

# **FREMONT ENVIRONMENTAL INC.**

December 29, 2017

Mr. Jacob Evans  
Noble Energy Inc.  
2115 117<sup>th</sup> Ave,  
Greeley, CO 80634

Subject:     **Excavation Report**  
              Cervi 41-21  
              API # 05-123-20820  
              NENE Sec 21, T4N, R63W  
              Weld County, Colorado  
              Fremont Project No. C016-026  
              Facility #331518 (Location), Spill #443565

Dear Mr. Evans:

Enclosed please find a copy of the above referenced Excavation Report for the Cervi 41-21 water vault release site in Weld County, Colorado. The enclosed report describes excavation actions to remove impacted soil from the site.

Since the excavation project has removed the subsurface petroleum impacts, Noble Energy Inc. should request that a No Further Action (NFA) determination be provided by the Colorado Oil and Gas Conservation Commission (COGCC) for this 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. Henahan, P.E.  
Senior Consultant

Enclosure

**1759 REDWING LANE, BROOMFIELD, CO 80020**  
**(303) 956-8714 (DIRECT)**

**EXCAVATION REPORT**

**NOBLE ENERGY INC.**

**CERVI 41-21**

**WELD COUNTY, COLORADO**

**FREMONT PROJECT NO. C016-026**

**FACILITY #331518, SPILL #4483565**

**Prepared by:**

**Fremont Environmental Inc.  
1759 Redwing Lane  
Broomfield, CO 80020  
(303) 956-8714**

**December 29, 2017**

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## **EXCAVATION REPORT**

**NOBLE ENERGY INC.**

**CERVI 41-21**

**WELD COUNTY, COLORADO**

**FREMONT PROJECT NO. C016-026**

**FACILITY #331518, SPILL #4483565**

### **1.0 INTRODUCTION**

The purpose of this document is to present information collected during the excavation of petroleum-impacted soil at the Cervi 41-21 release location in Weld County, Colorado. Impacted soil was identified at this site due to a historical release from the facility's water vault. This one-day excavation project was completed on October 30, 2017.

### **2.0 BACKGROUND INFORMATION**

#### **2.1 Site Location**

The Cervi 41-21 site is located approximately eight miles southeast of Kersey, Colorado in Weld County as shown on Figure 1. The site is located in a rural area one mile southwest of the intersection of County Road 69 and Highway 34. The location is further described as the NE  $\frac{1}{4}$  of the NE  $\frac{1}{4}$  of Section 21, Township 4N, Range 63W.

#### **2.2 Site History**

The site consists of the former water vault for the Cervi 41-21 natural gas well. The Cervi 41-21 well was drilled in 2002 to a depth of approximately 7,555 feet. Soil impacts were identified at the former water vault during abandonment of the facility. These soil impacts initiated this excavation effort.

### **3.0 FIELD ACTIVITIES**

Prior to excavation at the water vault, soil samples were collected using a hand auger. Four soil samples were collected at the northeast, southeast, northwest and southwest points approximately one foot from the water vault. As shown on Table 1, only the soil sample collected from the northwest point exceeded the COGCC Table 910-1 limits; the other three soil samples achieved the Table 910-1 standards. Therefore, remediation was only necessary for the northwest area of the water vault.

Remediation efforts consisted of the excavation of petroleum-impacted soil at this site. The soil consisted of roadbase which was underlain by sand to a depth of at least eight feet. Ground water was not encountered during the excavation work. The 12' x 12' excavated area is shown on Figure 3.

Excavation was initiated at the location of the former water vault on October 30, 2017. Soil removal took place in the area adjacent to and below the former water vault to a depth of approximately eight feet. Excavation continued until all soil impacts were excavated later that same day.

One sidewall sample and one floor sample collected upon completion of the excavation work indicated that no residual petroleum impacts were present. Since the one sidewall sample was collected from the east wall, an additional sidewall sample was collected with a hand auger on November 22, 2017 from the northwestern sample location to confirm no soil impacts were present.

The sidewall samples were collected as grab samples near the lower portion of the excavation wall at depths of five to six feet. One floor sample was collected at a depth of eight feet. The soil samples were analyzed by Summit Scientific Inc. of Golden, Colorado for benzene, toluene, ethylbenzene and xylenes (BTEX), naphthalene, Total Petroleum

Hydrocarbons – Gasoline Range Organics (TPH-GRO) by EPA method 8260C, and TPH – Diesel Range Organics (TPH-DRO) by EPA method 8015. The laboratory reports and chains-of-custody documentation are included in Appendix A.

A summarization of the laboratory data is included in Table 1, which presents the laboratory analyses for each soil sample. The laboratory analyses indicated that the soil samples collected from the post-excavation sidewalls and floor achieved the COGCC Table 910-1 limits.

A total of 20 cubic yards of petroleum impacted soil were removed by Gusher Oilfield Services Inc. from the location during this project. The impacted soil was disposed of at the Waste Management Inc. Northern Colorado landfill in Ault, Colorado as non-hazardous waste. The site was re-contoured to match the surrounding surface after backfilling was completed.

#### **4.0 DISCUSSION**

Site remediation of the Cervi 41-21 location was completed on October 30, 2017 by excavation and disposal of impacted soil. Approximately 20 cubic yards of impacted soil were excavated and removed from this site.

As demonstrated by the soil sampling and analyses, the petroleum impacted soil has been removed from the site by excavation. This was confirmed by the analyses of the soil samples collected from the excavation floor and sidewalls which were below the COGCC Table 910-1 limits. Therefore, Noble should request a no further action (NFA) determination from the COGCC.

