Prep Date: **1/27/2021** RunNo: **65035**
Client ID: **BATCH** Batch ID: **31181** Analysis Date: **2/1/2021** SeqNo: **1308086**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Pyridine	1,060	224	1,119	0	94.4	27.4	134	862.5	20.3	50	
Phenol	886	112	1,119	0	79.2	34.3	109	793.6	11.0	50	
Bis(2-chloroethyl) ether	953	112	1,119	0	85.1	21.1	115	801.0	17.3	50	
2-Chlorophenol	945	112	1,119	0	84.5	23.1	120	787.6	18.2	50	
1,3-Dichlorobenzene	915	83.9	1,119	0	81.7	5.65	107	778.5	16.1	50	
1,4-Dichlorobenzene	890	83.9	1,119	0	79.5	5	111	767.5	14.8	50	
1,2-Dichlorobenzene	897	83.9	1,119	0	80.1	4.28	113	780.5	13.9	50	
Benzyl alcohol	464	112	1,119	0	41.5	5	108	509.3	9.26	50	
2-Methylphenol (o-cresol)	865	112	1,119	0	77.3	36	116	769.2	11.8	50	
Hexachloroethane	841	112	1,119	0	75.2	0.976	109	707.6	17.3	50	
N-Nitrosodi-n-propylamine	853	112	1,119	0	76.3	41.1	126	754.5	12.3	50	
3&4-Methylphenol (m, p-cresol)	893	112	1,119	0	79.7	32.5	120	749.1	17.5	50	

Work Order: 2101416
CLIENT: Libby Environmental
Project: 35th Street Landfill

QC SUMMARY REPORT

Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: **2101409-002AMSD** SampType: **MSD** Units: **µg/Kg-dry** Prep Date: **1/27/2021** RunNo: **65035**
Client ID: **BATCH** Batch ID: **31181** Analysis Date: **2/1/2021** SeqNo: **1308086**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Nitrobenzene	931	112	1,119	0	83.1	29.5	117	794.7	15.8	50	
Isophorone	892	112	1,119	0	79.7	41.5	128	690.9	25.4	50	
2-Nitrophenol	927	112	1,119	0	82.8	23.9	134	827.3	11.4	50	
2,4-Dimethylphenol	946	112	1,119	0	84.5	14.2	136	796.8	17.1	50	
Bis(2-chloroethoxy)methane	1,000	83.9	1,119	0	89.5	34.8	122	840.7	17.5	50	
2,4-Dichlorophenol	953	112	1,119	0	85.1	28.2	130	750.7	23.7	50	
1,2,4-Trichlorobenzene	905	83.9	1,119	0	80.9	26.3	120	737.9	20.4	50	
Naphthalene	943	56.0	1,119	0	84.2	27.6	120	781.6	18.7	50	
4-Chloroaniline	668	83.9	1,119	0	59.6	15.1	109	497.7	29.2	50	
Hexachlorobutadiene	938	83.9	1,119	0	83.8	17.5	124	787.5	17.5	50	
4-Chloro-3-methylphenol	911	224	1,119	0	81.4	40.2	136	785.2	14.8	50	
2-Methylnaphthalene	938	56.0	1,119	0	83.8	36.3	124	797.1	16.2	50	
1-Methylnaphthalene	961	56.0	1,119	0	85.8	38	121	782.2	20.5	50	
Hexachlorocyclopentadiene	456	112	1,119	0	40.8	5	136	532.3	15.4	50	
2,4,6-Trichlorophenol	940	112	1,119	0	84.0	36.7	126	757.9	21.4	50	
2,4,5-Trichlorophenol	1,020	112	1,119	0	91.0	41.5	123	814.4	22.3	50	
2-Chloronaphthalene	936	83.9	1,119	0	83.6	40.3	119	828.0	12.3	50	
2-Nitroaniline	955	112	1,119	0	85.3	41.5	128	852.6	11.3	50	
Acenaphthene	891	56.0	1,119	0	79.6	42.3	124	736.6	19.0	50	
2,6-Dinitrotoluene	983	112	1,119	0	87.8	43.3	127	829.8	16.9	50	
Acenaphthylene	877	56.0	1,119	0	78.3	46.5	122	746.7	16.0	50	
2,4-Dinitrophenol	366	588	2,239	0	16.4	5	132	372.9	1.84	50	
Dibenzofuran	963	83.9	1,119	0	86.1	38.3	127	826.7	15.3	50	
2,4-Dinitrotoluene	988	112	1,119	0	88.2	36.3	131	751.2	27.2	50	
4-Nitrophenol	699	560	1,119	0	62.4	5	126	620.0	12.0	50	
Fluorene	926	56.0	1,119	0	82.7	40.4	127	818.6	12.3	50	
4-Chlorophenyl phenyl ether	964	83.9	1,119	0	86.2	41.6	123	840.1	13.8	50	
Diethylphthalate	924	112	1,119	0	82.5	42.1	127	814.2	12.6	50	
4,6-Dinitro-2-methylphenol	295	224	1,119	0	26.4	5	145	289.7	1.87	50	
4-Bromophenyl phenyl ether	924	83.9	1,119	0	82.5	41.9	124	835.6	10.0	50	

