Technical Memorandum

TO: Craig McKinney, Emerald Kalama Chemical LLC
Sloane Wildman, Babst Calland

FROM: Ken Reid, LEG; Chip Halbert, PE

DATE: December 21, 2022

RE: **Burnt Ridge Closure Summary**
Emerald Kalama Chemical/Fire Mountain Farms
Fire Mountain Farms Storage Units
Onalaska, Washington
Landau Project No. 0066045.110.114

Introduction

Landau Associates, Inc. (Landau) was retained by Perkins Coie LLP (Perkins) on behalf of Emerald Kalama Chemical, LLC (Emerald) to provide technical and environmental support services related to Administrative Order No. 10938 issued by the Washington State Department of Ecology (Ecology) to Emerald and Fire Mountain Farms, Inc. (FMF; Ecology 2014) and the Agreement for Conditional Compliance with Ecology Administrative Order No. 10938 During Judicial Review (Agreement) between Ecology, Emerald, and FMF, dated June 3, 2016 (Ecology 2016). On August 3, 2021, Emerald was acquired by LANXESS Corporation. On October 3, 2022, the support Perkins was providing to Emerald was transferred to Babst, Calland, Clements and Zomnir, P.C. and Landau was retained to provide technical and environmental support services.

This technical memorandum provides a summary of closure activities for the Burnt Ridge storage facility (Burnt Ridge) operated by FMF. From June 23, 2020 through November 28, 2022, FMF completed the facility's closure in accordance with the Final Closure Plan (Landau 2020), which was prepared for all three facilities as stipulated in the Agreement. Closure activities for Burnt Ridge are described in the following sections and consisted of water removal; mixed-material solids dewatering, removal, and disposal; decontamination; and collection of confirmation samples.

Background

The Burnt Ridge facility is in Lewis County located at 856 Burnt Ridge Road, in Onalaska, Washington (Figure 1). The storage unit is contained by an embankment constructed into sloping, natural terrain that stored mixed material composed of municipal wastewater treatment plant-derived biosolids and industrial wastewater biological solids (IWBS). The mixed material contains biosolids from municipal wastewater treatment plants and IWBS generated at Emerald's wastewater treatment plant in Kalama, Washington. Ecology designated the IWBS and mixed material at FMF as dangerous waste in 2014 based on the Resource Conservation and Recovery Act's derived-from rule. Mixed material at the FMF facilities was designated as U019- and U220-listed dangerous waste.

Emerald and FMF submitted delisting petitions to the US Environmental Protection Agency (EPA) and Ecology in 2018, which were subsequently approved by both agencies on April 8, 2020. The delisting approvals allow for disposal of the mixed material in a Washington State Subtitle D landfill. The EPA approved a total volume of 4,700 cubic yards (cy) of mixed material at Burnt Ridge.

As stated in the Closure Plan, the storage unit is approximately square, as shown on Figure 2 and 3, with approximate dimensions of 220 feet (ft) on each side and a surface area at the top of the storage unit of about 48,000 square ft. The level-top embankment matches existing grades on the north side, with perimeter berms on the south, east, and west sides that extend above the surrounding grades. As shown on Figure 2, the storage unit was designed with internal slopes of 3 units horizontal to 1 unit vertical (3H:1V), perimeter berm external slopes of 2H:1V, and a depth of approximately 14 ft. According to the design drawing, the storage unit is lined with Claymax 600CL geosynthetic clay liner (GCL) material manufactured by Colloid Environmental Technologies Company. For the purposes of volume estimates, Landau assumes that approximately 12 inches of soil ("soil cap") was placed on top of the liner as part of typical manufacturer recommendations for GCL installations. The total storage unit volume, including 18 inches of freeboard, is approximately 3 million gallons.

The storage unit contains mixed material and accumulated precipitation. Landau took measurements of the depth to the mixed material surface below the water level in October 2017 (Landau 2017b). Measurements were collected in a grid at 23 locations across the storage unit. Based on these measurements and the storage unit design drawings, the estimated average mixed-material thickness was 2 ft. Given this thickness, the volume of mixed material was estimated to be approximately 3,000 cy. As discussed below, the actual volume of mixed material removed from the storage unit was 26 percent higher than originally estimated.

Mixed-Material and Water Removal

Due to unexpected mixed-material grain-size variations at depth within the Burnt Ridge storage unit, three different phases of work (2020, 2021, and 2022) were necessary to remove the accumulated precipitation and mixed material. Each of these phases of work is discussed separately, by year, below.

2020

The first phase of water and mixed-material removal work occurred in 2020. In accordance with the Closure Plan, 842,983 gallons of accumulated precipitation was trucked from the storage unit to the Emerald Kalama plant for treatment between June 23, 2020 and August 18, 2020. Once the storage unit was drained to the desired level, mixed-material removal commenced by means of a large-scale centrifuge operated by Synagro Technologies between December 2, 2020 and December 28, 2020. Mixed material was removed using an FMF-operated dredge, pumped to a polymer mix tank where coagulants and flocculants were added, and then processed through two centrifuges running in

parallel at rates up to 200 gallons per minute each. Filtrate water from the centrifuge was recirculated back to the unit. A photograph of the dredge and centrifuge is provided in Attachment 1. The centrifuge was stopped once the influent mixed-material solids content was less than 3 percent, which is the limit of the operable range for that equipment. A total of 1,516 tons (approximately 1,799 cy) of dewatered mixed material was removed during this first phase of dewatering with a significant amount of mixed material remaining in the storage unit.

After the necessary cessation of centrifugal mixed-material dewatering, a review of alternative dewatering technologies was conducted, and a belt filter press (BFP) with a submerged intake pump (rather than a dredge) was selected with Ecology consultation and approval. This dewatering technology would be implemented in the second phase of closure work to be conducted in 2021.

2021

The second phase of water and mixed-material removal work occurred in 2021 and, in accordance with the Closure Plan, 1,732,362 gallons of accumulated precipitation was trucked from the storage unit to the Emerald Kalama plant for treatment between March 8, 2021 and August 12, 2021. Once the storage unit was drained to the desired level, mixed-material removal commenced by means of a large-scale BFP. Between September 2, 2021 and October 14, 2021, mixed material was removed using FMF-operated pumps to a polymer mix tank where coagulants and flocculants were added, and then processed through the BFP at rates up to 105 gallons per minute. Filtrate water from the BFP was pumped through a series of frac and weir tanks to remove suspended sediment and the clarified water was sent to the Emerald Kalama plant for treatment. The BFP work was stopped when the mixed material remaining in the unit became too coarse to be pumped; a review and approval of final material removal alternatives would be required before the third and final phase of closure work could be conducted in 2022. A total of 715 tons (approximately 848 cy) of dewatered mixed material was removed during the second phase of dewatering. A total of 363,843 gallons of BFP process water was trucked to the Emerald Kalama plant for treatment. Photographs of the belt filter press are provided in Attachment 1.

After an evaluation of alternative dewatering technologies for the coarser mixed material that could not be pumped, allowing the mixed material to dry during the late spring and summer of 2022 and then manual removal (dig-and-haul) was selected as the most efficient and expedient method for the final stage mixed-material removal. Ecology approved manual removal for this final, third phase of closure work.

Ecology approved the installation of a 30-mil geosynthetic membrane to separate the pending wet season rainwater from the water already in contact with the mixed material, which must be managed as a dangerous waste. Rainfall accumulating on top of the rain cover was approved for discharge to the adjacent pasture (Reid 2021). A photograph of the installed rain cover is included in Attachment 1.

2022

The third phase of water and mixed-material removal work occurred in 2022 and, in accordance with the Closure Plan, 1,298,091 gallons of accumulated precipitation in contact with the mixed material (underneath the rainfall liner) was pumped through a series of frac and weir tanks to remove suspended sediment and the clarified water was sent to the Emerald Kalama plant for treatment between June 1, 2022 and November 21, 2022. Once the storage unit was completely drained so that no standing water was present, the mixed material was allowed to dry out until no free water was present before manual removal commenced. Mixed-material removal started in the northwestern corner and proceeded across the storage unit using different pieces of hauling/loading equipment for each stage to minimize tracking mixed material out of the storage unit (i.e., "track out"). At the end of the removal process, the minimal amount of mixed-material track out was removed by hand; the completeness of track out removal was confirmed by Ecology during its August 10, 2022 site visit. Photographs of the dig-and-haul process are provided in Attachment 1.

Due to a significant shortage of LeMay containers during the summer of 2022, all parties involved (FMF, Emerald, Ecology, and Landau) became concerned that the mixed-material removal process was not proceeding fast enough, and a late summer rain event could complicate or even possibly prohibit completion of the project during the 2022 dry season. To minimize this risk, Ecology approved the use of a concrete slab adjacent to FMF's hay shed as a temporary upland staging area to place mixed material prior to being loaded into LeMay containers, as shown on Figure 3. The concrete slab area used as an upland solids staging area is surrounded by concrete blocks and included two stormwater catch basins, the inlet and outlet pipes of which were plugged to prevent stormwater from leaving the slab area. Ecology's August 18, 2022 email (Gould 2022) approving of the use of this staging area included the requirements that the slab and stormwater catch basins be power-washed, all water and solids removed, and confirmation water samples be collected from both catch basins and analyzed for benzene and toluene, as discussed below.

Between August 1, 2022 and September 13, 2022, all remaining mixed material was removed from the Burnt Ridge storage unit, including a significant portion of the soil cap (discussed below). A total of 1,057 tons (approximately 1,125 cy) of dewatered mixed material was removed during the third and final phase of dewatering.

