

FREMONT ENVIRONMENTAL INC.

June 16, 2022

Mr. Jason Davidson
Great Western Operating Company, LLC
1001 17th Street, Suite 2000
Denver, CO 80202

Subject: **Remediation Report**
 UPRR Meyer #1
 API # 05-001-06793
 SWSE Sec 9, T2S, R63W
 Adams County, Colorado
 Fremont Project No. C020-031
 Facility #319791, Remediation #9464

Dear Mr. Davidson:

Enclosed please find a copy of the above referenced Remediation Report for the UPRR Meyer #1 site in Adams County, Colorado. The enclosed report describes the operation of the soil vapor extraction system that was installed at the site to remediate petroleum-impacted soil at the site.

Please contact me at (303) 956-8714 if you require any additional information.

Fremont appreciates the opportunity to provide this service.

Sincerely,
FREMONT ENVIRONMENTAL INC.



Paul V. Henehan, P.E.
Senior Consultant

Enclosure

REMEDIATION REPORT

GREAT WESTERN OPERATING COMPANY, LLC

UPRR MEYER #1

ADAMS COUNTY, COLORADO

FREMONT PROJECT NO. C020-031

FACILITY #319791, REMEDIATION #9464

Prepared by:

Fremont Environmental Inc.

1759 Redwing Lane

Broomfield, CO 80020

(303) 956-8714

June 16, 2022

TABLE OF CONTENTS

1.0 INTRODUCTION	1
2.0 BACKGROUND INFORMATION	1
2.1 Site Location	1
2.2 Site History	1
3.0 REMEDIATION ACTIVITIES	2
3.1 Soil Remediation System.....	2
4.0 DISCUSSION	2
5.0 REMARKS.....	2

Table

Table 1: Summary of SVE Emissions

Figures

Figure 1: Site Location Map

Figure 2: Site Map

Figure 3: Remediation System Layout

Appendix

Appendix A: Laboratory Documentation

REMEDIATION REPORT
GREAT WESTERN OPERATING COMPANY, LLC
UPRR MEYER #1
ADAMS COUNTY, COLORADO
FREMONT PROJECT NO. C020-031
FACILITY #319791, REMEDIATION #9464

1.0 INTRODUCTION

The purpose of this document is to present information collected during the remediation of petroleum-impacted soil at Great Western Operating Company, LLC's (Great Western's) UPRR Meyer #1 site in Adams County, Colorado. A soil remediation system consisting of two soil vapor extraction (SVE) wells was installed and activated at the site on November 19, 2021. The SVE system has operated continuously since that date.

2.0 BACKGROUND INFORMATION

2.1 Site Location

The UPRR Meyer #1 site is located approximately 11 miles north of Bennett, Colorado in Adams County as shown on Figure 1. The site is located in an agricultural area approximately 0.3 miles northwest of the intersection of County Road 33 and East 104th Avenue. The location is further described as the SW $\frac{1}{4}$ of the SE $\frac{1}{4}$ of Section 9, Township 2S, Range 63W.

2.2 Site History

The UPRR Meyer #1 well was drilled in 1974 to a vertical depth of approximately 7,671 feet. The well and facility were permanently abandoned in 2019.

During abandonment activities, historical subsurface contamination was observed. These residual impacts triggered this remediation program.

3.0 REMEDIATION ACTIVITIES

3.1 Soil Remediation System

As a result of the residual subsurface impacts at the UPRR Meyer #1 location, Great Western installed an SVE system to remediate soil impacts. The system consists of two SVE wells that are individually piped to a remediation trailer. The Republic HRC 500 SVE vacuum blower operates at approximately 80 cfm and 25" H₂O. The remediation system is powered by a propane fueled generator. Figure 3 illustrates the layout of the remediation system.

An SVE exhaust sample was collected on April 14, 2022 and submitted to Origins Laboratory. These data indicate that the SVE system was removing 9.19 pounds per day of petroleum hydrocarbons. The laboratory reports are provided in Appendix A.

4.0 DISCUSSION

Since soil impacts remained at the site after facility abandonment, an SVE remediation system was installed and activated in November 2021 to address those impacts. The remediation system operates on a 24/7 basis. The SVE system has removed 0.66 tons of petroleum hydrocarbons since startup.

When it appears that the SVE system has reached the limits of its operational effectiveness, confirmation soil borings will be advanced to determine whether the subsurface soil impacts have been adequately remediated. The Residential Soil Screening Levels will be applied to this site since the depth to groundwater is believed to be approximately 125 feet based on a 2020 Division of Water Resources document.

