

# **FREMONT ENVIRONMENTAL INC.**

March 20, 2018

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

Subject:     **Excavation Report**  
              Bates #1 C3-2  
              API # 05-123-10929  
              SWNE Sec 3, T4N, R64W  
              Weld County, Colorado  
              Fremont Project No. C018-013  
              Facility #319242, Spill #454241

Dear Mr. Evans:

Enclosed please find a copy of the above referenced Excavation Report for the Bates #1 C3-2 release site in Weld County, Colorado. The enclosed report describes excavation actions to remove impacted soil from 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

**EXCAVATION REPORT**

**NOBLE ENERGY INC.**

**BATES #1 C3-2**

**WELD COUNTY, COLORADO**

**FREMONT PROJECT NO. C018-013**

**FACILITY #319242, SPILL #454241**

**Prepared by:**

**Fremont Environmental Inc.**

**1759 Redwing Lane**

**Broomfield, CO 80020**

**(303) 956-8714**

**March 20, 2018**

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**EXCAVATION REPORT**  
**NOBLE ENERGY INC.**  
**BATES #1 C3-2**  
**WELD COUNTY, COLORADO**  
**FREMONT PROJECT NO. C018-013**  
**FACILITY #319242, SPILL #454241**

**1.0 INTRODUCTION**

The purpose of this document is to present information collected during the excavation of petroleum-impacted soil at the Bates #1 C3-2 wellhead release location in Weld County, Colorado. This two-day excavation project was completed on March 6, 2018.

**2.0 BACKGROUND INFORMATION**

**2.1 Site Location**

The Bates #1 C3-2 site is located approximately three miles southeast of Kersey, Colorado in Weld County as shown on Figure 1. The site is located in a rural and agricultural area approximately 0.4 miles southwest of the intersection of County Road 50 and County Road 57. The location is further described as the SW  $\frac{1}{4}$  of the NE  $\frac{1}{4}$  of Section 3, Township 4N, Range 64W.

**2.2 Site History**

The site consists of the former water vault for the Bates #1 C3-2 natural gas well. The Bates #1 C3-2 well was drilled in 1982 to a depth of approximately 6,915 feet. Soil impacts were identified at the water vault during abandonment of the facility. These soil impacts initiated this excavation effort.

### **3.0 FIELD ACTIVITIES**

Remediation efforts consisted of the excavation of petroleum-impacted soil at this site. The soil consisted of roadbase which was underlain by clayey sand to a depth of at least nine feet. Ground water was encountered during the excavation work at approximately nine feet. The 15' x 20' x 9' deep excavated area is shown on Figure 3.

Excavation was initiated at the former water vault location on March 5, 2018. Soil removal was limited to the area immediately adjacent to the former water vault; the exterior sidewall samples collected upon completion of the excavation work indicated that no residual impacts were present on the sidewalls. However, ground water was present at the bottom of the excavation. When tested, this ground water sample had a benzene concentration greater than the allowable limit set forth in the Colorado Oil and Gas Conservation Commission's (COGCC's) Table 910-1.

The sidewall samples were collected as grab samples near the lower portion of the excavation wall at a depth of six to seven feet. Since ground water was encountered, one water sample was collected.

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 ground water sample was analyzed for BTEX by EPA method 8260C. The laboratory reports and chain-of-custody documentation are included in Appendix A.

Summaries of the laboratory data are included in Tables 1 and 2. Table 1 presents the laboratory analyses for each soil sample. A column stating whether the laboratory analyses passed or failed the COGCC Table 910-1 limits is provided. The laboratory

analyses indicated that six of the seven soil samples collected from the sidewalls and floor achieved the COGCC Table 910-1 limits. The sidewall soil sample collected from the southwestern wall at a depth of seven feet (SW Wall 7 Ft) exceeded the COGCC Table 910-1 limit for total petroleum hydrocarbons (TPH); as a result, additional excavation was performed in that area the following day. Two subsequent soil samples (SW02 and SW03) were collected and those concentrations were less than the COGCC Table 910-1 limits. A floor soil sample was also collected during the first day of excavation and had concentrations that were less than the COGCC Table 910-1 limits.

Table 2 presents the ground water analytical data; the water sample (GW1) exceeded the COGCC Table 910-1 allowable limits for benzene. The benzene concentration in this ground water sample was 56 ug/L.

A total of 150 cubic yards of petroleum impacted soil was removed by Cachi's Oilfield Services Inc. from the location over this two-day project. The impacted soil was disposed of at the Waste Management Inc. Northern Colorado landfill in Ault, Colorado as non-hazardous waste.

#### **4.0 DISCUSSION**

As demonstrated by the soil sampling, the petroleum impacted soil was removed from the site by excavation after abandonment of the facility. This was confirmed by the analyses of the soil samples collected from the exterior sidewalls which were below the COGCC Table 910-1 limits. Approximately 150 cubic yards of impacted soil were removed and transported to the landfill.

Ground water was encountered during the excavation and one sample (GW1) was collected and analyzed for BTEX. The benzene concentration exceeded the COGCC Table 910-1 limit in this sample. The benzene concentration in sample "GW1" was 56 ug/L.

Since the water sample had a benzene concentration that exceeded the COGCC limit, monitoring wells will need to be installed at this site to delineate the horizontal extent of ground water impacts. Installation and monitoring of the wells will be discussed in separate reporting.