**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.**

 For MVA

12/29/17

\_\_\_\_\_  
Date\_\_\_\_\_

Mark Taylor  
Construction Consultant

Reviewed by:



12/29/17

\_\_\_\_\_  
Date\_\_\_\_\_

Paul V. Henahan, P.E.  
Senior Consultant

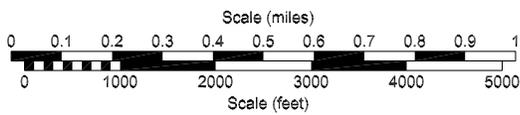
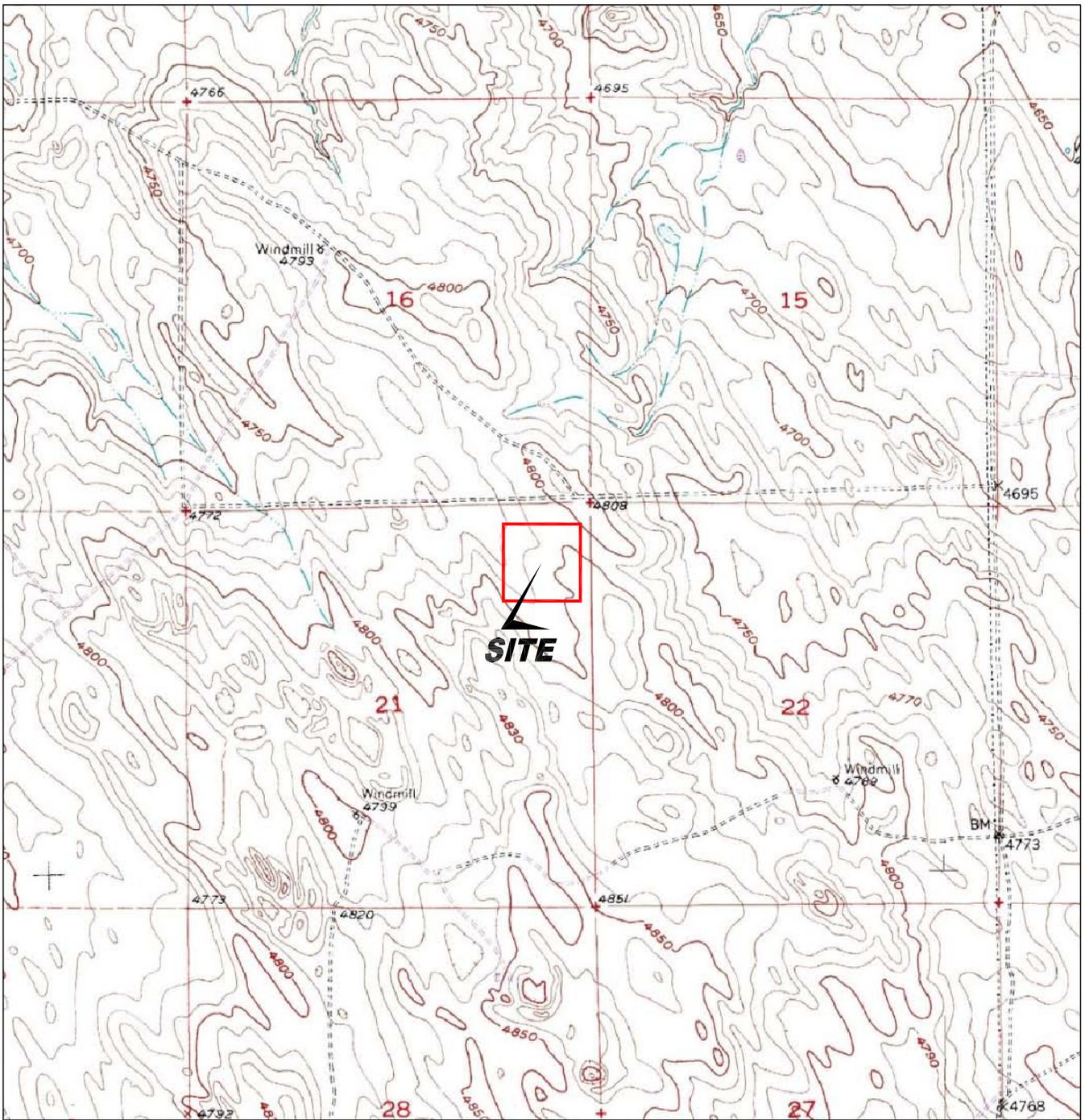
**TABLE**

**TABLE 1**  
**SUMMARY OF SOIL CHEMISTRY DATA**  
**NOBLE ENERGY INC.**  
**CERVI 41-21**  
**FREMONT PROJECT NO. C016-026**

