

FREMONT ENVIRONMENTAL INC.

April 30, 2018

Mr. Jacob Evans
Noble Energy Inc.
2115 117th Ave,
Greeley, CO 80634

Subject: **Site Investigation Report**
 Bates #1, C3-2
 API # 05-123-10929
 SWNE Sec 3, T4N, R64W
 Weld County, Colorado
 Fremont Project No. C018-013
 Facility #319242, Remediation #11124

Dear Mr. Evans:

Enclosed please find a copy of the above referenced Site Investigation Report for the Bates #1, C3-2 site in Weld County, Colorado. The enclosed report describes site investigation and sampling efforts to assess soil and ground water quality at the site.

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

Fremont appreciates the opportunity to provide this service.

Sincerely,
FREMONT ENVIRONMENTAL INC.

A handwritten signature in blue ink, appearing to read "Paul V. Henahan".

Paul V. Henahan, P.E.
Senior Consultant

Enclosure

SITE INVESTIGATION REPORT

NOBLE ENERGY INC.

BATES #1, C3-2

WELD COUNTY, COLORADO

FREMONT PROJECT NO. C018-013

FACILITY #319242, REMEDIATION #11124

Prepared by:

Fremont Environmental Inc.

**1759 Redwing Lane
Broomfield, CO 80020
(303) 956-8714**

April 30, 2018

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SITE INVESTIGATION REPORT
NOBLE ENERGY INC.
BATES #1, C3-2
WELD COUNTY, COLORADO
FREMONT PROJECT NO. C018-013
FACILITY #319242, REMEDIATION #11124

1.0 INTRODUCTION

The purpose of this document is to present soil and ground water quality data collected during a site investigation at the Bates #1, C3-2 location in Weld County, Colorado. Impacted ground water was identified at this location during facility abandonment due to a historical release from the facility's water vault. Five monitoring wells were installed at this site on April 6, 2018 to delineate the magnitude and extent of subsurface impacts.

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.

Approximately 150 cubic yards of impacted soil were removed by Cachi's Oilfield Services, Inc. in March 2018 and disposed of at the Waste Management Inc. Northern Colorado landfill in Ault, Colorado as non-hazardous waste.

Laboratory analyses of the soil and ground water samples indicated that ground water impacts in excess of the COGCC's Table 910-1 limits were present in the excavation of the former water vault. The benzene concentration in the ground water sample was 56 ug/L which exceeds the limit of 5 ug/L. These ground water impacts initiated this investigation effort.

3.0 SITE INVESTIGATION ACTIVITIES

3.1 Soil Borings/Monitoring Wells

A site investigation was conducted at the facility on April 6, 2018. Five soil borings were advanced utilizing a Geoprobe rig. These borings were temporarily completed as stickup 1-inch diameter monitoring wells; after soil and ground water sampling, each of the wells was abandoned. The five borings/monitoring wells were used to delineate the extent of soil and ground water impacts at the site. The locations of the monitoring wells are illustrated on the attached figures.

Generally, the subsurface consists of sandy clay to a depth of approximately three feet which is then underlain by sand to a depth of at least 14 feet. Ground water is present across the site at a depth of approximately nine feet. Geologic cross sections are presented on Figure 3.

The 1-inch diameter monitoring wells were constructed with 10 feet sections of well screen that were placed at a total depth of approximately 14 feet and temporarily

completed as stickup vaults. Soil samples from each of the borings were evaluated in the field using a photoionization detector (PID). Logs of the monitoring wells are presented in Appendix A.

Soil samples were collected from each of the borings and sent to Summit Scientific, Inc. in Golden, Colorado for the analyses of benzene, toluene, ethylbenzene and xylenes (BTEX), naphthalene, total petroleum hydrocarbons-gasoline range organics (TPH-GRO), and TPH-diesel range organics (TPH-DRO).

Soil impacts were not observed in any of the five borings above the COGCC's Table 910-1 limits for BTEX, naphthalene, TPH-GRO and TPH-DRO. The soil chemistry is presented on Figure 4 and summarized on Table 1. The laboratory's report is provided in Appendix C.

3.2 Ground Water Monitoring

Ground water levels were measured in the five monitoring wells on April 6, 2018 in accordance with the Sampling Plan included in Appendix B. The data are summarized in Table 2.

Water table contours inferred from the April 2018 data are illustrated on Figure 5. Based on these data, ground water is inferred to flow to the northeast. The water table gradient was calculated at approximately 0.013 feet per foot (ft/ft) for the April 2018 data.

3.3 Ground Water Sampling and Analysis

Ground water samples were collected from the five monitoring wells on April 6, 2018. All ground water samples were submitted to Summit Scientific, Inc. for analyses of BTEX by EPA Method 8260C.

The ground water concentrations for the five monitoring wells were below their respective COGCC Table 910-1 values. The ground water chemistry is shown on Figure 6. The ground water analytical data are summarized in Table 2. A copy of the laboratory's report is presented in Appendix C.

4.0 DISCUSSION

A site investigation was conducted at the Bates #1, C3-2 location in April 2018 as a result of a release from the facility's former water vault. A total of five monitoring wells were used to delineate the magnitude and extent of ground water impacts.

Soil impacts above the COGCC Table 910-1 limits were not observed in any of the soil borings. Excavation and removal of impacted soil had previously been completed during removal of the water vault in March 2018. Approximately 150 cubic yards of soil were excavated and disposed of at the Waste Management Buffalo Ridge Landfill as non-hazardous waste.

The data collected from the monitoring wells indicates that the ground water flow direction is to the northeast. Further, the BTEX concentrations in the five monitoring wells were less than the COGCC Table 910-1 limits; these data are illustrated on Figure 6. The temporary wells were abandoned immediately after ground water sampling.

