

FREMONT ENVIRONMENTAL INC.

January 27, 2023

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

Subject: **Facility Closure Data Submittal**
Sandau 64N66W 34NWSW Facility
Facility ID: 328079
NWSW Sec. 34, T4N, R66W
Weld County, Colorado
Fremont Project No. C022-152
Remediation #25708

Dear Mr. Peterson:

As requested, Fremont Environmental Inc. (Fremont) personnel conducted facility abandonment activities at the Noble Energy Inc. (Noble) Sandau 64N66W 34NWSW facility. Details of the facility abandonment activities are documented in the attached Closure Report. Soil sample PWVB01@6' was reported with concentrations of organic compounds in exceedance of groundwater protection standards. Groundwater was not encountered during decommissioning activities.

Please contact me at (303) 956-8714 if you require any additional information. Fremont appreciates the opportunity to provide this service.

Sincerely,

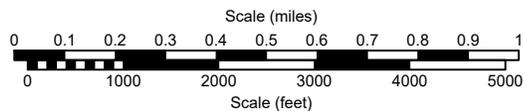
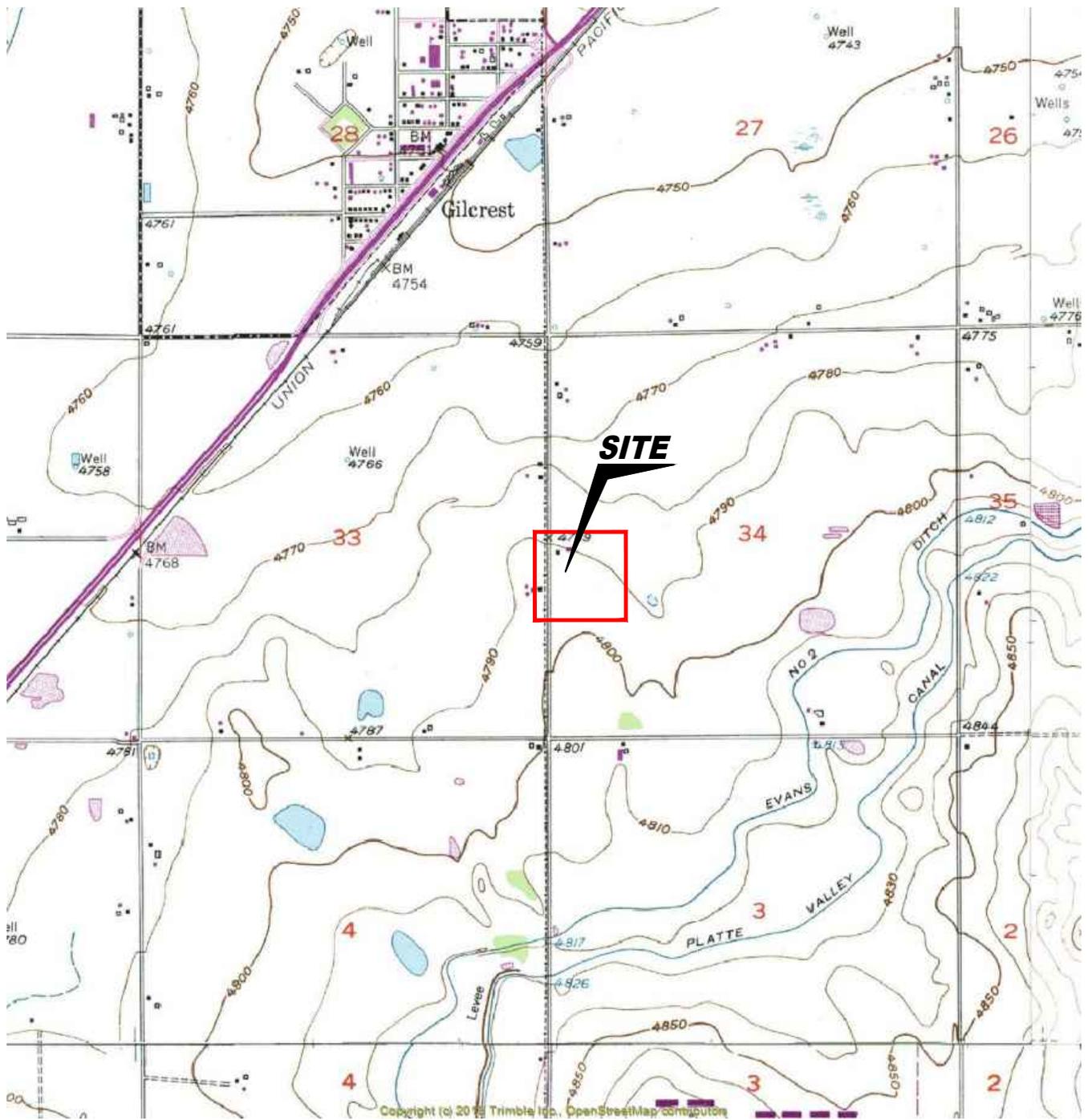
FREMONT ENVIRONMENTAL INC.