During all three phases of mixed-material removal at Burnt Ridge, mixed material was loaded into plastic-lined shipping containers mounted on flatbed trailers provided and transported by LeMay Enterprises, Inc. (LeMay). LeMay is Lewis County's designated solid waste hauler and the project was required to use them for all mixed-material transport. FMF cleaned any spilled mixed material from the sides and top of each container and each container was then covered before being transported off site. LeMay hauled 129 containers to the Centralia Rail Yard where containers were transferred onto rail cars and transported to the Roosevelt Landfill in Roosevelt, Washington for final disposal.

The density (weight per unit volume) of the dewatered mixed material was measured several times during each phase of removal. These density measurements were used to calculate the approximate volume of mixed material hauled by LeMay. The total volume removed from Burnt Ridge was approximately 3,772 cy; which is below the EPA-approved volume of 4,700 cy.

After decontamination and removal of the frac and weir tanks used to remove suspended sediment and the clarified water was sent to the Emerald Kalama plant for treatment, Ecology made a final site visit on December 12, 2022 and confirmed that all process water and mixed material had been removed from the site.

Confirmation Sampling

During the third phase of manual mixed-material removal, most of the soil cap throughout the central portion of the storage unit (Figure 3; columns B, C, D, and E, rows 2 through 5) could not easily be segregated from the mixed material by the manual means employed and, as a result, was removed and incorporated into the material hauled to landfill. Portions of the geosynthetic liner in this central area of the storage unit were damaged such that the underlying soil was exposed. The damaged liner was pointed out to and observed by Ecology and, following discussion of the confirmation sampling process, the exposed subgrade below the liner was specifically identified for confirmation sample collection, as discussed below.

Landau collected 11 soil samples from the bottom of the Burnt Ridge storage unit on September 16, 2022. As shown on Figure 3 and as discussed in Section 2.2.1 of the Closure Plan (Landau 2020), these 11 confirmation sampling locations were determined using the same methods described in the Waste Characterization Plan for sampling mixed material (Landau 2017a). The specific portion of the subgrade material sampled within each of the 11 cells was selected in the field following Ecology concurrence.

Confirmation soil samples were collected in the field by EPA Method 5035A and placed in a cooler on ice and delivered under standard chain-of-custody procedures to Eurofins/TestAmerica in Fife, Washington for analysis. Samples were analyzed for benzene and toluene by EPA Method 8260D with a 3-day turnaround time. Copies of the laboratory analytical reports are provided in Attachment 2. Selected photographs of some of the sampling locations are provided in Attachment 1.

As discussed above, Ecology's approval of the use of a temporary mixed-material staging area included the requirement that the concrete slab and stormwater catch basins be power-washed and all rinse water transported to Emerald Kalama for treatment. Following this cleaning process, confirmation water samples were collected from each of the two plugged catch basins (Figure 3). Samples were placed in a cooler on ice and delivered under standard chain-of-custody procedures to Eurofins/TestAmerica in Fife, Washington for analysis. Samples were analyzed for benzene and toluene by EPA Method 8260D with a 10-day turnaround time. Copies of the laboratory analytical

reports are provided in Attachment 2. Photographs of the sampling locations are provided in Attachment 1.

Confirmation Sampling Results

Analytical results of both the soil and water confirmation samples are provided in Tables 1 and 2, respectively. Results were compared to their respective Model Toxics Control Act (MTCA) Method A cleanup levels, which are the closure standards set forth in the Closure Plan.

Analytical results for the 11 soil confirmation samples collected from the base of the storage unit (Figure 3) were below the MTCA Method A soil cleanup levels for both benzene and toluene (Table 1). Toluene was detected in six of the 11 samples at concentrations significantly below the MTCA Method A soil cleanup level and benzene was not detected above the laboratory reporting limit. The benzene reporting limit for 1 of the 11 samples (FMF-BR-C5) was slightly elevated due to matrix interference encountered by the laboratory while running the analysis, which required a dilution. The required dilution resulted in an elevated reporting limit slightly above the MTCA Method A cleanup level for benzene; however, based on results from the other 10 samples in which benzene was not detected and reporting limits were below the MTCA Method A cleanup level, the sampling results collectively demonstrate that neither benzene nor toluene was present at concentrations exceeding MTCA Method A soil cleanup levels.

Analytical results for the two water samples collected from the catch basins located in the temporary upland solids staging area (Figure 3) are provided in Table 2. Benzene and toluene were not detected above their respective laboratory reporting limits. These sampling results support the conclusion that the staging area controls were effective at preventing the release of liquids into the stormwater system.

These results demonstrate compliance with conditions for closure of Burnt Ridge as a dangerous waste storage unit.

Use of This Technical Memorandum

This technical memorandum has been prepared for the exclusive use of Emerald and applicable regulatory agencies for specific application to the Burnt Ridge storage unit closure project. No other party is entitled to rely on the information, conclusions, and recommendations included in this document without the express written consent of Landau. 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 Landau, shall be at the user's sole risk. Landau warrants that within the limitations 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. Landau makes no other warranty, either express or implied.

If you have any questions regarding the information provided in this technical memorandum, please contact the undersigned.

LANDAU ASSOCIATES, INC.

Ken Reid, LEG
Associate

Chip Halbert, PE
Chief Executive Officer

KJR/EHI/CPH/ccy
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References

Ecology. 2014. Administrative Order No. 10938 In the Matter of an Administrative Order Against Emerald Kalama Chemical, LLC and Fire Mountain Farms, Inc. Washington State Department of Ecology. September 11. Bates: EKC006135-EKC006143.

Ecology. 2016. Agreement for Conditional Compliance with Ecology Administrative Order No. 10938 During Judicial Review. Washington State Department of Ecology. June 3. Bates: EKC022878-EKC022888.

Gould, G. 2022. "Re: FMF Solids Stage Area Alternatives." From Gregory Gould, Solid Waste Management, Industrial Section, Washington State Department of Ecology, to Ken Reid, Associate, Landau Associates, Inc. August 18.

Landau. 2017a. Revision 3: Waste Characterization Plan, Fire Mountain Farms Mixed Material Storage Units, Lewis County, Washington. Landau Associates, Inc. July 27.

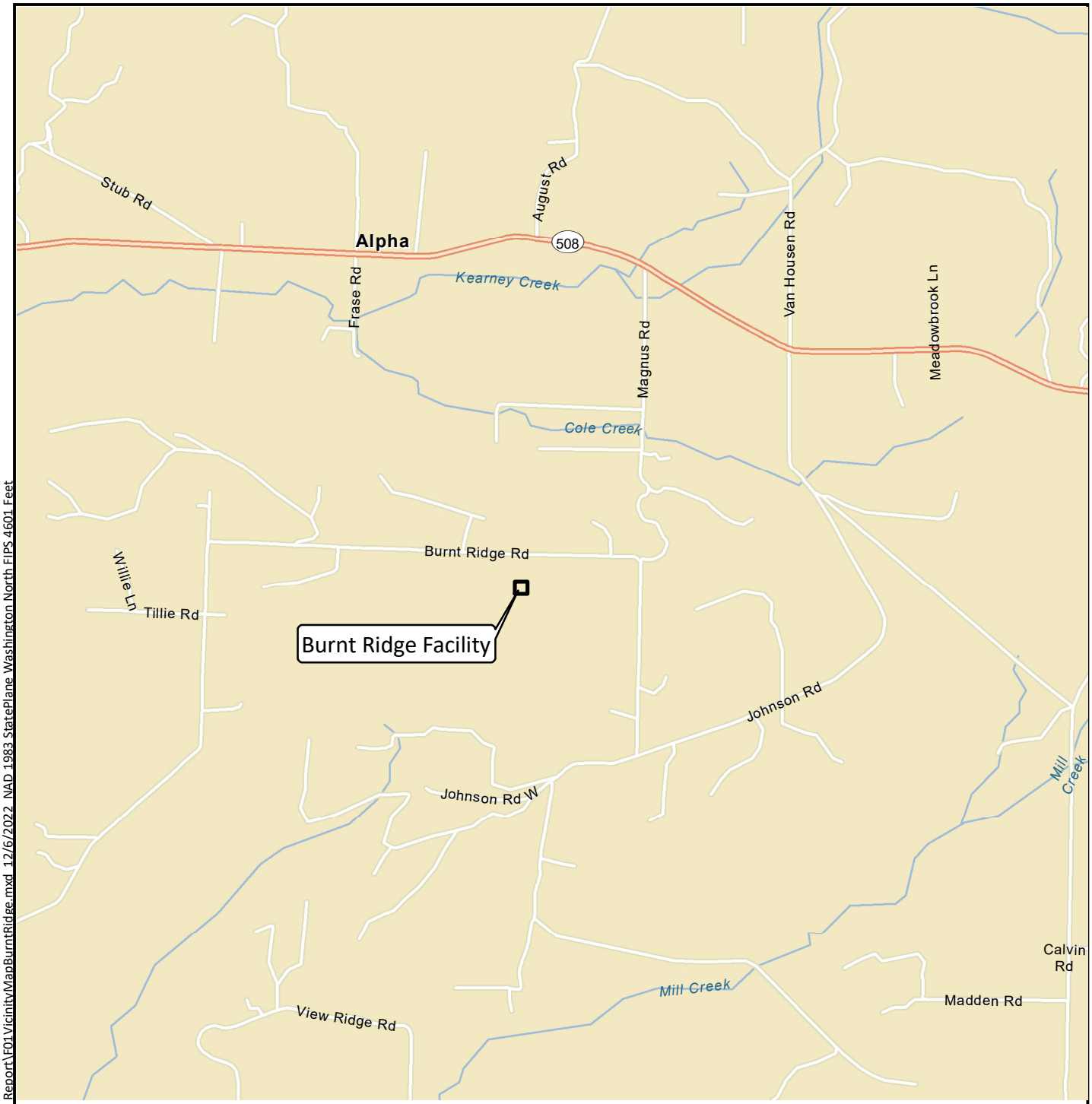
Landau. 2017b. Waste Characterization Report, Fire Mountain Farms Burnt Ridge Storage Unit, Lewis County, Washington. Landau Associates, Inc. November 29.