5.0 REMARKS

The discussion and conclusions contained in this report represent our professional opinions. These opinions are based on currently available information and are arrived at

in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Other than this, no warranty is implied or intended.

This report was prepared by **FREMONT ENVIRONMENTAL INC.**



6/16/22

Date _____

Paul V. Henehan, P.E.
Senior Consultant

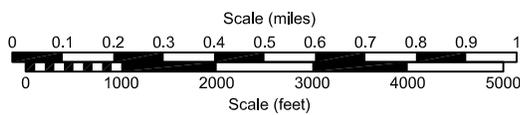
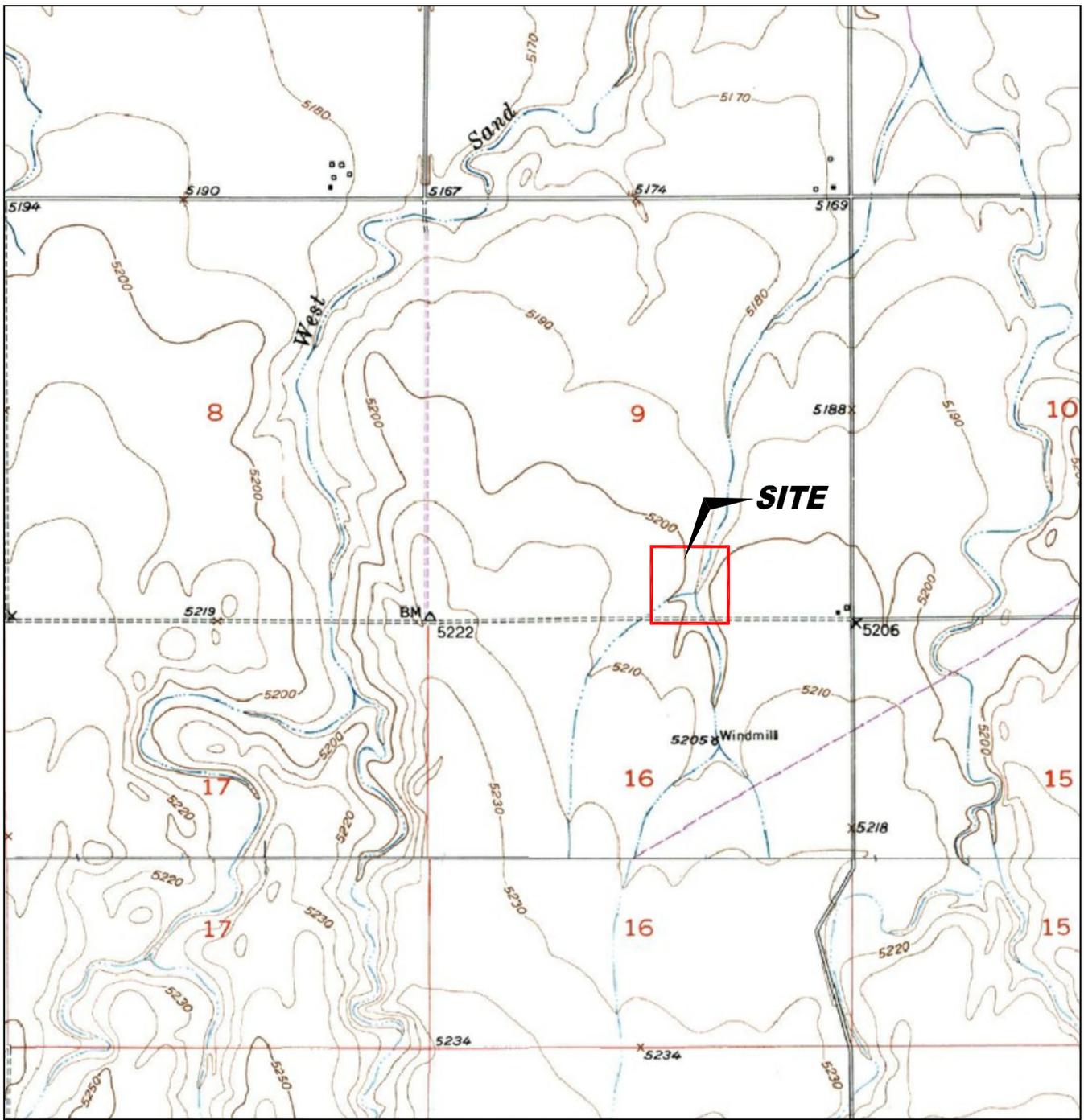
TABLE