Due to landowner restrictions, Noble will re-drill and sample the ground water at this site on a semi-annual basis to evaluate the BTEX concentrations relative to the COGCC's Table 910-1 requirements. After two consecutive semi-annual sampling events of COGCC-compliant BTEX concentrations, Noble will request closure of this site.

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.**



Paul V. Henehan, P.E.
Senior Consultant

5/1/18
Date_____

Reviewed by:



Michael R. Gerstner
Senior Geologist

5/1/18
Date_____

TABLES

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

SAMPLE LOCATION	DATE SAMPLED	DEPTH ft	BENZENE mg/kg	TOLUENE mg/kg	ETHYL BENZENE mg/kg	TOTAL XYLENES mg/kg	NAPHTH-ALENE mg/kg	TPH-GRO mg/kg	TPH-DRO mg/kg
MW-1 6 Ft	04/06/18	6	<0.002	<0.005	<0.005	<0.010	<0.010	<50	<50
MW-2 6 Ft	04/06/18	6	<0.002	<0.005	<0.005	<0.010	<0.010	<50	<50
MW-3 6Ft	04/06/18	6	<0.002	<0.005	<0.005	<0.010	<0.010	<50	<50
MW-4 6 Ft	04/06/18	6	<0.002	<0.005	<0.005	<0.010	<0.010	<50	<50
MW-5 6 Ft	04/06/18	6	<0.002	<0.005	<0.005	<0.010	<0.010	<50	<50
COGCC Table 910-1 Concentrations			0.17	85	100	175	23	500*	500*

The TPH-GRO and TPH-DRO concentrations are added together; if the sum of the two is >500 mg/kg, this exceeds the COGCC Table 910-1 limit

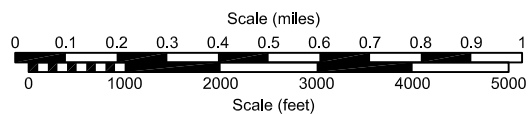
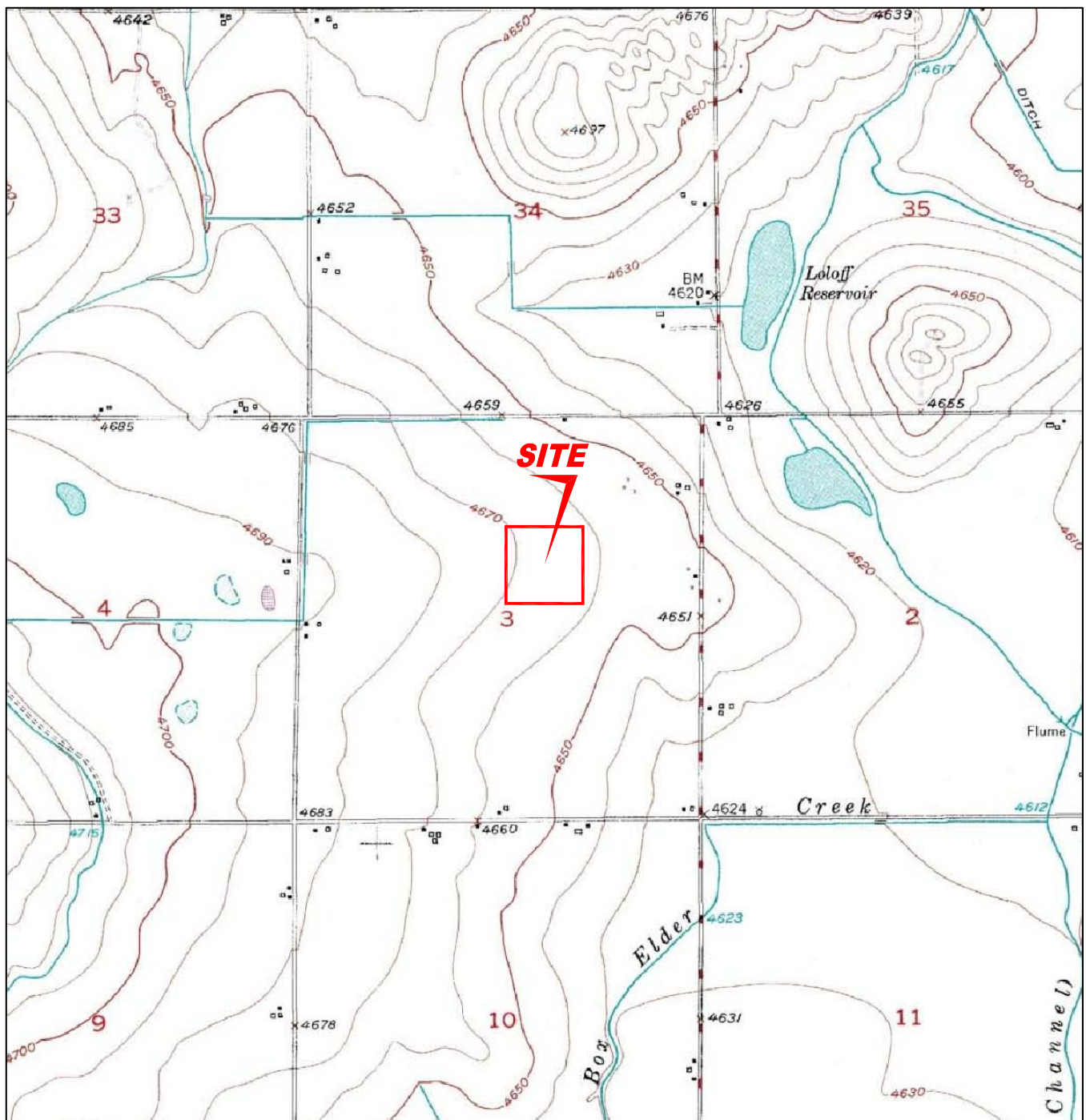
TABLE 2
SUMMARY OF GROUND WATER ELEVATION DATA AND CHEMISTRY DATA
NOBLE ENERGY INC.
BATES #1, C3-2, WELD COUNTY, COLORADO
FREMONT PROJECT NO. C018-013