Landau. 2020. Final Closure Plan, Fire Mountain Farms, Inc. Storage Units, Kalama, Washington. Landau Associates, Inc. August 12.

Reid, K. 2021. "Re: Burnt Ridge Rainwater Liner Proposal." From Ken Reid, Associate, Landau Associates, Inc., to Greg Gould, Solid Waste Management, Industrial Section, Washington State Department of Ecology. October 29.

Attachments

Table 1: Soil Analytical Results
Table 2: Decontamination Water Analytical Results
Figure 1: Burnt Ridge Vicinity Map
Figure 2: Burnt Ridge Storage Unit Design
Figure 3: Burnt Ridge Storage Unit Sampling Locations
Attachment 1: Burnt Ridge Closure Completion Photographs
Attachment 2: Laboratory Analytical Reports



N

0 0.5 1

Miles

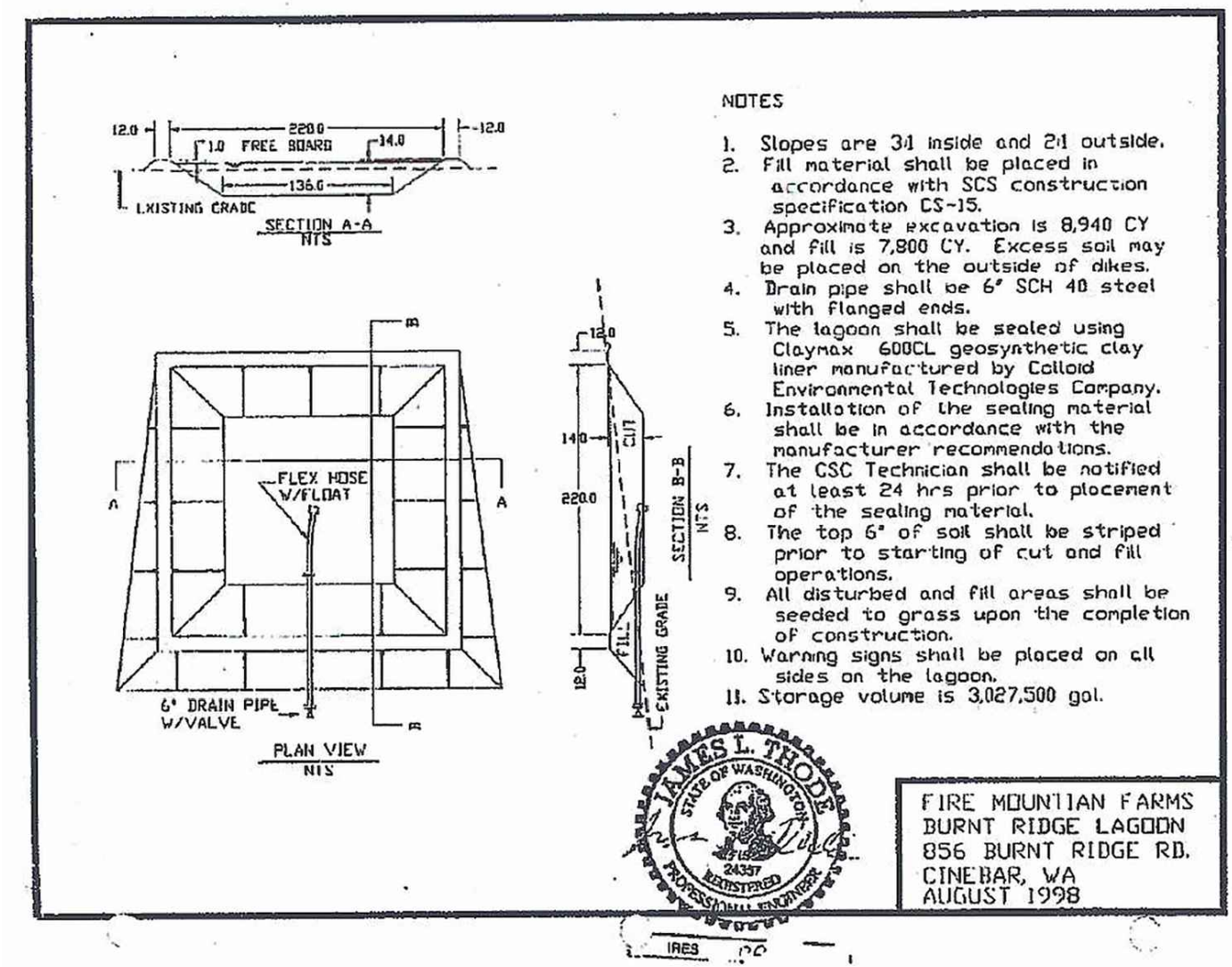
Data Source: Esri.

G:\Projects\066\045\110\114\Burnt Ridge Closure Report\F01VicinityMapBurntRidge.mxd 12/6/2022 NAD 1983 StatePlane Washington North FIPS 4601 Feet

LANDAU ASSOCIATES

Emerald Kalama Closure Report	**Burnt Ridge Vicinity Map**	Figure 1

Burnt Ridge Lagoon



Source: Fire Mountain Farms Inc.

Emerald Kalama Closure Report	**Burnt Ridge Storage Unit Design**	Figure 2

LANDAU ASSOCIATES

Legend

- Stormwater Sampling Location
- A1 Sampling Grid
- Grab Sampling Location

0 60 120

Feet

Notes

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

Data Source: Esri World Imagery

G:\Projects\066\045\110\114\Burnt Ridge Closure Report\F03BRSoilCapSampling.mxd 12/13/2022 NAD 1983 StatePlane Washington South FIPS 4602 Feet

LANDAU ASSOCIATES

Emerald Kalama Closure Report	**Burnt Ridge Storage Unit Sampling Locations**	Figure 3

Table 1
Soil Analytical Results
Burnt Ridge Facility
Onalaska, Washington

Analyte	MTCA Method A Cleanup Level for Unrestricted Uses	Sampling Location, Laboratory SDG, Sampling Date										
		FMF-BR-A2 580-118014-1 9/16/2022	FMF-BR-A4 580-118014-1 9/16/2022	FMF-BR-A5 580-118014-1 9/16/2022	FMF-BR-A6 580-118014-1 9/16/2022	FMF-BR-B3 580-118014-1 9/16/2022	FMF-BR-B4 580-118014-1 9/16/2022	FMF-BR-C5 580-118014-1 9/16/2022	FMF-BR-E1 580-118014-1 9/16/2022	FMF-BR-E6 580-118014-1 9/16/2022	FMF-BR-F1 580-118014-1 9/16/2022	FMF-BR-F6 580-118014-1 9/16/2022
Volatiles (mg/kg; SW-846 8260D)												
Benzene	0.03	0.0014 U	0.0017 U	0.0012 U	0.0017 U	0.0012 U	0.0012 U	0.064 U (a)	0.0013 U	0.0012 U	0.0013 U	0.0012 U
Toluene	7	**0.0049**	**0.0024**	**0.0028**	0.0017 U	**0.0012**	0.0012 U	0.064 U	0.0013 U	**0.0015**	**0.0026**	0.0012 U

Notes:

Bold text indicates detected analyte**.**

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

(a) The laboratory indicated the sample required dilution due to matrix interference; an elevated reporting limit is provided.

Acronyms/Abbreviations:

mg/kg = milligrams per kilogram

MTCA = Model Toxics Control Act

SDG = sample delivery group

Table 2
Decontamination Water Analytical Results
Burnt Ridge Facility
Onalaska, Washington

Analyte	MTCA Method A Cleanup Level	Sampling Location, Laboratory SDG, Sampling Date, Sample Type		
		FMF-CB-NORTH		FMF-CB-SOUTH
		580-118222-1 9/23/2022 N	580-118222-1 9/23/2022 FD	580-118222-1 9/23/2022 N
Volatiles (µg/L; SW-846 8260D)				
Benzene	5	1.0 U	1.0 U	1.0 U
Toluene	1,000	1.0 U	1.0 U	1.0 U

Notes:

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

Acronyms/Abbreviations:

FD = field duplicate
µg/L = micrograms per liter
MTCA = Model Toxics Control Act
N = primary sample
SDG = sample delivery group