**TABLE 1
SUMMARY OF SVE DISCHARGE
GREAT WESTERN OPERATING COMPANY, LLC
UPRR MEYER #1, ADAMS COUNTY, COLORADO
FREMONT PROJECT NO. C021-031**

Date	Air Discharge (CFM)	Instantaneous Hydrocarbon Removal Rate		Operational Hours	Total Pounds Removed For Period	Cumulative Pounds Removed	Cumulative Tons Removed	Benzene Lbs/Hr	Total Benzene For Period Lbs	Cumulative Pounds Benzene Removed
		(Lbs/Hr)	(Lbs/Day)							
12/03/21	80	0.46	11.13	336	155.75	155.75	0.08	0.0006	0.20	0.20
12/21/21	60	0.53	12.65	388	204.51	360.26	0.18	0.0004	0.16	0.36
12/29/21	60	1.39	33.43	173	240.97	601.23	0.30	0.0002	0.04	0.40
01/28/22	60	0.52	12.54	612	319.83	921.06	0.46	0.0000	0.01	0.41
03/07/22	60	0.20	4.81	821	164.44	1,085.50	0.54	0.0001	0.05	0.46
04/14/22	40	0.38	9.19	610	233.51	1,319.01	0.66	0.0000	0.03	0.49

System started on 11/19/21

FIGURES



USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)

Figure 1
SITE LOCATION MAP

Great Western Operating Company
UPRR Meyer #1
SWSE Sec. 9, T2S, R63W 6th PM
Adams County, Colorado

Project # C021-031	API # 05-001-06793	Facility # 319791
Date 09/15/21	Remediation #	Filename 21031T





LEGEND

- GEO-PROBE SOIL BORING LOCATION
- SOIL BORING LOCATION
- Ⓢ SOIL VAPOR EXTRACTION WELL LOCATION
- ABOVE GROUND STORAGE TANK
- ▭ FORMER FACILITY
- ▭ CONTAINMENT BERM
- ▭ CONTAINMENT WALL
- ▭ FENCE LINE

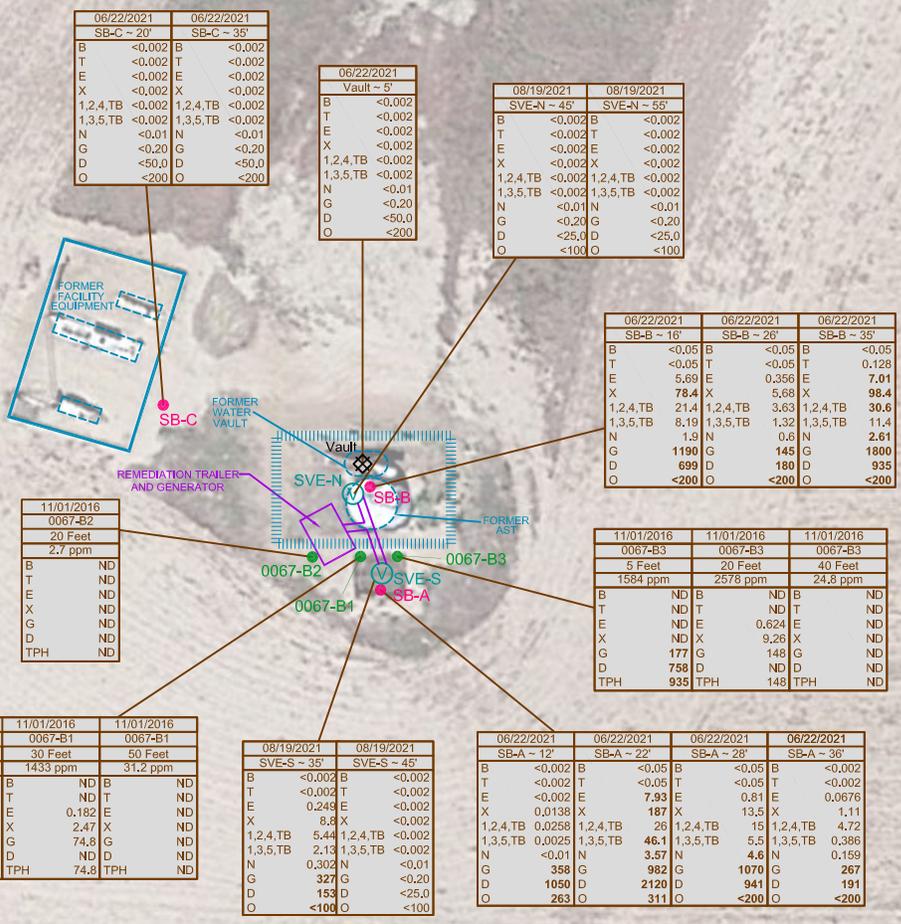
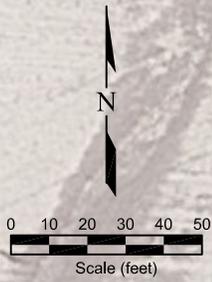
**Figure 2
SITE MAP**