Chris Lattes
Geologist

Attachments:

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



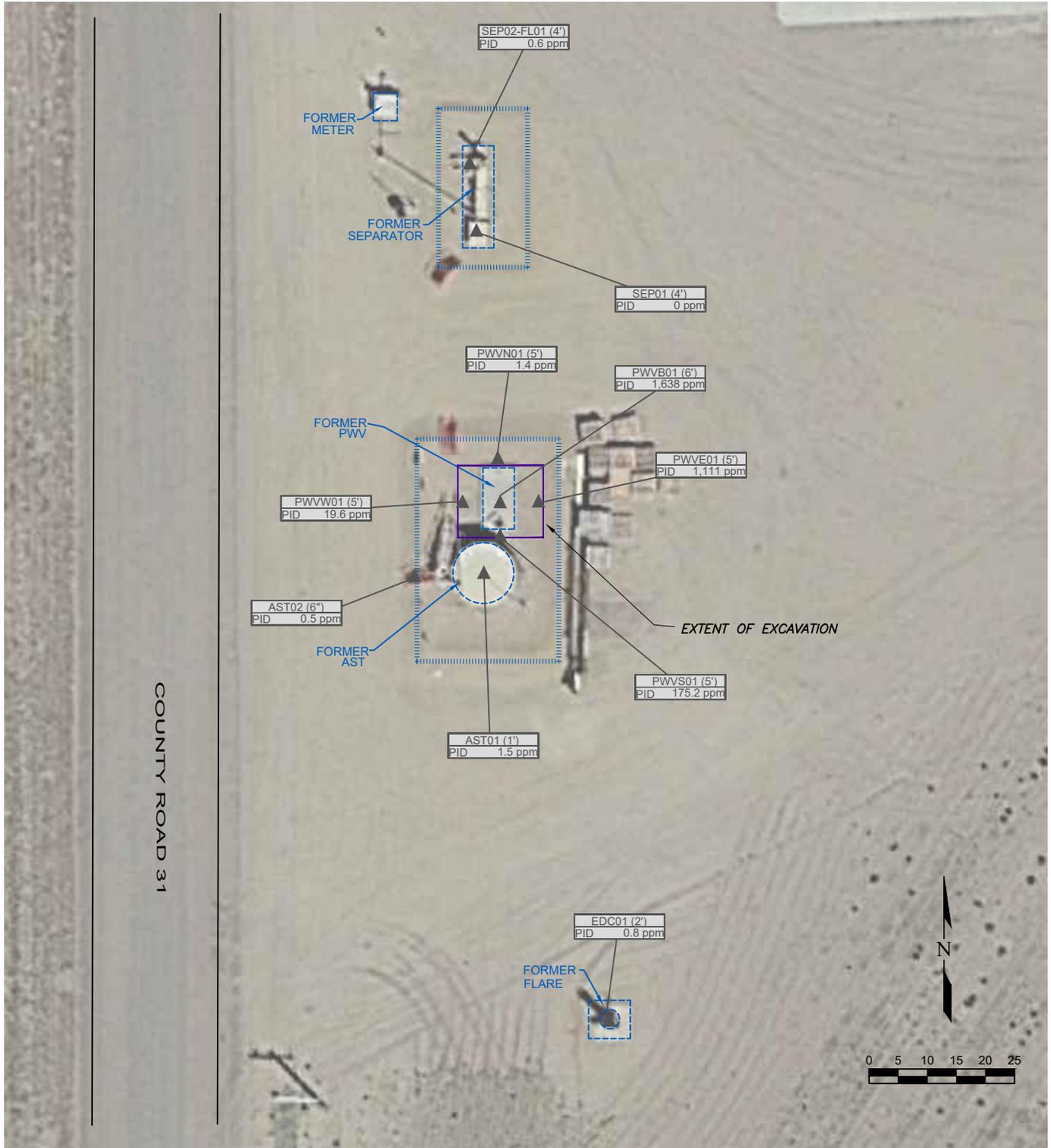
USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)

