Cleanup Report
Nisqually Place
Meridian Campus Development
Lacey, Washington

March 3, 2021

Prepared for

Johnson and Maddox Construction Company, Inc.
2209 93rd Avenue SW
Olympia, Washington

Copper Ridge LLC
Post Office Box 73790
Puyallup, Washington

LANDAU ASSOCIATES

500 Columbia St NW, Ste 110
Olympia, WA 98501
(360) 791-3178

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LIST OF ABBREVIATIONS AND ACRONYMS

CAP	Cleanup Action Plan
bgs	below ground surface
Ecology	Washington State Department of Ecology
EPA	US Environmental Protection Agency
ft	foot/feet
LAI	Landau Associates, Inc.
mg/kg	milligrams per kilogram
msl	mean sea level
NFA	No Further Action
MTCA	Model Toxics Control Act
SAP	Sampling and Analysis Plan
Site	Nisqually Place
Libby	Libby Environmental, Inc.

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INTRODUCTION

This report, prepared by Landau Associates, Inc. (LAI) provides a summary of the completed shallow soil cleanup activities conducted at the Nisqually Place development project (Site), which comprises Thurston County Parcel Number 11801130105, located at 9185 31st Avenue Northeast in Lacey, Washington. The Site is part of the Meridian Campus Development, which is located within the areas affected by windblown arsenic and lead emissions from the former Tacoma Asarco Smelter. The Site is approximately 9.82 acres and proposed for single-family residential development. A cleanup of shallow soil affected by arsenic and lead was conducted at the Site and is summarized in this report. The Site will be entered into the Washington State Department of Ecology (Ecology) Voluntary Cleanup Program as part of this report submittal. Based on the completed Site cleanup activities, an Ecology opinion letter is being requested for a No Further Action (NFA) determination. The location of the Site is shown on Figure 1. A development plan for the Site is shown on Figure 2.

Studies conducted by Ecology and Thurston County found elevated levels of arsenic and lead in undisturbed surface soil in northern Thurston County as a result of emissions from the Tacoma Asarco Smelter (Ecology; accessed June 26, 2016). In 2005, Meridian Campus Development Partners conducted a study at the Meridian Campus Development to determine if the area was potentially affected by Asarco Smelter emissions. Study results indicated slightly elevated levels of arsenic in soil; lead results were below the applicable cleanup levels. Since the proposed development land was previously undeveloped forest land and no evidence of illegal dumping was found, there was no reason to suspect other contaminants besides wind-born arsenic and lead. LAI prepared a Cleanup Action Plan (CAP; LAI 2005a) and a Sampling and Analysis Plan (SAP; LAI 2005b) for cleanup of the Meridian Campus Development. Ecology approved the soil mixing cleanup method described in the CAP for the Meridian Campus Development (Ecology 2006). Cleanup was conducted at the Site in 2021 during development activities using the prior approved CAP, SAP, and Ecology opinion letter recommendations developed for the Meridian Campus Development.

The cleanup action and final grading have recently been completed at the Site. Stockpile and confirmation soil sampling and analysis were conducted to confirm that arsenic and lead concentrations in soil at the Site are below Washington State Model Toxics Control Act (MTCA) Method A cleanup levels for unrestricted land use after final grading activities. Copies of laboratory analytical reports for the cleanup action are provided in Appendix A.

SITE DESCRIPTION

The Site is located in a residential/commercial area with mildly undulating topography directly west of the Nisqually Delta. The elevation of the Site is approximately 215 to 230 feet (ft) above mean sea level (msl).

The Site is generally underlain by recessional outwash deposits along the western property boundary and glacial till deposits along the eastern property boundary, with a transitional zone mapped through

the middle of the Site (Drost et al. 1999). The upper soil layer corresponding to the recessional outwash deposits is mapped as Everett very gravelly sandy loam, 8 to 15 percent slopes (USDA NRCS; accessed June 30, 2016). The uppermost aquifer beneath the Site is the Qva aquifer. The elevation of the groundwater in the Qva aquifer beneath the Site was estimated to be between 125 and 150 ft msl, more than 100 ft below ground surface (bgs; Drost et al. 1999). The abbreviated legal description of the Site is Section 01 Township 18 Range 1W Quarter SW NE, Tract B-5, Document ROS #3925703.

SITE CHARACTERIZATION AND CLEANUP METHOD

Characterization sampling was performed for the entire Meridian Campus Development in March 2005; however, soil samples were not collected from the Site during this initial characterization effort. Fifty characterization soil samples were collected from 0 to 6 inches bgs during this effort (CAP; LAI 2005a). Characterization sample results indicated arsenic concentrations throughout the development area ranged from 2.8 to 40.5 milligrams per kilogram (mg/kg) and lead concentrations ranged from 5 to 146 mg/kg. Samples were collected from an adjacent property about 1,500 ft to the northwest of the Site and results indicated arsenic and lead concentrations were between 11.7 and 36.2 mg/kg and 24 and 116 mg/kg, respectively. A comparison of the Meridian Campus Development characterization results to the MTCA Method A cleanup levels for unrestricted land use indicate 18 out of the 50 samples had arsenic concentrations above the cleanup level (20 mg/kg) while all the results were below the lead cleanup level (250 mg/kg) (LAI 2005a).

The CAP was issued for the Meridian Campus Development area of which the Nisqually Place development is a subpart; therefore, a cleanup action was conducted at the Site in accordance with the Ecology approved CAP. Site cleanup activities took place in January of 2021 during Site development activities. The approved cleanup plan included mixing the upper soil layer (to a depth of approximately 6 to 12 inches bgs) and collecting and analyzing stockpile and confirmation samples to evaluate the effectiveness of the cleanup action. In accordance with the CAP, the upper 12 inches (average removal depth) on the Site was scraped, thoroughly mixed, and some material was stockpiled, and some was placed at final grade. Soil was contained in a single stockpile.

STOCKPILE SAMPLING

Upon completion of the soil mixing at the Site, representative composite soil samples were collected from the generated stockpile on January 12, 2021. Based on the estimated 8,000 cubic yards of stockpile volume, 10 composite samples were collected, as shown on Figure 2, following stockpile sampling procedures described in the SAP (LAI 2005b). The stockpile was visually segregated into 10 sections based on a grid pattern. Four discrete samples were collected from each grid section from various depths and locations within the section. An equal portion of each of the four subsamples was composited into a single composite sample. The stockpile samples were submitted to Libby Environmental, Inc. (Libby), located in Olympia, Washington, for arsenic and lead analysis by US Environmental Protection Agency (EPA) Method 6020B.