Sample	Depth (ft)	Date Sampled	Location	Pass or Fail	Benzene mg/kg	Toluene mg/kg	Ethyl-Benzene mg/kg	Xylenes mg/kg	Naphthalene mg/kg	TPH GRO mg/kg	TPH DRO mg/kg
NE Wall 6 Ft	6	8/28/2017	Wall	Pass	<0.002	<0.005	<0.005	<0.01	<0.01	<50	230
SE Wall 5 Ft	5	8/28/2017	Wall	Pass	<0.002	<0.005	<0.005	<0.01	<0.01	<50	73
NW Wall 5 Ft	5	8/28/2017	Wall	<b>Fail</b>	<0.002	<0.005	<0.005	<0.01	<0.01	<50	<b>1100</b>
SW Wall 6 Ft	6	8/28/2017	Wall	Pass	<0.002	<0.005	<0.005	<0.01	<0.01	<50	75
E Wall 3 Ft	3	10/30/2017	Wall	Pass	<0.002	<0.005	<0.005	<0.01	<0.01	<50	<50
Floor 8 Ft	8	10/30/2017	Floor	Pass	<0.002	<0.005	<0.005	<0.01	<0.01	<50	<50
NW Wall 5 Ft	5	11/22/2017	Wall	Pass	<0.002	<0.005	<0.005	<0.01	<0.01	<50	<50
COGCC Table 910 Limits					0.17	85	100	175	23	500	500

Bold faced values exceed the COGCC Table 910-1 concentrations

## FIGURES



USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)

Figure 1  
**SITE LOCATION MAP**

**Noble Cervi 41-21**  
 NE NE Section 21, T3N, R63W  
 Weld County, Colorado

Project No. C016-026	Prepared by	Drawn by JMA
Date 12/28/17	Reviewed by	Filename 16026T





Figure 2  
SITE MAP

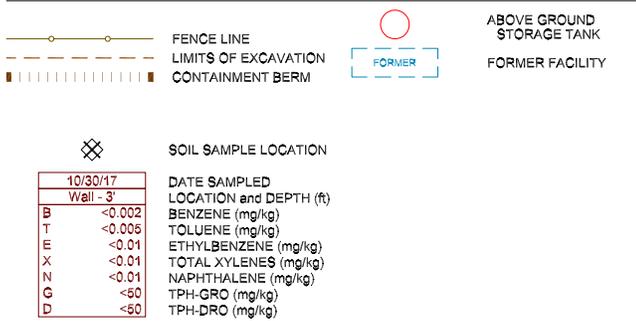
**Noble Cervi 41-21**  
NE NE Sec. 21, T3N, R63W - 40.30273°N 104.435816°W  
Weld County, Colorado

Project No. C016-026	Prepared by	Drawn by JMA
Date 12/28/17	Reviewed by	Filename 16026Q





Scale (feet)



**Figure 3**  
**EXCAVATION SOIL CHEMISTRY**

**Noble Cervi 41-21**  
NE NE Sec. 21, T3N, R63W - 40.30273°N 104.435816°W  
Weld County, Colorado

Project No. <b>C016-026</b>	Prepared by	Drawn by <b>JMA</b>	
Date <b>12/28/17</b>	Reviewed by	Filename <b>16026Q</b>	

APPENDIX A

LABORATORY DOCUMENTATION

# Summit Scientific

---

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

September 06, 2017

Paul Henehan  
Fremont Environmental  
1759 Redwing Lane  
Broomfield, CO 80020  
RE: Noble - Cervi 41-21

Enclosed are the results of analyses for samples received by Summit Scientific on 08/28/17 16:25. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury For Ben Shrewsbury  
Laboratory Manager



Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Cervi 41-21

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
09/06/17 06:48

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
NE 6 FT	1708277-01	Soil	08/28/17 00:00	08/28/17 16:25
SE 5 FT	1708277-02	Soil	08/28/17 00:00	08/28/17 16:25
NW 5 FT	1708277-03	Soil	08/28/17 00:00	08/28/17 16:25
SW 6 FT	1708277-04	Soil	08/28/17 00:00	08/28/17 16:25

Summit Scientific

*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.*

# Summit Scientific

S<sub>2</sub>

1708277

741 Corporate Circle, Suite J ♦ Golden, Colorado 80401  
303-277-9310 ♦ 303-374-5933

Page 1 of 1

Client: Fremont Environmental

Project Manager: Paul Henehan

Address: P.O. Box 1289

E-Mail: paulh@fremontenv.com

*Bill to Jacob*

City/State/Zip: PO Box 1829 Wellington, CO 80549

Phone: 303-956-8714

Fax:

Project Name: *NOBLE - CERVI 41-21*

Sampler Name: *HENEHAN*

Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested						Special Instructions		
					HCl	HNO3	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)	BTEX	GRO/DRO	Napthalene	SAR	EC	Ph			
1	<i>NE 6 FT</i>	<i>8/28/17</i>		<i>1</i>			<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
2	<i>SE 5 FT</i>			<i>1</i>			<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
3	<i>NW 5 FT</i>			<i>1</i>			<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
4	<i>SW 6 FT</i>			<i>1</i>			<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
5																					
6																					
7																					
8																					
9																					
10																					

Relinquished by: <i>PH</i>	Date/Time: <i>8/28/17 16:25</i>	Received by: <i>PH</i>	Date/Time: <i>8-28-17 16:25</i>
Relinquished by:	Date/Time:	Received by:	Date/Time:
Relinquished by:	Date/Time:	Received by:	Date/Time:

**Turn Around Time** (Check)

Same Day  72 hours

24 hours  **Standard**

48 hours

**Sample Integrity:**

Temperature Upon Receipt:

Intact: Yes No

**Notes:**

1708277

Sample Receipt Checklist

S2 Work Order: \_\_\_\_\_

Client: Fremont-Noble

Client Project ID: \_\_\_\_\_

Noble-Cervi 41-21

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

Airbill #: \_\_\_\_\_

Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_  
(Describe)

Cooler ID					
Temp (°C)					

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C <sup>(1)</sup> ? NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>			
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation <b>(excluding cooling)</b> <sup>(1)</sup> ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.			<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):  				
<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.				

