



March 16, 2021

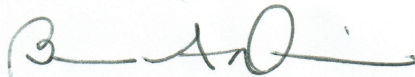
Gregory Gould, P.E.
Environmental Engineer
Washington State Department of Ecology
Solid Waste Management, Industrial Section
P.O. Box 47600
Olympia, Washington 98504

Transmitted via email to: greg.gould@ecy.wa.gov

Dear Mr. Gould:

Emerald Kalama Chemical and Fire Mountain Farms have completed the removal of mixed materials and cleaning of the Big Hanaford location in accordance with the Closure Plan approved by Washington Department of Ecology. Please confirm that the attached corrected revised technical memorandum satisfies our obligations under the Closure Plan for the Big Hanaford location. Upon Ecology's confirmation, and in accordance with the 2016 Agreement among Emerald, Fire Mountain Farms and Ecology, FMF shall be solely responsible for any subsequent use of the Big Hanaford Storage Unit and Emerald shall have no responsibility for such subsequent use.

Sincerely,



Brian A. Denison

Vice President, Manufacturing Technology Specialist

Emerald Performance Materials, LLC

Emerald Kalama Chemical, LLC | 1499 SE Tech Center Place, Suite 300, Vancouver, WA 98683 | 800.223.0035

**Akron, OH • Geleen, Netherlands • Henry, IL • Hong Kong • Kalama, WA • Maple Shade, NJ
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www.kalama.emeraldmaterials.com

Technical Memorandum

TO: Brian A. Denison, Emerald Kalama Chemical LLC
Sloane Wildman, Perkins Coie LLP

FROM: Lance Levine, PE; Evelyn Ives, PE

DATE: March 16, 2021

RE: **Big Hanaford Closure Summary**
Emerald Kalama Chemical/Fire Mountain Farms
Fire Mountain Farms Storage Units
Lewis County, Washington
Project No. 0066045.110.113

Introduction

Landau Associates, Inc. (LAI) was retained by Perkins Coie LLP (Perkins) on behalf of Emerald Kalama Chemical, LLC (Emerald) to provide technical support and environmental 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).

This technical memorandum provides a summary of closure activities for Big Hanaford storage facility (Big Hanaford) operated by FMF. From January 4, 2021 through February 5, 2021, FMF completed the facility's closure in accordance with the Final Closure Plan (LAI 2020), which was prepared for all three facilities as stipulated in the Agreement. Closure activities are described in the following sections and consisted of removal and disposal of mixed material stored in Big Hanaford, investigation of the structure and prior mixed-material releases outside of Big Hanaford, decontamination of mixed-material residues, and collection of confirmation samples.

Background

The facility is in Lewis County located at 307 Big Hanaford Road near Centralia, Washington (Figure 1). Mixed material was stored at Big Hanaford in a roofed concrete storage unit. As described in the Closure Plan, the mixed material was 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 Fire Mountain Farms as dangerous waste in 2014 based on the Resource Conservation and Recovery Act's (RCRA'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 at FMF in a Washington State Subtitle D landfill. EPA approved a total volume of 5,000 cubic yards (CY) of mixed material at Big Hanaford.

The Big Hanaford roof is metal supported by wooden structural members that are anchored at grade. The floor of the structure is concrete. Concrete panels with sealed seams were used to contain the mixed material. The facility is approximately 100 feet (ft) long by 60 ft wide. The concrete panel height is approximately 11.5 ft; the mixed material was observed to be about 2 ft below the top of the panels during the waste characterization sample collection in 2017. The estimated volume of the mixed material was approximately 2,000 CY based on these observations.

Mixed-Material Removal

Mixed material, along with a small amount of soil as discussed in the next section, was removed by FMF personnel between January 4 and January 25, 2021. Using a front-end loader, the mixed material was loaded into plastic-lined shipping containers on truck trailers that were provided and transported by LeMay Enterprises, Inc. (LeMay), which is Lewis County's designated waste hauler. FMF cleaned any spilled mixed material from the sides and top of each container and each container was then covered before leaving the site. On behalf of Emerald, LAI personnel conducted periodic inspections to monitor the cleanup progress. After removal of the bulk of the mixed material with the front-end loader, hand tools (shovels) were used to remove what the front-end loader could not. Hand-removed mixed material was placed in bags and then disposed of in the final container. LeMay hauled 56 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. Based on the bills of lading, the total weight of the disposed material was 1,450 tons.