**Great Western Operating Company
UPRR Meyer #1**
SWSE Sec. 9, T2S, R63W 6th PM
Adams County, Colorado

Project No. C021-031	API # 05-001-06793	Facility # 319791
Date 09/15/21	Remediation #	Filename 21031Q



11/01/2016 DATA TAKEN FROM AG WASSENAAR



LEGEND

- GEO-PROBE SOIL BORING LOCATION
- SOIL BORING LOCATION
- SOIL VAPOR EXTRACTION WELL LOCATION
- SOIL SAMPLE LOCATION
- ABOVE GROUND STORAGE TANK
- FORMER FACILITY
- CONTAINMENT BERM
- CONTAINMENT WALL
- FENCE LINE
- REMEDIATION SYSTEM TRENCH

DATE SAMPLED	SAMPLE ID and DEPTH (ft)	BENZENE (mg/kg)	TOLUENE (mg/kg)	ETHYLBENZENE (mg/kg)	TOTAL XYLENES (mg/kg)	1,2,4-TRIMETHYLBENZENE (mg/kg)	1,3,5-TRIMETHYLBENZENE (mg/kg)	NAPHTHALENE (mg/kg)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	TPH-ORO (mg/kg)
06/22/2021	SB-A ~ 12'	<0.002	<0.002	<0.002	0.0138	0.0258	0.0025	<0.01	G 358	D 1050	O 263
11/01/2016	0067-B2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
08/19/2021	SVE-S ~ 45'	<0.002	<0.002	<0.002	0.248	8.8	5.44	<0.002	N 302	G 327	D 153
06/22/2021	Vault ~ 5'	SAR 2.1	pH 8.07	EC 0.781	BORON 0.46						

**Figure 3
REMEDIATION SYSTEM LAYOUT**

**Great Western Operating Company
UPRR Meyer #1**
SWSE Sec. 9, T2S, R63W 6th PM
Adams County, Colorado

Project No. C021-031	API # 05-001-06793	Facility # 319791	
Date 12/17/21	Remediation #	Filename 21031Q	

PID = PHOTO IONIZATION DETECTOR / ppm = parts per million
TPH = TOTAL PETROLEUM HYDROCARBONS / BOLD = EXCEEDS COGCC TABLE 9104

APPENDIX A

LABORATORY DOCUMENTATION

May 03, 2022

Fremont Environmental

Paul Henehan

8305 6th St, PO Box 1289

Wellington CO 80549

Project Name - UPRR Meyer #1

Project Number - CO21-031

Attached are your analytical results for UPRR Meyer #1 received by Origins Laboratory, Inc. April 14, 2022. This project is associated with Origins project number Y204328-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.
303.433.1322
o-squad@oelabinc.com



Fremont Environmental
8305 6th St, PO Box 1289
Wellington CO 80549

Paul Henehan
Project Number: CO21-031
Project: UPRR Meyer #1

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
UPRR Meyer #1 SVE	Y204328-01	Air	April 14, 2022 10:45	04/14/2022 15:40

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Fremont Environmental
 8305 6th St, PO Box 1289
 Wellington CO 80549

Paul Henehan
 Project Number: CO21-031
 Project: UPRR Meyer #1

Origins Laboratory

F-012207-01-R1
 Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: Y704328

Client: Fremont

Client Project ID: UPRR Meyer #1

Checklist Completed by: JG

Shipped Via: HD
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 4/15/22

Airbill #: N/A

Matrix(s) Received: (Check all that apply): Soil/Solid Water Other: Air

Cooler Number/Temperature: - / - °C / °C / °C (Describe) °C

Thermometer ID: N/A

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Is there ice present (document if blue ice is used)			<input checked="" type="checkbox"/>	
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)			<input checked="" type="checkbox"/>	
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)			<input checked="" type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH < 2 for samples preserved with HNO ₃ , HCL, H ₂ SO ₄) / (pH > 10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by (Project Manager) JG

Date/Time Reviewed 4/18/22

Origins Laboratory, Inc.