Murip.  
Custodian Printed Name

MD 8-28-17  
Signature or Initials of Custodian

18:00  
Date/Time



Fremont Environmental  
1759 Redwing Lane  
Broomfeld CO, 80020

Project: Noble - Cervi 41-21

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
09/06/17 06:48

**NE 6 FT**  
**1708277-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/28/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>230</b>	50	mg/kg	1	1708301	08/31/17	09/01/17	8015M	

Date Sampled: **08/28/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		89.0 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **08/28/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1708302	"	08/31/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **08/28/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		114 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		100 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		96.2 %	21-167		"	"	"	"	

Summit Scientific

*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  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Cervi 41-21

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
09/06/17 06:48

**SE 5 FT**  
**1708277-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/28/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	73	50	mg/kg	1	1708301	08/31/17	09/01/17	8015M	

Date Sampled: **08/28/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		88.7 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **08/28/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1708302	"	09/01/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **08/28/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.8 %	21-167		"	"	"	"	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Cervi 41-21

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
09/06/17 06:48

**NW 5 FT  
1708277-03 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/28/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>1100</b>	50	mg/kg	1	1708301	08/31/17	09/01/17	8015M	

Date Sampled: **08/28/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		97.4 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **08/28/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1708302	"	09/01/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **08/28/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		103 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		96.8 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		95.8 %	21-167		"	"	"	"	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Cervi 41-21

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
09/06/17 06:48

**SW 6 FT**  
**1708277-04 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **08/28/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>75</b>	<b>50</b>	<b>mg/kg</b>	<b>1</b>	<b>1708301</b>	<b>08/31/17</b>	<b>09/05/17</b>	<b>8015M</b>	

Date Sampled: **08/28/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		<i>94.5 %</i>	<i>30-150</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **08/28/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1708302	"	09/01/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **08/28/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		<i>108 %</i>	<i>23-173</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: Toluene-d8</i>		<i>102 %</i>	<i>20-170</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>		<i>98.7 %</i>	<i>21-167</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Cervi 41-21

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
09/06/17 06:48

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

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

**Batch 1708301 - EPA 3550A**

**Blank (1708301-BLK1)**

Prepared & Analyzed: 08/31/17

C10-C28 (DRO)	ND	50	mg/kg								
<i>Surrogate: o-Terphenyl</i>	13.3		"	12.5		106	30-150				

**LCS (1708301-BS1)**

Prepared & Analyzed: 08/31/17

C10-C28 (DRO)	440	50	mg/kg	499		88.1	73-134				
<i>Surrogate: o-Terphenyl</i>	12.1		"	12.5		97.2	30-150				

**Matrix Spike (1708301-MS1)**

Source: 1708276-01

Prepared & Analyzed: 08/31/17

C10-C28 (DRO)	615	50	mg/kg	499	258	71.6	50-148				
<i>Surrogate: o-Terphenyl</i>	11.9		"	12.5		95.0	30-150				

**Matrix Spike Dup (1708301-MSD1)**

Source: 1708276-01

Prepared & Analyzed: 08/31/17

C10-C28 (DRO)	671	50	mg/kg	499	258	82.9	50-148	8.78	20		
<i>Surrogate: o-Terphenyl</i>	12.2		"	12.5		97.7	30-150				

Summit Scientific

*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  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Cervi 41-21

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
09/06/17 06:48

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

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

**Batch 1708302 - EPA 5030 Soil MS**

**Blank (1708302-BLK1)**

Prepared & Analyzed: 08/31/17

Naphthalene	ND	0.010	mg/kg								
Benzene	ND	0.0020	"								
Toluene	ND	0.0050	"								
Ethylbenzene	ND	0.0050	"								
Xylenes (total)	ND	0.010	"								
Gasoline Range Hydrocarbons	ND	50	"								
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0425</i>		<i>"</i>	<i>0.0400</i>		<i>106</i>		<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0403</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>		<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0376</i>		<i>"</i>	<i>0.0400</i>		<i>94.0</i>		<i>21-167</i>			

**LCS (1708302-BS1)**

Prepared & Analyzed: 08/31/17

Naphthalene	0.00768	0.010	mg/kg					66-138			
Benzene	0.0835	0.0020	"	0.100		83.5		58-130			
Toluene	0.0962	0.0050	"	0.100		96.2		61-134			
Ethylbenzene	0.114	0.0050	"	0.0992		114		74-139			
m,p-Xylene	0.229	0.010	"	0.200		115		73-137			
o-Xylene	0.107	0.0050	"	0.0980		109		73-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0423</i>		<i>"</i>	<i>0.0400</i>		<i>106</i>		<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0384</i>		<i>"</i>	<i>0.0400</i>		<i>96.0</i>		<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0382</i>		<i>"</i>	<i>0.0400</i>		<i>95.6</i>		<i>21-167</i>			

**Matrix Spike (1708302-MS1)**

Source: 1708277-01

Prepared & Analyzed: 08/31/17

Naphthalene	0.00741	0.010	mg/kg		0.00750			10-158			
Benzene	0.0837	0.0020	"	0.100	ND	83.7		30-131			
Toluene	0.0940	0.0050	"	0.100	ND	94.0		30-134			
Ethylbenzene	0.110	0.0050	"	0.0992	ND	111		22-153			
m,p-Xylene	0.213	0.010	"	0.200	ND	107		10-159			
o-Xylene	0.104	0.0050	"	0.0980	ND	106		31-151			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0418</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>		<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0376</i>		<i>"</i>	<i>0.0400</i>		<i>94.1</i>		<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0366</i>		<i>"</i>	<i>0.0400</i>		<i>91.6</i>		<i>21-167</i>			