Big Hanaford Inspection

As described in the Final Closure Plan, mixed material at Big Hanaford was previously visibly released through a seam in the storage unit at its southwest corner. After removal of the mixed material and before cleaning of the storage unit, LAI personnel inspected Big Hanaford on January 26, 2021 for visual evidence of missing sealant between concrete panels and evidence of other possible mixed-material releases to the soil surrounding the storage unit. During the course of this inspection, LAI personnel observed nine locations that would benefit from additional application of sealant prior to undertaking waste-based decontamination activities. Additionally, LAI personnel inspected the exterior of the storage unit adjacent to the nine locations needing additional sealant and no indications of leakage were observed. The only location known to have leaked was the southwest corner of the storage unit where a historical release had already been documented and soil had been placed to minimize additional leakage. This soil had been removed by FMF and placed in a container along with mixed material for disposal prior to LAI's inspection.

The approximate volume of the removed soil was 5 CY, based on the following measurements:

- 12 ft long
- 3 ft wide
- 3.5 ft tall.

The total estimated volume of disposed mixed material and soil is 2,005 CY.

Big Hanaford Decontamination

Big Hanaford was decontaminated by FMF on February 4 and 5, 2021. The concrete base and internal walls of the storage unit were cleaned and decontaminated using scrub brushes, brooms, and pressure washers. The approximately 1,300 gallons of decontamination water generated by pressure-washing was collected and pumped into a holding tank for transport to the Emerald Kalama plant on February 17, 2021.

Confirmation Sampling and Results

On February 5, 2021, LAI collected confirmation samples related to storage unit decontamination and the historical leak outside the southwest corner of the storage unit. Sampling locations are shown on Figure 2.

After pressure-washing to remove the mixed material adhered to the concrete walls and slab, FMF applied rinse water to the clean sides of the storage unit and allowed water to pool on the concrete floor for sample collection. LAI collected and composited four aliquots of pooled water into a 1-liter container and then collected a sample, BH-RINSE1-020521, from that composited rinse water.

A composite soil sample, BH-SOIL1-020521, was collected outside of and immediately adjacent to the southwest corner of the storage unit from three aliquots within a 10-ft by 10-ft area centered around the historical leak. The soil from the aliquots was gently homogenized and the sample was collected using EPA field collection Method 5035A.

The two samples and trip blanks were placed in a cooler on ice and delivered to the analytical laboratory on February 5, 2021. The laboratory was requested to analyze all samples using EPA Method 8260D for benzene and toluene with a 3-day turnaround time. The laboratory analytical report is provided as Attachment 1.

Laboratory results for both the soil and rinse water samples are provided in Table 1 and compared to the Model Toxics Control Act Method A cleanup levels, which are the closure standards set forth in the Closure Plan. The analytical results indicate that both benzene and toluene were not detected at concentrations above laboratory reporting limits in either sample. These results demonstrate compliance with conditions for closure of Big Hanaford as a hazardous waste storage unit.

Table 1: Big Hanaford Soil/Water Analytical Results

Sample ID	Lab SDG	Sampling Date	SW-846 8260D (µg/kg)	
			Benzene	Toluene
BH-SOIL1-020521	580-100920-1	2/5/2021	2.9 U	14 U
MTCA Method A Cleanup Level:			30	7,000

Sample ID	Lab SDG	Sampling Date	SW-846 8260D (µg/L)	
			Benzene	Toluene
BH-Rinse1-020521	580-100920-1	2/5/2021	3.0 U	2.0 U
MTCA Method A Cleanup Level:			5	1,000

Notes:

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

Abbreviations/Acronyms:

Lab = laboratory

µg/kg = micrograms per kilogram

µg/L = micrograms per liter

SDG = sample delivery group

MTCA = Model Toxics Control Act

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

LANDAU ASSOCIATES, INC.