Figure 1
SITE LOCATION MAP

NOBLE ENERGY, INC. ~ SANDAU-64N66W 24NWSW
 NWSW Sec. 34, T4N, R66W, 6th PM
 Weld County, Colorado
 40.267140 °, -104.772719°

Project # C022-152	API #	Facility # 328079
Date 1/26/23	Remediation # 25708	Filename 22152T1





LEGEND

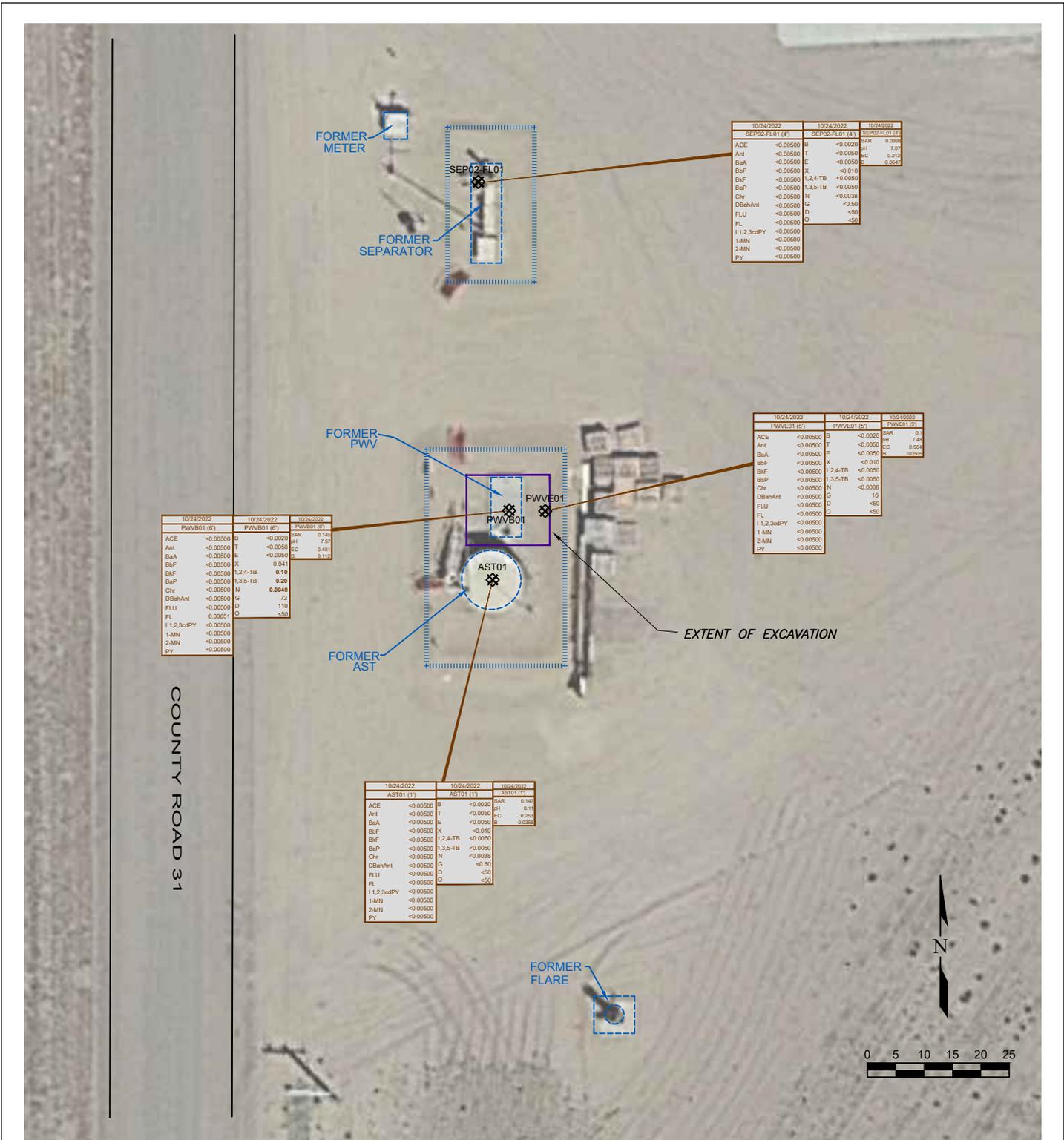
- ▲ PID READING LOCATION
 - ABOVE GROUND STORAGE TANK
 - FORMER FACILITY
 - FORMER BUILDING
 - CONTAINMENT WALL
 - CONTAINMENT BERM
 - FENCE LINE
 - EXTENT OF EXCAVATION
- 4.01 (4.5') PID READING LOCATION IDENTIFICATION
0.5 (0.5') PHOTO IONIZATION DETECTION (ppm)