J. Bynon

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Fremont Environmental
 8305 6th St, PO Box 1289
 Wellington CO 80549

Paul Henehan
 Project Number: CO21-031
 Project: UPRR Meyer #1

UPRR Meyer #1 SVE
4/14/2022 10:45:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	---------	----------	----------	-------

Origins Laboratory, Inc.
Y204328-01 (Air)

GBTEX by TO-15M GC/MS

T

Gasoline Range Hydrocarbons	2560000	50000	ug/m ³ Air	250	B2D1915	EPC	04/19/2022	04/21/2022	
Benzene	306	70.0	"	25	"	EPC	"	04/21/2022	
Toluene	1740	1250	"	250	"	EPC	"	04/21/2022	
Ethylbenzene	3330	1250	"	"	"	EPC	"	"	
m,p-Xylene	72300	4750	"	"	"	EPC	"	"	
o-Xylene	10000	1180	"	"	"	EPC	"	"	
Surrogate: 1,2-Dichloroethane-d4	87.9 %	70-130			"	"	"	"	
Surrogate: Toluene-d8	115 %	70-130			"	"	"	"	
Surrogate: 4-Bromofluorobenzene	92.7 %	70-130			"	"	"	"	

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Fremont Environmental
 8305 6th St, PO Box 1289
 Wellington CO 80549

Paul Henehan
 Project Number: CO21-031
 Project: UPRR Meyer #1

Volatile Organic Compounds by TO-15 in Air - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B2D1915 - Default Prep - Air										
Blank (B2D1915-BLK1)										
					Prepared: 04/19/2022 Analyzed: 04/20/2022					T
Gasoline Range Hydrocarbons	ND	200	ug/m ³ Air							U
Benzene	ND	2.80	"							U
Toluene	ND	5.00	"							U
Ethylbenzene	ND	5.00	"							U
m,p-Xylene	ND	19.0	"							U
o-Xylene	ND	4.70	"							U
Surrogate: 1,2-Dichloroethane-d4	10.0		ppbv	10.0		100	70-130			
Surrogate: Toluene-d8	11.0		"	10.0		110	70-130			
Surrogate: 4-Bromofluorobenzene	9.23		"	10.0		92.3	70-130			
LCS (B2D1915-BS1)										
					Prepared: 04/19/2022 Analyzed: 04/20/2022					T
Benzene	33.2	2.80	ug/m ³ Air	31.9		104	70-130			
Toluene	41.0	5.00	"	37.7		109	70-130			
Ethylbenzene	45.1	5.00	"	43.4		104	70-130			
m,p-Xylene	173	19.0	"	174		99.6	70-130			
o-Xylene	37.0	4.70	"	43.4		85.1	70-130			
Surrogate: 1,2-Dichloroethane-d4	9.11		ppbv	10.0		91.1	70-130			
Surrogate: Toluene-d8	9.79		"	10.0		97.9	70-130			
Surrogate: 4-Bromofluorobenzene	10.0		"	10.0		100	70-130			
LCS Dup (B2D1915-BSD1)										
					Prepared: 04/19/2022 Analyzed: 04/20/2022					T
Benzene	33.6	2.80	ug/m ³ Air	31.9		105	70-130	1.15	25	
Toluene	41.5	5.00	"	37.7		110	70-130	1.10	25	
Ethylbenzene	45.8	5.00	"	43.4		106	70-130	1.53	25	
m,p-Xylene	175	19.0	"	174		101	70-130	1.05	25	
o-Xylene	38.3	4.70	"	43.4		88.1	70-130	3.46	25	
Surrogate: 1,2-Dichloroethane-d4	8.50		ppbv	10.0		85.0	70-130			

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Fremont Environmental
8305 6th St, PO Box 1289
Wellington CO 80549

Paul Henehan
Project Number: CO21-031
Project: UPRR Meyer #1

Volatile Organic Compounds by TO-15 in Air - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B2D1915 - Default Prep - Air

LCS Dup (B2D1915-BSD1)

Prepared: 04/19/2022 Analyzed: 04/20/2022

T

Surrogate: Toluene-d8	8.93		ppbv	10.0		89.3	70-130			
Surrogate: 4-Bromofluorobenzene	9.90		"	10.0		99.0	70-130			

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Fremont Environmental
8305 6th St, PO Box 1289
Wellington CO 80549

Paul Henehan
Project Number: CO21-031
Project: UPRR Meyer #1

Notes and Definitions

U Sample is Non-Detect.

T The TO-15 analysis is not part of the NELAC accreditation

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.