CONFIRMATION SAMPLING

Upon completion of final Site mixing, stockpiling, and grading activities, LAI mobilized to collect at-grade confirmation samples. On January 12 and 25, 2021, 11 confirmation samples were collected in general accordance with the procedures described in the SAP (LAI 2005b) as modified to comply with small-scale composite sampling from 0 to 6 inches bgs, as recommended in Ecology's opinion letter (Ecology 2006) regarding the CAP. Samples were collected in locations to provide for adequate coverage of the entire tract specifically focusing on areas that may become residential yards and areas designated for open space. All samples were submitted to Libby for arsenic and lead analysis by EPA Method 6020B. Typical surface soil consisted of a dark brown sandy, fine to coarse gravel with silt and organics. The locations of all confirmation samples were recorded using a global positioning system and georeferenced site plans and are shown on Figure 2.

SAMPLE RESULTS

All stockpile and confirmation sample results indicate arsenic and lead concentrations were below the respective MTCA Method A soil cleanup levels for unrestricted land use (20 mg/kg for arsenic and 250 mg/kg for lead) as described below:

- Stockpile sample results:
  - The 10 stockpile sample results indicated that arsenic concentrations ranged from 9.1 to 19.7 mg/kg, and lead concentrations ranged from 15.4 to 28.1 mg/kg. Based on the analytical results, the stockpiled soil was below the respective MTCA Method A cleanup levels and suitable for use onsite to support hydroseeding for erosion control within the Site. Stockpile sampling locations are shown on Figure 2, and sample results are summarized in Table 1. The laboratory analytical data are provided in Appendix B.
- Final confirmation sample results:
  - The analytical results from the 11 final at-grade confirmation samples indicated that arsenic concentrations ranged from 3.07 to 25.7 mg/kg, and lead concentrations ranged from 2.06 to 25.5 mg/kg. All individual arsenic concentrations were below the MTCA Method A cleanup level except one location (sample LAI-C03-20210125) which was 25.7 mg/kg. The Site is considered clean if the Site-wide average for arsenic or lead is less than or equal to the MTCA Method A cleanup level and no single sample exceeds two times the MTCA Method A cleanup level. The average arsenic concentration Site-wide was 12.88 mg/kg which is below the MTCA Method A cleanup level. All lead concentrations were below the MTCA Method A cleanup level and the Site-wide average lead concentration was 16.46 mg/kg. Final confirmation sampling locations are shown on Figure 2, and sample results are summarized in Table 1. The laboratory analytical data are provided in Appendix A.

SUMMARY

The analytical results from the stockpile and final confirmation samples collected throughout the Site indicate that Site cleanup activities have been completed to MTCA standards. The average Site-wide

arsenic and lead concentration was 12.88 mg/kg and 16.46 mg/kg respectively, which are both below their associated MTCA Method A cleanup levels for unrestricted land use. Based on the completed cleanup action and analytical results that indicate that the Site does not contain elevated arsenic or lead concentrations above their respective MTCA Method A cleanup levels for unrestricted land use, LAI requests that Ecology issue an NFA determination for the Site.

USE OF THIS REPORT

This report has been prepared for the exclusive use of Johnson & Maddox Construction, Inc. working on behalf of the property owner Cooper Ridge LLC for specific application to the Nisqually Place development 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 limitation of scope, schedule, and budget, our 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.

LANDAU ASSOCIATES, INC.

Cody Laramie, EIT
Staff Engineer

Dave Johnson, PE
Associate Engineer

CAL/DEJ/kjg
[T:\1962\001\R\CLEANUP REPORT\LAI NISQUALLY PLACE CLEANUP REPORT_DEJREV1.DOCX]

REFERENCES

Drost, B.W., D.M. Ely, and W.E. II Lum. 1999. Conceptual Model and Numerical Simulation of the Ground-Water System in the Unconsolidated Sediments of Thurston County, Washington. US Geological Survey.

Ecology. *Living With a Toxic Legacy: Tacoma Smelter Plume*. Washington State Department of Ecology. http://www.ecy.wa.gov/programs/tcp/sites_brochure/tacoma_smelter/2011/ts-hp.htm.

Ecology. 2006. Letter: Opinion Pursuant to WAC 173-340-515(5) on Proposed Remedial Action for the Following Hazardous Waste Site: Name: Meridian Campus Development; Address: Northwest Intersection of Willamette Drive NE and Campus Glen Drive NE, Thurston County, Washington; Facility/Site No.: 9945; VCP No.: SW0690. From Joyce Mercuri, to Landau Associates, Inc. January 24.

LAI. 2005a. *Cleanup Action Plan and Site Characterization*, Meridian Campus Development, Lacey, Washington. Landau Associates, Inc. June 16.

LAI. 2005b. Draft: *Sampling and Analysis Plan*, Meridian Campus Development, Lacey, Washington. Landau Associates, Inc. February 4.

USDA NRCS. Web Soil Survey. US Department of Agriculture Natural Resources Conservation Service. http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm.