### 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.**



3/20/18

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

Kenneth Rogowski  
Environmental Consultant

Reviewed by:



3/20/18

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

Paul V. Henahan, P.E.  
Senior Consultant

## TABLES

**TABLE 1**  
**SUMMARY OF SOIL CHEMISTRY DATA**  
**NOBLE ENERGY INC.**  
**BATES #1, C3-2**  
**FREMONT PROJECT NO. C018-013**

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
SE Wall 6 Ft	6	3/5/2018	Wall	Pass	<0.002	<0.005	<0.005	<0.01	<0.01	<50	<50
SW Wall 7 Ft	7	3/5/2018	Wall	<b>Fail</b>	0.011	<0.005	4.6	<0.01	0.95	<b>2100</b>	<b>910</b>
NW Wall 7 Ft	7	3/5/2018	Wall	Pass	<0.002	<0.005	<0.005	<0.01	<0.01	<50	<50
NE Wall 7 Ft	7	3/5/2018	Wall	Pass	<0.002	<0.005	<0.005	<0.01	<0.01	<50	<50
Floor 9 Ft	9	3/5/2018	Floor	Pass	<0.002	<0.005	<0.005	<0.01	<0.01	<50	<50
SW02	7	3/6/2018	Wall	Pass	<0.002	<0.005	<0.005	<0.01	<0.01	<50	<50
SW03	7	3/6/2018	Wall	Pass	<0.002	<0.005	0.0064	<0.01	<0.01	<50	<50
COGCC Table 910 Limits					0.17	85	100	175	23	500	500

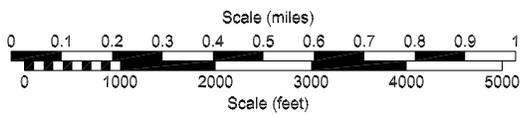
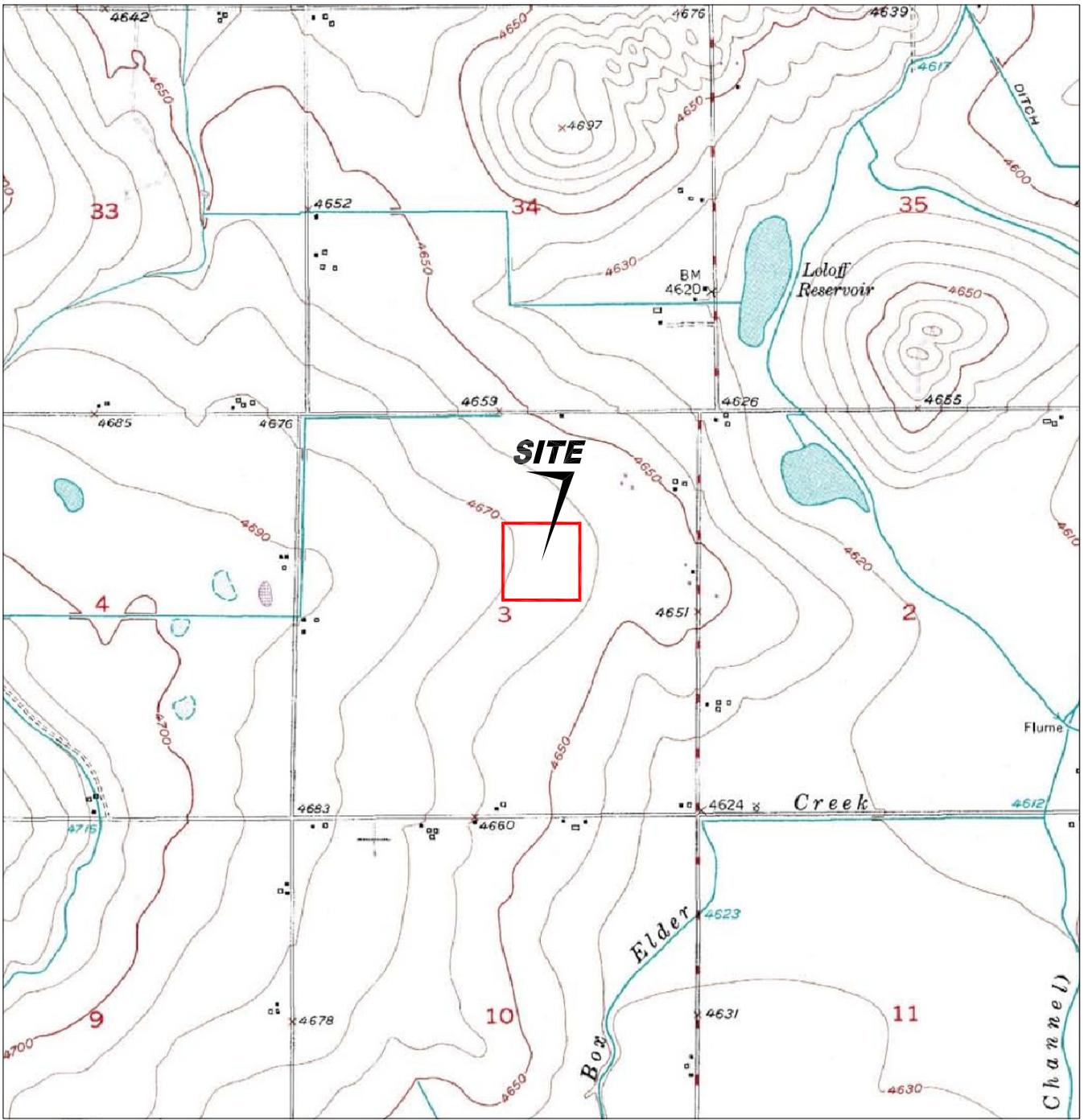
Bold faced values exceed the COGCC Table 910-1 concentrations

