

FREMONT ENVIRONMENTAL INC.

April 25, 2023

Mr. Dan Peterson
Noble Energy Inc.
2115 117th Avenue
Greeley, CO 80634

Subject: **Flowline Closure Data Submittal**
Patriot B 16-24
API # 05-123-25729
SESW Sec. 16, T5N, R64W
Weld County, Colorado
Fremont Project No. C023-037
Remediation # 25430

Dear Mr. Peterson:

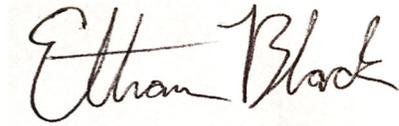
As you requested, Fremont Environmental Inc. (Fremont) personnel conducted flowline abandonment activities for the Noble Energy Inc. (Noble) Patriot B 16-24 location. Details of the Patriot B 16-24 flowline abandonment are documented in the attached Closure Report.

Petroleum impacted soil was encountered along the flowline adjacent to the wellhead. Additional site investigation is needed to determine the magnitude and extent of impacts. Groundwater was not encountered.

Please contact me at (603) 477-6907 if you require any additional information. Fremont appreciates the opportunity to provide this service.

Sincerely,

FREMONT ENVIRONMENTAL INC.



Ethan D. Black, P.G.
Consultant

Attachments:

- Facility Closure Checklist
- Tables
- Figures
- Photos
- Laboratory Reports

Flowline Closure Checklist

COGCC Rule 911.a.(4) Environmental Site Closure Assessment Field Form

<i>Additional Attachments:</i>		Tank Battery Closure		Wellhead Closure		Pit Closure		Partially Buried Vault Closure
<i>Site Name & COGCC Facility Number:</i>		<i>Date:</i>						<i>Remediation Project #:</i>
<i>Associated Wells:</i>		<i>Age of Site:</i>						<i>Number of Photos Attached:</i>

Starting point: (GPS coordinates and descriptions)

End point: (GPS coordinates and descriptions)

USCS Soil Type: _____ *Estimated Depth to Groundwater:* _____

Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)

Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)

Flowlines

<i>Flowline type</i>								
<i>Depth</i>								
<i>Age</i>								
<i>Length</i>								
<i>Construction Material</i>								
<i>Were flowlines pulled?</i>								
<i>Visual Integrity of lines</i>								
<i>Visual impacts if trenched</i>								
<i>PID Readings if trenched</i>								
<i>Sample taken?</i>								
<i>Location/Sample ID#</i>								
<i>Photo Number(s)</i>								

Other observations regarding on location flowlines:

Summary

Was impacted soil identified?
 No Yes - less than 10 cubic yards Yes - more than 10 cubic yards

Total number of samples field screened: _____ *Total number of samples collected:* _____

Highest PID Reading: _____ *Total number of samples submitted to lab for analysis:* _____

If more than 10 cubic yards of impacted soil were observed:

Vertical extent: _____ *Estimated spill volume:* _____

Lateral extent: _____ *Volume of soil removed:* _____

Is additional investigation required?

Was groundwater encountered during the investigation?
 No Yes - not impacted or in contact with impacted soils Yes - groundwater impacted and/or in contact with impacted soils

Measured depth to groundwater: _____ *Was remedial groundwater removal conducted?* Yes No

Date Groundwater was encountered: _____ *Commencement date of removal:* _____

Sheen on groundwater? Yes No *Volume of groundwater removed prior to sampling:* _____

Free product observed? Yes No *Volume of groundwater removed post sampling:* _____

Total number of samples collected: _____ *Total Volume of groundwater removed:* _____

Total number of samples submitted to lab for analysis: _____

TABLE 1
SUMMARY OF VOLATILE ORGANIC SOIL CHEMISTRY DATA
NOBLE ENERGY INC.
PATRIOT B 16-24, WELD COUNTY, COLORADO
FREMONT PROJECT NO. C023-037

Sample ID	Sample Date	Depth (ft)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-Benzene (mg/kg)	Xylenes (mg/kg)	1,2,4-Trimethyl-Benzene (mg/kg)	1,3,5-Trimethyl-Benzene (mg/kg)	Naphthalene (mg/kg)	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH ORO (mg/kg)
COGCC Table 915-1 Limits (Residential SSL)			1.2	490	5.8	58	30	27	2	500**		
COGCC Table 915-1 Limits (Protection of Groundwater SSL)			0.0026	0.69	0.78	9.9	0.0081	0.0087	0.0038	500**		
FL01 2FT	02/13/2023	2	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50

Bold faced values exceed the COGCC Table 915-1 concentrations

Red & blue highlighted 915-1 Limits indicate the referenced soil screening level (SSL)

* Indicates laboratory minimum detection limit in excess of SSL

** Summation of GRO+DRO+ORO must be less than 500 mg/kg

NA - Not analyzed

TABLE 2
SUMMARY OF POLYCYCLIC AROMATIC HYDROCARBON SOIL CHEMISTRY DATA
NOBLE ENERGY INC.
PATRIOT B 16-24, WELD COUNTY, COLORADO
FREMONT PROJECT NO. C023-037