Lance Levine, PE
Senior Project Engineer



Evelyn Ives, PE
Associate

LGL/EHI/ccy

P:\066\045\R\Closure Rpt - Big Hanaford\LAI Emerald FMF Big Hanaford Closure_tm - revised 03-16-21.docx

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.

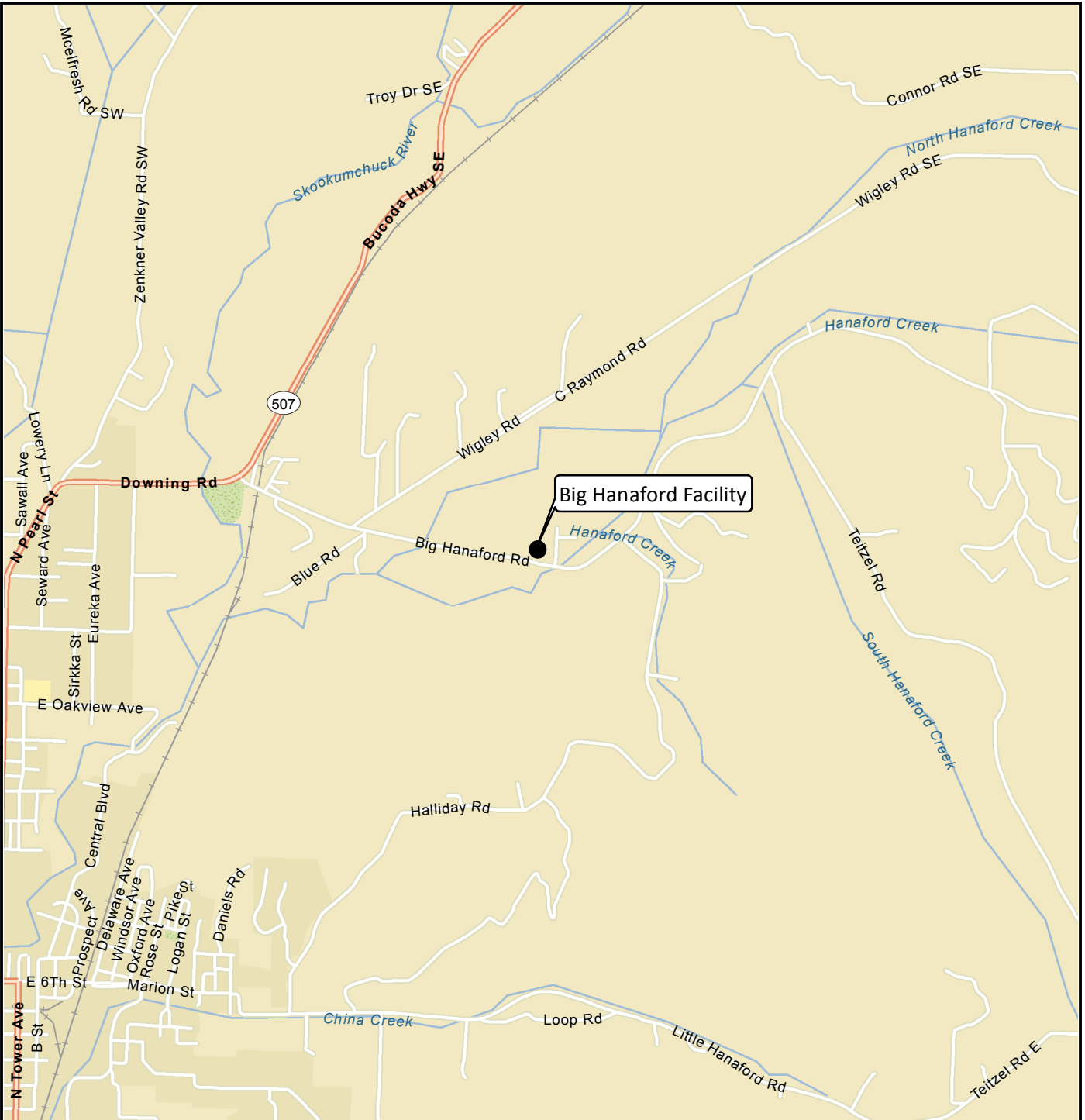
Ecology. 2016. Agreement for Conditional Compliance with Ecology Administrative Order No. 10938 During Judicial Review. Washington State Department of Ecology. June 3. Bates: EKC022878-EKC022888.