SAMPLE LOCATION	DATE	BENZENE (µg/L)	TOLUENE (µg/L)	ETHYL BENZENE (µg/L)	TOTAL XYLENES (µg/L)	TOC ELEVATION (feet)	DEPTH TO GROUND WATER (ft)	GROUND WATER ELEVATION (ft)	FREE PRODUCT THICKNESS (ft)
MW-1	04/06/18	<1.0	<1.0	<1.0	<1.0	100.00	10.11	89.89	NP
MW-2	04/06/18	<1.0	<1.0	<1.0	<1.0	98.55	8.88	89.67	NP
MW-3	04/06/18	<1.0	<1.0	<1.0	<1.0	98.32	8.85	89.47	NP
MW-4	04/06/18	<1.0	<1.0	<1.0	<1.0	98.66	9.04	89.62	NP
MW-5	04/06/18	<1.0	<1.0	<1.0	<1.0	98.54	8.87	89.67	NP
Table 910-1 Limits		5	560	700	1,400				

Bold face values exceed the COGCC limits

NP - No Free Product

FIGURES



USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)

Figure 1
SITE LOCATION MAP
April 6, 2018

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
TDA

Date
4/30/2018

Reviewed by

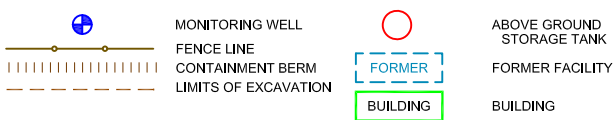
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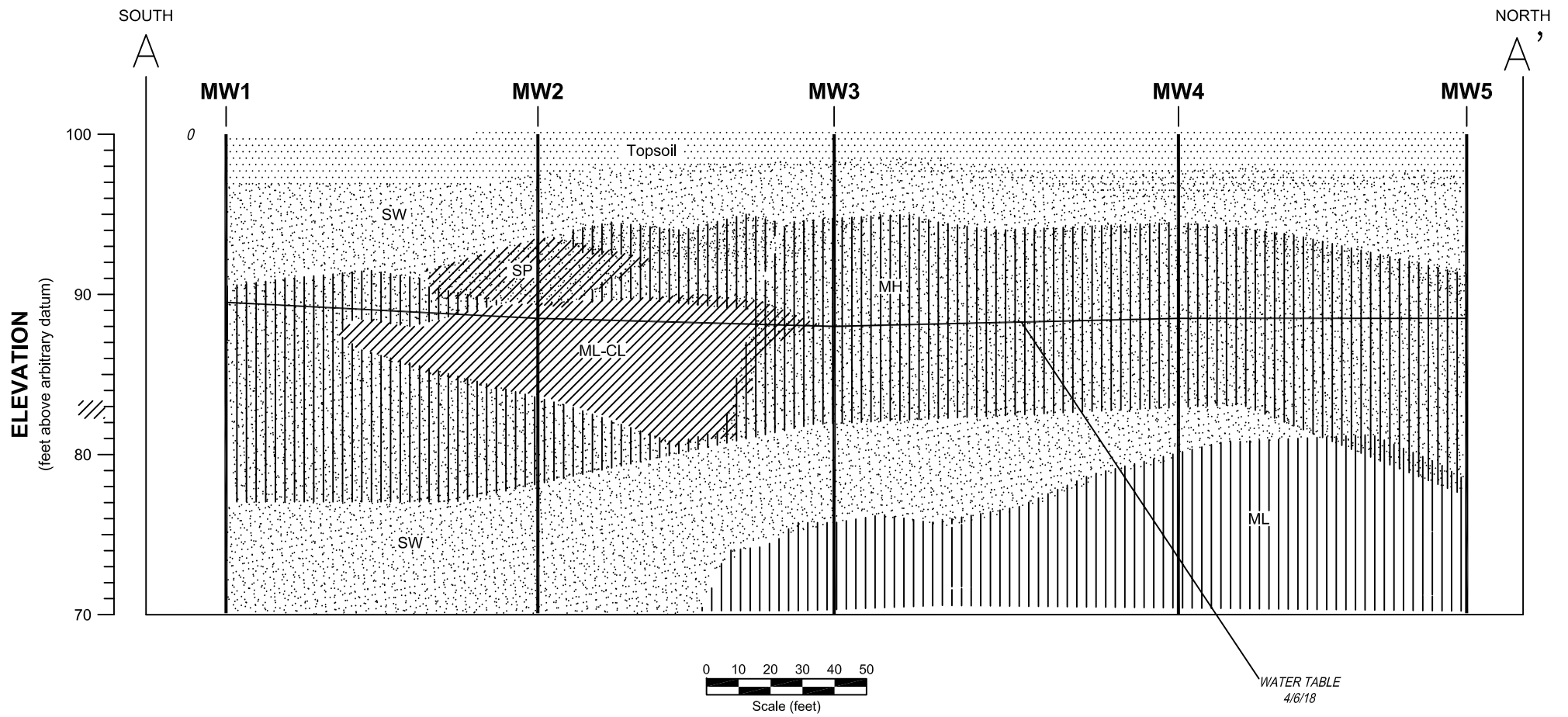