**Figure 2
SITE MAP**

NOBLE ENERGY, INC. ~ SANDAU-64N66W 24NWSW
 NWSW Sec. 34, T4N, R66W, 6th PM
 Weld County, Colorado
 40.267140 °, -104.772719°

Project No. C022-152	API #	Facility # 328079
Date 1/27/23	Remediation # 25708	Filename 22152Q1





LEGEND

- SOIL SAMPLE LOCATION
- ABOVE GROUND STORAGE TANK
- FORMER BUILDING
- FORMER FACILITY
- CONTAINMENT WALL
- CONTAINMENT BERM
- FENCE LINE
- EXTENT OF EXCAVATION
- NOT ANALYZED

11/07/2022	DATE SAMPLED	SAMPLE ID and DEPTH (ft)	11/07/2022	DATE SAMPLED	SAMPLE ID and DEPTH (ft)
N AST (0.2)			N AST (0.2)		
ACE	<0.0050		ANTHRACENE (mg/kg)		
Ant	<0.0050		BENZENE (mg/kg)		
BaA	<0.0050		TOLUENE (mg/kg)		
BbF	<0.0050		ETHYLBENZENE (mg/kg)		
BbP	<0.0050		TOTAL XYLENES (mg/kg)		
BaP	<0.0050		1,2,4-TRIMETHYLBENZENE (mg/kg)		
Chr	<0.0050		1,3,5-TRIMETHYLBENZENE (mg/kg)		
DBahAnt	<0.0050		NAPHTHALENE (mg/kg)		
FLU	<0.0050		TPH-GRO (mg/kg)		
FL	<0.0050		TPH-DRO (mg/kg)		
1,1,2,3cdPY	<0.0050		TPH-CRO (mg/kg)		
1-MN	<0.0050				
2-MN	<0.0050				
py	<0.0050				

Figure 3
SOIL CHEMISTRY MAP

NOBLE ENERGY, INC. ~ SANDAU-64N66W 24NWSW
NWSW Sec. 34, T4N, R66W, 6th PM
Weld County, Colorado
40.267140 °, -104.772719°

Project No. C022-152	API #	Facility # 328079	
Date 1/27/23	Remediation # 25708	Filename 22152Q1	

TABLE 1
SUMMARY OF VOLATILE ORGANIC SOIL CHEMISTRY DATA
NOBLE ENERGY INC.
SANDAU 64N66W 34NWSW, WELD COUNTY, COLORADO
FREMONT PROJECT NO. C022-152

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		
AST01@1'	10/24/2022	1'	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<0.50	<50	<50
PWVB01@6'	10/24/2022	6'	<0.0020	<0.0050	<0.0050	0.041	0.10	0.20	0.0040	72	110	<50
PWVE01@5'	10/24/2022	5'	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	16	<50	<50
SEP02-FL01@4'	10/24/2022	4'	<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)