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

Attachments

- Figure 1: Big Hanaford Vicinity Map
- Figure 2: Big Hanaford Storage Unit Sampling Locations
- Attachment 1: Laboratory Analytical Report
- Attachment 2: Big Hanaford Closure Completion Photographs

G:\Projects\0661045101014\Big Hanaford Closure Report\F01\VicinityMap\BigHanaford.mxd 2/12/2021 NAD 1983 StatePlane Washington North FIPS 4601 Feet



Data Source: Esri.



Fire Mountain Farms Storage Units
Lewis County, Washington





**Big Hanaford
Vicinity Map**

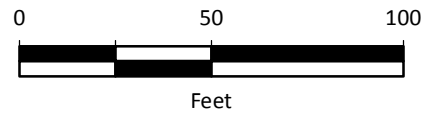
Figure
1

G:\Projects\066\045\010\14\Big Hanaford Closure_Report\F02SampleLocationsBH.mxd 2/12/2021 NAD 1983 StatePlane Washington South FIPS 4602 Feet



Legend

-  Soil Sample Aliquot Location for Sample BH-SOIL1-020521
-  Water Sample Aliquot Location for Sample BH-RINSE1-020521
-  Dry Concrete
-  Standing Water



Data Source: Google Earth Pro, 2014.



Fire Mountain Farms Storage Units
Lewis County, Washington

**Big Hanaford Storage Unit
Sampling Locations**

Figure
2

ATTACHMENT 1

Laboratory Analytical Report

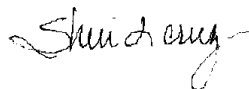
ANALYTICAL REPORT

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

Laboratory Job ID: 580-100920-1
Laboratory Sample Delivery Group: 0066045.110.113
Client Project/Site: Fire Mtn Farms

For:
Landau & Associates, Inc.
130 Second Ave South
Edmonds, Washington 98020

Attn: Evelyn Ives



Authorized for release by:
2/10/2021 11:46:54 AM

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

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

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

Job ID: 580-100920-1
SDG: 0066045.110.113

Job ID: 580-100920-1

Laboratory: Eurofins TestAmerica, Seattle

Narrative

Job Narrative 580-100920-1

Comments

No additional comments.

Receipt

The samples were received on 2/5/2021 12:34 PM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 6.8° C.

GC/MS VOA

No analytical or quality issues were noted, other than those described 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: Fire Mtn Farms

Job ID: 580-100920-1
SDG: 0066045.110.113

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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: 580-100920-1
SDG: 0066045.110.113

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
580-100920-1	BH-SOIL1-020521	Solid	02/05/21 09:05	02/05/21 12:34	
580-100920-2	TRIP BLANK BH-SOIL1-020521	Solid	02/05/21 09:05	02/05/21 12:34	
580-100920-3	TRIP BLANK BH-RINSE1-020521	Water	02/05/21 09:45	02/05/21 12:34	
580-100920-4	BH-RINSE1-020521	Water	02/05/21 09:45	02/05/21 12:34	

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11



Chain-of-Custody Record

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

Date 2/5/2021
Page 1 of 1

Turnaround Time:
Standard _____
Accelerated 3-DAY

Project Name FIRE MTN FARMS Project No. 0066045.110.113
 Project Location/Event BIG MANAFORD RINSE
 Sampler's Name LANCE LEVINE
 Project Contact EVELYN IVES
 Send Results To EVELYN IVES

Testing Parameters

Special Handling Requirements:

 Shipment Method:

 Stored on ice: Yes / No

82600/BENZENE + TOLUENE ONLY

Sample I.D.	Date	Time	Matrix	No. of Containers																
BH-SOIL1-020521	2/5/21	9:05	SOIL	4	X															
TRIP BLANK BH-SOIL1-020521	2/5/21	9:05	T.B.	3	X															
TRIP BLANK BH-RINSE1-020521	2/5/21	9:45	TB	2	X															
BH-RINSE1-020521	2/5/21	9:45	WATER	3	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 BENZENE + TOLUENE ONLY