ATTACHMENT 1

Burnt Ridge Closure Completion Photographs

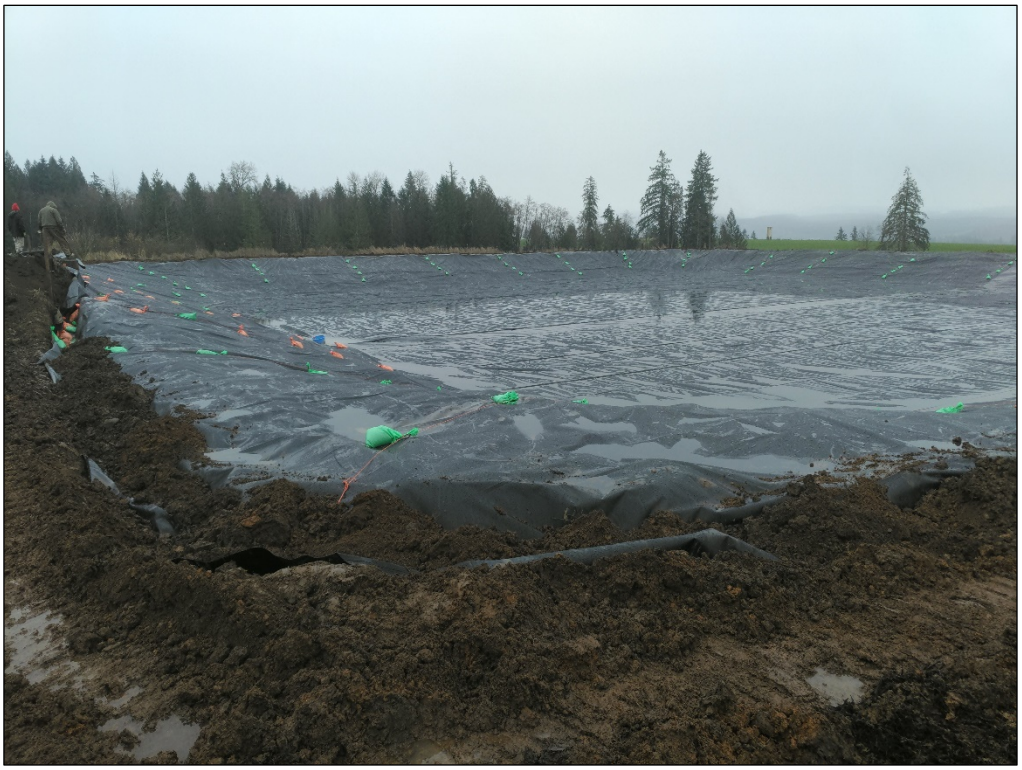
1. 2020: FMF dredge in foreground, centrifuge in background, looking north.

2. 2021: Belt filter press setup.

3. 2021: Belt filter press in operation.

4. 2021: Belt filter press in operation.

5. 2021: Belt filter press – loading LeMay container.



6. 2021: Rain cover installed.

7. 2022: Mixed-material dig excavation, looking southwest.

8. 2022: Haul road to conveyor, looking east.

9. 2022: Mixed material temporarily staged on dump slab prior to being loaded onto conveyor.

10. 2022: Mixed material being loaded on conveyor.

11. 2022: Mixed material conveyored into LeMay containers.

12. 2022: Mixed material removed, looking southeast.

13. 2022: Confirmation sample A5, looking south.

14. 2022: Confirmation sample B4, looking northwest.

15. 2022: Confirmation sample C5, looking east.

16. 2022: Liner exposed.

17. 2022: Damaged geosynthetic liner.

18. 2022: Dump slab loading area (cleaned), looking south.

19. 2022: Dump slab truck loading area (cleaned), looking north.

20. 2022: Upland solids staging area, FMF north catch basin after cleaning.

21. 2022: Upland solids staging area, FMF north catch basin sampling location after cleaning, looking south.

22. 2022: Upland solids staging area, FMF south catch basin sampling location after cleaning, looking west.

23. 2022: Upland solids staging area, FMF south catch basin after cleaning.

ATTACHMENT 2

Laboratory Analytical Reports

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-118014-1
Client Project/Site: burnt Ridge Road, Onalaska WA

For:
Landau & Associates, Inc.
155 NE 100 ST
Suite 302
Seattle, Washington 98125

Attn: Evelyn Ives

Authorized for release by:
9/23/2022 5:33:56 PM

Sheri Cruz, Project Manager I
(253)922-2310
Sheri.Cruz@et.eurofinsus.com

Table of Contents

Job ID: 580-118014-1

Laboratory: Eurofins Seattle

Narrative

Job Narrative
580-118014-1

Comments
Trip Blank was listed on COC but not received. No analyses were logged for this sample.

Receipt
The samples were received on 9/17/2022 9:35 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.3º C.

Receipt Exceptions
Sample containers were not received for the following sample.Trip (580-118014-12) The client is aware and requested we cancel analysis on this sample.

GC/MS VOA
Method 8260D: The following sample was diluted due to the nature of the sample matrix: FMF-BR-C5 (580-118014-7). Elevated reporting limits (RLs) are provided.

Method 8260D: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with analytical batch 570-265985. The laboratory control sample (LCS) was performed in duplicate (LCSD) to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Definitions/Glossary

Client: Landau & Associates, Inc.
Project/Site: burnt Ridge Road, Onalaska WA

Job ID: 580-118014-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Sample Summary

Client: Landau & Associates, Inc.
Project/Site: burnt Ridge Road, Onalaska WA

Job ID: 580-118014-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-118014-1	FMF-BR-A6	Solid	09/16/22 15:20	09/17/22 09:35
580-118014-2	FMF-BR-A5	Solid	09/16/22 15:25	09/17/22 09:35
580-118014-3	FMF-BR-A4	Solid	09/16/22 15:30	09/17/22 09:35
580-118014-4	FMF-BR-A2	Solid	09/16/22 15:40	09/17/22 09:35
580-118014-5	FMF-BR-B4	Solid	09/16/22 15:50	09/17/22 09:35
580-118014-6	FMF-BR-B3	Solid	09/16/22 16:00	09/17/22 09:35
580-118014-7	FMF-BR-C5	Solid	09/16/22 16:10	09/17/22 09:35
580-118014-8	FMF-BR-E6	Solid	09/16/22 16:20	09/17/22 09:35
580-118014-9	FMF-BR-E1	Solid	09/16/22 16:30	09/17/22 09:35
580-118014-10	FMF-BR-F6	Solid	09/16/22 16:40	09/17/22 09:35
580-118014-11	FMF-BR-F1	Solid	09/16/22 16:50	09/17/22 09:35

Chain-of-Custody Record

LANDAU ASSOCIATES

- [x] North Seattle (206) 631-8660
- [ ] Tacoma (253) 926-2493
- [ ] Olympia (360) 791-3178
- [ ] Spokane (509) 327-9737
- [ ] Portland (503) 542-1080

Date 9/16/22

Page 1 of 1

Turnaround Time: Standard ____ Accelerated 3-day

Project Name EMF Project No. 060045

Project Location/Event Burnt Ridge Rd., Onaleska WA

Sampler's Name Ken Reid

Project Contact " ", Evelyn Ives

Send Results To " " " ", Kristi Shultz

Special Handling Requirements: NG

Shipment Method: LAI

Stored on ice: (Yes) No

Sample I.D.	Date	Time	Matrix	No. of Containers	VOC 8260D Report Benzene & Toluene ONLY	Testing Parameters	Observations/Comments
EMF-BR-A6	9/16/22	1520	Soil	4	X		
EMF-BR-A5		1525			X		
EMF-BR-A4		1530			X		
EMF-BR-A2		1540			X		
EMF-BR-B4		1550			X		
EMF-BR-B3		1600			X		
EMF-BR-C5		1610			X		
EMF-BR-E6		1620			X		
EMF-BR-E1		1630			X		
EMF-BR-F6		1640			X		
EMF-BR-F1		1650		4	X		
Trip			HCl	1	X		

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 ____

Therm. ID: A3 Cor: 2.3 ° Unc: 1.7 °

Cooler Dsc: LB

Packing: Bub

Cust. Seal: Yes ___ No ___

Blue Ice (Wet) Dry, None

FedEx: ____

UPS: ____

Lab Cour: ____

Other: CD

Relinquished by	Received by	Relinquished by	Received by
Signature	Signature	Signature	
Printed Name Joshua Burbach	Printed Name D. VALLELUNGA	Printed Name	
Company Landau Associates	Company EETN	Company	
Date 9/17/22 Time 0935	Date 9/17/22 Time 0935	Date Time	

580-118014 Chain of Custody

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

Chain-of-Custody Record

LANDAU ASSOCIATES

- [x] North Seattle (206) 631-8660
- [ ] Tacoma (253) 926-2493
- [ ] Olympia (360) 791-3178
- [ ] Spokane (509) 327-9737
- [ ] Portland (503) 542-1080

Date 9/16/22

Page 1 of 1

Turnaround Time: Standard ____ Accelerated 3-day

Project Name EMF Project No. 060045

Project Location/Event Burnt Ridge Rd., Onaloska WA

Sampler's Name Ken Reid

Project Contact " ", Evelyn Ives

Send Results To " " " ", Kristi Schultz

Special Handling Requirements: NG

Shipment Method: LAI

Stored on ice: (Yes) No

Testing Parameters: VOC 8260D (Report Benzene & Toluene ONLY)

Sample I.D.	Date	Time	Matrix	No. of Containers	VOC 8260D (Report Benzene & Toluene ONLY)
EMF-BR-A6	9/16/22	1520	Soil	4	X
EMF-BR-A5		1525			X
EMF-BR-A4		1530			X
EMF-BR-A2		1540			X
EMF-BR-B4		1550			X
EMF-BR-B3		1600			X
EMF-BR-C5		1610			X
EMF-BR-E6		1620			X
EMF-BR-E1		1630			X
EMF-BR-F6		1640			X
EMF-BR-F1	↓	1650		4	X
Trip			~~H2O~~	1	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 ____