Sample ID	Sample Date	Depth (ft)	Acenaphthene (mg/kg)	Anthracene (mg/kg)	Benzo (a) Anthracene (mg/kg)	Benzo (a) Pyrene (mg/kg)	Benzo (b) Fluoranthene (mg/kg)	Benzo (k) Fluoranthene (mg/kg)	Chrysene (mg/kg)	Dibenzo (a,h) Anthracene (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Indeno (1,2,3-cd) Pyrene (mg/kg)	Pyrene (mg/kg)	1-Methyl - Naphthalene (mg/kg)	2-Methyl- Naphthalene (mg/kg)
COGCC Table 915-1 Limits (Residential SSL)			360	1800	1.1	0.11	1.1	11	110	0.11	240	240	1.1	180	18	24
COGCC Table 915-1 Limits (Protection of Groundwater SSL)			0.55	5.8	0.011	0.24	0.3	2.9	9	0.096	8.9	0.54	0.98	1.3	0.006	0.019
FL01 2FT	02/13/2023	2	0.013	0.018	0.030	0.019	0.029	0.012	0.0281	<0.00500	0.066	0.0162	0.015	0.063	<0.00500	<0.00500

Bold faced values exceed the COGCC Table 915-1 concentrations

Red & blue highlighted 915-1 Limits indicate the referenced soil screening level (SSL)

* Indicates laboratory minimum detection limit in excess of SSL

NA - Not analyzed

TABLE 3
SUMMARY OF SOIL SUITABILITY FOR RECLAMATION
NOBLE ENERGY INC.
PATRIOT B 16-24, WELD COUNTY, COLORADO
FREMONT PROJECT NO. C023-037

Sample ID	Sample Date	Depth (ft)	pH	EC (mmhos/cm)	SAR	Boron (mg/L)
COGCC Table 915-1 Soil Suitability Limits			6 - 8.3	<4	<6	2
FL01 2FT	02/13/2023	2	7.5	0.454	0.609	0.151

Bold faced values exceed the COGCC Table 915-1 concentrations

Yellow highlighted 915-1 Limits indicate the referenced soil screening level (SSL)

NA - Not analyzed

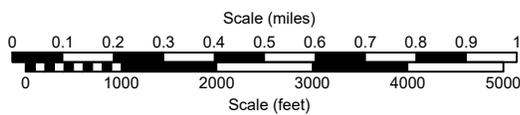
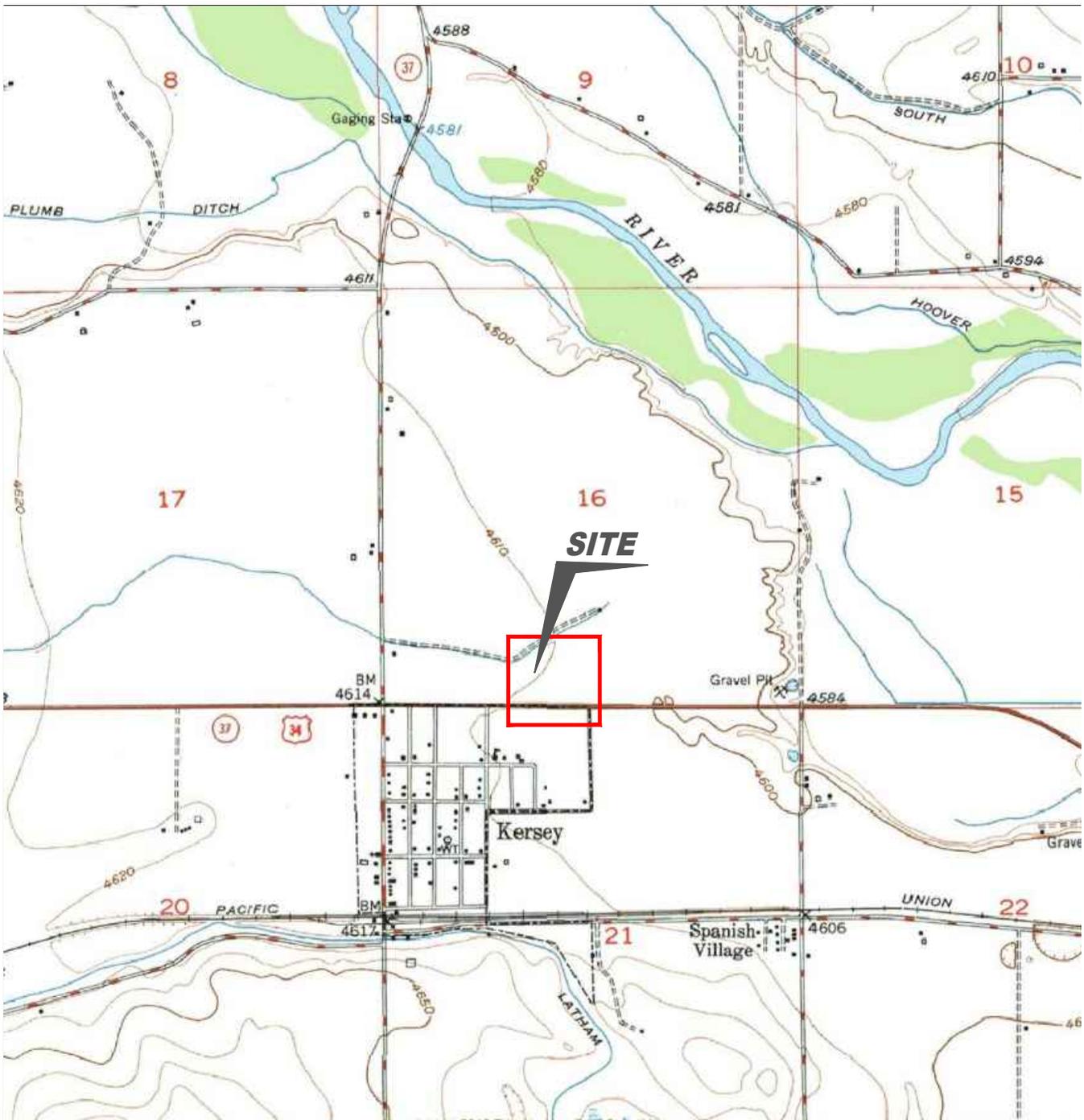
TABLE 4
SUMMARY OF POTHOLE FIELD OBSERVATIONS
NOBLE ENERGY INC.
PATRIOT B 16-24, WELD COUNTY, COLORADO
FREMONT PROJECT C023-037