Figure 2
SITE MAP
 April 6, 2018

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 TDA	
Date 5/1/2018	Reviewed by Filename 18013Q	



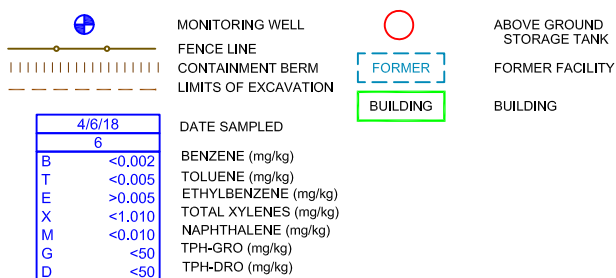
LEGEND

CH	Clay, high plasticity	SW	Sand, well-graded		Topsoil	Cased interval
CL	Clay, low plasticity	SP	Sand, poorly-graded		Asphalt	
MH	Silt, high plasticity	SC	Sand, clayey		Concrete	Screened interval
ML	Silt, low plasticity	SM	Sand, silty		Basin fill	
CH-MH	Clay, silty, high plasticity	GW	Gravel, well-graded		Claystone	Uncased interval
CL-ML	Clay, silty, low plasticity	GP	Gravel, poorly-graded		Siltstone	
MH-CH	Silt, clayey, high plasticity	GC	Gravel, clayey		Shale	Plug-back interval
ML-CL	Silt, clayey, low plasticity	GM	Gravel, silty		Sandstone	


Figure 3
CROSS-SECTION A-A'

Noble - Bates #1, C3-2
SW NE Sec. 3, Section 23, T4N, R64W
Weld County, Colorado

Project No. CO18-013	Prepared by	Drawn by TDA	REMONT ENVIRONMENTAL
Date 5/6/2018	Reviewed by	Filename 18013X	



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 TDA	
Date 5/1/2018	Reviewed by	Filename 18013Q	

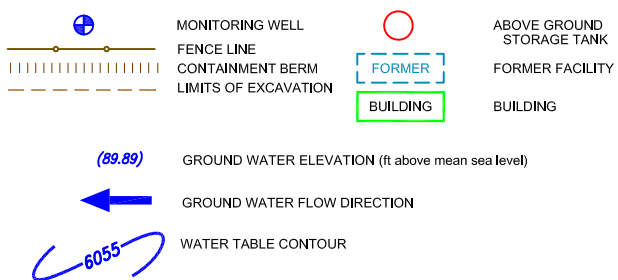


Figure 5
INFERRED GROUND WATER CONTOUR MAP
 April 6, 2018

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
TDA

Date
5/2/2018

Reviewed by

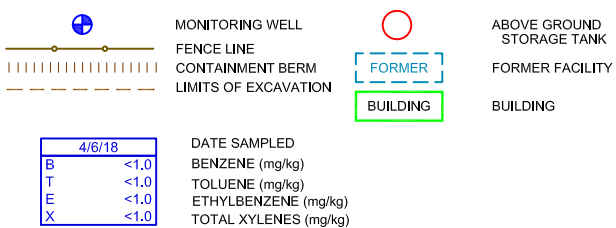
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18013Q





Figure 6
GROUND WATER CHEMISTRY MAP
April 6, 2018

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 TDA	Drawn by TDA	
Date 5/1/2018	Reviewed by	Filename 18013Q	

APPENDIX A

BORING LOGS

BORING/WELL CONSTRUCTION LOG

Boring/Well Location Sketch Map

Page 1 of 1

Boring/Well No. MW-1	Total Depth 14'	Location Noble Energy Bates #1, C3-2 SW NE Sec 3, T4N, R64W Weld County, Colorado	
Project No./Name C018-013/Noble Bates #1, C3-2		Approved By	
Drilling Contractor/Driller DrillPro		Geologist/Office Paul Henehan	
Drilling Equipment/Method Geoprobe		Size/Type of Bit 2.5" direct push	Sampling Method direct push
		Start/Finish Date 4/6/18	
Well Installed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Casing Mtrl./Dia. PVC/1"	Screen: Type Slotted Mtrl. PVC	Length 10' Dia. 1" Slot Size 0.010"
Elevation of: (ft. above datum)	Ground Surface	Top of Well Casing	Top of Screen
			Bottom of Screen
			Ground Water Surface/Date Measured

DEPTH (feet)	WELL CONSTRUCTION		LITHOLOGY		Penetration Rate (blows/6")	Recovery (%)	Sample Interval (feet)	PID Values (ppm)
			GRAPHIC LOG	VISUAL DESCRIPTION				
	Bentonite	Blank		Top soil, fine sand, dry, moist				
5	#10-20 Silica Sand	1" Screen		Medium sand, wet, no stain, odor				0
10				Medium sand, wet, no stain, no odor				0
				Fine/medium sand, silty sand, dark gray stain, no odor for two inches				
				Firmer silt sand, no stain, odor				6
15				TD 14'				0
20								

BORING/WELL CONSTRUCTION LOG

Boring/Well Location Sketch Map

Page 1 of


Boring/Well No. MW-2	Total Depth 14'	Location Noble Energy Bates #1, C3-2 SW NE Sec 3, T4N, R64W Weld County, Colorado	
Project No./Name C018-013/Noble Bates #1, C3-2		Approved By	
Drilling Contractor/Driller DrillPro		Geologist/Office Paul Henehan	
Drilling Equipment/Method Geoprobe		Size/Type of Bit 2.5" direct push	Sampling Method direct push
Well Installed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Start/Finish Date 4/6/18	
Casing Mtrl./Dia. PVC/1"	Screen: Type Slotted Mtrl. PVC Length 10' Dia. 1" Slot Size 0.010"		
Elevation of: (ft. above datum)	Ground Surface	Top of Well Casing	Top of Screen
			Bottom of Screen
			Ground Water Surface/Date Measured