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfeld CO, 80020

Project: Noble - Cervi 41-21

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
09/06/17 06:48

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

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

**Batch 1708302 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (1708302-MSD1)</b>	<b>Source: 1708277-01</b>			<b>Prepared &amp; Analyzed: 08/31/17</b>						
Naphthalene	0.00756	0.010	mg/kg	0.00750	ND	84.5	10-158	2.00	42	
Benzene	0.0845	0.0020	"	0.100	ND	97.7	30-131	0.963	34	
Toluene	0.0977	0.0050	"	0.100	ND	120	30-134	3.88	30	
Ethylbenzene	0.119	0.0050	"	0.0992	ND	116	22-153	7.96	24	
m,p-Xylene	0.232	0.010	"	0.200	ND	116	10-159	8.73	68	
o-Xylene	0.114	0.0050	"	0.0980	ND	116	31-151	9.32	38	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0439</i>		<i>"</i>	<i>0.0400</i>		<i>110</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0393</i>		<i>"</i>	<i>0.0400</i>		<i>98.2</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0401</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>21-167</i>			

Summit Scientific

*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  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Cervi 41-21

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
09/06/17 06:48

### Notes and Definitions

DET Analyte DETECTED  
ND Analyte NOT DETECTED at or above the reporting limit  
NR Not Reported  
dry Sample results reported on a dry weight basis  
RPD Relative Percent Difference

# Summit Scientific

---

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

November 07, 2017

Paul Henehan  
Fremont Environmental  
1759 Redwing Lane  
Broomfield, CO 80020  
RE: Noble - Cervi 41-21

Enclosed are the results of analyses for samples received by Summit Scientific on 10/31/17 15:20. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury For Ben Shrewsbury  
Laboratory Manager



Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Cervi 41-21

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
11/07/17 08:37

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
E Wall 3 Ft	1710339-01	Soil	10/30/17 00:00	10/31/17 15:20
Floor 8 Ft	1710339-02	Soil	10/30/17 00:00	10/31/17 15:20

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Summit Scientific

*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.*

# Summit Scientific

1710339

S<sub>2</sub>

741 Corporate Circle, Suite J ♦ Golden, Colorado 80401  
303-277-9310 ♦ 303-374-5933

Page 1 of 1

Client: Fremont Environmental

Project Manager: Paul Henehan

Address: P.O. Box 1289

E-Mail: paulh@fremontenv.com

*BILL TO: HOWARD*

City/State/Zip: PO Box 1829 Wellington, CO 80549

Phone: 303-956-8714

Fax:

Project Name: *NOBLE - CERVI 41-21*

Sampler Name: *HENEHAN*

Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested						Special Instructions
					HCl	HNO3	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)	BTEX	GRO/DRO	Napthalene	SAR	EC	Ph	
1	<i>E. WALL 3 FT</i>	<i>10/30/17</i>		<i>1</i>			<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
2	<i>FLOOR 8 FT</i>	<i>"</i>		<i>1</i>			<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
Relinquished by: <i>PA/FE</i>		Date/Time: <i>10/31/17 15:20</i>		Received by: <i>DA</i>		Date/Time: <i>10-31-17 15:20</i>		Turn Around Time (Check)						Notes:					
								Same Day <input type="checkbox"/> 72 hours <input type="checkbox"/>											
								24 hours <input type="checkbox"/> <input checked="" type="checkbox"/> Standard											
Relinquished by:		Date/Time:		Received by:		Date/Time:		48 hours <input type="checkbox"/>						Sample Integrity:					
Relinquished by:		Date/Time:		Received by:		Date/Time:		Temperature Upon Receipt:						13.1 Intact: <input checked="" type="checkbox"/> No <input type="checkbox"/>					

1710339

Sample Receipt Checklist

S2 Work Order: \_\_\_\_\_

Client: FREMONT/NOBLE Client Project ID: NOBLE - CERVI 41-21

Shipped Via: H.D. ONICE Airbill #: \_\_\_\_\_  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_  
(Describe)

Cooler ID					
Temp (°C)	13.1				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C <sup>(1)</sup> ? NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.	y			
Were all samples received intact <sup>(1)</sup> ?	✓			
Was adequate sample volume provided <sup>(1)</sup> ?	x			
If custody seals are present, are they intact <sup>(1)</sup> ?			✓	
Are short holding time analytes or samples with HTs due within 48 hours present?			x	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	✓			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	✓			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	✓			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	✓			
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>			x	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			x	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.			x	
If dissolved metals are requested, were samples field filtered?			✓	
Additional Comments (if any):				

<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.