**TABLE 2**  
**SUMMARY OF GROUND WATER CHEMISTRY DATA**  
**NOBLE ENERGY INC.**  
**BATES #1, C3-2**  
**FREMONT PROJECT NO. C018-013**

<b>SAMPLE LOCATION</b>	<b>DATE</b>	<b>BENZENE (µg/L)</b>	<b>TOLUENE (µg/L)</b>	<b>ETHYL BENZENE (µg/L)</b>	<b>TOTAL XYLENES (µg/L)</b>
GW1	03/06/18	<b>56</b>	<1.0	52	46
Table 910-1 Limits		5	560	700	1,400

Bold face values exceed the COGCC limits

## FIGURES



USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)

Figure 1  
**SITE LOCATION MAP**

**Noble Bates #1, C3-2**  
 SW NE Sec. 3, T4N, R64W - 40.34323°N 104.53432°W  
 Weld County, Colorado

Project No. C018-013	Prepared by	Drawn by JMA
Date 3/16/18	Reviewed by	Filename 18013T



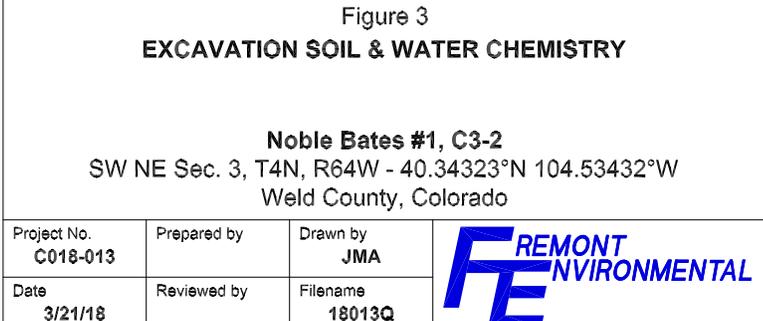
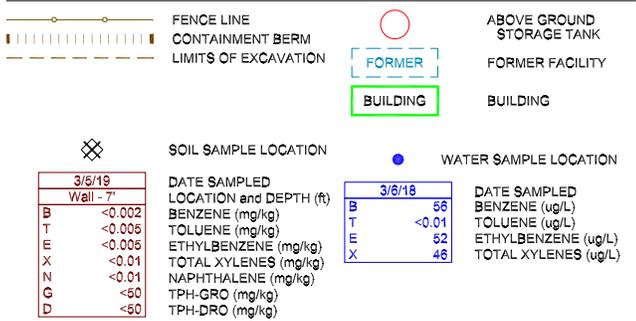
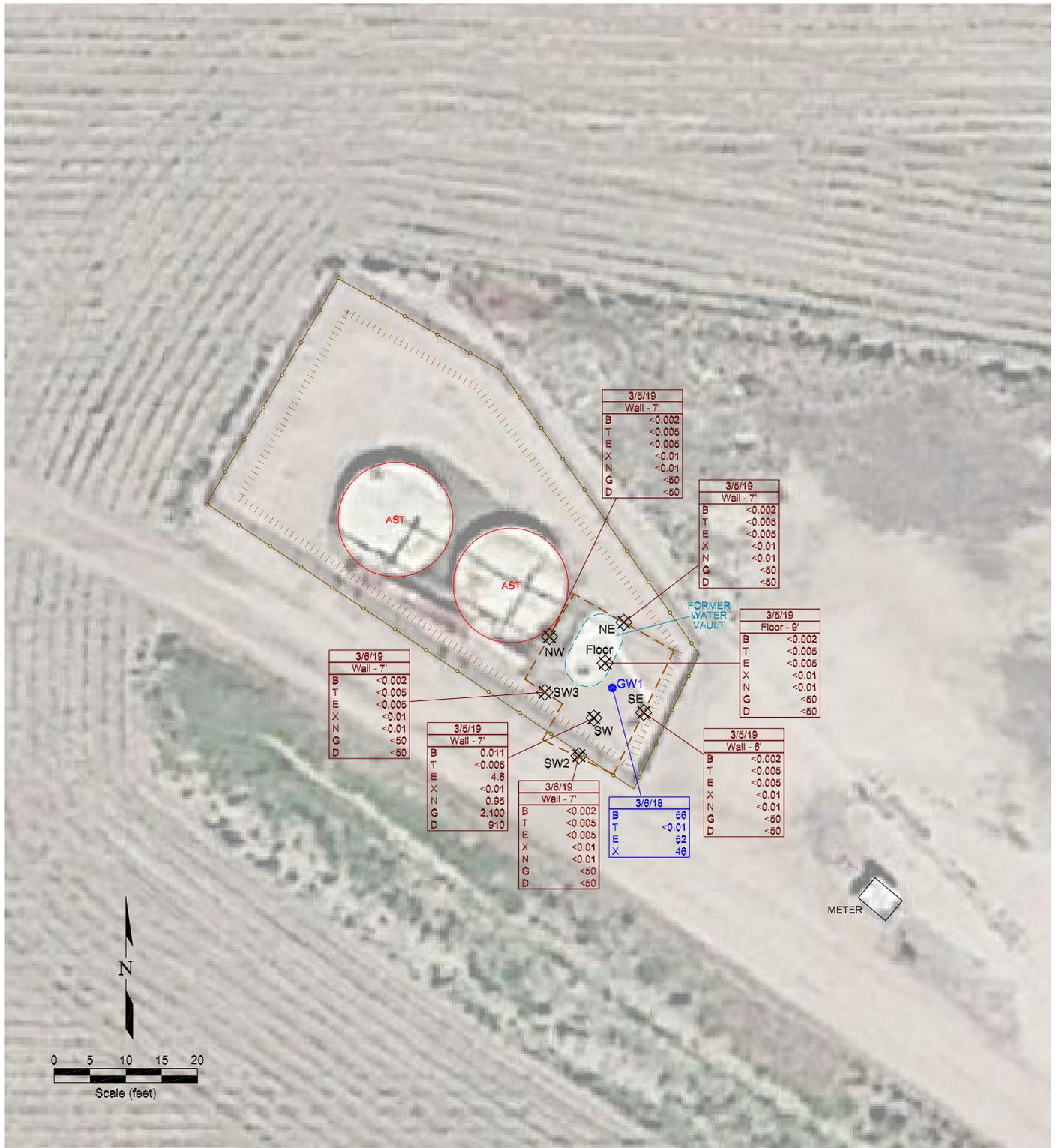