580-100920 Chain of Custody

Therm. ID: A1 Cor: 6.4 ° Unc: 7.3 °
 Cooler Dsc: SR
 Packing: Sub FedEx: _____
 Cust. Seal: Yes No _____ UPS: _____
 Lab Cour: _____
 Blue Ice, Yes Dry, None Other: CP

Relinquished by
 Signature [Signature]
 Printed Name LANCE LEVINE
 Company LANDAU ASSOCIATES
 Date 2/5/2021 Time 12:29pm

Received by
 Signature [Signature]
 Printed Name DIANA VALLELUNIA
 Company TASEA
 Date 2-5-21 Time 1234

Relinquished by
 Signature _____
 Printed Name _____
 Company _____
 Date _____ Time _____

Received by
 Signature _____
 Printed Name _____
 Company _____
 Date _____ Time _____

Login Sample Receipt Checklist

Client: Landau & Associates, Inc.

Job Number: 580-100920-1
SDG Number: 0066045.110.113

Login Number: 100920

List Number: 1

Creator: Vallelunga, Diana L

List Source: Eurofins TestAmerica, 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 Sample Results

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

Job ID: 580-100920-1
SDG: 0066045.110.113

Client Sample ID: BH-SOIL1-020521

Lab Sample ID: 580-100920-1

Date Collected: 02/05/21 09:05

Matrix: Solid

Date Received: 02/05/21 12:34

Percent Solids: 64.9

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		2.9		ug/Kg	☼	02/05/21 16:27	02/05/21 21:01	1
Toluene	ND		14		ug/Kg	☼	02/05/21 16:27	02/05/21 21:01	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	101		80 - 120	02/05/21 16:27	02/05/21 21:01	1
<i>4-Bromofluorobenzene (Surr)</i>	89		80 - 120	02/05/21 16:27	02/05/21 21:01	1
<i>Dibromofluoromethane (Surr)</i>	110		80 - 120	02/05/21 16:27	02/05/21 21:01	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	117		80 - 121	02/05/21 16:27	02/05/21 21:01	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	64.9		0.1		%			02/08/21 13:23	1
Percent Moisture	35.1		0.1		%			02/08/21 13:23	1

Client Sample Results

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

Job ID: 580-100920-1
 SDG: 0066045.110.113

Client Sample ID: TRIP BLANK BH-SOIL1-020521

Lab Sample ID: 580-100920-2

Date Collected: 02/05/21 09:05

Matrix: Solid

Date Received: 02/05/21 12:34

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		2.0		ug/Kg		02/05/21 16:27	02/05/21 20:36	1
Toluene	ND		10		ug/Kg		02/05/21 16:27	02/05/21 20:36	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	99		80 - 120	02/05/21 16:27	02/05/21 20:36	1
<i>4-Bromofluorobenzene (Surr)</i>	91		80 - 120	02/05/21 16:27	02/05/21 20:36	1
<i>Dibromofluoromethane (Surr)</i>	103		80 - 120	02/05/21 16:27	02/05/21 20:36	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	104		80 - 121	02/05/21 16:27	02/05/21 20:36	1

Client Sample Results

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

Job ID: 580-100920-1
 SDG: 0066045.110.113

Client Sample ID: TRIP BLANK BH-RINSE1-020521

Lab Sample ID: 580-100920-3

Date Collected: 02/05/21 09:45

Matrix: Water

Date Received: 02/05/21 12:34

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		3.0		ug/L			02/05/21 21:37	1
Toluene	ND		2.0		ug/L			02/05/21 21:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	110		80 - 120		02/05/21 21:37	1
<i>4-Bromofluorobenzene (Surr)</i>	106		80 - 120		02/05/21 21:37	1
<i>Dibromofluoromethane (Surr)</i>	96		80 - 120		02/05/21 21:37	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	96		80 - 126		02/05/21 21:37	1