Murip.  
Custodian Printed Name

[Signature] 10-31-17  
Signature or Initials of Custodian

10:30  
Date/Time



Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Cervi 41-21

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
11/07/17 08:37

**E Wall 3 Ft**  
**1710339-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **10/30/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1711010	11/01/17	11/02/17	8015M	

Date Sampled: **10/30/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		105 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **10/30/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1711009	"	11/01/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **10/30/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		137 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.4 %	21-167		"	"	"	"	

**Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: **10/30/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	<b>5400</b>	11.9	mg/kg dry	1	1711029	11/02/17	11/02/17	EPA 6020/Mod. USDA60 6(2, 3A)	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Cervi 41-21

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
11/07/17 08:37

**E Wall 3 Ft**  
**1710339-01 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis**

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Magnesium	463	5.97	mg/kg dry	1	1711029	11/02/17	11/02/17	EPA 6020/Mod. USDA60 6(2, 3A)	
Sodium	131	5.97	"	"	"	"	"	"	"
Sodium Adsorption Ratio	0.459		units	"	1711053	11/03/17	11/03/17	"	"

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **10/30/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.69	0.100	pH Units	1	1711032	11/02/17	11/02/17	EPA 9045	
Specific Conductance (EC)	0.756	0.0100	mmhos/cm	"	1711033	11/02/17	11/02/17	SM 2510B	
% Solids	83.7		%	"	1711031	11/02/17	11/03/17	% calculation	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Cervi 41-21

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
11/07/17 08:37

**Floor 8 Ft**  
**1710339-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **10/30/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1711010	11/01/17	11/02/17	8015M	

Date Sampled: **10/30/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		101 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **10/30/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1711009	"	11/01/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **10/30/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		132 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		91.6 %	21-167		"	"	"	"	

Summit Scientific

*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  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Cervi 41-21

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
11/07/17 08:37

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

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

**Batch 1711010 - EPA 3550A**

<b>Blank (1711010-BLK1)</b>				Prepared & Analyzed: 11/01/17							
C10-C28 (DRO)	ND	50	mg/kg								
<i>Surrogate: o-Terphenyl</i>	12.6		"	12.5		101	30-150				
<b>LCS (1711010-BS1)</b>				Prepared & Analyzed: 11/01/17							
C10-C28 (DRO)	506	50	mg/kg	499		101	73-134				
<i>Surrogate: o-Terphenyl</i>	13.1		"	12.5		105	30-150				
<b>Matrix Spike (1711010-MS1)</b>				<b>Source: 1710337-01</b>		Prepared & Analyzed: 11/01/17					
C10-C28 (DRO)	510	50	mg/kg	499	27.4	96.7	50-148				
<i>Surrogate: o-Terphenyl</i>	15.1		"	12.5		121	30-150				
<b>Matrix Spike Dup (1711010-MSD1)</b>				<b>Source: 1710337-01</b>		Prepared: 11/01/17 Analyzed: 11/02/17					
C10-C28 (DRO)	548	50	mg/kg	499	27.4	104	50-148	7.14		20	
<i>Surrogate: o-Terphenyl</i>	12.8		"	12.5		103	30-150				

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfeld CO, 80020

Project: Noble - Cervi 41-21

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
11/07/17 08:37

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

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

**Batch 1711009 - EPA 5030 Soil MS**

**Blank (1711009-BLK1)**

Prepared & Analyzed: 11/01/17

Naphthalene	ND	0.010	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0517</i>		<i>"</i>	<i>0.0400</i>		<i>129</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0384</i>		<i>"</i>	<i>0.0400</i>		<i>95.9</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0354</i>		<i>"</i>	<i>0.0400</i>		<i>88.4</i>	<i>21-167</i>			

**LCS (1711009-BS1)**

Prepared & Analyzed: 11/01/17

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.0699	0.0020	"	0.100		69.9	58-130			
Toluene	0.0893	0.0050	"	0.100		89.3	61-134			
Ethylbenzene	0.106	0.0050	"	0.0992		107	74-139			
m,p-Xylene	0.215	0.010	"	0.200		108	73-137			
o-Xylene	0.103	0.0050	"	0.0980		105	73-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0418</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0378</i>		<i>"</i>	<i>0.0400</i>		<i>94.4</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0361</i>		<i>"</i>	<i>0.0400</i>		<i>90.2</i>	<i>21-167</i>			

**Matrix Spike (1711009-MS1)**

Source: 1710338-01

Prepared & Analyzed: 11/01/17

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.0615	0.0020	"	0.100	ND	61.5	30-131			
Toluene	0.0804	0.0050	"	0.100	ND	80.4	30-134			
Ethylbenzene	0.0888	0.0050	"	0.0992	ND	89.5	22-153			
m,p-Xylene	0.178	0.010	"	0.200	ND	89.3	10-159			
o-Xylene	0.0874	0.0050	"	0.0980	ND	89.1	31-151			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0521</i>		<i>"</i>	<i>0.0400</i>		<i>130</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0387</i>		<i>"</i>	<i>0.0400</i>		<i>96.8</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0390</i>		<i>"</i>	<i>0.0400</i>		<i>97.5</i>	<i>21-167</i>			

Summit Scientific

*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  
1759 Redwing Lane  
Broomfeld CO, 80020

Project: Noble - Cervi 41-21

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
11/07/17 08:37

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

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

**Batch 1711009 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (1711009-MSD1)</b>	<b>Source: 1710338-01</b>			<b>Prepared &amp; Analyzed: 11/01/17</b>						
Naphthalene	ND	0.010	mg/kg	ND	ND		10-158		42	
Benzene	0.0625	0.0020	"	0.100	ND	62.5	30-131	1.65	34	
Toluene	0.0805	0.0050	"	0.100	ND	80.5	30-134	0.112	30	
Ethylbenzene	0.0876	0.0050	"	0.0992	ND	88.3	22-153	1.43	24	
m,p-Xylene	0.176	0.010	"	0.200	ND	88.1	10-159	1.36	68	
o-Xylene	0.0855	0.0050	"	0.0980	ND	87.3	31-151	2.12	38	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0536</i>		<i>"</i>	<i>0.0400</i>		<i>134</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0395</i>		<i>"</i>	<i>0.0400</i>		<i>98.8</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0389</i>		<i>"</i>	<i>0.0400</i>		<i>97.3</i>	<i>21-167</i>			