Therm. ID: A3 Cor: 2.3 ° Unc: 1.7 °

Cooler Dsc: LB

Packing: Bub

Cust. Seal: Yes ___ No ✓

Blue Ice (Wet) Dry, None

FedEx: ____

UPS: ____

Lab Cour: ____

Other: CO

Relinquished by

Signature ____

Printed Name Joshua Burbach

Company Landau Associates

Date 9/17/22 Time 0935

Received by

Signature ____

Printed Name D. VALLELUNGA

Company EETN

Date 9/17/22 Time 0935

Relinquished by

Signature ____

Printed Name ____

Company ____

Date ____ Time ____

Received by

580-118014 Chain of Custody

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

Eurofins Seattle
5755 8th Street East
Tacoma WA 98424
Phone 253-922-2310

Chain of Custody Record

eurofins Environment Testing America

Client Information (Sub Contract Lab)	Sampler	Lab PM: Cruz, Sheri L	Carrier Tracking No(s):	COC No: 580-109122.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: Sheri Cruz@et.eurofinsus.com	State of Origin: Washington	Page: Page 1 of 2
Company: Eurofins Environment Testing Southwest,		Accreditations Required (See note): NELAP - Oregon, State - Washington		Job #: 580-118014-1
Address: 2841 Dow Avenue, Suite 100	Due Date Requested: 9/26/2022			
City: Tustin	TAT Requested (days)			
State, Zip: CA, 92780				
Phone: 714-895-5494(Tel)	PO #:			
Email:	WO #:			
Project Name: burnt Ridge Road Onalaska WA	Project #: 58015768			
Site:	SSOW#:			

Analysis Requested

Preservation Codes

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260D/5035FP_Calc 8260D Benzene and toluene only	Moisture/ Pecent Moisture/Solids	Total Number of containers	Special Instructions/Note.
			Preservation Code.							
FMF-BR-A6 (580-118014-1)	9/16/22	15 20 Pacific		Solid			X	X	4	
FMF-BR-A5 (580-118014-2)	9/16/22	15 25 Pacific		Solid			X	X	4	
FMF-BR-A4 (580-118014-3)	9/16/22	15 30 Pacific		Solid			X	X	4	
FMF-BR-A2 (580-118014-4)	9/16/22	15 40 Pacific		Solid			X	X	4	
FMF-BR-B4 (580-118014-5)	9/16/22	15 50 Pacific		Solid			X	X	4	
FMF-BR-B3 (580-118014-6)	9/16/22	16 00 Pacific		Solid			X	X	4	
FMF-BR-C5 (580-118014-7)	9/16/22	16 10 Pacific		Solid			X	X	4	
FMF-BR-E6 (580-118014-8)	9/16/22	16 20 Pacific		Solid			X	X	4	
FMF-BR-E1 (580-118014-9)	9/16/22	16 30 Pacific		Solid			X	X	4	

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Northwest, LLC places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories This sample shipment is forwarded under chain-of-custody If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed the samples must be shipped back to the Eurofins Environment Testing Northwest, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Northwest, LLC attention immediately If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins Environment Testing Northwest, LLC.

Possible Hazard Identification	*Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*
Unconfirmed	☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested I II III IV Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements

Empty Kit Relinquished by:	Date	Time	Method of Shipment:

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

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No	Cooler Temperature(s) °C and Other Remarks
		07/10 IR-5C11

Ver: 06/08/2021

Eurofins Seattle
5755 8th Street East
Tacoma WA 98424
Phone 253-922-2310

Chain of Custody Record

eurofins Environment Testing America

Client Information (Sub Contract Lab)	Sampler	Lab PM: Cruz Sheri L	Carrier Tracking No(s):	COC No: 580-109122.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: Sheri Cruz@et.eurofinsus.com	State of Origin: Washington	Page: Page 2 of 2
Company: Eurofins Environment Testing Southwest,		Accreditations Required (See note): NELAP - Oregon State - Washington		Job #: 580-118014-1
Address: 2841 Dow Avenue Suite 100	Due Date Requested: 9/26/2022			
City: Tustin	TAT Requested (days):			
State, Zip: CA, 92780				
Phone: 714-895-5494(Tel)	PO #:			
Email:	WO #:			
Project Name: burnt Ridge Road Onalaska WA	Project #: 58015768			
Site:	SSOW#:			

Analysis Requested

Preservation Codes.

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Y - Trizma, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260D/5035FP_Calc 8260D Benzene and toluene only	Moisture/ Pecent Moisture/Solids	Total Number of containers	Special Instructions/Note
			Preservation Code:							
FMF-BR-F6 (580-118014-10)	9/16/22	16 40 Pacific		Solid			X	X	4	
FMF-BR-F1 (580-118014-11)	9/16/22	16 50 Pacific		Solid			X	X	4	

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Northwest, LLC places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories This sample shipment is forwarded under chain-of-custody If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed the samples must be shipped back to the Eurofins Environment Testing Northwest, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Northwest, LLC attention immediately If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to Eurofins Environment Testing Northwest, LLC.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested I II III IV Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements

Empty Kit Relinquished by:	Date	Time	Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
	9/19/22			9/20/22 1000	
Relinquished by	Date/Time:	Company	Received by	Date/Time:	Company
Relinquished by	Date/Time:	Company	Received by	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No	Cooler Temperature(s) °C and Other Remarks
		0.7/1.0 /k SCI

Ver 06/08/2021

9/23/2022

Login Sample Receipt Checklist

Client: Landau & Associates, Inc.

Job Number: 580-118014-1

Login Number: 118014
List Number: 1
Creator: Presley, Kim A

List Source: Eurofins Seattle

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Landau & Associates, Inc.

Job Number: 580-118014-1

Login Number: 118014
List Number: 2
Creator: Ornelas, Olga

List Source: Eurofins Calscience
List Creation: 09/20/22 04:17 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	Not Present
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Client Sample ID: FMF-BR-A6

Lab Sample ID: 580-118014-1

Date Collected: 09/16/22 15:20
Matrix: Solid
Date Received: 09/17/22 09:35
Percent Solids: 85.7

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.7		ug/Kg	☼	09/20/22 17:24	09/21/22 12:32	1
Toluene	ND		1.7		ug/Kg	☼	09/20/22 17:24	09/21/22 12:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*121*		*80 - 142*	*09/20/22 17:24*	*09/21/22 12:32*	*1*
4-Bromofluorobenzene (Surr)	*102*		*80 - 120*	*09/20/22 17:24*	*09/21/22 12:32*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 123*	*09/20/22 17:24*	*09/21/22 12:32*	*1*
Toluene-d8 (Surr)	*95*		*80 - 120*	*09/20/22 17:24*	*09/21/22 12:32*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**14.3**		0.1		%			09/20/22 17:30	1
Percent Solids	**85.7**		0.1		%			09/20/22 17:30	1

Client: Landau & Associates, Inc.
Project/Site: burnt Ridge Road, Onalaska WA

Job ID: 580-118014-1

Client Sample ID: FMF-BR-A5

Date Collected: 09/16/22 15:25
Date Received: 09/17/22 09:35

Lab Sample ID: 580-118014-2

Matrix: Solid
Percent Solids: 82.6

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.2		ug/Kg	☼	09/20/22 17:24	09/21/22 12:52	1
Toluene	**2.8**		1.2		ug/Kg	☼	09/20/22 17:24	09/21/22 12:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*119*		*80 - 142*	*09/20/22 17:24*	*09/21/22 12:52*	*1*
4-Bromofluorobenzene (Surr)	*102*		*80 - 120*	*09/20/22 17:24*	*09/21/22 12:52*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 123*	*09/20/22 17:24*	*09/21/22 12:52*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*	*09/20/22 17:24*	*09/21/22 12:52*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**17.4**		0.1		%			09/20/22 17:30	1
Percent Solids	**82.6**		0.1		%			09/20/22 17:30	1

Client: Landau & Associates, Inc.
Project/Site: burnt Ridge Road, Onalaska WA

Job ID: 580-118014-1

Client Sample ID: FMF-BR-A4

Date Collected: 09/16/22 15:30
Date Received: 09/17/22 09:35

Lab Sample ID: 580-118014-3

Matrix: Solid
Percent Solids: 72.0

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.7		ug/Kg	☼	09/20/22 17:24	09/21/22 13:13	1
Toluene	**2.4**		1.7		ug/Kg	☼	09/20/22 17:24	09/21/22 13:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*116*		*80 - 142*	*09/20/22 17:24*	*09/21/22 13:13*	*1*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*	*09/20/22 17:24*	*09/21/22 13:13*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 123*	*09/20/22 17:24*	*09/21/22 13:13*	*1*
Toluene-d8 (Surr)	*95*		*80 - 120*	*09/20/22 17:24*	*09/21/22 13:13*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**28.0**		0.1		%			09/20/22 17:30	1
Percent Solids	**72.0**		0.1		%			09/20/22 17:30	1

Client: Landau & Associates, Inc.
Project/Site: burnt Ridge Road, Onalaska WA

Job ID: 580-118014-1

Client Sample ID: FMF-BR-A2

Date Collected: 09/16/22 15:40
Date Received: 09/17/22 09:35

Lab Sample ID: 580-118014-4

Matrix: Solid
Percent Solids: 83.0

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.4		ug/Kg	☼	09/20/22 17:24	09/21/22 13:33	1
Toluene	**4.9**		1.4		ug/Kg	☼	09/20/22 17:24	09/21/22 13:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*80 - 142*	*09/20/22 17:24*	*09/21/22 13:33*	*1*
4-Bromofluorobenzene (Surr)	*103*		*80 - 120*	*09/20/22 17:24*	*09/21/22 13:33*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 123*	*09/20/22 17:24*	*09/21/22 13:33*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*	*09/20/22 17:24*	*09/21/22 13:33*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**17.0**		0.1		%			09/20/22 17:30	1
Percent Solids	**83.0**		0.1		%			09/20/22 17:30	1