Location	Latitude	Longitude	PID Reading	Field Observations
FL01 2 Ft	40.39544629	-104.5552493	0.0	No impacts observed
FL02 3 Ft	40.39577101	-104.55489	0.0	No impacts observed
FL03 3 Ft	40.3963552	-104.5548547	0.0	No impacts observed
SEP E Surf.	40.396967	-104.554884	0.0	No impacts observed

TABLE 5
SUMMARY OF FLOW LINE CONDITION
NOBLE ENERGY INC.
PATRIOT B 16-24, WELD COUNTY, COLORADO
FREMONT PROJECT C023-037

START	STOP	FOOTAGE	PIPE TYPE AND CONDITION
FL01 2 Ft	FL02 3 Ft	156	2" sch 80 carbon steel, non-ACM TGF coating, good condition
FL02 3 Ft	FL03 3 Ft	248	2" sch 80 carbon steel, non-ACM TGF coating, good condition
FL03 3 Ft	SEP E Surf.	216	2" sch 80 carbon steel, non-ACM TGF coating, good condition

620 **Total linear feet of flow line**



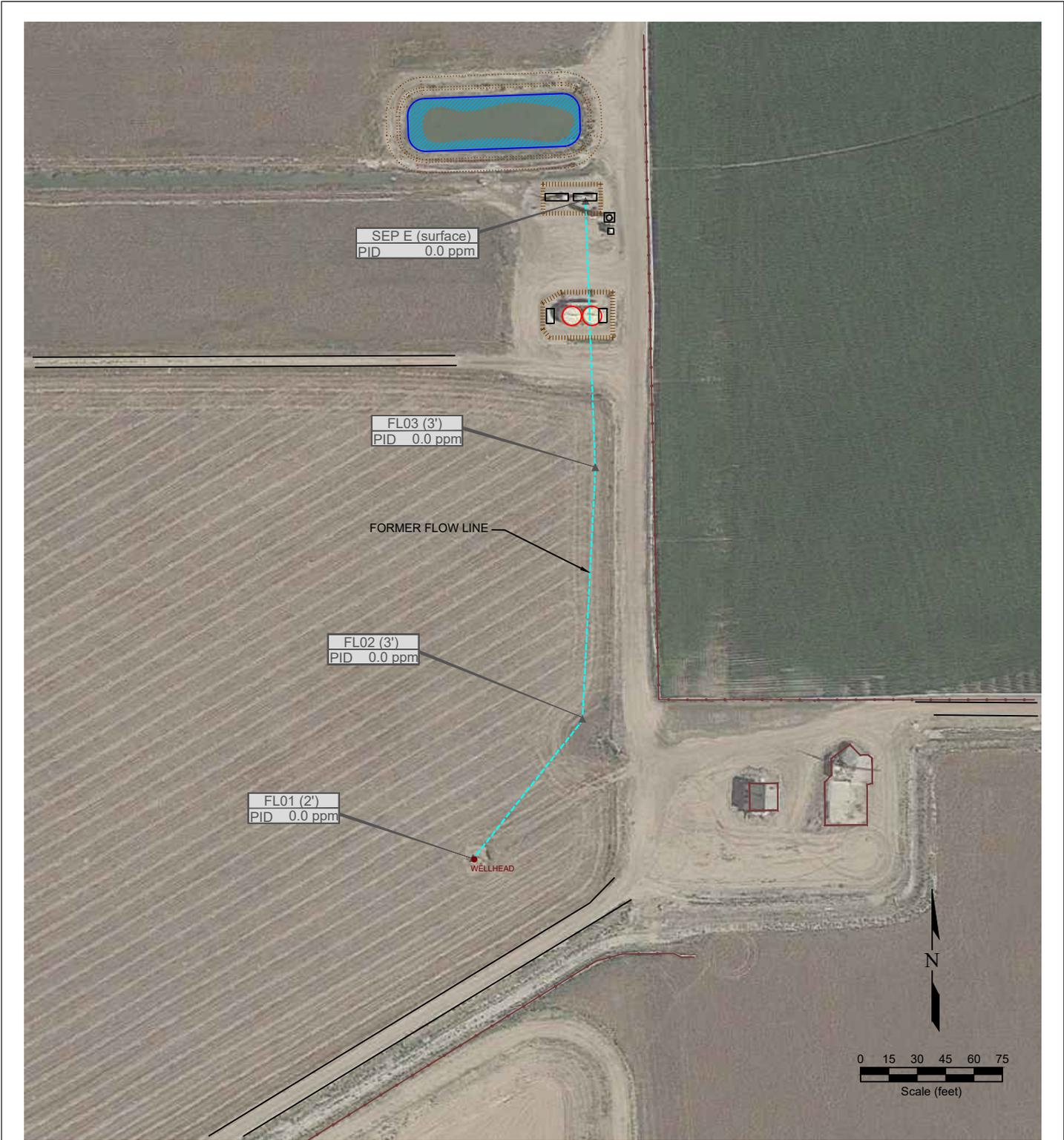
USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)