N

0 0.5 1

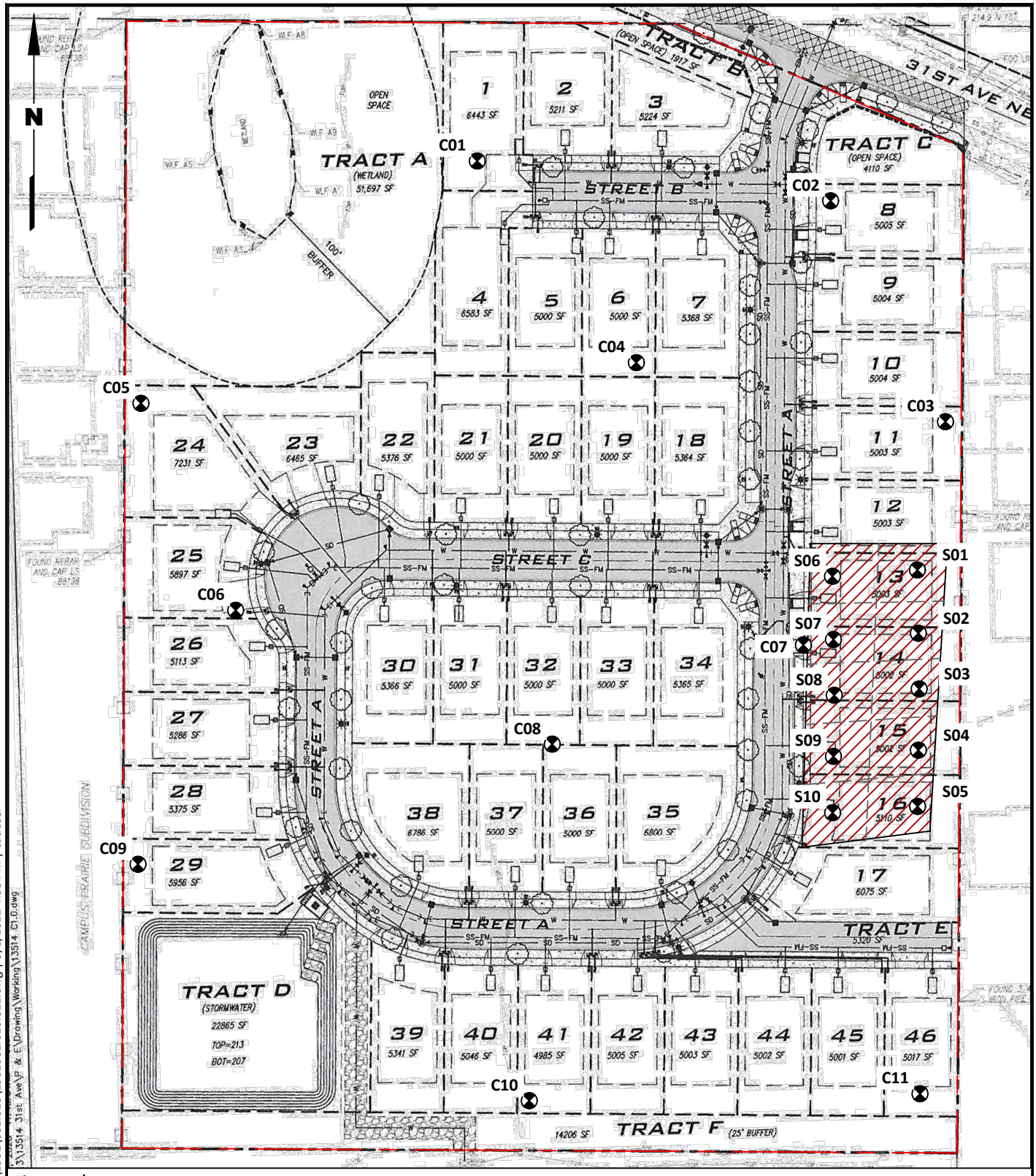
Miles

Data Source: Esri.

G:\Projects\1962\001\F01VicMap.mxd 1/20/2021 NAD 1983 StatePlane Washington South FIPS 4602 Feet

LANDAU ASSOCIATES

Nisqually Place Soil Characterization Lacey, Washington	**Vicinity Map**	Figure 1



Legend

S01 Sample Location and Designation

Approximate Stockpile Location

Site Boundary

0 100 200

Scale in Feet

Note

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

Source: Patrick Harron & Associates, LLC, 2020

LANDAU ASSOCIATES

Nisqually Place Soil Characterization Lacey, Washington	**Site and Exploration Location Plan**	Figure 2

Table 1
Stockpile and Confirmation Sample Results
Nisqually Place
Lacey, Washington

Sample ID	Sample date	Arsenic (mg/kg)	Lead (mg/kg)
LAI-S01-20210112	1/12/2021	16.9	27.2
LAI-S02-20210112	1/12/2021	16.2	25.4
LAI-S03-20210112	1/12/2021	13.6	21.4
LAI-S04-20210112	1/12/2021	12.3	20.3
LAI-S05-20210112	1/12/2021	13.5	22.2
LAI-S06-20210112	1/12/2021	14.2	24.9
LAI-S07-20210112	1/12/2021	19.7	28.1
LAI-S08-20210112	1/12/2021	16.1	26.5
LAI-S09-20210112	1/12/2021	9.1	15.4
LAI-S10-20210112	1/12/2021	16.2	22.9
LAI-C01-20210112	1/12/2021	6.2	4.9
LAI-C02-20210112	1/12/2021	19.0	23.0
LAI-C03-20210125	1/25/2021	**25.7**	25.5
LAI-C04-20210112	1/12/2021	3.1	2.1
LAI-C05-20210125	1/25/2021	8.3	6.9
LAI-C06-20210112	1/12/2021	13.9	6.9
LAI-C07-20210112	1/12/2021	12.6	14.8
LAI-C08-20210112	1/12/2021	8.1	7.6
LAI-C09-20210112	1/12/2021	12.8	5.8
LAI-C10-20210112	1/12/2021	6.5	7.3
LAI-C11-20210112	1/12/2021	6.6	6.5
Site-wide Average		12.9	16.5
MTCA Method A Cleanup Level for Unrestricted Use		20.0	250.0

Notes:
Bold = detected compound above MTCA Method A for unrestrictive land use

Abbreviations and Acronyms:
ID = identification
mg/kg = milligram per kilogram
MTCA = Model Toxics Control Act

APPENDIX A

Laboratory Analytical Reports

Libby Environmental, Inc.

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

January 21, 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 Nisqually Place Project located in Lacey, 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

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

Chain-of-Custody Record

Date 1/12/2021

Page 1 of 2

Project Name NISQUALLY PLACE Project No.

Project Location/Event 9185 31ST AVE. NE LACEY, WA

Sampler's Name C. LARAMIE

Project Contact D. JOHNSON, D. JORGENSEN

Send Results To D. JOHNSON, D. JORGENSEN

Testing Parameters

Sample I.D.	Date	Time	Matrix	No. of Containers	Pb & As only 6010, 6020, 6200	Observations/Comments
LA1-S01-20210112	1/12/21	930	SOIL	1	x	
LA1-S02-20210112		940			x	
LA1-S03-20210112		950			x	
LA1-S04-20210112		1000			x	
LA1-S05-20210112		1010			x	
LA1-S06-20210112		1020			x	
LA1-S07-20210112		1630			x	
LA1-S08-20210112		1040			x	
LA1-S09-20210112		1050			x	
LA1-S10-20210112		1100			x	
LA1-C01-20210112		1130			x	
LA1-C02-20210112		1145			x	
LA1-C03-20210112		1200			x	
LA1-C04-20210112		1215			x	
LA1-C05-20210112		1230			x	
LA1-C06-20210112		1245			x	
LA1-C07-20210112		1300			x	
LA1-C08-20210112	x	1315	x	x	x	

Turnaround Time
- [x] Standard
- [ ] Accelerated
- [ ] _____

Observations/Comments

- [x] Allow water samples to settle, collect aliquot from clear portion
- [ ] NWTPH-Dx - run acid wash silica gel cleanup
- [ ] Analyze for EPH if no specific product identified

VOC/BTEX/VPH (soil):
- [ ] non-preserved
- [ ] preserved w/methanol
- [ ] preserved w/sodium bisulfate
- [ ] Freeze upon receipt
- [ ] Dissolved metal water samples field filtered

Other _____

Special Shipment/Handling or Storage Requirements

Method of Shipment

Relinquished by	Received by	Relinquished by	Received by
Signature Cody Laramie	Signature	Signature	Signature
Printed Name CODY LARAMIE	Printed Name Kory Dixon	Printed Name	Printed Name
Company LA1	Company Libby	Company	Company
Date 1/12/21 Time 1622	Date 1/12/21 Time 1625	Date Time	Date Time