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

TABLE 2
SUMMARY OF POLYCYCLIC AROMATIC HYDROCARBON SOIL CHEMISTRY DATA
NOBLE ENERGY INC.
SANDAU 64N66W 34NWSW, WELD COUNTY, COLORADO
FREMONT PROJECT NO. C022-152

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
AST01@1'	10/24/2022	1'	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
PWVB01@6'	10/24/2022	6'	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	0.00651	<0.00500	<0.00500	<0.00500	<0.00500
PWVE01@5'	10/24/2022	5'	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
SEP02-FL01@4'	10/24/2022	4'	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<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)

TABLE 3
SUMMARY OF SOIL SUITABILITY FOR RECLAMATION
NOBLE ENERGY INC.
SANDAU 64N66W 34NWSW, WELD COUNTY, COLORADO
FREMONT PROJECT NO. C022-152

Sample ID	Sample Date	Depth (ft)	EC (mmhos/cm)	pH	SAR	Boron (mg/L)
COGCC Table 915-1 Soil Suitability Limits			<4	6 - 8.3	<6	2
AST01@1'	10/24/2022	1'	0.253	8.11	0.147	0.0358
PWVB01@6'	10/24/2022	6'	0.401	7.57	0.145	0.112
PWVE01@5'	10/24/2022	5'	0.564	7.48	0.1	0.0505
SEP02-FL01@4'	10/24/2022	4'	0.212	7.07	0.0998	0.0647

Bold faced values exceed the COGCC Table 915-1 concentrations

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

Third Party Removal Date									
Sample taken? Location/Container									
PID Readings									
Photo Number(s)									
Other Facility Equipment									
Equipment type	ECD								
Equipment Condition									
Age	Unknown								
Soil impacts	None observed								
PID Readings	0.8 ppm								
Sample taken? Location/Container	See attached								
Photo Number(s)	See attached								
Other observations regarding other facility or third party equipment: Meter shed had been removed prior									
Summary									
Was impacted soil identified? No Yes - less than 10 cubic yards Yes - more than 10 cubic yards									
Total number of samples field screened: 10					Total number of samples collected: 10				
Highest PID Reading: 1.5 ppm					Total number of samples submitted to lab for analysis: 4				
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:									

Buried or Partially Buried Vessel Closure Checklist

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

Additional attachments (optional):		Pit Closure		Wellhead Closure		Flowline Closure		Tank Battery Closure	
Site Name & COGCC Facility Number: Sandau 64N66W/34NWSW - 328079		Date: 10/24/2022						Remediation Project #: 25708	
Associated Wells: 123-15521		Age of Site: Unknown						Number of Photos Attached: See attached	
Location: (GPS coordinates of vault or southeastern tank berm for multiple) 40.267012, -104.772703							Estimated Facility Size (acres):		
General Condition of Site: (General observations regarding housekeeping, corrosion, waste management, etc.) Good condition, no observed issues.									
USCS Soil Type: SW				Estimated Depth to Groundwater: 8 ft					
Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth) No surficial observed hydrocarbon impacted soil. Grey soil with elevated PID measurements identified in former PWV excavation.									
Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth) No observed salt crusted soil or impacted vegetation.									
Buried or Partially Buried Vessels									
Tank Contents	Produced Water								
Size (barrels)									
Age	Unknown								
Construction Material	Concrete								
Visual Integrity of Tank									
Condition of tank Foundation	Grey Soil								
PID Readings	1.4 to 1,638 ppm								
Condition of Access Line									
PID Readings									
Sample taken? Location/Sample ID#	See attached								
Photo Number(s)	See attached								
Other observations regarding partially buried vessels:									
Summary									
Was impacted soil identified? Impacted soil reported at the base of the PWV excavation, no impacted soil has been removed. No Yes - less than 10 cubic yards Yes - more than 10 cubic yards									
Total number of samples field screened: 5				Total number of samples collected: 5					
Highest PID Reading: 1,638 ppm				Total number of samples submitted to lab for analysis: 2					
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:									