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Cervi 41-21

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
11/07/17 08:37

**Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis - Quality Control**  
**Summit Scientific**

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

**Batch 1711029 - General Preparation**

**Blank (1711029-BLK1)**

Prepared & Analyzed: 11/02/17

Calcium	ND	10.0	mg/kg wet						
Magnesium	ND	5.00	"						
Sodium	ND	5.00	"						

**LCS (1711029-BS1)**

Prepared & Analyzed: 11/02/17

Calcium	471	10.0	mg/kg wet	500		94.1	82.9-118		
Magnesium	455	5.00	"	500		91.1	77.1-123		
Sodium	441	5.00	"	500		88.3	71-129		

**Duplicate (1711029-DUP1)**

Source: 1710287-02

Prepared & Analyzed: 11/02/17

Calcium	1140	10.4	mg/kg dry		1080			4.87	200
Magnesium	59.3	5.21	"		52.2			12.8	200
Sodium	28.8	5.21	"		25.9			10.4	200

**Matrix Spike (1711029-MS1)**

Source: 1710287-02

Prepared & Analyzed: 11/02/17

Calcium	1540	10.4	mg/kg dry	521	1080	87.2	75-125		
Magnesium	537	5.21	"	521	52.2	93.0	75-125		
Sodium	459	5.21	"	521	25.9	83.0	75-125		

**Matrix Spike Dup (1711029-MSD1)**

Source: 1710287-02

Prepared & Analyzed: 11/02/17

Calcium	1570	10.4	mg/kg dry	521	1080	94.5	75-125	2.43	25
Magnesium	531	5.21	"	521	52.2	91.9	75-125	1.16	25
Sodium	470	5.21	"	521	25.9	85.2	75-125	2.45	25

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Cervi 41-21

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
11/07/17 08:37

**Physical Parameters by APHA/ASTM/EPA Methods - Quality Control**  
**Summit Scientific**

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

**Batch 1711031 - General Preparation**

<b>Duplicate (1711031-DUP1)</b>	<b>Source: 1710287-02</b>			Prepared: 11/02/17 Analyzed: 11/03/17						
% Solids	95.9		%		95.9				0.00	20

**Batch 1711032 - General Preparation**

<b>LCS (1711032-BS1)</b>								Prepared & Analyzed: 11/02/17			
pH	9.18	0.100	pH Units		9.16		100	95-105			
<b>Duplicate (1711032-DUP1)</b>	<b>Source: 1710339-01</b>			Prepared & Analyzed: 11/02/17							
pH	8.68	0.100	pH Units		8.69				0.115	20	

**Batch 1711033 - General Preparation**

<b>Blank (1711033-BLK1)</b>								Prepared & Analyzed: 11/02/17			
Specific Conductance (EC)	ND	0.0100	mmhos/cm								
<b>LCS (1711033-BS1)</b>								Prepared & Analyzed: 11/02/17			
Specific Conductance (EC)	0.754	0.0100	mmhos/cm		0.750		100	90-110			
<b>Duplicate (1711033-DUP1)</b>	<b>Source: 1710339-01</b>			Prepared & Analyzed: 11/02/17							
Specific Conductance (EC)	0.712	0.0100	mmhos/cm		0.756				6.06	20	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Cervi 41-21

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
11/07/17 08:37

### Notes and Definitions

DET Analyte DETECTED  
ND Analyte NOT DETECTED at or above the reporting limit  
NR Not Reported  
dry Sample results reported on a dry weight basis  
RPD Relative Percent Difference

# Summit Scientific

---

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

November 30, 2017

Paul Henehan  
Fremont Environmental  
1759 Redwing Lane  
Broomfield, CO 80020  
RE: Noble - Cervi 42-21

Enclosed are the results of analyses for samples received by Summit Scientific on 11/22/17 14:15. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ben Shrewsbury', with a long, sweeping horizontal line extending to the right.

Ben Shrewsbury  
Laboratory Manager



Fremont Environmental  
1759 Redwing Lane  
Broomfeld CO, 80020

Project: Noble - Cervi 42-21

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
11/30/17 15:25

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
NW 5FT	1711302-01	Soil	11/22/17 00:00	11/22/17 14:15

Summit Scientific

*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.*

# Summit Scientific

S<sub>2</sub>

1711302

741 Corporate Circle, Suite J ♦ Golden, Colorado 80401

303-277-9310 ♦ 303-374-5933

Page 1 of 1

Client: Fremont Environmental

Project Manager: Paul Henehan

Address: P.O. Box 1289

E-Mail: paulh@fremontenv.com

Invoice to: JACOB

City/State/Zip: PO Box 1829 Wellington, CO 80549

Phone: 303-956-8714

Fax:

Project Name: NOBLE - CERY, 42-21

Sampler Name: HENEHAN

Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested						Special Instructions	
					HCl	HNO3	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)	BTEX	GRO/DRO	Napthalene	SAR	EC	Ph		
1	NW 5F	11/22/17		1			✓		✓				✓	✓	✓					
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				

Relinquished by: <i>PAUL HENEHAN</i>	Date/Time: 11/22/17 14:15	Received by: <i>PAUL HENEHAN</i>	Date/Time: 11-22-17 14:15	<b>Turn Around Time</b> (Check) Same Day _____ 72 hours _____ 24 hours _____ <b>Standard</b> _____ 48 hours _____  <b>Sample Integrity:</b> Temperature Upon Receipt: 10.8 Intact: <b>Yes</b> No	<b>Notes:</b>
Relinquished by:	Date/Time:	Received by:	Date/Time:		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

Sample Receipt Checklist

S2 Work Order: 1711302

Client: FREMONT NOBLE Client Project ID: NOBLE-CERVI 42-21

Shipped Via: H.D. ON ICE Airbill #: \_\_\_\_\_  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_  
(Describe)

Cooler ID				
Temp (°C)	<u>12.8</u>			

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C <sup>(1)</sup> ? NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>			
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.			<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.