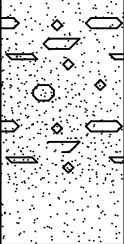
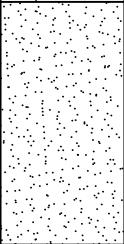
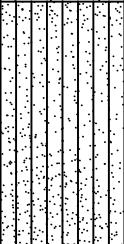
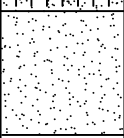
DEPTH (feet)	WELL CONSTRUCTION		LITHOLOGY		Penetration Rate (blows/6")	Recovery (%)	Sample Interval (feet)	PID Values (ppm)
			GRAPHIC LOG	VISUAL DESCRIPTION				
	Bentonite	Blank		Topsoil, sandy clay, moist, no stain, odor				
5				Silty clay to 7', then fine sand to 7.5', then sandy clay, no stain, odor, very moist				0
	#10-20 Silica Sand	1" Screen						0
10				Silty clay to 9', then fine sand, dark gray staining 10'-11' with no odor				0
								105
				Fine sand, wet, water has a rainbow sheen				86
15				TD 14'				2
20								

BORING/WELL CONSTRUCTION LOG

Boring/Well Location Sketch Map

Page 1 of 1

Boring/Well No. MW-3		Total Depth 14'		Location Noble Energy Bates #1, C3-2 SW NE Sec 3, T4N, R64W Weld County, Colorado	
Project No./Name C018-013/Noble Bates #1, C3-2					
Drilling Contractor/Driller DrillPro					
Geologist/Office Paul Henehan					
Drilling Equipment/Method Geoprobe				Size/Type of Bit 2.5" direct push	Sampling Method direct push
Start/Finish Date 4/6/18					
Well Installed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Casing Mtrl./Dia.		Screen: Type Slotted Mtrl. PVC Length 10' Dia. 1" Slot Size 0.010"	
Elevation of: (ft. above datum)		Ground Surface	Top of Well Casing	Top of Screen	Bottom of Screen
					Ground Water Surface/Date Measured

DEPTH (feet)	WELL CONSTRUCTION		LITHOLOGY		Penetration Rate (blows/6")	Recovery (%)	Sample Interval (feet)	PID Values (ppm)
			GRAPHIC LOG	VISUAL DESCRIPTION				
5	 Bentonite	 1" Blank		Topsoil, silty clay, fine sand, no stain, odor				0
				Fine sand, wet, no stain, odor				0
				Fine sand, silty sand, firm, wet, moist				0
				Fine sand, no stain, odor				0
15			TD 14'					0
20								

BORING/WELL CONSTRUCTION LOG

Boring/Well Location Sketch Map

Page 1 of 1


Boring/Well No. MW-4	Total Depth 14'	Location Noble Energy Bates #1, C3-2 SW NE Sec 3, T4N, R64W Weld County, Colorado	
Project No./Name C018-013/Noble Bates #1, C3-2		Drilling Contractor/Driller DrillPro	
Geologist/Office Paul Henehan		Approved By	
Drilling Equipment/Method Geoprobe		Size/Type of Bit 2.5" direct push	Sampling Method direct push
Well Installed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Casing Mtrl./Dia. PVC/1"	Screen: Type Slotted Mtrl. PVC Length 10' Dia. 1" Slot Size 0.010"
Elevation of: (ft. above datum)	Ground Surface	Top of Well Casing	Top of Screen
			Bottom of Screen
			Ground Water Surface/Date Measured

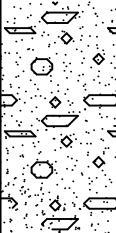
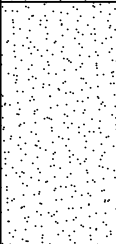
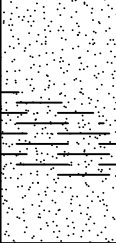
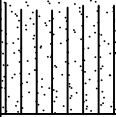
DEPTH (feet)	WELL CONSTRUCTION		LITHOLOGY		Penetration Rate (blows/6")	Recovery (%)	Sample Interval (feet)	PID Values (ppm)
			GRAPHIC LOG	VISUAL DESCRIPTION				
	Bentonite	1" Blank		Topsoil, silty sand, dry, no stain, odor				
5				Light brown, fine sand, very moist, no stain, odor				0
10				Wet, fine sand, firm, silt, gray band of staining, no odor				0 260
15				Firm silt, no stain, odor, dry				0
20			TD 14'					0

BORING/WELL CONSTRUCTION LOG

Boring/Well Location Sketch Map

Page 1 of 1

Boring/Well No. MW-5		Total Depth 14'		Location Noble Energy Bates #1, C3-2 SW NE Sec 3, T4N, R64W Weld County, Colorado	
Project No./Name C018-013/Noble Bates #1, C3-2					
Drilling Contractor/Driller DrillPro					
Geologist/Office Paul Henehan					
Drilling Equipment/Method GeoProbe				Size/Type of Bit 2.5" direct push	Sampling Method direct push
Well Installed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				Start/Finish Date 4/6/18	
Casing Mtrl./Dia. PVC/1"		Screen: Type Slotted Mtrl. PVC Length 10' Dia. 1" Slot Size 0.010"			
Elevation of: (ft. above datum)		Ground Surface	Top of Well Casing	Top of Screen	Bottom of Screen
					Ground Water Surface/Date Measured