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

12/2014

LANDAU ASSOCIATES

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

Chain-of-Custody Record

Date 1/12/2021

Page 2 of 2

Project Name NISQUALLY PLACE Project No. _____

Project Location/Event 9185 31ST AVE. NE LACEY, WA

Sampler's Name C. LARAMIE

Project Contact D. JOHNSON, D. JORGENSEN

Send Results To D. JOHNSON, D. JORGENSEN

Testing Parameters

Pb & As only 6010, 6020, 6200

Turnaround Time
- ☒ Standard
- ☐ Accelerated
- ☐ _____

Sample I.D.	Date	Time	Matrix	No. of Containers	Pb & As only 6010, 6020, 6200	Observations/Comments
LAI-C09-20210112	1/12/21	1330	SOIL	1	X	
LAI-C10-20210112		1345			X	
LAI-C11-20210112		1400			X	

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

__ NWTPH-Dx - run acid wash silica gel cleanup

__ Analyze for EPH if no specific product identified

VOC/BTEX/VPH (soil):
- __ non-preserved
- __ preserved w/methanol
- __ preserved w/sodium bisulfate
- __ Freeze upon receipt
- __ Dissolved metal water samples field filtered

Other _____

Special Shipment/Handling or Storage Requirements

Method of Shipment

Relinquished by	Received by	Relinquished by	Received by
Signature Cody Laramie	Signature	Signature	Signature
Printed Name CODY LARAMIE	Printed Name	Printed Name	Printed Name
Company LAI	Company	Company	Company
Date 1/12/21 Time 1622	Date Time	Date Time	Date Time

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

12/2014

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@gmail.com

NISQUALLY PLACE PROJECT
Landau Associates
Libby Project # L210112-9
Date Received 1/12/2021
Time Received 4:25 PM

Received By KD

Sample Receipt Checklist

Chain of Custody

1. Is the Chain of Custody is 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)	1.6 °C		
8. Temperature of sample(s) (0°C to 8°C recommended)	2.1 °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. _____

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

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

RE: Nisqually Place
Work Order Number: 2101226

January 21, 2021

Attention Sherry Chilcutt:

Fremont Analytical, Inc. received 21 sample(s) on 1/14/2021 for the analyses presented in the following report.

Sample Moisture (Percent Moisture)
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: *01/21/2021*

CLIENT: Libby Environmental
Project: Nisqually Place
Work Order: 2101226

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2101226-001	LAI-S01-20210112	01/12/2021 9:30 AM	01/14/2021 11:37 AM
2101226-002	LAI-S02-20210112	01/12/2021 9:40 AM	01/14/2021 11:37 AM
2101226-003	LAI-S03-20210112	01/12/2021 9:50 AM	01/14/2021 11:37 AM
2101226-004	LAI-S04-20210112	01/12/2021 10:00 AM	01/14/2021 11:37 AM
2101226-005	LAI-S05-20210112	01/12/2021 10:10 AM	01/14/2021 11:37 AM
2101226-006	LAI-S06-20210112	01/12/2021 10:20 AM	01/14/2021 11:37 AM
2101226-007	LAI-S07-20210112	01/12/2021 10:30 AM	01/14/2021 11:37 AM
2101226-008	LAI-S08-20210112	01/12/2021 10:40 AM	01/14/2021 11:37 AM
2101226-009	LAI-S09-20210112	01/12/2021 10:50 AM	01/14/2021 11:37 AM
2101226-010	LAI-S10-20210112	01/12/2021 11:00 AM	01/14/2021 11:37 AM
2101226-011	LAI-C01-20210112	01/12/2021 11:30 AM	01/14/2021 11:37 AM
2101226-012	LAI-C02-20210112	01/12/2021 11:45 AM	01/14/2021 11:37 AM
2101226-013	LAI-C03-20210112	01/12/2021 12:00 PM	01/14/2021 11:37 AM
2101226-014	LAI-C04-20210112	01/12/2021 12:15 PM	01/14/2021 11:37 AM
2101226-015	LAI-C05-20210112	01/12/2021 12:30 PM	01/14/2021 11:37 AM
2101226-016	LAI-C06-20210112	01/12/2021 12:45 PM	01/14/2021 11:37 AM
2101226-017	LAI-C07-20210112	01/12/2021 1:00 PM	01/14/2021 11:37 AM
2101226-018	LAI-C08-20210112	01/12/2021 1:15 PM	01/14/2021 11:37 AM
2101226-019	LAI-C09-20210112	01/12/2021 1:30 PM	01/14/2021 11:37 AM
2101226-020	LAI-C10-20210112	01/12/2021 1:45 PM	01/14/2021 11:37 AM
2101226-021	LAI-C11-20210112	01/12/2021 2:00 PM	01/14/2021 11:37 AM

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

Original

Case Narrative

WO#: **2101226**
Date: **1/21/2021**

CLIENT: Libby Environmental
Project: Nisqually Place

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

Analytical Report

Work Order: **2101226**
Date Reported: **1/21/2021**

CLIENT: Libby Environmental
Project: Nisqually Place

Lab ID: 2101226-001 **Collection Date:** 1/12/2021 9:30:00 AM
Client Sample ID: **LAI-S01-20210112** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 31074		Analyst: TN
Arsenic	16.9	0.265		mg/Kg-dry	1	1/19/2021 3:19:29 PM
Lead	27.2	0.212		mg/Kg-dry	1	1/18/2021 4:47:37 PM
Sample Moisture (Percent Moisture)				Batch ID: R64696		Analyst: CH
Percent Moisture	29.1	0.500		wt%	1	1/14/2021 4:54:34 PM

Lab ID: 2101226-002 **Collection Date:** 1/12/2021 9:40:00 AM
Client Sample ID: **LAI-S02-20210112** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 31074		Analyst: TN
Arsenic	16.2	0.252		mg/Kg-dry	1	1/20/2021 2:30:10 PM
Lead	25.4	0.201		mg/Kg-dry	1	1/18/2021 5:15:24 PM
Sample Moisture (Percent Moisture)				Batch ID: R64696		Analyst: CH
Percent Moisture	24.8	0.500		wt%	1	1/14/2021 4:54:34 PM

Lab ID: 2101226-003 **Collection Date:** 1/12/2021 9:50:00 AM
Client Sample ID: **LAI-S03-20210112** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 31074		Analyst: TN
Arsenic	13.6	0.284		mg/Kg-dry	1	1/20/2021 2:35:44 PM
Lead	21.4	0.227		mg/Kg-dry	1	1/18/2021 6:16:36 PM
Sample Moisture (Percent Moisture)				Batch ID: R64696		Analyst: CH
Percent Moisture	35.7	0.500		wt%	1	1/14/2021 4:54:34 PM