Client Sample Results

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

Job ID: 580-100920-1
 SDG: 0066045.110.113

Client Sample ID: BH-RINSE1-020521

Lab Sample ID: 580-100920-4

Date Collected: 02/05/21 09:45

Matrix: Water

Date Received: 02/05/21 12:34

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		3.0		ug/L			02/06/21 00:09	1
Toluene	ND		2.0		ug/L			02/06/21 00:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Toluene-d8 (Surr)</i>	101		80 - 120		02/06/21 00:09	1
<i>4-Bromofluorobenzene (Surr)</i>	100		80 - 120		02/06/21 00:09	1
<i>Dibromofluoromethane (Surr)</i>	105		80 - 120		02/06/21 00:09	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	105		80 - 126		02/06/21 00:09	1

QC Sample Results

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

Job ID: 580-100920-1
SDG: 0066045.110.113

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

Lab Sample ID: MB 580-349368/9
Matrix: Water
Analysis Batch: 349368

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

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzene	ND		3.0		ug/L			02/05/21 16:38	1
Toluene	ND		2.0		ug/L			02/05/21 16:38	1
Surrogate	MB	MB	Limits			Prepared	Analyzed	Dil Fac	
	%Recovery	Qualifier							
Toluene-d8 (Surr)	99		80 - 120				02/05/21 16:38	1	
4-Bromofluorobenzene (Surr)	96		80 - 120				02/05/21 16:38	1	
Dibromofluoromethane (Surr)	93		80 - 120				02/05/21 16:38	1	
1,2-Dichloroethane-d4 (Surr)	98		80 - 126				02/05/21 16:38	1	

Lab Sample ID: LCS 580-349368/4
Matrix: Water
Analysis Batch: 349368

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

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
Benzene	10.0	9.36		ug/L		94	82 - 122
Toluene	10.0	9.64		ug/L		96	80 - 120
Surrogate	LCS	LCS	Limits			%Rec	%Rec. Limits
	%Recovery	Qualifier					
Toluene-d8 (Surr)	98		80 - 120				
4-Bromofluorobenzene (Surr)	95		80 - 120				
Dibromofluoromethane (Surr)	96		80 - 120				
1,2-Dichloroethane-d4 (Surr)	96		80 - 126				

Lab Sample ID: LCSD 580-349368/5
Matrix: Water
Analysis Batch: 349368

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

Analyte	Spike Added	LCSD	LCSD	Unit	D	%Rec	%Rec. Limits	RPD	Limit
		Result	Qualifier						
Benzene	10.0	9.57		ug/L		96	82 - 122	2	14
Toluene	10.0	9.65		ug/L		96	80 - 120	0	13
Surrogate	LCSD	LCSD	Limits			%Rec	%Rec. Limits	RPD	Limit
	%Recovery	Qualifier							
Toluene-d8 (Surr)	99		80 - 120						
4-Bromofluorobenzene (Surr)	98		80 - 120						
Dibromofluoromethane (Surr)	100		80 - 120						
1,2-Dichloroethane-d4 (Surr)	100		80 - 126						

Lab Sample ID: MB 580-349377/1-A
Matrix: Solid
Analysis Batch: 349371

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 349377

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Benzene	ND		2.0		ug/Kg		02/05/21 16:27	02/05/21 18:56	1
Toluene	ND		10		ug/Kg		02/05/21 16:27	02/05/21 18:56	1
Surrogate	MB	MB	Limits			Prepared	Analyzed	Dil Fac	
	%Recovery	Qualifier							
Toluene-d8 (Surr)	96		80 - 120			02/05/21 16:27	02/05/21 18:56	1	

Eurofins TestAmerica, Seattle

QC Sample Results

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

Job ID: 580-100920-1
SDG: 0066045.110.113

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

Lab Sample ID: MB 580-349377/1-A
Matrix: Solid
Analysis Batch: 349371

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 349377

Surrogate	MB MB		Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
4-Bromofluorobenzene (Surr)	89		80 - 120	02/05/21 16:27	02/05/21 18:56	1
Dibromofluoromethane (Surr)	99		80 - 120	02/05/21 16:27	02/05/21 18:56	1
1,2-Dichloroethane-d4 (Surr)	104		80 - 121	02/05/21 16:27	02/05/21 18:56	1