DEPTH (feet)	WELL CONSTRUCTION		LITHOLOGY		Penetration Rate (blows/6")	Recovery (%)	Sample Interval (feet)	PID Values (ppm)
			GRAPHIC LOG	VISUAL DESCRIPTION				
	Bentonite	Blank		Top soil, silt clay, fine to medium sand, dry, no staining, odor				
5	#10-20 Silica Sand	1" Screen		Fine to medium sand, fine sand, gray staining, wet, light odor				0
10				Wet, fine sand, firm silt, gray band				4
				Firm silt, no stain, odor				29
15				TD 14'				1
20								1

APPENDIX B

SAMPLING PLAN

SAMPLING METHODS AND PROCEDURES

Water Level Measurements

All ground water level measurements will be obtained using an electric measuring device, which indicates when a probe is in contact with ground water. Measurements will be obtained by lowering the device into the well until the water surface had been encountered, and by measuring the distance from the top of the inside riser pipe to the probe. All of the measurements will be recorded to the nearest 0.01 ft. To minimize cross-contamination, the water level indicator will be decontaminated with isopropyl alcohol and distilled water between each well.

Monitoring Well Sampling

All monitoring wells were sampled from the “cleanest” to the “most contaminated” according to the protocols listed below.

Field Protocol

- | | |
|--------|--|
| Step 1 | Measure water level in each well. |
| Step 2 | Purge each monitoring well by evacuating a minimum of three well bore volumes using a disposable polyethylene bailer. |
| Step 3 | Collect water samples using a disposable polyethylene bailer. |
| Step 4 | Cool samples to approximately 4°C for transportation. |
| Step 5 | Store water samples and transport to a specific laboratory, following all documentation and chain-of-custody procedures. |

Upon completion of ground water sampling, a chain-of-custody log will be completed. Chain-of-custody records include the following information: project, project number, shipped by, shipped to, suspected hazard, sampling point, location, field identification number, date collected, sample type, number of containers, analysis required, and sampler's signature.

The chain-of-custody records will be shipped with the samples to the laboratory. Upon arrival at the laboratory the samples will be checked in and signed by the appropriate laboratory personnel. Laboratory identification numbers will be noted on the chain-of-custody record. Upon completion of the laboratory analysis, the completed chain-of-custody record will be returned to the project manager.

Analytical Methods

The following list identifies the various chemical constituents and analytical methods which will be used for their quantification.

<u>Chemical Parameter</u>	<u>Method</u>
Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX)	EPA Method – 8260C

APPENDIX C

LABORATORY DOCUMENTATION

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

April 15, 2018

Paul Henehan
Fremont Environmental
PO Box 1289
Wellington, CO 80549
RE: Noble - Bates #1, C3-2

Enclosed are the results of analyses for samples received by Summit Scientific on 04/09/18 16:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury For Ben Shrewsbury
President / Laboratory Director



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Bates #1, C3-2

Project Number: [none]
Project Manager: Paul Henehan

Reported:
04/15/18 16:39

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	1804173-01	Water	04/06/18 00:00	04/09/18 16:30
MW-2	1804173-02	Water	04/06/18 00:00	04/09/18 16:30
MW-3	1804173-03	Water	04/06/18 00:00	04/09/18 16:30
MW-4	1804173-04	Water	04/06/18 00:00	04/09/18 16:30
MW-5	1804173-05	Water	04/06/18 00:00	04/09/18 16:30
MW-1 6FT	1804173-06	Soil	04/06/18 00:00	04/09/18 16:30
MW-2 6FT	1804173-07	Soil	04/06/18 00:00	04/09/18 16:30
MW-3 6FT	1804173-08	Soil	04/06/18 00:00	04/09/18 16:30
MW-4 6FT	1804173-09	Soil	04/06/18 00:00	04/09/18 16:30
MW-5 6FT	1804173-10	Soil	04/06/18 00:00	04/09/18 16:30

Summit Scientific

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1804173

Summit Scientific

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

Page 1 of 1

Client: FREMONT
Address: _____
City/State/Zip: _____
Phone: _____ Fax: _____
Sampler Name: HENEHAN

Project Manager: HENEHAN Bill to JACOBS
E-Mail: _____
Project Name: NOBLE-BATES #1, CS-2
Project Number: _____

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:						Special Instructions		
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	BTEX	GRD/DRO	NAPHTHALENE	SAR	EC		pH	
MW-1	4/6/18					✓		✓					✓						
MW-2	↓																		
MW-3																			
MW-4																			
MW-5																			
MW-1 6 FT														✓					
MW-2 6 FT													✓	✓					
MW-3 6 FT													✓	✓					
MW-4 6 FT													✓	✓					
MW-5 6 FT													✓	✓					
Relinquished by: <u>[Signature]</u> Date/Time: <u>4/9/18</u>				Received by: <u>[Signature]</u> Date/Time: <u>4/9/18</u>				Turn Around Time (Check)				Notes:							
Relinquished by: _____ Date/Time: _____				Received by: _____ Date/Time: _____				Same Day <input type="checkbox"/> 72 Hours <input checked="" type="checkbox"/>				on ice							
Relinquished by: _____ Date/Time: _____				Received by: _____ Date/Time: _____				24 Hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/>											
Relinquished by: _____ Date/Time: _____				Received in Lab by: _____ Date/Time: _____				Sample Integrity: Temperature Upon Receipt: <u>4.5°C</u>											
								Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No											

Sample Receipt Checklist

S2 Work Order: 1804173

Client: Fremont Client Project ID: Noble-Bates #1, C3-2

Shipped Via: Hand Airbill #: _____
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Matrix (check all that apply): ☐ Air ☒ Soil/Solid ☒ Water ☐ Other: _____
(Describe)