Figure 2  
SITE MAP

**Noble Bates #1, C3-2**  
SW NE Sec. 3, T4N, R64W - 40.34323°N 104.53432°W  
Weld County, Colorado

Project No. <b>C018-013</b>	Prepared by	Drawn by <b>JMA</b>
Date <b>3/16/18</b>	Reviewed by	Filename <b>18013Q</b>





APPENDIX A

LABORATORY DOCUMENTATION

# Summit Scientific

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741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

March 06, 2018

Paul Henehan  
Fremont Environmental  
1759 Redwing Lane  
Broomfield, CO 80020

RE: Noble - Bates #1, C3-2, RC# 815902517

Enclosed are the results of analyses for samples received by Summit Scientific on 03/05/18 15:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury  
President



Fremont Environmental  
1759 Redwing Lane  
Broomfeld CO, 80020

Project: Noble - Bates #1, C3-2, RC# 815902517

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
03/06/18 16:39

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SE WALL 6'	1803052-01	Soil	03/05/18 00:00	03/05/18 15:30
SW WALL 7'	1803052-02	Soil	03/05/18 00:00	03/05/18 15:30
NW WALL 7'	1803052-03	Soil	03/05/18 00:00	03/05/18 15:30
NE WALL 7'	1803052-04	Soil	03/05/18 00:00	03/05/18 15:30
Floor 9FT	1803052-05	Soil	03/05/18 00:00	03/05/18 15:30

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 - Bates #1, C3-2, RC# 815902517

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
03/06/18 16:39

# Summit Scientific

S<sub>2</sub>

741 Corporate Circle, Suite J ♦ Golden, Colorado 80401 1803052  
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 INV TO HENEHAN  
City/State/Zip: PO Box 1829 Wellington, CO 80549  
Phone: 303-956-8714 Fax: Project Name: NOBLE - BATES #1, C3-2, RC# 815902517  
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	SE WALL 6 FT	3/5/18		1			✓			✓				✓	✓	✓				
2	SW WALL 7 FT			1			✓			✓				✓	✓	✓				
3	NW WALL 7 FT			1			✓			✓				✓	✓	✓				
4	NE WALL 7 FT			1			✓			✓				✓	✓	✓				
5	FLOOR 9 FT	↓		1			✓			✓				✓	✓	✓				
6																				
7																				
8																				
9																				
10																				
Relinquished by: <u>PAH/FE</u>		Date/Time: <u>3/5/18 15:30</u>		Received by: <u>PAH</u>		Date/Time: <u>3/5/18 1530</u>		Turn Around Time (Check)				Notes:								
Relinquished by:		Date/Time:		Received by:		Date/Time:		<input checked="" type="checkbox"/> Same Day <input type="checkbox"/> 24 hours <input type="checkbox"/> 48 hours				<input type="checkbox"/> 72 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> TUES AM PLZ.								
Relinquished by:		Date/Time:		Received by:		Date/Time:		Sample Integrity: Temperature Upon Receipt: <u>13.8°C</u> Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No												

www.s2scientific.com

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Bates #1, C3-2, RC# 815902517

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
03/06/18 16:39

**Sample Receipt Checklist**

S2 Work Order: 1803052  
 Client: Fremont Environmental Client Project ID: Noble - Bates #1, C3-2, RC# 815902517  
 Shipped Via: Hand (UPS, FedEx, Hand Delivered, Pick-up, etc.) Airbill #: \_\_\_\_\_  
 Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_ (Describe)

Cooler ID					
Temp (°C)	13.8				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C <sup>(1)</sup> ?		✓		
<small>NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.</small>				
Were all samples received intact <sup>(1)</sup> ?	✓			
Was adequate sample volume provided <sup>(1)</sup> ?	✓			
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?			✓	
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>			✓	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ?			✓	
<small>Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect</small>				
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?			✓	
<small>Record the pH in Comments.</small>				
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.				