Original

CLIENT: Libby Environmental
Project: Nisqually Place

Lab ID: 2101226-004 **Collection Date:** 1/12/2021 10:00:00 AM
Client Sample ID: **LAI-S04-20210112** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 31074		Analyst: TN
Arsenic	12.3	0.266		mg/Kg-dry	1	1/20/2021 2:41:18 PM
Lead	20.3	0.213		mg/Kg-dry	1	1/18/2021 6:22:10 PM
Sample Moisture (Percent Moisture)				Batch ID: R64696		Analyst: CH
Percent Moisture	24.7	0.500		wt%	1	1/14/2021 4:54:34 PM

Lab ID: 2101226-005 **Collection Date:** 1/12/2021 10:10:00 AM
Client Sample ID: **LAI-S05-20210112** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 31074		Analyst: TN
Arsenic	13.5	0.244		mg/Kg-dry	1	1/20/2021 2:46:51 PM
Lead	22.2	0.195		mg/Kg-dry	1	1/18/2021 6:27:43 PM
Sample Moisture (Percent Moisture)				Batch ID: R64696		Analyst: CH
Percent Moisture	24.6	0.500		wt%	1	1/14/2021 4:54:34 PM

CLIENT: Libby Environmental
Project: Nisqually Place

Lab ID: 2101226-006 **Collection Date:** 1/12/2021 10:20:00 AM
Client Sample ID: **LAI-S06-20210112** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 31074		Analyst: TN
Arsenic	14.2	0.281		mg/Kg-dry	1	1/20/2021 2:52:25 PM
Lead	24.9	0.225		mg/Kg-dry	1	1/18/2021 6:33:17 PM
Sample Moisture (Percent Moisture)				Batch ID: R64696		Analyst: CH
Percent Moisture	32.2	0.500		wt%	1	1/14/2021 4:54:34 PM

Lab ID: 2101226-007 **Collection Date:** 1/12/2021 10:30:00 AM
Client Sample ID: **LAI-S07-20210112** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 31074		Analyst: TN
Arsenic	19.7	0.281		mg/Kg-dry	1	1/20/2021 2:57:58 PM
Lead	28.1	0.225		mg/Kg-dry	1	1/18/2021 6:38:50 PM
Sample Moisture (Percent Moisture)				Batch ID: R64696		Analyst: CH
Percent Moisture	35.5	0.500		wt%	1	1/14/2021 4:54:34 PM

Lab ID: 2101226-008 **Collection Date:** 1/12/2021 10:40:00 AM
Client Sample ID: **LAI-S08-20210112** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 31074		Analyst: TN
Arsenic	16.1	0.299		mg/Kg-dry	1	1/20/2021 3:24:48 PM
Lead	26.5	0.239		mg/Kg-dry	1	1/18/2021 7:01:07 PM
Sample Moisture (Percent Moisture)				Batch ID: R64696		Analyst: CH
Percent Moisture	33.0	0.500		wt%	1	1/14/2021 4:54:34 PM

CLIENT: Libby Environmental
Project: Nisqually Place

Lab ID: 2101226-009 **Collection Date:** 1/12/2021 10:50:00 AM
Client Sample ID: **LAI-S09-20210112** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 31074		Analyst: TN
Arsenic	9.10	0.250		mg/Kg-dry	1	1/20/2021 3:30:21 PM
Lead	15.4	0.200		mg/Kg-dry	1	1/18/2021 7:06:40 PM
Sample Moisture (Percent Moisture)				Batch ID: R64696		Analyst: CH
Percent Moisture	25.9	0.500		wt%	1	1/14/2021 4:54:34 PM

Lab ID: 2101226-010 **Collection Date:** 1/12/2021 11:00:00 AM
Client Sample ID: **LAI-S10-20210112** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 31074		Analyst: TN
Arsenic	16.2	0.273		mg/Kg-dry	1	1/20/2021 3:35:55 PM
Lead	22.9	0.218		mg/Kg-dry	1	1/18/2021 7:12:14 PM
Sample Moisture (Percent Moisture)				Batch ID: R64696		Analyst: CH
Percent Moisture	33.5	0.500		wt%	1	1/14/2021 4:54:34 PM

CLIENT: Libby Environmental
Project: Nisqually Place

Lab ID: 2101226-011 **Collection Date:** 1/12/2021 11:30:00 AM
Client Sample ID: **LAI-C01-20210112** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 31074		Analyst: TN
Arsenic	6.24	0.222		mg/Kg-dry	1	1/20/2021 3:41:29 PM
Lead	4.91	0.178		mg/Kg-dry	1	1/18/2021 7:17:47 PM
Sample Moisture (Percent Moisture)				Batch ID: R64696		Analyst: CH
Percent Moisture	13.4	0.500		wt%	1	1/14/2021 4:54:34 PM

Lab ID: 2101226-012 **Collection Date:** 1/12/2021 11:45:00 AM
Client Sample ID: **LAI-C02-20210112** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 31074		Analyst: TN
Arsenic	19.0	0.252		mg/Kg-dry	1	1/20/2021 3:47:02 PM
Lead	23.0	0.201		mg/Kg-dry	1	1/18/2021 7:23:21 PM
Sample Moisture (Percent Moisture)				Batch ID: R64696		Analyst: CH
Percent Moisture	23.0	0.500		wt%	1	1/14/2021 4:54:34 PM

Lab ID: 2101226-013 **Collection Date:** 1/12/2021 12:00:00 PM
Client Sample ID: **LAI-C03-20210112** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 31074		Analyst: TN
Arsenic	22.9	0.295		mg/Kg-dry	1	1/20/2021 3:52:35 PM
Lead	33.9	0.236		mg/Kg-dry	1	1/18/2021 7:28:54 PM
Sample Moisture (Percent Moisture)				Batch ID: R64696		Analyst: CH
Percent Moisture	33.8	0.500		wt%	1	1/14/2021 4:54:34 PM

CLIENT: Libby Environmental
Project: Nisqually Place

Lab ID: 2101226-014 **Collection Date:** 1/12/2021 12:15:00 PM
Client Sample ID: **LAI-C04-20210112** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 31090		Analyst: CO
Arsenic	3.07	0.210		mg/Kg-dry	1	1/20/2021 4:14:52 PM
Lead	2.06	0.168		mg/Kg-dry	1	1/20/2021 4:14:52 PM
Sample Moisture (Percent Moisture)				Batch ID: R64696		Analyst: CH
Percent Moisture	8.98	0.500		wt%	1	1/14/2021 4:54:34 PM