Lab Sample ID: LCS 580-349377/2-A
Matrix: Solid
Analysis Batch: 349371

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 349377
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Benzene	20.0	18.7		ug/Kg		94	79 - 135
Toluene	20.0	19.5		ug/Kg		98	75 - 137

Surrogate	LCS LCS		Limits
	%Recovery	Qualifier	
Toluene-d8 (Surr)	104		80 - 120
4-Bromofluorobenzene (Surr)	102		80 - 120
Dibromofluoromethane (Surr)	106		80 - 120
1,2-Dichloroethane-d4 (Surr)	104		80 - 121

Lab Sample ID: LCSD 580-349377/3-A
Matrix: Solid
Analysis Batch: 349371

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 349377
%Rec.

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Benzene	20.0	21.7		ug/Kg		109	79 - 135	15	31
Toluene	20.0	23.2		ug/Kg		116	75 - 137	17	34

Surrogate	LCSD LCSD		Limits
	%Recovery	Qualifier	
Toluene-d8 (Surr)	100		80 - 120
4-Bromofluorobenzene (Surr)	94		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120
1,2-Dichloroethane-d4 (Surr)	104		80 - 121

Lab Chronicle

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

Job ID: 580-100920-1
SDG: 0066045.110.113

Client Sample ID: BH-SOIL1-020521

Lab Sample ID: 580-100920-1

Date Collected: 02/05/21 09:05

Matrix: Solid

Date Received: 02/05/21 12:34

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1	349431	02/08/21 13:23	CCH	TAL SEA

Client Sample ID: BH-SOIL1-020521

Lab Sample ID: 580-100920-1

Date Collected: 02/05/21 09:05

Matrix: Solid

Date Received: 02/05/21 12:34

Percent Solids: 64.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			349377	02/05/21 16:27	CJB	TAL SEA
Total/NA	Analysis	8260D		1	349371	02/05/21 21:01	CJ	TAL SEA

Client Sample ID: TRIP BLANK BH-SOIL1-020521

Lab Sample ID: 580-100920-2

Date Collected: 02/05/21 09:05

Matrix: Solid

Date Received: 02/05/21 12:34

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			349377	02/05/21 16:27	CJB	TAL SEA
Total/NA	Analysis	8260D		1	349371	02/05/21 20:36	CJ	TAL SEA

Client Sample ID: TRIP BLANK BH-RINSE1-020521

Lab Sample ID: 580-100920-3

Date Collected: 02/05/21 09:45

Matrix: Water

Date Received: 02/05/21 12:34

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	349368	02/05/21 21:37	CJB	TAL SEA

Client Sample ID: BH-RINSE1-020521

Lab Sample ID: 580-100920-4

Date Collected: 02/05/21 09:45

Matrix: Water

Date Received: 02/05/21 12:34

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260D		1	349368	02/06/21 00:09	CJB	TAL SEA

Laboratory References:

TAL SEA = Eurofins TestAmerica, 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: 580-100920-1
SDG: 0066045.110.113

Laboratory: Eurofins TestAmerica, 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	17-024	02-19-22
ANAB	Dept. of Defense ELAP	L2236	01-19-22
ANAB	ISO/IEC 17025	L2236	01-19-22
California	State	2901	11-05-21
Montana (UST)	State	NA	04-13-21
Oregon	NELAP	WA100007	11-05-21
US Fish & Wildlife	US Federal Programs	058448	07-31-21
USDA	US Federal Programs	P330-20-00031	02-10-23
Washington	State	C553	02-18-21



Big Hanaford Closure Completion Photographs



1. Loading mixed material into intermodal container (01/05/2021).



2. Storage unit being emptied (01/18/2021).



3. Storage unit being emptied (01/18/2021).



4. Removing mixed material from Big Hanaford (01/18/2021).



5. Storage unit being emptied (01/18/2021).



6. Mixed-material removal and decontamination complete (02/05/2021).

02/19/21 P:\066\045\Closure Rpt - Big Hanaford\Attachment 2\Emerald FMF Big Hanaford Closure_att2-3.docx



7. Mixed-material removal and decontamination complete (02/5/2021).



8. Mixed-material removal and decontamination complete (02/5/2021).