Nakita  
Custodian Printed Name

[Signature]  
Signature or Initials of Custodian

3/5/18 16:02  
Date/Time

[Signature]



Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Bates #1, C3-2, RC# 815902517

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
03/06/18 16:39

**SE WALL 6'**  
**1803052-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/05/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1803054	03/05/18	03/06/18	8015M	

Date Sampled: **03/05/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		95.4 %	30-150		"	"	"	"	

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

Date Sampled: **03/05/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1803052	03/05/18	03/05/18	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: **03/05/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		94.7 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		85.8 %	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 - Bates #1, C3-2, RC# 815902517

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
03/06/18 16:39

**SW WALL 7'**  
**1803052-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/05/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>910</b>	50	mg/kg	1	1803054	03/05/18	03/06/18	8015M	

Date Sampled: **03/05/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		94.1 %	30-150		"	"	"	"	

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

Date Sampled: **03/05/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Naphthalene</b>	<b>0.95</b>	0.010	mg/kg	1	1803052	03/05/18	03/06/18	EPA 8260B	
<b>Benzene</b>	<b>0.011</b>	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>4.6</b>	0.50	"	100	"	"	03/05/18	"	
Xylenes (total)	ND	0.010	"	1	"	"	03/06/18	"	
<b>Gasoline Range Hydrocarbons</b>	<b>2100</b>	50	"	100	"	"	03/05/18	"	

Date Sampled: **03/05/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		111 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		78.3 %	20-170		"	"	03/06/18	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		164 %	21-167		"	"	03/05/18	"	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Bates #1, C3-2, RC# 815902517

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
03/06/18 16:39

**NW WALL 7'**  
**1803052-03 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/05/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1803054	03/05/18	03/06/18	8015M	

Date Sampled: **03/05/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		103 %	30-150		"	"	"	"	

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

Date Sampled: **03/05/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1803052	03/05/18	03/05/18	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: **03/05/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		99.1 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		82.6 %	21-167		"	"	"	"	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Bates #1, C3-2, RC# 815902517

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
03/06/18 16:39

**NE WALL 7'**  
**1803052-04 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/05/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1803054	03/05/18	03/06/18	8015M	

Date Sampled: **03/05/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		96.7 %	30-150		"	"	"	"	

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

Date Sampled: **03/05/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1803052	03/05/18	03/05/18	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: **03/05/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		94.5 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		93.5 %	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 - Bates #1, C3-2, RC# 815902517

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
03/06/18 16:39

**Floor 9FT**  
**1803052-05 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/05/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1803054	03/05/18	03/06/18	8015M	

Date Sampled: **03/05/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		95.9 %	30-150		"	"	"	"	

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

Date Sampled: **03/05/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1803052	03/05/18	03/05/18	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: **03/05/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		95.7 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		89.2 %	21-167		"	"	"	"	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Bates #1, C3-2, RC# 815902517

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
03/06/18 16:39

**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 1803054 - EPA 3550A**

<b>Blank (1803054-BLK1)</b>		Prepared: 03/05/18 Analyzed: 03/06/18									
C10-C28 (DRO)	ND	50	mg/kg								
<i>Surrogate: o-Terphenyl</i>	11.4		"	12.5		90.9	30-150				
<b>LCS (1803054-BS1)</b>		Prepared: 03/05/18 Analyzed: 03/06/18									
C10-C28 (DRO)	347	50	mg/kg	399		86.9	73-134				
<i>Surrogate: o-Terphenyl</i>	12.4		"	12.5		99.0	30-150				
<b>Matrix Spike (1803054-MS1)</b>		<b>Source: 1803032-01</b>		Prepared: 03/05/18 Analyzed: 03/06/18							
C10-C28 (DRO)	373	50	mg/kg	399	19.5	88.6	50-148				
<i>Surrogate: o-Terphenyl</i>	12.3		"	12.5		98.1	30-150				
<b>Matrix Spike Dup (1803054-MSD1)</b>		<b>Source: 1803032-01</b>		Prepared: 03/05/18 Analyzed: 03/06/18							
C10-C28 (DRO)	357	50	mg/kg	399	19.5	84.4	50-148	4.58		20	
<i>Surrogate: o-Terphenyl</i>	12.9		"	12.5		104	30-150				

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Bates #1, C3-2, RC# 815902517

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
03/06/18 16:39

**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 1803052 - EPA 5030 Soil MS**

**Blank (1803052-BLK1)**

Prepared: 03/05/18 Analyzed: 03/06/18

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	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0366		"	0.0400		91.5	23-173			
Surrogate: Toluene-d8	0.0403		"	0.0400		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0339		"	0.0400		84.8	21-167			

**LCS (1803052-BS1)**

Prepared: 03/05/18 Analyzed: 03/06/18

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.0924	0.0020	"	0.100		92.4	58-130			
Toluene	0.0899	0.0050	"	0.100		89.9	61-134			
Ethylbenzene	0.0935	0.0050	"	0.0992		94.3	74-139			
m,p-Xylene	0.182	0.010	"	0.200		91.4	73-137			
o-Xylene	0.0947	0.0050	"	0.0980		96.7	73-141			
Xylenes (total)	0.277	0.010	"				0-200			
Gasoline Range Hydrocarbons	2.11	0.50	"				30-150			
Surrogate: 1,2-Dichloroethane-d4	0.0353		"	0.0400		88.3	23-173			
Surrogate: Toluene-d8	0.0422		"	0.0400		105	20-170			
Surrogate: 4-Bromofluorobenzene	0.0327		"	0.0400		81.7	21-167			