Lab ID: 2101226-015 **Collection Date:** 1/12/2021 12:30:00 PM
Client Sample ID: **LAI-C05-20210112** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 31090		Analyst: CO
Arsenic	28.7	0.282		mg/Kg-dry	1	1/20/2021 4:53:51 PM
Lead	52.7	0.225		mg/Kg-dry	1	1/20/2021 4:53:51 PM
Sample Moisture (Percent Moisture)				Batch ID: R64696		Analyst: CH
Percent Moisture	30.1	0.500		wt%	1	1/14/2021 4:54:34 PM

CLIENT: Libby Environmental
Project: Nisqually Place

Lab ID: 2101226-016 **Collection Date:** 1/12/2021 12:45:00 PM
Client Sample ID: **LAI-C06-20210112** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 31090		Analyst: CO
Arsenic	13.9	0.234		mg/Kg-dry	1	1/20/2021 4:59:25 PM
Lead	6.92	0.187		mg/Kg-dry	1	1/20/2021 4:59:25 PM
Sample Moisture (Percent Moisture)				Batch ID: R64696		Analyst: CH
Percent Moisture	19.0	0.500		wt%	1	1/14/2021 4:54:34 PM

Lab ID: 2101226-017 **Collection Date:** 1/12/2021 1:00:00 PM
Client Sample ID: **LAI-C07-20210112** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 31090		Analyst: CO
Arsenic	12.6	0.250		mg/Kg-dry	1	1/20/2021 5:04:59 PM
Lead	14.8	0.200		mg/Kg-dry	1	1/20/2021 5:04:59 PM
Sample Moisture (Percent Moisture)				Batch ID: R64696		Analyst: CH
Percent Moisture	20.1	0.500		wt%	1	1/14/2021 4:54:34 PM

Lab ID: 2101226-018 **Collection Date:** 1/12/2021 1:15:00 PM
Client Sample ID: **LAI-C08-20210112** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 31090		Analyst: CO
Arsenic	8.07	0.229		mg/Kg-dry	1	1/20/2021 5:10:33 PM
Lead	7.61	0.183		mg/Kg-dry	1	1/20/2021 5:10:33 PM
Sample Moisture (Percent Moisture)				Batch ID: R64696		Analyst: CH
Percent Moisture	16.5	0.500		wt%	1	1/14/2021 4:54:34 PM

CLIENT: Libby Environmental
Project: Nisqually Place

Lab ID: 2101226-019 **Collection Date:** 1/12/2021 1:30:00 PM
Client Sample ID: **LAI-C09-20210112** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 31090		Analyst: CO
Arsenic	12.8	0.227		mg/Kg-dry	1	1/20/2021 5:16:07 PM
Lead	5.78	0.182		mg/Kg-dry	1	1/20/2021 5:16:07 PM
Sample Moisture (Percent Moisture)				Batch ID: R64696		Analyst: CH
Percent Moisture	17.3	0.500		wt%	1	1/14/2021 4:54:34 PM

Lab ID: 2101226-020 **Collection Date:** 1/12/2021 1:45:00 PM
Client Sample ID: **LAI-C10-20210112** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 31090		Analyst: CO
Arsenic	6.49	0.239		mg/Kg-dry	1	1/20/2021 5:21:40 PM
Lead	7.34	0.191		mg/Kg-dry	1	1/20/2021 5:21:40 PM
Sample Moisture (Percent Moisture)				Batch ID: R64696		Analyst: CH
Percent Moisture	16.3	0.500		wt%	1	1/14/2021 4:54:34 PM

Analytical Report

Work Order: **2101226**
Date Reported: **1/21/2021**

CLIENT: Libby Environmental
Project: Nisqually Place

Lab ID: 2101226-021 **Collection Date:** 1/12/2021 2:00:00 PM
Client Sample ID: **LAI-C11-20210112** **Matrix:** Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 31090		Analyst: CO
Arsenic	6.56	0.187		mg/Kg-dry	1	1/20/2021 5:38:24 PM
Lead	6.46	0.150		mg/Kg-dry	1	1/20/2021 5:38:24 PM
Sample Moisture (Percent Moisture)				Batch ID: R64707		Analyst: CH
Percent Moisture	1.07	0.500		wt%	1	1/15/2021 9:15:39 AM

Work Order: 2101226
CLIENT: Libby Environmental
Project: Nisqually Place

QC SUMMARY REPORT

Total Metals by EPA Method 6020B

Sample ID: **MB-31074** SampType: **MBLK** Units: **mg/Kg** Prep Date: **1/18/2021** RunNo: **64766**
Client ID: **MBLKS** Batch ID: **31074** Analysis Date: **1/18/2021** SeqNo: **1302720**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	0.160									

Sample ID: **LCS-31074** SampType: **LCS** Units: **mg/Kg** Prep Date: **1/18/2021** RunNo: **64766**
Client ID: **LCSS** Batch ID: **31074** Analysis Date: **1/18/2021** SeqNo: **1302721**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	22.6	0.160	20.00	0	113	80	120				

Sample ID: **2101226-001AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **1/18/2021** RunNo: **64766**
Client ID: **LAI-S01-20210112** Batch ID: **31074** Analysis Date: **1/18/2021** SeqNo: **1302724**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	58.7	0.212	26.52	27.17	119	75	125				

Sample ID: **2101226-001AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **1/18/2021** RunNo: **64766**
Client ID: **LAI-S01-20210112** Batch ID: **31074** Analysis Date: **1/18/2021** SeqNo: **1302725**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	51.3	0.211	26.32	27.17	91.8	75	125	58.66	13.3	20	

Sample ID: **MB-31074** SampType: **MBLK** Units: **mg/Kg** Prep Date: **1/18/2021** RunNo: **64766**
Client ID: **MBLKS** Batch ID: **31074** Analysis Date: **1/19/2021** SeqNo: **1303087**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.200									

Work Order: 2101226
CLIENT: Libby Environmental
Project: Nisqually Place

QC SUMMARY REPORT

Total Metals by EPA Method 6020B

Sample ID: **LCS-31074** SampType: **LCS** Units: **mg/Kg** Prep Date: **1/18/2021** RunNo: **64766**
Client ID: **LCSS** Batch ID: **31074** Analysis Date: **1/19/2021** SeqNo: **1303088**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	37.2	0.200	40.00	0	93.0	80	120				

Sample ID: **2101226-001AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **1/18/2021** RunNo: **64766**
Client ID: **LAI-S01-20210112** Batch ID: **31074** Analysis Date: **1/19/2021** SeqNo: **1303100**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	77.4	0.265	53.05	16.88	114	75	125				

Sample ID: **2101226-001AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **1/18/2021** RunNo: **64766**
Client ID: **LAI-S01-20210112** Batch ID: **31074** Analysis Date: **1/19/2021** SeqNo: **1303101**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	72.2	0.263	52.65	16.88	105	75	125	77.38	6.97	20	