Cooler ID					
Temp (°C)	4.5				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?				
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 ⁽¹⁾ ?	✓			
Was adequate sample volume provided ⁽¹⁾ ?	✓			
If custody seals are present, are they intact ⁽¹⁾ ?			✓	
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 ⁽¹⁾ ?	✓			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	✓			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	✓			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	✓			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		✓		
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?			✓	
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 ⁽¹⁾ ?			✓	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			✓	
Additional Comments (if any):				

⁽¹⁾ 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

4/9/18 1450
Date/Time



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Bates #1, C3-2

Project Number: [none]
Project Manager: Paul Henehan

Reported:
04/15/18 16:39

MW-1
1804173-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1804046	04/11/18	04/14/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		105 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		90.5 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.3 %	45-146		"	"	"	"	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Bates #1, C3-2

Project Number: [none]
Project Manager: Paul Henehan

Reported:
04/15/18 16:39

MW-2
1804173-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1804046	04/11/18	04/14/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		104 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		91.7 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		114 %	45-146		"	"	"	"	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Bates #1, C3-2

Project Number: [none]
Project Manager: Paul Henehan

Reported:
04/15/18 16:39

MW-3
1804173-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1804046	04/11/18	04/14/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		92.5 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	45-146		"	"	"	"	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Bates #1, C3-2

Project Number: [none]
Project Manager: Paul Henehan

Reported:
04/15/18 16:39

MW-4
1804173-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1804046	04/11/18	04/14/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		96.5 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %	45-146		"	"	"	"	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Bates #1, C3-2

Project Number: [none]
Project Manager: Paul Henehan

Reported:
04/15/18 16:39

MW-5
1804173-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1804046	04/11/18	04/14/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		92.3 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %	45-146		"	"	"	"	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Bates #1, C3-2

Project Number: [none]
Project Manager: Paul Henehan

Reported:
04/15/18 16:39

MW-1 6FT
1804173-06 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804083	04/11/18	04/11/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		86.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		92.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.8 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804084	04/10/18	04/11/18	EPA 8015M	

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		121 %	30-150		"	"	"	"	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Bates #1, C3-2

Project Number: [none]
Project Manager: Paul Henehan

Reported:
04/15/18 16:39

MW-2 6FT
1804173-07 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804083	04/11/18	04/11/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		88.5 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		93.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.6 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804084	04/10/18	04/11/18	EPA 8015M	

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		122 %	30-150		"	"	"	"	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Bates #1, C3-2

Project Number: [none]
Project Manager: Paul Henehan

Reported:
04/15/18 16:39

MW-3 6FT
1804173-08 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804083	04/11/18	04/11/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		82.7 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		92.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.7 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804084	04/10/18	04/12/18	EPA 8015M	

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		120 %	30-150		"	"	"	"	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Bates #1, C3-2

Project Number: [none]
Project Manager: Paul Henehan

Reported:
04/15/18 16:39

MW-4 6FT
1804173-09 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804083	04/11/18	04/11/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		82.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		93.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.6 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804084	04/10/18	04/12/18	EPA 8015M	

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		124 %	30-150		"	"	"	"	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Bates #1, C3-2

Project Number: [none]
Project Manager: Paul Henehan

Reported:
04/15/18 16:39

MW-5 6FT
1804173-10 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804083	04/11/18	04/11/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		83.3 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		89.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804084	04/10/18	04/12/18	EPA 8015M	

Date Sampled: **04/06/18 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		124 %	30-150		"	"	"	"	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Bates #1, C3-2

Project Number: [none]
Project Manager: Paul Henehan

Reported:
04/15/18 16:39

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1804046 - EPA 5030 Water MS

Blank (1804046-BLK1)

Prepared: 04/11/18 Analyzed: 04/14/18

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	13.9		"	13.2		105	37-154			
Surrogate: Toluene-d8	13.3		"	13.3		99.7	45-149			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.9	45-146			

LCS (1804046-BS1)

Prepared: 04/11/18 Analyzed: 04/14/18

Benzene	49.5	1.0	ug/l	50.0		98.9	60.1-131			
Toluene	50.8	1.0	"	50.0		102	65.9-127			
Ethylbenzene	48.2	1.0	"	50.0		96.4	65.1-129			
m,p-Xylene	98.0	2.0	"	100		98.0	66.8-127			
o-Xylene	50.4	1.0	"	50.0		101	61.2-120			
Xylenes (total)	148	2.0	"				63-131			
Surrogate: 1,2-Dichloroethane-d4	13.8		"	13.2		105	37-154			
Surrogate: Toluene-d8	13.6		"	13.3		102	45-149			
Surrogate: 4-Bromofluorobenzene	13.1		"	13.3		98.5	45-146			

Matrix Spike (1804046-MS1)

Source: 1804157-01

Prepared: 04/11/18 Analyzed: 04/14/18

Benzene	51.8	1.0	ug/l	50.0	ND	104	52.7-130			
Toluene	54.0	1.0	"	50.0	ND	108	57-127			
Ethylbenzene	52.5	1.0	"	50.0	ND	105	59.2-127			
m,p-Xylene	95.0	2.0	"	100	ND	95.0	53.2-132			
o-Xylene	54.5	1.0	"	50.0	ND	109	56.3-117			
Xylenes (total)	159	2.0	"		ND		63-131			
Surrogate: 1,2-Dichloroethane-d4	12.8		"	13.2		97.3	37-154			
Surrogate: Toluene-d8	13.7		"	13.3		103	45-149			
Surrogate: 4-Bromofluorobenzene	12.8		"	13.3		95.7	45-146			