Figure 1
SITE LOCATION MAP

Noble Energy, Inc. ~ Patriot 16-24
 SESW Sec. 16, T5N, R65W, 6th PM
 Weld County, Colorado
 40.395440°, -104.555204°

Project # CO23-037	API # 05-123-25730	Facility #
Date 8/16/23	Remediation # 25430	Filename 23037T





LEGEND

- WELL HEAD LOCATION
- ▲ PID READING LOCATION
- ABOVE GROUND STORAGE TANK
- ◻ FORMER FACILITY
- ◻ BUILDING
- ▨ FORMER FACILITY
- ▨ BUILDING
- ▨ CONTAINMENT BERM
- ▨ FENCE LINE
- ▨ FLOW LINE

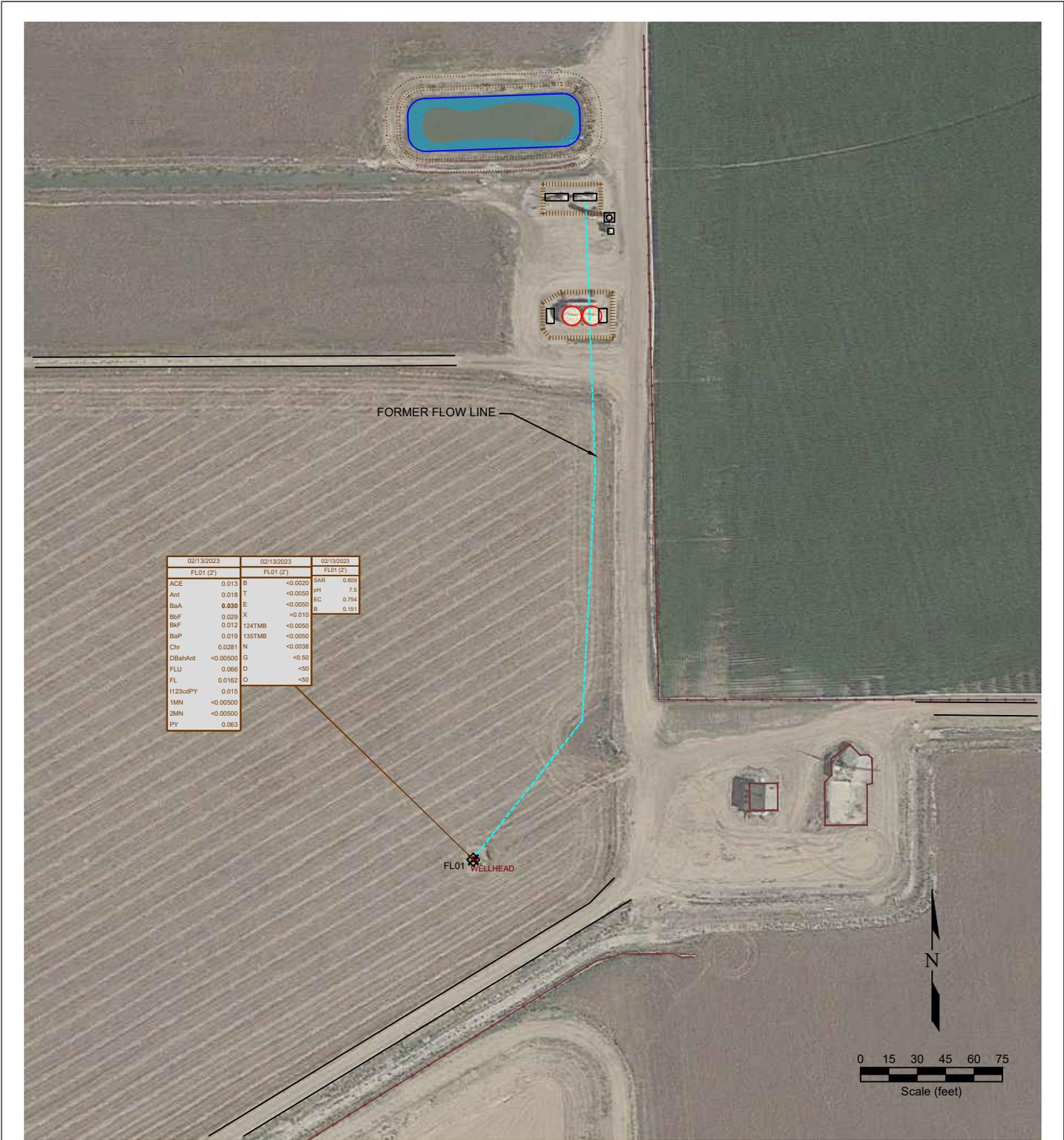
PID = photo ionization detection
 ppm = parts per million

**Figure 2
SITE MAP**

Noble Energy, Inc. ~ Patriot 16-24
 SESW Sec. 16, T5N, R65W, 6th PM
 Weld County, Colorado
 40.395440°, -104.555204°

Project No. CO23-037	API # 05-123-25730	Facility #
Date 8/16/23	Remediation # 25430	Filename 23037Q





02/13/2023		02/13/2023		02/13/2023	
FL01 (2')		FL01 (2')		FL01 (2')	
ACE	0.013	B	<0.0020	SAR	0.608
Ant	0.018	T	<0.0050	pH	7.6
BaA	0.030	E	<0.0050	EC	0.754
BbF	0.029	X	<0.010	B	0.151
BbF	0.012	124TMB	<0.0050		
BaP	0.019	135TMB	<0.0050		
Chr	0.0281	N	<0.0038		
DBahAnt	<0.00500	G	<0.50		
FLU	0.066	D	<50		
FL	0.0162	O	<50		
1123cdPY	0.015				
1MN	<0.00500				
2MN	<0.00500				
PY	0.063				