Client: Landau & Associates, Inc.
Project/Site: burnt Ridge Road, Onalaska WA

Job ID: 580-118014-1

Client Sample ID: FMF-BR-B4

Date Collected: 09/16/22 15:50
Date Received: 09/17/22 09:35

Lab Sample ID: 580-118014-5

Matrix: Solid
Percent Solids: 79.4

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.2		ug/Kg	☼	09/20/22 17:24	09/21/22 13:54	1
Toluene	ND		1.2		ug/Kg	☼	09/20/22 17:24	09/21/22 13:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*127*		*80 - 142*	*09/20/22 17:24*	*09/21/22 13:54*	*1*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*	*09/20/22 17:24*	*09/21/22 13:54*	*1*
Dibromofluoromethane (Surr)	*110*		*80 - 123*	*09/20/22 17:24*	*09/21/22 13:54*	*1*
Toluene-d8 (Surr)	*93*		*80 - 120*	*09/20/22 17:24*	*09/21/22 13:54*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**20.6**		0.1		%			09/20/22 17:30	1
Percent Solids	**79.4**		0.1		%			09/20/22 17:30	1

Client: Landau & Associates, Inc.
Project/Site: burnt Ridge Road, Onalaska WA

Job ID: 580-118014-1

Client Sample ID: FMF-BR-B3

Date Collected: 09/16/22 16:00
Date Received: 09/17/22 09:35

Lab Sample ID: 580-118014-6

Matrix: Solid
Percent Solids: 78.2

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.2		ug/Kg	☼	09/20/22 17:24	09/21/22 14:14	1
Toluene	**1.2**		1.2		ug/Kg	☼	09/20/22 17:24	09/21/22 14:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*121*		*80 - 142*	*09/20/22 17:24*	*09/21/22 14:14*	*1*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*	*09/20/22 17:24*	*09/21/22 14:14*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 123*	*09/20/22 17:24*	*09/21/22 14:14*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*	*09/20/22 17:24*	*09/21/22 14:14*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**21.8**		0.1		%			09/20/22 17:30	1
Percent Solids	**78.2**		0.1		%			09/20/22 17:30	1

Client: Landau & Associates, Inc.
Project/Site: burnt Ridge Road, Onalaska WA

Job ID: 580-118014-1

Client Sample ID: FMF-BR-C5

Date Collected: 09/16/22 16:10
Date Received: 09/17/22 09:35

Lab Sample ID: 580-118014-7

Matrix: Solid
Percent Solids: 75.0

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		64		ug/Kg	☼	09/20/22 17:24	09/21/22 12:11	50
Toluene	ND		64		ug/Kg	☼	09/20/22 17:24	09/21/22 12:11	50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*104*		*80 - 142*	*09/20/22 17:24*	*09/21/22 12:11*	*50*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*	*09/20/22 17:24*	*09/21/22 12:11*	*50*
Dibromofluoromethane (Surr)	*94*		*80 - 123*	*09/20/22 17:24*	*09/21/22 12:11*	*50*
Toluene-d8 (Surr)	*96*		*80 - 120*	*09/20/22 17:24*	*09/21/22 12:11*	*50*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**25.0**		0.1		%			09/20/22 17:30	1
Percent Solids	**75.0**		0.1		%			09/20/22 17:30	1

Client: Landau & Associates, Inc.
Project/Site: burnt Ridge Road, Onalaska WA

Job ID: 580-118014-1

Client Sample ID: FMF-BR-E6

Date Collected: 09/16/22 16:20
Date Received: 09/17/22 09:35

Lab Sample ID: 580-118014-8

Matrix: Solid
Percent Solids: 77.8

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.2		ug/Kg	☼	09/20/22 17:24	09/21/22 14:35	1
Toluene	**1.5**		1.2		ug/Kg	☼	09/20/22 17:24	09/21/22 14:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*119*		*80 - 142*	*09/20/22 17:24*	*09/21/22 14:35*	*1*
4-Bromofluorobenzene (Surr)	*102*		*80 - 120*	*09/20/22 17:24*	*09/21/22 14:35*	*1*
Dibromofluoromethane (Surr)	*105*		*80 - 123*	*09/20/22 17:24*	*09/21/22 14:35*	*1*
Toluene-d8 (Surr)	*93*		*80 - 120*	*09/20/22 17:24*	*09/21/22 14:35*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**22.2**		0.1		%			09/20/22 17:30	1
Percent Solids	**77.8**		0.1		%			09/20/22 17:30	1

Client Sample ID: FMF-BR-E1

Date Collected: 09/16/22 16:30
Date Received: 09/17/22 09:35

Lab Sample ID: 580-118014-9

Matrix: Solid
Percent Solids: 75.3

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.3		ug/Kg	☼	09/20/22 17:24	09/21/22 14:56	1
Toluene	ND		1.3		ug/Kg	☼	09/20/22 17:24	09/21/22 14:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*118*		*80 - 142*	*09/20/22 17:24*	*09/21/22 14:56*	*1*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*	*09/20/22 17:24*	*09/21/22 14:56*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 123*	*09/20/22 17:24*	*09/21/22 14:56*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*	*09/20/22 17:24*	*09/21/22 14:56*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**24.7**		0.1		%			09/20/22 17:30	1
Percent Solids	**75.3**		0.1		%			09/20/22 17:30	1

Client Sample ID: FMF-BR-F6

Date Collected: 09/16/22 16:40
Date Received: 09/17/22 09:35

Lab Sample ID: 580-118014-10

Matrix: Solid
Percent Solids: 74.8

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.2		ug/Kg	☼	09/20/22 17:24	09/21/22 15:16	1
Toluene	ND		1.2		ug/Kg	☼	09/20/22 17:24	09/21/22 15:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*126*		*80 - 142*	*09/20/22 17:24*	*09/21/22 15:16*	*1*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*	*09/20/22 17:24*	*09/21/22 15:16*	*1*
Dibromofluoromethane (Surr)	*109*		*80 - 123*	*09/20/22 17:24*	*09/21/22 15:16*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*	*09/20/22 17:24*	*09/21/22 15:16*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**25.2**		0.1		%			09/20/22 17:30	1
Percent Solids	**74.8**		0.1		%			09/20/22 17:30	1

Client Sample ID: FMF-BR-F1

Date Collected: 09/16/22 16:50
Date Received: 09/17/22 09:35

Lab Sample ID: 580-118014-11

Matrix: Solid
Percent Solids: 78.8

Method: 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.3		ug/Kg	☼	09/20/22 17:24	09/21/22 15:37	1
Toluene	**2.6**		1.3		ug/Kg	☼	09/20/22 17:24	09/21/22 15:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*127*		*80 - 142*	*09/20/22 17:24*	*09/21/22 15:37*	*1*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*	*09/20/22 17:24*	*09/21/22 15:37*	*1*
Dibromofluoromethane (Surr)	*107*		*80 - 123*	*09/20/22 17:24*	*09/21/22 15:37*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*	*09/20/22 17:24*	*09/21/22 15:37*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**21.2**		0.1		%			09/20/22 17:30	1
Percent Solids	**78.8**		0.1		%			09/20/22 17:30	1

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 570-265985/10
Matrix: Solid
Analysis Batch: 265985

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		50		ug/Kg			09/21/22 11:30	50
Toluene	ND		50		ug/Kg			09/21/22 11:30	50

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*80 - 142*		*09/21/22 11:30*	*50*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*		*09/21/22 11:30*	*50*
Dibromofluoromethane (Surr)	*96*		*80 - 123*		*09/21/22 11:30*	*50*
Toluene-d8 (Surr)	*98*		*80 - 120*		*09/21/22 11:30*	*50*

Lab Sample ID: MB 570-265985/9
Matrix: Solid
Analysis Batch: 265985

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.0		ug/Kg			09/21/22 11:10	1
Toluene	ND		1.0		ug/Kg			09/21/22 11:10	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*107*		*80 - 142*		*09/21/22 11:10*	*1*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*		*09/21/22 11:10*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 123*		*09/21/22 11:10*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*09/21/22 11:10*	*1*

Lab Sample ID: LCS 570-265985/4
Matrix: Solid
Analysis Batch: 265985

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			50.0	49.1		ug/Kg		98	80 - 120		
Toluene			50.0	49.5		ug/Kg		99	80 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*105*		*80 - 142*
4-Bromofluorobenzene (Surr)	*104*		*80 - 120*
Dibromofluoromethane (Surr)	*103*		*80 - 123*
Toluene-d8 (Surr)	*103*		*80 - 120*

Lab Sample ID: LCSD 570-265985/5
Matrix: Solid
Analysis Batch: 265985

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			50.0	49.3		ug/Kg		99	80 - 120	0	20
Toluene			50.0	49.6		ug/Kg		99	80 - 120	0	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,2-Dichloroethane-d4 (Surr)	*106*		*80 - 142*

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCSD 570-265985/5
Matrix: Solid
Analysis Batch: 265985