Sample ID: **MB-31090** SampType: **MBLK** Units: **mg/Kg** Prep Date: **1/19/2021** RunNo: **64842**
Client ID: **MBLKS** Batch ID: **31090** Analysis Date: **1/20/2021** SeqNo: **1304058**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.198									
Lead	ND	0.159									

Sample ID: **LCS-31090** SampType: **LCS** Units: **mg/Kg** Prep Date: **1/19/2021** RunNo: **64842**
Client ID: **LCSS** Batch ID: **31090** Analysis Date: **1/20/2021** SeqNo: **1304059**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	37.0	0.192	38.46	0	96.1	80	120				
Lead	18.0	0.154	19.23	0	93.5	80	120				

Work Order: 2101226
CLIENT: Libby Environmental
Project: Nisqually Place

QC SUMMARY REPORT

Total Metals by EPA Method 6020B

Sample ID: **2101226-014AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **1/19/2021** RunNo: **64842**
Client ID: **LAI-C04-20210112** Batch ID: **31090** Analysis Date: **1/20/2021** SeqNo: **1304064**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	45.4	0.221	44.30	3.066	95.5	75	125				
Lead	22.2	0.177	22.15	2.059	90.7	75	125				

Sample ID: **2101226-014AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **1/19/2021** RunNo: **64842**
Client ID: **LAI-C04-20210112** Batch ID: **31090** Analysis Date: **1/20/2021** SeqNo: **1304065**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	44.6	0.220	43.94	3.066	94.4	75	125	45.37	1.81	20	
Lead	22.0	0.176	21.97	2.059	90.8	75	125	22.16	0.639	20	

Sample Log-In Check List

Client Name:	**LIBBY**	Work Order Number:	**2101226**
Logged by:	**Gabrielle Coeuille**	Date Received:	**1/14/2021 11:37:00 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	3.1

* 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

2101226

www.LibbyEnvironmental.com

Date: 1-13-21 Page: 1 of 2

Project Manager: Schilcutt

Project Name: Nisqually Place

Location: City, State: Lacey, WA

Collector: Date of Collection: 1-12-21

Email:

Client: Libby Environmental, Inc

Address:

City: State: Zip:

Phone: Fax:

Client Project #

	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	Pb+As Total		Field Notes
1	LAI-S01-20210112		0930	SOIL	4oz Jar												X			
2	LAI-S02-20210112		0940														X			
3	LAI-S03-20210112		0950														X			
4	LAI-S04-20210112		1000														X			
5	LAI-S05-20210112		1010														X			
6	LAI-S06-20210112		1020														X			
7	LAI-S07-20210112		1030														X			
8	LAI-S08-20210112		1040														X			
9	LAI-S09-20210112		1050														X			
10	LAI-S10-20210112		1100														X			
11	LAI-C01-20210112		1130														X			
12	LAI-C02-20210112		1145														X			
13	LAI-C03-20210112		1200														X			
14	LAI-C04-20210112		1215														X			
15	LAI-C05-20210112		1230														X			
16	LAI-C06-20210112		1245														X			
17	LAI-C07-20210112		1300	↓	↓												X			

Relinquished by: KPK Date / Time: 1/13/2021 1630
Received by: UPS Date / Time:

Relinquished by: UPS Date / Time:
Received by: Dawn Anderson Date / Time: 1/14/21 11:37

Relinquished by: Date / Time:
Received by: Date / Time:

Sample Receipt

	Y	N	
Good Condition?			
Cooler Temp.			°C
Sample Temp.			°C
Total Number of Containers			

Remarks: Smelter Protocol
Standard TAT

TAT: 24HR 48HR 5-DAY

Distribution: White - Lab, Yellow - Originator

Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Chain of Custody Record

2101226

www.LibbyEnvironmental.com

Date: 1-13-21 Page: 2 of 2

Client: Libby Environmental, Inc
Address:
City: State: Zip:
Phone: Fax:
Client Project #

Project Manager: S Chilcutt
Project Name: Nisqually Place
Location: City, State: Lacey, WA
Collector: Date of Collection: 1-12-21
Email:

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	Pb+As total		Field Notes
1 LAI-C08-20210112		1315	S	4oz Glass												X			
2 LAI-C09-20210112		1330	S	↓												X			
3 LAI-C10-20210112		1345	S													X			
4 LAI-C11-20210112		1400	S													X			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			

Relinquished by:	Date / Time	Received by:	Date / Time
[signature]	1/6/2021 1630	UPS	
UPS		[signature]	1/14/21 1137

Sample Receipt

Good Condition?	Y	N
Cooler Temp.		°C
Sample Temp.		°C
Total Number of Containers		

Remarks:
Standard TAT
Smelter Protocol

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

Libby Environmental, Inc.

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

January 28, 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 Nisqually Place Project located in Lacey, 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

Chain-of-Custody Record

LANDAU ASSOCIATES

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

Date 1/25/21
Page 1 of 1

Turnaround Time:
Standard
Accelerated 48 HR

Project Name NISQUALLY PLACE Project No. 196200I.010.011
Project Location/Event 9185 31ST AVE. NE LACEY, WA
Sampler's Name C. LARAMIE
Project Contact D. JOHNSON, D. JORGENSEN
Send Results To " " , " "

Testing Parameters

Sample I.D.	Date	Time	Matrix	No. of Containers	AB 3A's Only 6010, 6020, 6200 (SMELTER PLUME PROTOCOL)												Observations/Comments
LAI-C03-20210125	1/25/21	1430	Soil	1	X												
LAI-C05-20210125	1/25/21	1445	〃	〃	X												

Special Handling Requirements:

Shipment Method:

Stored on ice: Yes / No

___ 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 Sherry Chilcutt	Signature	Signature
Printed Name CODY LARAMIE	Printed Name Sherry Chilcutt	Printed Name	Printed Name
Company LAI	Company LAI	Company	Company
Date 1/25/21 Time 1515	Date 1-25-21 Time 1516	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
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@gmail.com

NISQUALLY PLACE PROJECT
Landau Associates
Libby Project # L210125-3
Date Received 1/25/2021
Time Received 3:16 PM

Received By SC

Sample Receipt Checklist

Chain of Custody

1. Is the Chain of Custody is 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)	1.2 °C		
8. Temperature of sample(s) (0°C to 8°C recommended)	4.4 °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. _____

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

Libby Environmental
Kodey Eley
3322 South Bay Road NE
Olympia, WA 98506

RE: Nisqually Place
Work Order Number 2101392

January 28, 2021

Attention Kodey Eley:

Fremont Analytical, Inc. received 2 sample(s) on 1/26/2021 for the analyses presented in the following report.