LEGEND

	WELL HEAD LOCATION		ABOVE GROUND STORAGE TANK		FORMER FACILITY		CONTAINMENT BERM
	SOIL SAMPLE LOCATION		BUILDING		FORMER FACILITY		FENCE LINE
			FLOW LINE				

02/13/2023		02/13/2023		02/13/2023	
FL01 (2')		FL01 (2')		FL01 (2')	
ACE	0.013	ACENAPHTHENE (mg/kg)		B	<0.0020
Ant	0.018	ANTHRACENE (mg/kg)		T	<0.0050
BaA	0.030	BENZO (A) ANTHRACENE (mg/kg)		E	<0.0050
BbF	0.029	BENZO (B) FLUORANTHENE (mg/kg)		X	<0.010
BbF	0.012	BENZO (K) FLUORANTHENE (mg/kg)		124TMB	<0.0050
BbF	0.019	BENZO (A) PYRENE (mg/kg)		135TMB	<0.0050
Chr	0.0281	CHRYSENE (mg/kg)		N	<0.0038
DBahAnt	<0.00500	DIBENZ (A,H) ANTHRACENE (mg/kg)		G	<0.50
FLU	0.066	FLUORANTHENE (mg/kg)		D	<50
FL	0.0162	FLUORENE (mg/kg)		O	<50
1123cdPY	0.015	INDENO (1,2,3-CD) PYRENE (mg/kg)			
1MN	<0.00500	1-METHYLNAPHTHALENE (mg/kg)			
2MN	<0.00500	2-METHYLNAPHTHALENE (mg/kg)			
PY	0.063	PYRENE (mg/kg)			

**Figure 3
SOIL CHEMISTRY MAP**

Noble Energy, Inc. ~ Patriot 16-24
 SESW Sec. 16, T5N, R65W, 6th PM
 Weld County, Colorado
 40.395440°, -104.555204°

Project No. CO23-037	API # 05-123-25730	Facility #
Date 8/16/23	Remediation # 25430	Filename 23037Q

Photo Log



Description:

1 - Patriot B 16-24 FL01 bellhole, looking northeast

Photo Log



Description:

2 - Patriot B 16-24 FL03 bellhole, looking northeast

Photo Log



Description:

3 - Patriot B 16-24 SEP E dump line trench, looking east (dump lines -green FBE coating, flowline black non-ACM TGF)

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

February 27, 2023

Paul Henchan
Fremont Environmental
PO Box 1289
Wellington, CO 80549
RE: Noble - Patriot B16-24
Work Order #2302349

Enclosed are the results of analyses for samples received by Summit Scientific on 02/17/23 09:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Scott Sheely For Paul Shrewsbury
President



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Patriot B16-24

Project Number: [none]
Project Manager: Paul Henchan

Reported:
02/27/23 11:10

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
FL01 2FT	2302349-01	Soil	02/13/23 00:00	02/17/23 09:00

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.

S₂

Sample Receipt Checklist

S2 Work Order# 2302349

Client: Fremont Client Project ID: Noble-Patriot B16-24

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other Airbill #:

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

Temp (°C) Thermometer #

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6°C? ⁽¹⁾ NOTE: If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ON ICE
If custody seals are present, are they intact? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples due within 48 hours present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are water samples with short hold times present? Note the short hold analysis in the comments column - pH, Nitrate/Nitrite, Ferrous Iron (Fe ²⁺), Hexavalent Chromium (Cr ⁶⁺ , Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out Completely? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC? ⁽¹⁾	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling)? ⁽¹⁾ Note the type of preservative in the comments column – HCl, H ₂ SO ₄ , NaOH, HNO ₃ , etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2? ⁽¹⁾ Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Additional Comments (if any):

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

AS
Custodian Printed Name

2/17/23
Date/Time



Fremont Environmental
 PO Box 1289
 Wellington CO, 80549

Project: Noble - Patriot B16-24

Project Number: [none]
 Project Manager: Paul Henchan

Reported:
 02/27/23 11:10

FL01 2FT
2302349-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/13/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BGB0579	02/20/23	02/21/23	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050		"	"	"	"	"	"	
Naphthalene	ND	0.0038		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **02/13/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	0.0319	79.7 %		50-150		"	"	"	"	
Surrogate: Toluene-d8	0.0400	100 %		50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	0.0411	103 %		50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **02/13/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BGB0581	02/20/23	02/20/23	EPA 8015M	
C28-C36 (ORO)	ND	50		"	"	"	"	"	"	

Date Sampled: **02/13/23 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl	12.5	100 %		30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Patriot B16-24

Project Number: [none]
Project Manager: Paul Henchan

Reported:
02/27/23 11:10

FL01 2FT
2302349-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **02/13/23 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	0.0132	0.00500	mg/kg	1	BGB0627	02/21/23	02/21/23	EPA 8270D SIM	
Anthracene	0.0181	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	0.0300	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	0.0192	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	0.0288	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	0.0120	0.00500	"	"	"	"	"	"	
Chrysene	0.0281	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	0.0662	0.00500	"	"	"	"	"	"	
Fluorene	0.0162	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	0.0154	0.00500	"	"	"	"	"	"	
Pyrene	0.0629	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **02/13/23 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10	0.0250	75.1 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10	0.0262	78.6 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **02/13/23 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.151	0.0100	mg/L	1	BGB0665	02/21/23	02/23/23	EPA 6020B	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **02/13/23 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	27.4	0.0539	mg/L dry	1	BGB0722	02/22/23	02/24/23	EPA 6020B	