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*103*		*80 - 120*
Dibromofluoromethane (Surr)	*103*		*80 - 123*
Toluene-d8 (Surr)	*103*		*80 - 120*

Method: Moisture - Percent Moisture

Lab Sample ID: 580-118014-1 DU
Matrix: Solid
Analysis Batch: 265837

Client Sample ID: FMF-BR-A6
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Moisture	14.3			14.6		%				1	10
Percent Solids	85.7			85.4		%				0.2	10

Lab Sample ID: 580-118014-11 DU
Matrix: Solid
Analysis Batch: 265837

Client Sample ID: FMF-BR-F1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Moisture	21.2			20.0		%				6	10
Percent Solids	78.8			80.0		%				1	10

Lab Chronicle

Client: Landau & Associates, Inc.
Project/Site: burnt Ridge Road, Onalaska WA

Job ID: 580-118014-1

Client Sample ID: FMF-BR-A6
Date Collected: 09/16/22 15:20
Date Received: 09/17/22 09:35

Lab Sample ID: 580-118014-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Moisture		1	265837	B4QL	EET CAL 4	09/20/22 17:30

Client Sample ID: FMF-BR-A6
Date Collected: 09/16/22 15:20
Date Received: 09/17/22 09:35

Lab Sample ID: 580-118014-1
Matrix: Solid
Percent Solids: 85.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			265829	ZH8D	EET CAL 4	09/20/22 17:24
Total/NA	Analysis	8260D		1	265985	OH1	EET CAL 4	09/21/22 12:32

Client Sample ID: FMF-BR-A5
Date Collected: 09/16/22 15:25
Date Received: 09/17/22 09:35

Lab Sample ID: 580-118014-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Moisture		1	265837	B4QL	EET CAL 4	09/20/22 17:30

Client Sample ID: FMF-BR-A5
Date Collected: 09/16/22 15:25
Date Received: 09/17/22 09:35

Lab Sample ID: 580-118014-2
Matrix: Solid
Percent Solids: 82.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			265829	ZH8D	EET CAL 4	09/20/22 17:24
Total/NA	Analysis	8260D		1	265985	OH1	EET CAL 4	09/21/22 12:52

Client Sample ID: FMF-BR-A4
Date Collected: 09/16/22 15:30
Date Received: 09/17/22 09:35

Lab Sample ID: 580-118014-3
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Moisture		1	265837	B4QL	EET CAL 4	09/20/22 17:30

Client Sample ID: FMF-BR-A4
Date Collected: 09/16/22 15:30
Date Received: 09/17/22 09:35

Lab Sample ID: 580-118014-3
Matrix: Solid
Percent Solids: 72.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			265829	ZH8D	EET CAL 4	09/20/22 17:24
Total/NA	Analysis	8260D		1	265985	OH1	EET CAL 4	09/21/22 13:13

Client Sample ID: FMF-BR-A2
Date Collected: 09/16/22 15:40
Date Received: 09/17/22 09:35

Lab Sample ID: 580-118014-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Moisture		1	265837	B4QL	EET CAL 4	09/20/22 17:30

Lab Chronicle

Client: Landau & Associates, Inc.
Project/Site: burnt Ridge Road, Onalaska WA

Job ID: 580-118014-1

Client Sample ID: FMF-BR-A2
Lab Sample ID: 580-118014-4
Date Collected: 09/16/22 15:40
Matrix: Solid
Date Received: 09/17/22 09:35
Percent Solids: 83.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			265829	ZH8D	EET CAL 4	09/20/22 17:24
Total/NA	Analysis	8260D		1	265985	OH1	EET CAL 4	09/21/22 13:33

Client Sample ID: FMF-BR-B4
Lab Sample ID: 580-118014-5
Date Collected: 09/16/22 15:50
Matrix: Solid
Date Received: 09/17/22 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Moisture		1	265837	B4QL	EET CAL 4	09/20/22 17:30

Client Sample ID: FMF-BR-B4
Lab Sample ID: 580-118014-5
Date Collected: 09/16/22 15:50
Matrix: Solid
Date Received: 09/17/22 09:35
Percent Solids: 79.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			265829	ZH8D	EET CAL 4	09/20/22 17:24
Total/NA	Analysis	8260D		1	265985	OH1	EET CAL 4	09/21/22 13:54

Client Sample ID: FMF-BR-B3
Lab Sample ID: 580-118014-6
Date Collected: 09/16/22 16:00
Matrix: Solid
Date Received: 09/17/22 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Moisture		1	265837	B4QL	EET CAL 4	09/20/22 17:30

Client Sample ID: FMF-BR-B3
Lab Sample ID: 580-118014-6
Date Collected: 09/16/22 16:00
Matrix: Solid
Date Received: 09/17/22 09:35
Percent Solids: 78.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			265829	ZH8D	EET CAL 4	09/20/22 17:24
Total/NA	Analysis	8260D		1	265985	OH1	EET CAL 4	09/21/22 14:14

Client Sample ID: FMF-BR-C5
Lab Sample ID: 580-118014-7
Date Collected: 09/16/22 16:10
Matrix: Solid
Date Received: 09/17/22 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Moisture		1	265837	B4QL	EET CAL 4	09/20/22 17:30

Lab Chronicle

Client: Landau & Associates, Inc.
Project/Site: burnt Ridge Road, Onalaska WA

Job ID: 580-118014-1

Client Sample ID: FMF-BR-C5
Lab Sample ID: 580-118014-7
Date Collected: 09/16/22 16:10
Matrix: Solid
Date Received: 09/17/22 09:35
Percent Solids: 75.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			265829	ZH8D	EET CAL 4	09/20/22 17:24
Total/NA	Analysis	8260D		50	265985	OH1	EET CAL 4	09/21/22 12:11

Client Sample ID: FMF-BR-E6
Lab Sample ID: 580-118014-8
Date Collected: 09/16/22 16:20
Matrix: Solid
Date Received: 09/17/22 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Moisture		1	265837	B4QL	EET CAL 4	09/20/22 17:30

Client Sample ID: FMF-BR-E6
Lab Sample ID: 580-118014-8
Date Collected: 09/16/22 16:20
Matrix: Solid
Date Received: 09/17/22 09:35
Percent Solids: 77.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			265829	ZH8D	EET CAL 4	09/20/22 17:24
Total/NA	Analysis	8260D		1	265985	OH1	EET CAL 4	09/21/22 14:35

Client Sample ID: FMF-BR-E1
Lab Sample ID: 580-118014-9
Date Collected: 09/16/22 16:30
Matrix: Solid
Date Received: 09/17/22 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Moisture		1	265837	B4QL	EET CAL 4	09/20/22 17:30

Client Sample ID: FMF-BR-E1
Lab Sample ID: 580-118014-9
Date Collected: 09/16/22 16:30
Matrix: Solid
Date Received: 09/17/22 09:35
Percent Solids: 75.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			265829	ZH8D	EET CAL 4	09/20/22 17:24
Total/NA	Analysis	8260D		1	265985	OH1	EET CAL 4	09/21/22 14:56

Client Sample ID: FMF-BR-F6
Lab Sample ID: 580-118014-10
Date Collected: 09/16/22 16:40
Matrix: Solid
Date Received: 09/17/22 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Moisture		1	265837	B4QL	EET CAL 4	09/20/22 17:30

Lab Chronicle

Client: Landau & Associates, Inc.
Project/Site: burnt Ridge Road, Onalaska WA

Job ID: 580-118014-1

Client Sample ID: FMF-BR-F6

Lab Sample ID: 580-118014-10
Date Collected: 09/16/22 16:40
Matrix: Solid
Date Received: 09/17/22 09:35
Percent Solids: 74.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			265829	ZH8D	EET CAL 4	09/20/22 17:24
Total/NA	Analysis	8260D		1	265985	OH1	EET CAL 4	09/21/22 15:16

Client Sample ID: FMF-BR-F1

Lab Sample ID: 580-118014-11
Date Collected: 09/16/22 16:50
Matrix: Solid
Date Received: 09/17/22 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Moisture		1	265837	B4QL	EET CAL 4	09/20/22 17:30

Client Sample ID: FMF-BR-F1

Lab Sample ID: 580-118014-11
Date Collected: 09/16/22 16:50
Matrix: Solid
Date Received: 09/17/22 09:35
Percent Solids: 78.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	5035			265829	ZH8D	EET CAL 4	09/20/22 17:24
Total/NA	Analysis	8260D		1	265985	OH1	EET CAL 4	09/21/22 15:37

Laboratory References:

EET CAL 4 = Eurofins Calscience Tustin, 2841 Dow Avenue, Tustin, CA 92780, TEL (714)895-5494

Accreditation/Certification Summary

Client: Landau & Associates, Inc.
Job ID: 580-118014-1
Project/Site: burnt Ridge Road, Onalaska WA

Laboratory: Eurofins Calscience

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	Los Angeles County Sanitation Districts	10109	09-30-22
California	SCAQMD LAP	17LA0919	12-01-22
California	State	3082	07-31-23
Oregon	NELAP	4175	02-02-23
USDA	US Federal Programs	P330-20-00034	02-10-23
Washington	State	C916-18	10-12-22

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ANALYTICAL REPORT

Eurofins Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-118222-1
Client Project/Site: Fire Mtn Farms

For:
Landau & Associates, Inc.
155 NE 100 ST
Suite 302
Seattle, Washington 98125

Attn: Evelyn Ives

Authorized for release by:
10/9/2022 11:19:39 PM
Pauline Matlock, Project Manager
(253)922-2310
Pauline.Matlock@et.eurofinsus.com

Designee for

Sheri Cruz, Project Manager I
(253)922-2310
Sheri.Cruz@et.eurofinsus.com

Table of Contents

Case Narrative

Client: Landau & Associates, Inc.
Project/Site: Fire Mtn Farms

Job ID: 580-118222-1

Job ID: 580-118222-1

Laboratory: Eurofins Seattle

Narrative

Job Narrative
580-118222-1

Comments
No additional comments.