Muri P.  
Custodian Printed Name

MA 11-22-17  
Signature or Initials of Custodian

15:00  
Date/Time



Fremont Environmental  
1759 Redwing Lane  
Broomfeld CO, 80020

Project: Noble - Cervi 42-21

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
11/30/17 15:25

**NW 5FT**  
**1711302-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **11/22/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1711336	11/27/17	11/27/17	8015M	

Date Sampled: **11/22/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		86.9 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **11/22/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1711337	11/27/17	11/27/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **11/22/17 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		119 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfeld CO, 80020

Project: Noble - Cervi 42-21

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
11/30/17 15:25

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

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

**Batch 1711336 - EPA 3550A**

<b>Blank (1711336-BLK1)</b>				Prepared & Analyzed: 11/27/17							
C10-C28 (DRO)	ND	50	mg/kg								
Surrogate: <i>o</i> -Terphenyl	12.9		"	12.5		103	30-150				
<b>LCS (1711336-BS1)</b>				Prepared & Analyzed: 11/27/17							
C10-C28 (DRO)	595	50	mg/kg	499		119	73-134				
Surrogate: <i>o</i> -Terphenyl	14.1		"	12.5		113	30-150				
<b>Matrix Spike (1711336-MS1)</b>				Source: 1711302-01		Prepared & Analyzed: 11/27/17					
C10-C28 (DRO)	455	50	mg/kg	499	20.7	87.0	50-148				
Surrogate: <i>o</i> -Terphenyl	13.0		"	12.5		104	30-150				
<b>Matrix Spike Dup (1711336-MSD1)</b>				Source: 1711302-01		Prepared & Analyzed: 11/27/17					
C10-C28 (DRO)	486	50	mg/kg	499	20.7	93.2	50-148	6.55	20		
Surrogate: <i>o</i> -Terphenyl	12.0		"	12.5		95.7	30-150				

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Cervi 42-21

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
11/30/17 15:25

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

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

**Batch 1711337 - EPA 5030 Soil MS**

**Blank (1711337-BLK1)**

Prepared & Analyzed: 11/27/17

Naphthalene	ND	0.010	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0410</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0406</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0419</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>	<i>21-167</i>			

**LCS (1711337-BS1)**

Prepared & Analyzed: 11/27/17

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.0875	0.0020	"	0.100		87.5	58-130			
Toluene	0.0916	0.0050	"	0.100		91.6	61-134			
Ethylbenzene	0.0962	0.0050	"	0.0992		97.0	74-139			
m,p-Xylene	0.184	0.010	"	0.200		92.1	73-137			
o-Xylene	0.0904	0.0050	"	0.0980		92.3	73-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0411</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0442</i>		<i>"</i>	<i>0.0400</i>		<i>111</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0415</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>21-167</i>			

**Matrix Spike (1711337-MS1)**

Source: 1711297-02

Prepared & Analyzed: 11/27/17

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.0970	0.0020	"	0.100	ND	97.0	30-131			
Toluene	0.103	0.0050	"	0.100	ND	103	30-134			
Ethylbenzene	0.109	0.0050	"	0.0992	ND	110	22-153			
m,p-Xylene	0.208	0.010	"	0.200	ND	104	10-159			
o-Xylene	0.106	0.0050	"	0.0980	ND	108	31-151			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0440</i>		<i>"</i>	<i>0.0400</i>		<i>110</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0432</i>		<i>"</i>	<i>0.0400</i>		<i>108</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0418</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>21-167</i>			

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfeld CO, 80020

Project: Noble - Cervi 42-21

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
11/30/17 15:25

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

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

**Batch 1711337 - EPA 5030 Soil MS**

**Matrix Spike Dup (1711337-MSD1)**

**Source: 1711297-02**

Prepared & Analyzed: 11/27/17

Naphthalene	ND	0.010	mg/kg		ND		10-158		42
Benzene	0.106	0.0020	"	0.100	ND	106	30-131	9.21	34
Toluene	0.112	0.0050	"	0.100	ND	112	30-134	8.29	30
Ethylbenzene	0.125	0.0050	"	0.0992	ND	126	22-153	13.7	24
m,p-Xylene	0.236	0.010	"	0.200	ND	118	10-159	12.7	68
o-Xylene	0.121	0.0050	"	0.0980	ND	123	31-151	13.4	38
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0475</i>		<i>"</i>	<i>0.0400</i>		<i>119</i>	<i>23-173</i>		
<i>Surrogate: Toluene-d8</i>	<i>0.0416</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>20-170</i>		
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0418</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>21-167</i>		

Summit Scientific

*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  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Cervi 42-21

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
11/30/17 15:25

### Notes and Definitions

DET Analyte DETECTED  
ND Analyte NOT DETECTED at or above the reporting limit  
NR Not Reported  
dry Sample results reported on a dry weight basis  
RPD Relative Percent Difference