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Patriot B16-24

Project Number: [none]
Project Manager: Paul Henchan

Reported:
02/27/23 11:10

FL01 2FT
2302349-01 (Soil)

Summit Scientific

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Magnesium	10.9	0.0539	mg/L dry	1	BGB0722	02/22/23	02/24/23	EPA 6020B	
Sodium	14.9	0.0539	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **02/13/23 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.609	0.00100	units	1	BGB0794	02/24/23	02/24/23	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **02/13/23 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	92.7		%	1	BGB0666	02/21/23	02/22/23	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **02/13/23 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.454	0.0100	mmhos/cm	1	BGB0742	02/23/23	02/23/23	EPA 120.1	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **02/13/23 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.50		pH Units	1	BGB0743	02/23/23	02/23/23	EPA 9045D	

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Patriot B16-24

Project Number: [none]
Project Manager: Paul Henchan

Reported:
02/27/23 11:10

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 BGB0579 - EPA 5030 Soil MS

Blank (BGB0579-BLK1)

Prepared: 02/20/23 Analyzed: 02/21/23

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0312		"	0.0400		78.0	50-150			
Surrogate: Toluene-d8	0.0392		"	0.0400		98.0	50-150			
Surrogate: 4-Bromofluorobenzene	0.0408		"	0.0400		102	50-150			

LCS (BGB0579-BS1)

Prepared: 02/20/23 Analyzed: 02/21/23

Benzene	0.118	0.0020	mg/kg	0.100		118	70-130			
Toluene	0.117	0.0050	"	0.100		117	70-130			
Ethylbenzene	0.121	0.0050	"	0.100		121	70-130			
m,p-Xylene	0.239	0.010	"	0.200		120	70-130			
o-Xylene	0.113	0.0050	"	0.100		113	70-130			
1,2,4-Trimethylbenzene	0.114	0.0050	"	0.100		114	70-130			
1,3,5-Trimethylbenzene	0.119	0.0050	"	0.100		119	70-130			
Naphthalene	0.0717	0.0038	"	0.100		71.7	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0328		"	0.0400		82.1	50-150			
Surrogate: Toluene-d8	0.0401		"	0.0400		100	50-150			
Surrogate: 4-Bromofluorobenzene	0.0394		"	0.0400		98.4	50-150			

Matrix Spike (BGB0579-MS1)

Source: 2302348-01

Prepared: 02/20/23 Analyzed: 02/21/23

Benzene	0.119	0.0020	mg/kg	0.100	ND	119	70-130			
Toluene	0.119	0.0050	"	0.100	ND	119	70-130			
Ethylbenzene	0.120	0.0050	"	0.100	ND	120	70-130			
m,p-Xylene	0.238	0.010	"	0.200	ND	119	70-130			
o-Xylene	0.112	0.0050	"	0.100	ND	112	70-130			
1,2,4-Trimethylbenzene	0.115	0.0050	"	0.100	ND	115	70-130			
1,3,5-Trimethylbenzene	0.119	0.0050	"	0.100	ND	119	70-130			
Naphthalene	0.0819	0.0038	"	0.100	ND	81.9	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0336		"	0.0400		83.9	50-150			
Surrogate: Toluene-d8	0.0403		"	0.0400		101	50-150			
Surrogate: 4-Bromofluorobenzene	0.0391		"	0.0400		97.8	50-150			

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 PO Box 1289
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Project: Noble - Patriot B16-24

Project Number: [none]
 Project Manager: Paul Henchan

Reported:
 02/27/23 11:10

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 BGB0579 - EPA 5030 Soil MS

Matrix Spike Dup (BGB0579-MSD1)	Source: 2302348-01			Prepared: 02/20/23 Analyzed: 02/21/23						
Benzene	0.123	0.0020	mg/kg	0.100	ND	123	70-130	2.95	30	
Toluene	0.123	0.0050	"	0.100	ND	123	70-130	2.80	30	
Ethylbenzene	0.125	0.0050	"	0.100	ND	125	70-130	3.72	30	
m,p-Xylene	0.246	0.010	"	0.200	ND	123	70-130	3.52	30	
o-Xylene	0.116	0.0050	"	0.100	ND	116	70-130	3.36	30	
1,2,4-Trimethylbenzene	0.119	0.0050	"	0.100	ND	119	70-130	3.55	30	
1,3,5-Trimethylbenzene	0.123	0.0050	"	0.100	ND	123	70-130	3.36	30	
Naphthalene	0.0861	0.0038	"	0.100	ND	86.1	70-130	5.04	30	
Surrogate: 1,2-Dichloroethane-d4	0.0340		"	0.0400		84.9	50-150			
Surrogate: Toluene-d8	0.0406		"	0.0400		102	50-150			
Surrogate: 4-Bromofluorobenzene	0.0396		"	0.0400		99.1	50-150			

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 PO Box 1289
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Project: Noble - Patriot B16-24

Project Number: [none]
 Project Manager: Paul Henchan

Reported:
 02/27/23 11:10

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 BGB0581 - EPA 3550A

Blank (BGB0581-BLK1)

Prepared & Analyzed: 02/20/23

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								
Surrogate: <i>o</i> -Terphenyl	12.3		"	12.5		98.1		30-150			