**Matrix Spike (1803052-MS1)**

Source: 1803032-01

Prepared: 03/05/18 Analyzed: 03/06/18

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.0285	0.0020	"	0.100	ND	28.5	30-131			QM-07
Toluene	0.0229	0.0050	"	0.100	ND	22.9	30-134			QM-07
Ethylbenzene	0.0149	0.0050	"	0.0992	ND	15.0	22-153			QM-07
m,p-Xylene	0.0560	0.010	"	0.200	ND	28.0	10-159			
o-Xylene	0.0503	0.0050	"	0.0980	ND	51.4	31-151			
Xylenes (total)	0.106	0.010	"		ND		30-160			
Gasoline Range Hydrocarbons	1.17	0.50	"		0.854		30-160			
Surrogate: 1,2-Dichloroethane-d4	0.0398		"	0.0400		99.4	23-173			
Surrogate: Toluene-d8	0.0396		"	0.0400		98.9	20-170			
Surrogate: 4-Bromofluorobenzene	0.0362		"	0.0400		90.5	21-167			

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Bates #1, C3-2, RC# 815902517

Project Number: [none]  
Project Manager: Paul Henehan

Reported:  
03/06/18 16:39

**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 1803052 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (1803052-MSD1)</b>	<b>Source: 1803032-01</b>			Prepared: 03/05/18		Analyzed: 03/06/18				
Naphthalene	ND	0.010	mg/kg		ND		10-158		42	
Benzene	0.0329	0.0020	"	0.100	ND	32.9	30-131	14.5	34	
Toluene	0.0272	0.0050	"	0.100	ND	27.2	30-134	17.2	30	QM-07
Ethylbenzene	0.0177	0.0050	"	0.0992	ND	17.8	22-153	17.1	24	QM-07
m,p-Xylene	0.0585	0.010	"	0.200	ND	29.3	10-159	4.45	68	
o-Xylene	0.0483	0.0050	"	0.0980	ND	49.3	31-151	4.20	38	
Xylenes (total)	0.107	0.010	"		ND		30-160	0.450	30	
Gasoline Range Hydrocarbons	1.06	0.50	"		0.854		30-160	10.1	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0392</i>		<i>"</i>	<i>0.0400</i>		<i>98.0</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0398</i>		<i>"</i>	<i>0.0400</i>		<i>99.4</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0352</i>		<i>"</i>	<i>0.0400</i>		<i>88.0</i>	<i>21-167</i>			

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Bates #1, C3-2, RC# 815902517

Project Number: [none]  
Project Manager: Paul Henehan

**Reported:**  
03/06/18 16:39

### Notes and Definitions

- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
- 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

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741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

March 07, 2018

Paul Henehan  
Fremont Environmental  
1759 Redwing Lane  
Broomfield, CO 80020

RE: Noble - Bates #1, C3-2, RC# 815902517

Enclosed are the results of analyses for samples received by Summit Scientific on 03/06/18 15:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury  
President



Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Bates #1, C3-2, RC# 815902517

Project Number: C018-013  
Project Manager: Paul Henehan

**Reported:**  
03/07/18 06:22

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SW02	1803063-01	Soil	03/06/18 10:40	03/06/18 15:00
SW03	1803063-02	Soil	03/06/18 11:00	03/06/18 15:00
GW-1	1803063-03	Water	03/06/18 10:05	03/06/18 15:00

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Bates #1, C3-2, RC# 815902517

Project Number: C018-013  
Project Manager: Paul Henehan

Reported:  
03/07/18 06:22

# Summit Scientific

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

1803063

Page 1 of 1

Client: Fremont Environmental Project Manager: Paul Henehan  
Address: P.O. Box 1289 E-Mail: paulh@fremontenv.com  
City/State/Zip: PO Box 1829 Wellington, CO 80549  
Phone: 303-956-8714 Fax: Project Name: **BATES #1, C3-2**  
Sampler Name: **Ken Rogowski** Project Number: **C018-013**

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	SW-2	3.6.18	1040	1			X			X				X	X	X				
2	SW-3		1100	1			X			X				X	X	X				
3	GW-1		1005	2			X		X					X	X	X				
4																				
5																				
6																				
7																				
8																				
9																				
10																				

Relinquished by:	Date/Time: 3.6.18/1500	Received by:	Date/Time: 3/6/18 1500	<b>Turn Around Time</b> (Check) Same Day <input checked="" type="checkbox"/> 72 hours Standard <del>48 hours</del> <b>Sample Integrity:</b> Temperature Upon Receipt: 5.7°C Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Notes: on ice
Relinquished by:	Date/Time:	Received by:	Date/Time:		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

www.s2scientific.com



Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Bates #1, C3-2, RC# 815902517

Project Number: C018-013  
Project Manager: Paul Henehan

Reported:  
03/07/18 06:22

Sample Receipt Checklist

S2 Work Order: 1803063  
 Client: Fremont Environmental Client Project ID: Bates #1, C3-2  
 Shipped Via: Hand (UPS, FedEx, Hand Delivered, Pick-up, etc.) Airbill #: \_\_\_\_\_  
 Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_  
 (Describe)

Cooler ID				
Temp (°C)	5.7			

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C <sup>(1)?</sup> NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	✓			
Were all samples received intact <sup>(1)?</sup>	✓			
Was adequate sample volume provided <sup>(1)?</sup>	✓			
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?			✓	
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>		✓		
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			✓	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)?</sup> Record the pH in Comments.			✓	
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.				