Work Order: 2101416
CLIENT: Libby Environmental
Project: 35th Street Landfill

QC SUMMARY REPORT

Semi-Volatile Organic Compounds by EPA Method 8270

Sample ID: **2101409-002AMSD** SampType: **MSD** Units: **µg/Kg-dry** Prep Date: **1/27/2021** RunNo: **65035**
Client ID: **BATCH** Batch ID: **31181** Analysis Date: **2/1/2021** SeqNo: **1308086**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hexachlorobenzene	992	83.9	1,119	25.02	86.3	39.1	127	848.0	15.6	50	
Pentachlorophenol	925	112	1,119	0	82.6	6.79	138	794.3	15.2	50	
Phenanthrene	1,020	56.0	1,119	26.56	89.0	37.2	133	805.2	23.8	50	
Anthracene	1,020	56.0	1,119	0	91.2	46.7	124	831.4	20.5	50	
Carbazole	932	83.9	1,119	0	83.3	38.9	133	755.9	20.9	50	
Di-n-butylphthalate	1,030	112	1,119	40.61	88.5	38.8	144	853.4	18.9	50	
Fluoranthene	1,010	56.0	1,119	77.88	83.1	36	133	891.9	12.3	50	
Pyrene	1,090	56.0	1,119	105.3	88.3	36.5	132	918.1	17.5	50	
Butyl Benzylphthalate	986	112	1,119	0	88.1	34.8	155	842.4	15.7	50	
bis(2-Ethylhexyl)adipate	905	112	1,119	0	80.8	26.7	168	796.5	12.7	50	
Benz(a)anthracene	968	56.0	1,119	39.88	82.9	33.2	141	787.6	20.6	50	
Chrysene	1,040	56.0	1,119	73.35	86.0	42.1	127	821.2	23.1	50	
bis (2-Ethylhexyl) phthalate	2,380	112	1,119	1,374	90.2	36.1	163	2,215	7.33	50	
Di-n-octyl phthalate	1,050	112	1,119	0	93.5	30.7	171	854.4	20.2	50	
Benzo(b)fluoranthene	1,060	56.0	1,119	115.0	84.3	33.1	144	920.5	14.0	50	
Benzo(k)fluoranthene	956	56.0	1,119	85.45	77.7	28.8	140	813.7	16.0	50	
Benzo(a)pyrene	1,040	56.0	1,119	88.57	84.9	37.6	140	914.5	12.7	50	
Indeno(1,2,3-cd)pyrene	1,030	56.0	1,119	189.0	75.0	33.9	149	1,010	1.87	50	
Dibenz(a,h)anthracene	977	56.0	1,119	39.55	83.8	38.6	146	866.2	12.1	50	
Benzo(g,h,i)perylene	1,160	56.0	1,119	321.2	74.7	33.4	142	1,120	3.31	50	
Surr: 2,4,6-Tribromophenol	917		1,119		81.9	13.4	144		0		
Surr: 2-Fluorobiphenyl	502		559.7		89.7	5.5	130		0		
Surr: Nitrobenzene-d5	492		559.7		88.0	5	116		0		
Surr: Phenol-d6	939		1,119		83.9	21.2	117		0		
Surr: p-Terphenyl	540		559.7		96.5	41.3	151		0		

Sample Log-In Check List

Client Name:	LIBBY	Work Order Number:	2101416
Logged by:	Carissa True	Date Received:	1/27/2021 9:24:00 AM

Chain of Custody

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

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 Present	☑
6.	Was an attempt made to cool the samples?	Yes	☑	No ☐	NA	☐
7.	Were all items received at a temperature of >2°C to 6°C *	Yes	☑	No ☐	NA	☐
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: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

Item #	Temp ºC
Sample 1	5.3

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

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

2101416

Date: 1/26/21 Page: 1 of 1

Client: Libby Environmental, Inc.
Address:
City: State: Zip:
Phone: Fax:
Client Project # L210126-1

Project Manager: Sherry Chilcutt
Project Name: 35th Street Landfill
Location: City, State: Tacoma, WA
Collector: C.L Date of Collection: 1/26/21
Email: libbyenv@gmail.com

Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	PCE & Daughter Prod.	NWTPH-Gx	BTEX (8260) / (8021)	NWTPH-HCID	NWTPH-Dx / Dx	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	c PAH 8270	PAH 8270	Semi Vol 8270	Bal Se, Ag		Field Notes
1 B1-05-20210126		940	Soil	4oz jar											X	X			
2 B1-30-20210126		1020													X	X			
3 B2-05-20210126		1120													X	X			
4 B2-30-20210126		1245													X	X			
5 B3-05-20210126		1340													X	X			
6 B3-030-20210126		1430													X	X			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			

Relinquished by: Melissa Ht 1/26/21 Date / Time 1645
Received by: UPS Date / Time

Relinquished by: UPS Date / Time
Received by: 1/27/21 0124 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:
Standard TAT

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 - Originator