LCS (BGB0581-BS1)

Prepared & Analyzed: 02/20/23

C10-C28 (DRO)	489	50	mg/kg	500		97.7		70-130			
Surrogate: <i>o</i> -Terphenyl	13.2		"	12.5		105		30-150			

Matrix Spike (BGB0581-MS1)

Source: 2302348-01

Prepared & Analyzed: 02/20/23

C10-C28 (DRO)	385	50	mg/kg	500	14.2	74.2		70-130			
Surrogate: <i>o</i> -Terphenyl	10.3		"	12.5		82.4		30-150			

Matrix Spike Dup (BGB0581-MSD1)

Source: 2302348-01

Prepared & Analyzed: 02/20/23

C10-C28 (DRO)	380	50	mg/kg	500	14.2	73.1		70-130	1.34	20	
Surrogate: <i>o</i> -Terphenyl	9.89		"	12.5		79.2		30-150			

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Project: Noble - Patriot B16-24

Project Number: [none]
Project Manager: Paul Henchan

Reported:
02/27/23 11:10

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BGB0627 - EPA 5030 Soil MS

Blank (BGB0627-BLK1)

Prepared & Analyzed: 02/21/23

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
Surrogate: 2-Methylnaphthalene-d10	0.0332		"	0.0333		99.5	40-150			
Surrogate: Fluoranthene-d10	0.0356		"	0.0333		107	40-150			

LCS (BGB0627-BS1)

Prepared & Analyzed: 02/21/23

Acenaphthene	0.0323	0.00500	mg/kg	0.0333		96.9	31-137			
Anthracene	0.0307	0.00500	"	0.0333		92.0	30-120			
Benzo (a) anthracene	0.0368	0.00500	"	0.0333		110	30-120			
Benzo (a) pyrene	0.0365	0.00500	"	0.0333		109	30-120			
Benzo (b) fluoranthene	0.0386	0.00500	"	0.0333		116	30-120			
Benzo (k) fluoranthene	0.0388	0.00500	"	0.0333		117	30-120			
Chrysene	0.0373	0.00500	"	0.0333		112	30-120			
Dibenz (a,h) anthracene	0.0287	0.00500	"	0.0333		86.2	30-120			
Fluoranthene	0.0319	0.00500	"	0.0333		95.7	30-120			
Fluorene	0.0331	0.00500	"	0.0333		99.4	30-120			
Indeno (1,2,3-cd) pyrene	0.0367	0.00500	"	0.0333		110	30-120			
Pyrene	0.0366	0.00500	"	0.0333		110	35-142			
1-Methylnaphthalene	0.0357	0.00500	"	0.0333		107	35-142			
2-Methylnaphthalene	0.0299	0.00500	"	0.0333		89.7	35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0293		"	0.0333		87.9	40-150			
Surrogate: Fluoranthene-d10	0.0322		"	0.0333		96.5	40-150			

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Patriot B16-24

Project Number: [none]
Project Manager: Paul Henchan

Reported:
02/27/23 11:10

PAH by EPA Method 8270D SIM - Quality Control

Summit Scientific

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

Batch BGB0627 - EPA 5030 Soil MS

Matrix Spike (BGB0627-MS1)	Source: 2302325-01			Prepared & Analyzed: 02/21/23						
Acenaphthene	0.0257	0.00500	mg/kg	0.0333	ND	77.2	31-137			
Anthracene	0.0241	0.00500	"	0.0333	ND	72.4	30-120			
Benzo (a) anthracene	0.0290	0.00500	"	0.0333	ND	87.0	30-120			
Benzo (a) pyrene	0.0283	0.00500	"	0.0333	ND	84.8	30-120			
Benzo (b) fluoranthene	0.0300	0.00500	"	0.0333	ND	89.9	30-120			
Benzo (k) fluoranthene	0.0298	0.00500	"	0.0333	ND	89.3	30-120			
Chrysene	0.0285	0.00500	"	0.0333	ND	85.4	30-120			
Dibenz (a,h) anthracene	0.0225	0.00500	"	0.0333	ND	67.4	30-120			
Fluoranthene	0.0260	0.00500	"	0.0333	ND	78.1	30-120			
Fluorene	0.0263	0.00500	"	0.0333	ND	79.0	30-120			
Indeno (1,2,3-cd) pyrene	0.0280	0.00500	"	0.0333	ND	84.1	30-120			
Pyrene	0.0321	0.00500	"	0.0333	ND	96.4	35-142			
1-Methylnaphthalene	0.0280	0.00500	"	0.0333	ND	84.0	15-130			
2-Methylnaphthalene	0.0240	0.00500	"	0.0333	ND	71.9	15-130			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0255</i>		<i>"</i>	<i>0.0333</i>		<i>76.5</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0253</i>		<i>"</i>	<i>0.0333</i>		<i>75.9</i>	<i>40-150</i>			