Nakita  
Custodian Printed Name

[Signature]  
Signature or Initials of Custodian

3/6/18 1:50  
Date/Time

[Signature]



Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Bates #1, C3-2, RC# 815902517

Project Number: C018-013  
Project Manager: Paul Henehan

Reported:  
03/07/18 06:22

**SW02**  
**1803063-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/06/18 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1803083	03/06/18	03/06/18	8015M	

Date Sampled: **03/06/18 10:40**

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: **03/06/18 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1803082	03/06/18	03/07/18	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: **03/06/18 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		118 %	21-167		"	"	"	"	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Bates #1, C3-2, RC# 815902517

Project Number: C018-013  
Project Manager: Paul Henehan

**Reported:**  
03/07/18 06:22

**SW03**  
**1803063-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **03/06/18 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1803083	03/06/18	03/06/18	8015M	

Date Sampled: **03/06/18 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		96.2 %	30-150		"	"	"	"	

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

Date Sampled: **03/06/18 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1803082	03/06/18	03/07/18	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>0.0064</b>	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	50	"	"	"	"	"	"	

Date Sampled: **03/06/18 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.2 %	21-167		"	"	"	"	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfeld CO, 80020

Project: Noble - Bates #1, C3-2, RC# 815902517

Project Number: C018-013  
Project Manager: Paul Henehan

**Reported:**  
03/07/18 06:22

**GW-1**  
**1803063-03 (Water)**

**Summit Scientific**

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

Date Sampled: **03/06/18 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>56</b>	1.0	ug/l	1	1803081	03/06/18	03/06/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>52</b>	1.0	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>46</b>	2.0	"	"	"	"	"	"	

Date Sampled: **03/06/18 10:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		99.6 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		94.0 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		102 %	45-146		"	"	"	"	

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Bates #1, C3-2, RC# 815902517

Project Number: C018-013  
Project Manager: Paul Henehan

**Reported:**  
03/07/18 06:22

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

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

**Batch 1803083 - EPA 3550A**

<b>Blank (1803083-BLK1)</b>				Prepared & Analyzed: 03/06/18							
C10-C28 (DRO)	ND	50	mg/kg								
<i>Surrogate: o-Terphenyl</i>	12.7		"	12.5		102	30-150				
<b>LCS (1803083-BS1)</b>				Prepared & Analyzed: 03/06/18							
C10-C28 (DRO)	468	50	mg/kg	499		93.8	73-134				
<i>Surrogate: o-Terphenyl</i>	13.5		"	12.5		108	30-150				
<b>Matrix Spike (1803083-MS1)</b>				<b>Source: 1803063-02</b>		Prepared & Analyzed: 03/06/18					
C10-C28 (DRO)	463	50	mg/kg	499	14.0	89.9	50-148				
<i>Surrogate: o-Terphenyl</i>	14.1		"	12.5		113	30-150				
<b>Matrix Spike Dup (1803083-MSD1)</b>				<b>Source: 1803063-02</b>		Prepared & Analyzed: 03/06/18					
C10-C28 (DRO)	470	50	mg/kg	499	14.0	91.3	50-148	1.50		20	
<i>Surrogate: o-Terphenyl</i>	14.3		"	12.5		115	30-150				

Summit Scientific

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Bates #1, C3-2, RC# 815902517

Project Number: C018-013  
Project Manager: Paul Henehan

Reported:  
03/07/18 06:22

**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 1803081 - EPA 5030 Water MS**

**Blank (1803081-BLK1)**

Prepared & Analyzed: 03/06/18

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>12.8</i>		<i>"</i>	<i>13.3</i>		<i>96.4</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>12.6</i>		<i>"</i>	<i>13.3</i>		<i>94.3</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>13.2</i>		<i>"</i>	<i>13.3</i>		<i>98.9</i>	<i>45-146</i>			

**LCS (1803081-BS1)**

Prepared & Analyzed: 03/06/18

Benzene	32.9	1.0	ug/l	33.3		98.6	51-132			
Toluene	32.4	1.0	"	33.3		97.1	51-138			
Ethylbenzene	37.0	1.0	"	33.1		112	58-146			
m,p-Xylene	68.0	2.0	"	66.5		102	57-144			
o-Xylene	33.4	1.0	"	32.7		102	53-146			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>13.4</i>		<i>"</i>	<i>13.3</i>		<i>100</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>12.7</i>		<i>"</i>	<i>13.3</i>		<i>95.6</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>13.3</i>		<i>"</i>	<i>13.3</i>		<i>99.9</i>	<i>45-146</i>			

**Matrix Spike (1803081-MS1)**

Source: 1803059-01

Prepared & Analyzed: 03/06/18

Benzene	32.9	1.0	ug/l	33.3	ND	98.8	34-141			
Toluene	32.7	1.0	"	33.3	ND	98.0	27-151			
Ethylbenzene	37.0	1.0	"	33.1	ND	112	29-160			
m,p-Xylene	67.8	2.0	"	66.5	ND	102	20-166			
o-Xylene	33.6	1.0	"	32.7	ND	103	33-159			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>13.5</i>		<i>"</i>	<i>13.3</i>		<i>102</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>12.9</i>		<i>"</i>	<i>13.3</i>		<i>97.1</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>13.0</i>		<i>"</i>	<i>13.3</i>		<i>97.5</i>	<i>45-146</i>			