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Bates #1, C3-2

Project Number: [none]
Project Manager: Paul Henehan

Reported:
04/15/18 16:39

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

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

Batch 1804046 - EPA 5030 Water MS

Matrix Spike Dup (1804046-MSD1)				Source: 1804157-01		Prepared: 04/11/18		Analyzed: 04/14/18		
Benzene	52.4	1.0	ug/l	50.0	ND	105	52.7-130	1.21	19.3	
Toluene	53.8	1.0	"	50.0	ND	108	57-127	0.186	18.7	
Ethylbenzene	53.9	1.0	"	50.0	ND	108	59.2-127	2.56	20	
m,p-Xylene	98.9	2.0	"	100	ND	98.9	53.2-132	4.01	20	
o-Xylene	49.7	1.0	"	50.0	ND	99.3	56.3-117	9.25	20	
Xylenes (total)	163	2.0	"		ND		63-131	2.31	20	
Surrogate: 1,2-Dichloroethane-d4	12.3		"	13.2		93.3	37-154			
Surrogate: Toluene-d8	13.1		"	13.3		98.0	45-149			
Surrogate: 4-Bromofluorobenzene	12.4		"	13.3		93.4	45-146			

Batch 1804083 - EPA 5030 Soil MS

Blank (1804083-BLK1)				Prepared & Analyzed: 04/11/18						
Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.0050	"							
Naphthalene	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0331		"	0.0396		83.5	23-173			
Surrogate: Toluene-d8	0.0375		"	0.0400		93.7	20-170			
Surrogate: 4-Bromofluorobenzene	0.0381		"	0.0400		95.2	21-167			

LCS (1804083-BS1)				Prepared & Analyzed: 04/11/18						
Benzene	0.0881	0.0020	mg/kg	0.100		88.1	58-130			
Toluene	0.103	0.0050	"	0.100		103	61-134			
Ethylbenzene	0.119	0.0050	"	0.100		119	74-139			
m,p-Xylene	0.252	0.010	"	0.200		126	73-137			
o-Xylene	0.119	0.0050	"	0.100		119	73-141			
Xylenes (total)	0.371	0.0050	"				73-141			
Naphthalene	ND	0.010	"				66-138			
Gasoline Range Hydrocarbons	2.51	0.50	"				30-150			
Surrogate: 1,2-Dichloroethane-d4	0.0327		"	0.0396		82.5	23-173			
Surrogate: Toluene-d8	0.0362		"	0.0400		90.6	20-170			
Surrogate: 4-Bromofluorobenzene	0.0370		"	0.0400		92.5	21-167			

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Project Number: [none]
Project Manager: Paul Henehan

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

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

Batch 1804083 - EPA 5030 Soil MS

Matrix Spike (1804083-MS1)

Source: 1804173-06

Prepared & Analyzed: 04/11/18

Benzene	0.0909	0.0020	mg/kg	0.100	ND	90.9	30-131			
Toluene	0.107	0.0050	"	0.100	ND	107	30-134			
Ethylbenzene	0.121	0.0050	"	0.100	ND	121	22-153			
m,p-Xylene	0.251	0.010	"	0.200	ND	126	10-159			
o-Xylene	0.118	0.0050	"	0.100	ND	118	31-151			
Xylenes (total)	0.370	0.0050	"		ND		10-159			
Naphthalene	ND	0.010	"		ND		10-158			
Gasoline Range Hydrocarbons	2.61	0.50	"		ND		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0351</i>		<i>"</i>	<i>0.0396</i>		<i>88.6</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0372</i>		<i>"</i>	<i>0.0400</i>		<i>93.1</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0377</i>		<i>"</i>	<i>0.0400</i>		<i>94.3</i>	<i>21-167</i>			

Matrix Spike Dup (1804083-MSD1)

Source: 1804173-06

Prepared & Analyzed: 04/11/18

Benzene	0.0893	0.0020	mg/kg	0.100	ND	89.3	30-131	1.76	20	
Toluene	0.105	0.0050	"	0.100	ND	105	30-134	2.18	20	
Ethylbenzene	0.117	0.0050	"	0.100	ND	117	22-153	2.72	20	
m,p-Xylene	0.246	0.010	"	0.200	ND	123	10-159	2.22	20	
o-Xylene	0.118	0.0050	"	0.100	ND	118	31-151	0.559	20	
Xylenes (total)	0.363	0.0050	"		ND		10-159	1.69	20	
Naphthalene	ND	0.010	"		ND		10-158		20	
Gasoline Range Hydrocarbons	2.53	0.50	"		ND		30-160	3.33	20	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0346</i>		<i>"</i>	<i>0.0396</i>		<i>87.4</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0367</i>		<i>"</i>	<i>0.0400</i>		<i>91.7</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0369</i>		<i>"</i>	<i>0.0400</i>		<i>92.3</i>	<i>21-167</i>			

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Project: Noble - Bates #1, C3-2

Project Number: [none]
Project Manager: Paul Henehan

Reported:
04/15/18 16:39

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1804084 - EPA 3550A

Blank (1804084-BLK1)

Prepared & Analyzed: 04/10/18

C10-C28 (DRO) ND 50 mg/kg

LCS (1804084-BS1)

Prepared & Analyzed: 04/10/18

C10-C28 (DRO) 547 50 mg/kg 500 109 81.4-129

Matrix Spike (1804084-MS1)

Source: 1804167-01

Prepared & Analyzed: 04/10/18

C10-C28 (DRO) 545 50 mg/kg 500 15.8 106 77.8-133

Matrix Spike Dup (1804084-MSD1)

Source: 1804167-01

Prepared & Analyzed: 04/10/18

C10-C28 (DRO) 575 50 mg/kg 500 15.8 112 77.8-133 5.25 8.48

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Project: Noble - Bates #1, C3-2

Project Number: [none]
Project Manager: Paul Henehan

Reported:
04/15/18 16:39

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