Matrix Spike Dup (BGB0627-MSD1)	Source: 2302325-01			Prepared & Analyzed: 02/21/23						
Acenaphthene	0.0240	0.00500	mg/kg	0.0333	ND	71.9	31-137	7.18	30	
Anthracene	0.0208	0.00500	"	0.0333	ND	62.3	30-120	14.9	30	
Benzo (a) anthracene	0.0270	0.00500	"	0.0333	ND	81.0	30-120	7.16	30	
Benzo (a) pyrene	0.0255	0.00500	"	0.0333	ND	76.4	30-120	10.5	30	
Benzo (b) fluoranthene	0.0272	0.00500	"	0.0333	ND	81.5	30-120	9.78	30	
Benzo (k) fluoranthene	0.0276	0.00500	"	0.0333	ND	82.9	30-120	7.37	30	
Chrysene	0.0268	0.00500	"	0.0333	ND	80.5	30-120	5.84	30	
Dibenz (a,h) anthracene	0.0189	0.00500	"	0.0333	ND	56.7	30-120	17.2	30	
Fluoranthene	0.0242	0.00500	"	0.0333	ND	72.5	30-120	7.48	30	
Fluorene	0.0243	0.00500	"	0.0333	ND	72.8	30-120	8.12	30	
Indeno (1,2,3-cd) pyrene	0.0260	0.00500	"	0.0333	ND	77.9	30-120	7.56	30	
Pyrene	0.0292	0.00500	"	0.0333	ND	87.7	35-142	9.42	30	
1-Methylnaphthalene	0.0332	0.00500	"	0.0333	ND	99.7	15-130	17.0	50	
2-Methylnaphthalene	0.0220	0.00500	"	0.0333	ND	66.0	15-130	8.46	50	
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0258</i>		<i>"</i>	<i>0.0333</i>		<i>77.3</i>	<i>40-150</i>			
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0233</i>		<i>"</i>	<i>0.0333</i>		<i>69.8</i>	<i>40-150</i>			

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Fremont Environmental
 PO Box 1289
 Wellington CO, 80549

Project: Noble - Patriot B16-24

Project Number: [none]
 Project Manager: Paul Henchan

Reported:
 02/27/23 11:10

Total Metals by EPA 6020B Hot Water Soluble Extraction - Quality Control
Summit Scientific

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

Batch BGB0665 - EPA 3050B

Blank (BGB0665-BLK1)

Prepared: 02/21/23 Analyzed: 02/23/23

Boron ND 0.0100 mg/L

LCS (BGB0665-BS1)

Prepared: 02/21/23 Analyzed: 02/23/23

Boron 5.12 0.0100 mg/L 5.00 102 80-120

Duplicate (BGB0665-DUP1)

Source: 2302346-01

Prepared: 02/21/23 Analyzed: 02/23/23

Boron 0.117 0.0100 mg/L 0.120 2.31 20

Matrix Spike (BGB0665-MS1)

Source: 2302346-01

Prepared: 02/21/23 Analyzed: 02/23/23

Boron 5.35 0.0100 mg/L 5.00 0.120 105 75-125

Matrix Spike Dup (BGB0665-MSD1)

Source: 2302346-01

Prepared: 02/21/23 Analyzed: 02/23/23

Boron 5.16 0.0100 mg/L 5.00 0.120 101 75-125 3.47 25

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Fremont Environmental
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Project: Noble - Patriot B16-24

Project Number: [none]
 Project Manager: Paul Henchan

Reported:
 02/27/23 11:10

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction - Quality Control

Summit Scientific

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

Batch BGB0722 - General Preparation

Blank (BGB0722-BLK1)

Prepared: 02/22/23 Analyzed: 02/23/23

Calcium	ND	0.0500	mg/L wet							
Magnesium	ND	0.0500	"							
Sodium	ND	0.0500	"							

LCS (BGB0722-BS1)

Prepared: 02/22/23 Analyzed: 02/23/23

Calcium	4.62	0.0500	mg/L wet	5.00	92.3	70-130				
Magnesium	4.88	0.0500	"	5.00	97.5	70-130				
Sodium	4.99	0.0500	"	5.00	99.7	70-130				

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Project: Noble - Patriot B16-24

Project Number: [none]
 Project Manager: Paul Henchan

Reported:
 02/27/23 11:10

Physical Parameters by APHA/ASTM/EPA Methods - Quality Control

Summit Scientific

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

Batch BGB0666 - General Preparation

Duplicate (BGB0666-DUP1)		Source: 2302346-01		Prepared: 02/21/23 Analyzed: 02/22/23	
% Solids	91.5	%		91.6	0.187 20

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Fremont Environmental
 PO Box 1289
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Project: Noble - Patriot B16-24

Project Number: [none]
 Project Manager: Paul Henchan

Reported:
 02/27/23 11:10

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction - Quality Control

Summit Scientific

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

Batch BGB0742 - General Preparation

Blank (BGB0742-BLK1)

Prepared & Analyzed: 02/23/23

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BGB0742-BS1)

Prepared & Analyzed: 02/23/23

Specific Conductance (EC) 0.144 0.0100 mmhos/cm 0.150 96.2 95-105

Duplicate (BGB0742-DUP1)

Source: 2302325-01

Prepared & Analyzed: 02/23/23

Specific Conductance (EC) 0.240 0.0100 mmhos/cm 0.244 1.44 20

Summit Scientific

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Fremont Environmental
 PO Box 1289
 Wellington CO, 80549

Project: Noble - Patriot B16-24

Project Number: [none]
 Project Manager: Paul Henchan

Reported:
 02/27/23 11:10

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction - Quality Control

Summit Scientific

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

Batch BGB0743 - General Preparation

LCS (BGB0743-BS1)

Prepared & Analyzed: 02/23/23

pH 9.11 pH Units 9.18 99.2 95-105

Duplicate (BGB0743-DUP1)

Source: 2302325-01

Prepared & Analyzed: 02/23/23

pH 7.86 pH Units 7.94 1.01 20

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Patriot B16-24

Project Number: [none]
Project Manager: Paul Henchan

Reported:
02/27/23 11:10

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