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Fremont Environmental  
1759 Redwing Lane  
Broomfield CO, 80020

Project: Noble - Bates #1, C3-2, RC# 815902517

Project Number: C018-013  
Project Manager: Paul Henehan

Reported:  
03/07/18 06:22

**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 1803081 - EPA 5030 Water MS**

**Matrix Spike Dup (1803081-MSD1)**

Source: 1803059-01

Prepared & Analyzed: 03/06/18

Benzene	33.9	1.0	ug/l	33.3	ND	102	34-141	3.02	32	
Toluene	33.3	1.0	"	33.3	ND	99.8	27-151	1.76	25	
Ethylbenzene	37.4	1.0	"	33.1	ND	113	29-160	1.10	50	
m,p-Xylene	67.6	2.0	"	66.5	ND	102	20-166	0.266	36	
o-Xylene	33.8	1.0	"	32.7	ND	103	33-159	0.326	26	
Surrogate: 1,2-Dichloroethane-d4	14.8		"	13.3		111	37-154			
Surrogate: Toluene-d8	12.9		"	13.3		96.9	45-149			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		98.8	45-146			

**Batch 1803082 - EPA 5030 Soil MS**

**Blank (1803082-BLK1)**

Prepared & Analyzed: 03/06/18

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	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0414		"	0.0400		104	23-173			
Surrogate: Toluene-d8	0.0382		"	0.0400		95.5	20-170			
Surrogate: 4-Bromofluorobenzene	0.0383		"	0.0400		95.8	21-167			

**LCS (1803082-BS1)**

Prepared & Analyzed: 03/06/18

Naphthalene	ND	0.010	mg/kg							
Benzene	0.0991	0.0020	"	0.100		99.1	58-130			
Toluene	0.100	0.0050	"	0.100		100	61-134			
Ethylbenzene	0.114	0.0050	"	0.0992		115	74-139			
m,p-Xylene	0.209	0.010	"	0.200		105	73-137			
o-Xylene	0.102	0.0050	"	0.0980		104	73-141			
Xylenes (total)	0.311	0.010	"				0-200			
Gasoline Range Hydrocarbons	3.35	0.50	"				30-150			
Surrogate: 1,2-Dichloroethane-d4	0.0407		"	0.0400		102	23-173			
Surrogate: Toluene-d8	0.0388		"	0.0400		97.0	20-170			
Surrogate: 4-Bromofluorobenzene	0.0394		"	0.0400		98.5	21-167			

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Broomfield CO, 80020

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Project Number: C018-013  
Project Manager: Paul Henehan

Reported:  
03/07/18 06:22

**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 1803082 - EPA 5030 Soil MS**

**Matrix Spike (1803082-MS1)**

Source: 1803063-02

Prepared & Analyzed: 03/06/18

Naphthalene	ND	0.010	mg/kg	ND	ND	100	10-158			
Benzene	0.100	0.0020	"	0.100	ND	100	30-131			
Toluene	0.102	0.0050	"	0.100	ND	102	30-134			
Ethylbenzene	0.117	0.0050	"	0.0992	0.00636	111	22-153			
m,p-Xylene	0.210	0.010	"	0.200	ND	105	10-159			
o-Xylene	0.103	0.0050	"	0.0980	ND	105	31-151			
Xylenes (total)	0.313	0.010	"		ND		30-160			
Gasoline Range Hydrocarbons	3.50	0.50	"		1.93		30-160			
Surrogate: 1,2-Dichloroethane-d4	0.0404		"	0.0400		101	23-173			
Surrogate: Toluene-d8	0.0389		"	0.0400		97.4	20-170			
Surrogate: 4-Bromofluorobenzene	0.0385		"	0.0400		96.2	21-167			

**Matrix Spike Dup (1803082-MSD1)**

Source: 1803063-02

Prepared: 03/06/18 Analyzed: 03/07/18

Naphthalene	0.00411	0.010	mg/kg	ND	ND	100	10-158		42	
Benzene	0.0999	0.0020	"	0.100	ND	99.9	30-131	0.0600		34
Toluene	0.101	0.0050	"	0.100	ND	101	30-134	0.532		30
Ethylbenzene	0.120	0.0050	"	0.0992	0.00636	115	22-153	3.01		24
m,p-Xylene	0.214	0.010	"	0.200	ND	107	10-159	1.90		68
o-Xylene	0.106	0.0050	"	0.0980	ND	108	31-151	2.52		38
Xylenes (total)	0.320	0.010	"		ND		30-160	2.10		30
Gasoline Range Hydrocarbons	3.62	0.50	"		1.93		30-160	3.36		30
Surrogate: 1,2-Dichloroethane-d4	0.0420		"	0.0400		105	23-173			
Surrogate: Toluene-d8	0.0388		"	0.0400		97.0	20-170			
Surrogate: 4-Bromofluorobenzene	0.0388		"	0.0400		97.0	21-167			

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Project: Noble - Bates #1, C3-2, RC# 815902517

Project Number: C018-013  
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**Reported:**  
03/07/18 06:22

### 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