Receipt
The samples were received on 9/23/2022 12:13 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 9.6º C.

GC/MS VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Definitions/Glossary

Client: Landau & Associates, Inc.
Project/Site: Fire Mtn Farms

Job ID: 580-118222-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Sample Summary

Client: Landau & Associates, Inc.
Project/Site: Fire Mtn Farms

Job ID: 580-118222-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-118222-1	FMF-CB-North	Water	09/23/22 09:16	09/23/22 12:13
580-118222-2	FMF-CB-DUP	Water	09/23/22 09:28	09/23/22 12:13
580-118222-3	FMF-CB-South	Water	09/23/22 09:40	09/23/22 12:13
580-118222-4	Trip Blank	Water	09/23/22 00:01	09/23/22 12:13

Chain-of-Custody Record

LANDAU ASSOCIATES

- [ ] North Seattle (206) 631-8660
- [x] Tacoma (253) 926-2493
- [ ] Olympia (360) 791-3178
- [ ] Spokane (509) 327-9737
- [ ] Portland (503) 542-1080
- [ ] _____

Date 9/23/22

Page 1 of 1

Turnaround Time: (Standard) / Accelerated

Project Name Burnt Ridge-FMF Project No. 006045.110.113

Project Location/Event Issaquah, WA | Slab decon water Testing

Sampler's Name Samantha Lindstrom

Project Contact Ken Reid, Ryan Thode

Send Results To K. Reid, D. Jorgensen

Special Handling Requirements:

Shipment Method: dropoff

Stored on ice: (Yes) / No

Sample I.D.	Date	Time	Matrix	No. of Containers	VOCs by EPA 8260D*	Observations/Comments
FMF-CB-North	9/23/22	916	AQ	2	X	
FMF-CB-DUP	9/23/22	928	AQ	2	X	
FMF-CB-South	9/23/22	940	AQ	2	X	
TripBlank	—	—	AQ	2	X	

Testing Parameters

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 ~~Report~~ benzene + toluene only

VOAs preserved w/ HCl

580-118222 Chain of Custody

10.2 / 9.6 IRB smpled Bub/wet/client

Relinquished by	Received by	Relinquished by	Received by
Signature [signature]	Signature [signature]	Signature	Signature
Printed Name Samantha Lindstrom	Printed Name Alexandra Swoope	Printed Name	Printed Name
Company Landau Associates	Company EETN	Company	Company
Date 9/23/22 Time 1212	Date 9/23/22 Time 12:13	Date Time	Date Time

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

Login Sample Receipt Checklist

Client: Landau & Associates, Inc.

Job Number: 580-118222-1

Login Number: 118222
List Number: 1
Creator: Swoope, Alexandra C

List Source: Eurofins Seattle

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Client: Landau & Associates, Inc.
Project/Site: Fire Mtn Farms

Job ID: 580-118222-1

Client Sample ID: FMF-CB-North
Date Collected: 09/23/22 09:16
Date Received: 09/23/22 12:13

Lab Sample ID: 580-118222-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.0		ug/L			10/05/22 17:44	1
Toluene	ND		1.0		ug/L			10/05/22 17:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*80 - 120*		*10/05/22 17:44*	*1*
4-Bromofluorobenzene (Surr)	*90*		*80 - 120*		*10/05/22 17:44*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 120*		*10/05/22 17:44*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*80 - 120*		*10/05/22 17:44*	*1*

Client: Landau & Associates, Inc.
Project/Site: Fire Mtn Farms

Job ID: 580-118222-1

Client Sample ID: FMF-CB-DUP

Date Collected: 09/23/22 09:28
Date Received: 09/23/22 12:13

Lab Sample ID: 580-118222-2

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.0		ug/L			10/05/22 18:09	1
Toluene	ND		1.0		ug/L			10/05/22 18:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*80 - 120*		*10/05/22 18:09*	*1*
4-Bromofluorobenzene (Surr)	*90*		*80 - 120*		*10/05/22 18:09*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 120*		*10/05/22 18:09*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*80 - 120*		*10/05/22 18:09*	*1*

Client: Landau & Associates, Inc.
Project/Site: Fire Mtn Farms

Job ID: 580-118222-1

Client Sample ID: FMF-CB-South
Date Collected: 09/23/22 09:40
Date Received: 09/23/22 12:13

Lab Sample ID: 580-118222-3
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.0		ug/L			10/05/22 18:34	1
Toluene	ND		1.0		ug/L			10/05/22 18:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*97*		*80 - 120*		*10/05/22 18:34*	*1*
4-Bromofluorobenzene (Surr)	*93*		*80 - 120*		*10/05/22 18:34*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 120*		*10/05/22 18:34*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*80 - 120*		*10/05/22 18:34*	*1*

Client: Landau & Associates, Inc.
Project/Site: Fire Mtn Farms

Job ID: 580-118222-1

Client Sample ID: Trip Blank

Date Collected: 09/23/22 00:01
Date Received: 09/23/22 12:13

Lab Sample ID: 580-118222-4

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.0		ug/L			10/05/22 17:20	1
Toluene	ND		1.0		ug/L			10/05/22 17:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*98*		*80 - 120*		*10/05/22 17:20*	*1*
4-Bromofluorobenzene (Surr)	*93*		*80 - 120*		*10/05/22 17:20*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 120*		*10/05/22 17:20*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*80 - 120*		*10/05/22 17:20*	*1*

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 580-406059/3
Matrix: Water
Analysis Batch: 406059

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		1.0		ug/L			10/05/22 11:36	1
Toluene	ND		1.0		ug/L			10/05/22 11:36	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Toluene-d8 (Surr)	*99*		*80 - 120*		*10/05/22 11:36*	*1*
4-Bromofluorobenzene (Surr)	*94*		*80 - 120*		*10/05/22 11:36*	*1*
Dibromofluoromethane (Surr)	*100*		*80 - 120*		*10/05/22 11:36*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*80 - 120*		*10/05/22 11:36*	*1*

Lab Sample ID: LCS 580-406059/4
Matrix: Water
Analysis Batch: 406059

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Benzene			10.0	9.81		ug/L		98	80 - 122		
Toluene			10.0	9.40		ug/L		94	80 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Toluene-d8 (Surr)	*97*		*80 - 120*
4-Bromofluorobenzene (Surr)	*95*		*80 - 120*
Dibromofluoromethane (Surr)	*99*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*101*		*80 - 120*

Lab Sample ID: LCSD 580-406059/5
Matrix: Water
Analysis Batch: 406059

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Benzene			10.0	9.79		ug/L		98	80 - 122	0	14
Toluene			10.0	9.42		ug/L		94	80 - 120	0	13

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Toluene-d8 (Surr)	*96*		*80 - 120*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*
Dibromofluoromethane (Surr)	*103*		*80 - 120*
1,2-Dichloroethane-d4 (Surr)	*105*		*80 - 120*

Lab Chronicle

Client: Landau & Associates, Inc.
Project/Site: Fire Mtn Farms

Job ID: 580-118222-1

Client Sample ID: FMF-CB-North
Lab Sample ID: 580-118222-1
Date Collected: 09/23/22 09:16
Matrix: Water
Date Received: 09/23/22 12:13

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	406059	BNM	EET SEA	10/05/22 17:44

Client Sample ID: FMF-CB-DUP
Lab Sample ID: 580-118222-2
Date Collected: 09/23/22 09:28
Matrix: Water
Date Received: 09/23/22 12:13

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	406059	BNM	EET SEA	10/05/22 18:09

Client Sample ID: FMF-CB-South
Lab Sample ID: 580-118222-3
Date Collected: 09/23/22 09:40
Matrix: Water
Date Received: 09/23/22 12:13

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	406059	BNM	EET SEA	10/05/22 18:34

Client Sample ID: Trip Blank
Lab Sample ID: 580-118222-4
Date Collected: 09/23/22 00:01
Matrix: Water
Date Received: 09/23/22 12:13

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	406059	BNM	EET SEA	10/05/22 17:20

Laboratory References:

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Landau & Associates, Inc.
Project/Site: Fire Mtn Farms

Job ID: 580-118222-1

Laboratory: Eurofins Seattle

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-004	02-19-25
ANAB	Dept. of Defense ELAP	L2236	01-19-25
ANAB	Dept. of Energy	L2236	01-19-25
ANAB	ISO/IEC 17025	L2236	01-19-25
Arkansas DEQ	State	8801526	05-23-23
California	State	2954	07-07-22 *
Florida	NELAP	E87575	06-30-23
Louisiana	NELAP	03073	06-30-23
Maine	State	WA01273	05-02-24
Montana (UST)	State	NA	04-14-27
New Jersey	NELAP	WA014	06-30-23
New York	NELAP	11662	04-01-23
Oregon	NELAP	4167	07-08-23
US Fish & Wildlife	US Federal Programs	A20571	06-30-23
USDA	US Federal Programs	P330-20-00031	02-10-23
Washington	State	C788	07-13-23
Wisconsin	State	399133460	08-31-23

* Accreditation/Certification renewal pending - accreditation/certification considered valid.