Sample Moisture (Percent Moisture)
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

CLIENT: Libby Environmental
Project: Nisqually Place
Work Order: 2101392

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2101392-001	LAI-C03-20210125	01/25/2021 2:30 PM	01/26/2021 9:28 AM
2101392-002	LAI-C05-20210125	01/25/2021 2:45 PM	01/26/2021 9:28 AM

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

Case Narrative

WO#: **2101392**
Date: **1/28/2021**

CLIENT: Libby Environmental
Project: Nisqually Place

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

Analytical Report

Work Order: **2101392**
Date Reported: **1/28/2021**

Client: Libby Environmental
Collection Date: 1/25/2021 2:30:00 PM
Project Nisqually Place
Lab ID: 2101392-001
Matrix: Soil
Client Sample ID: **LAI-C03-20210125**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 31172		Analyst CO
Arsenic	25.7	0.253		mg/Kg-dry	1	1/27/2021 5:16:14 PM
Lead	25.5	0.203		mg/Kg-dry	1	1/27/2021 5:16:14 PM
Sample Moisture (Percent Moisture)				Batch ID: R64922		Analyst RL
Percent Moisture	26.4	0.500		wt%	1	1/27/2021 10:03:56 AM

Analytical Report

Work Order: **2101392**
Date Reported: **1/28/2021**

Client: Libby Environmental
Collection Date: 1/25/2021 2:45:00 PM
Project Nisqually Place
Lab ID: 2101392-002
Matrix: Soil
Client Sample ID: **LAI-C05-20210125**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020B				Batch ID: 31172		Analyst CO
Arsenic	8.30	0.223		mg/Kg-dry	1	1/27/2021 5:39:02 PM
Lead	6.91	0.178		mg/Kg-dry	1	1/27/2021 5:39:02 PM
Sample Moisture (Percent Moisture)				Batch ID: R64922		Analyst RL
Percent Moisture	16.2	0.500		wt%	1	1/27/2021 10:03:56 AM

Work Order: 2101392
CLIENT: Libby Environmental
Project: Nisqually Place

QC SUMMARY REPORT

Total Metals by EPA Method 6020B

Sample ID **MB-31172** SampType: **MBLK** Units **mg/Kg** Prep Date: **1/27/2021** RunNo: **64948**
Client ID: **MBLKS** Batch ID: **31172** Analysis Date: **1/27/2021** SeqNo: **1306518**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.194									
Lead	ND	0.155									

Sample ID **LCS-31172** SampType: **LCS** Units **mg/Kg** Prep Date: **1/27/2021** RunNo: **64948**
Client ID: **LCSS** Batch ID: **31172** Analysis Date: **1/27/2021** SeqNo: **1306519**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	37.2	0.197	39.37	0	94.5	80	120				
Lead	18.3	0.157	19.69	0	92.9	80	120				

Sample ID **2101392-001AMS** SampType: **MS** Units **mg/Kg-dry** Prep Date: **1/27/2021** RunNo: **64948**
Client ID: **LAI-C03-20210125** Batch ID: **31172** Analysis Date: **1/27/2021** SeqNo: **1306522**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	72.0	0.265	53.05	25.67	87.3	75	125				
Lead	43.6	0.212	26.53	25.47	68.2	75	125				S

NOTES:
S - Outlying spike recovery(ies) observed due to high sample concentration. Spike recoveries in this range may not be meaningful.

Sample ID **2101392-001AMSD** SampType: **MSD** Units **mg/Kg-dry** Prep Date: **1/27/2021** RunNo: **64948**
Client ID: **LAI-C03-20210125** Batch ID: **31172** Analysis Date: **1/27/2021** SeqNo: **1306523**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	69.6	0.267	53.47	25.67	82.2	75	125	71.99	3.34	20	
Lead	40.9	0.214	26.73	25.47	57.9	75	125	43.57	6.22	20	S

NOTES:
S - Outlying spike recovery(ies) observed due to high sample concentration. Spike recoveries in this range may not be meaningful.

Sample Log-In Check List

Client Name:	**LIBBY**	Work Order Number:	**2101392**
Logged by:	**Gabrielle Coeuille**	Date Received:	**1/26/2021 9:28:00 AM**

Chain of Custody

1.	Is Chain of Custody complete?	Yes	☑	N	☐	Not Present ☐
2.	How was the sample delivered?	UPS				

Log In

3.	Coolers are present?	Yes	☑	N	☐	NA ☐
4.	Shipping container/cooler in good condition?	Yes	☑	N	☐	
5.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes	☐	N	☐	Not Present ☑
6.	Was an attempt made to cool the samples?	Yes	☑	N	☐	NA ☐
7.	Were all items received at a temperature of >2°C to 6°C *	Yes	☑	N	☐	NA ☐
8.	Sample(s) in proper container(s)?	Yes	☑	N	☐	
9.	Sufficient sample volume for indicated test(s)?	Yes	☑	N	☐	
10.	Are samples properly preserved?	Yes	☑	N	☐	
11.	Was preservative added to bottles?	Yes	☐	N	☑	NA ☐
12.	Is there headspace in the VOA vials?	Yes	☐	N	☐	NA ☑
13.	Did all samples containers arrive in good condition(unbroken)?	Yes	☑	N	☐	
14.	Does paperwork match bottle labels?	Yes	☑	N	☐	
15.	Are matrices correctly identified on Chain of Custody?	Yes	☑	N	☐	
16.	Is it clear what analyses were requested?	Yes	☑	N	☐	
17.	Were all holding times able to be met?	Yes	☑	N	☐	

Special Handling (if applicable)

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

Person Notified: _____ Date _____

By Whom: _____ Via: ☐ eMail ☐ Phon ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

Item #	Temp ºC
Sample 1	0.5

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

2101392

www.LibbyEnvironmental.com

Date: 1-25-21 Page: 1 of 1

Client: Libby Environmental, Inc
Address:
City: State: Zip:
Phone: Fax:
Client Project # L210125-3

Project Manager: Kodey Eley
Project Name: N. Squally Place
Location: City, State:
Collector: Date of Collection: 1-25-21
Email:

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	Pb+As L210160		Field Notes
1 LAI-C03-20210125		1430	S	4oz Jar												X			
2 LAI-C05-20210125		1445	S	4oz Jar												X			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
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15																			
16																			
17																			

Relinquished by:	Date / Time	Received by:	Date / Time
Melissa Hyt	1/25/21 16:19	UPS	
Relinquished by: UPS	Date / Time	Received by:	Date / Time
		1/26/21 @ 0928	
Relinquished by:	Date / Time	Received by:	Date / Time

Sample Receipt

Good Condition?	Y	N
Cooler Temp.		°C
Sample Temp.		°C
Total Number of Containers		

Remarks:

TAT: 24HR (48HR) 5-DAY

LEGAL ACTION CLAUSE: *In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.*

Distribution: White - Lab, Yellow - Originator