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

November 01, 2022

Paul Henchan

Fremont Environmental

PO Box 1289

Wellington, CO 80549

RE: Noble - Sandau 64N66W/34NWSW

Work Order #2210453

Enclosed are the results of analyses for samples received by Summit Scientific on 10/25/22 16:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Mikayla Axtell For Paul Shrewsbury

President



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SEP02-FL01@4'	2210453-01	Soil	10/24/22 00:00	10/25/22 16:00
PWVE01@5'	2210453-03	Soil	10/24/22 00:00	10/25/22 16:00
PWVB01@6'	2210453-06	Soil	10/24/22 00:00	10/25/22 16:00
AST01@1'	2210453-07	Soil	10/24/22 00:00	10/25/22 16:00

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.

Summit Scientific

S₂

2210453

4653 Table Mountain Drive ♦ Golden, Colorado 80403
303-277-9310 ♦ 303-374-5933 (f)

Page 1 of 1

Client: Fremont Environmental

Project Manager: Paul Henehan

Address:

E-Mail: Fremont Distribution List: PaulH, EthanB, JeffG and ChrisL. @fremontenv.com

City/State/Zip:

Bill to Noble:

Phone:

Project Name: Sandau 64N66W/34NWSW

Sampler Name: Chris Latta

Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested						Special Instructions			
					HCl	HNO ₃	None	Other	Water	Soil	Air-Canister #	Other	TPH, BTEX, TMS, Naph.	PAH (915)	EC, SAR, pH, Boron	Metals (915)	TDS, Chloride, Sulfate	HOLD				
1	SEP02/FL01@4'	10/24/22		1			X			X				X	X	X						
2	PWVNX1@5'			2										X	X	X						X
3	PWVEX1@5'			2										X	X	X						
4	PWVX01@5'			2																		X
5	PWVW01@5'			2																		X
6	PWVB01@6'			2										X	X	X						
7	AST01@1'	10/24/22		1			X			X				X	X	X						
8																						
9																						
10																						

Relinquished by: Chris Latta	Date/Time: 10/25/22	Received by: S2	Date/Time: 10/25/22	Turn Around Time (Check) Same Day — 72 hours 24 hours — Standard <input checked="" type="checkbox"/> 48 hours — Sample Integrity: Temperature Upon Receipt: 6.6 Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	Notes:
Relinquished by: S2	Date/Time: 10/25/22 1000	Received by: 	Date/Time: 10/25/22 1000		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

S₂

Sample Receipt Checklist

S2 Work Order# 2210453

Client: Fremont Client Project ID: Sanday C4NCEW/34NWSW

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

[] - [] [] [] []

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

Temp (°C) 6.6 Thermometer # 1

Table with 5 columns: Yes, No, N/A, Comments (if any). Rows include: If samples require cooling, is the temperature < 6°C? (1), If custody seals are present, are they intact? (1), Are samples due within 48 hours present?, Are water samples with short hold times present?, Is a chain-of-custody (COC) form present and filled out completely? (1), Is the COC properly relinquished by the client w/ date and time recorded? (1), Were all samples received intact? (1), Was adequate sample volume provided? (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), 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, etc., 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.

[Signature]

10-25-22

Custodian Printed Name

Date/Time



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

SEP02-FL01@4'
2210453-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFJ0727	10/26/22	10/28/22	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: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		104 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		113 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		108 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BFJ0730	10/26/22	10/27/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		32.5 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

SEP02-FL01@4'
2210453-01 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0786	10/28/22	10/29/22	EPA 8270D SIM	
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	"	"	"	"	"	"	

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		59.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		86.0 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0647	0.0100	mg/L	1	BFJ0711	10/26/22	10/27/22	EPA 6020B	

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

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Fremont Environmental
 PO Box 1289
 Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
 Project Manager: Paul Henchan

Reported:
 11/01/22 14:26

SEP02-FL01@4'
2210453-01 (Soil)

Summit Scientific

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	33.3	0.0550	mg/L dry	1	BFJ0780	10/27/22	10/28/22	EPA 6020B	
Magnesium	10.8	0.0550	"	"	"	"	"	"	
Sodium	2.59	0.0550	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0998	0.00100	units	1	BFJ0844	10/31/22	10/31/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	90.9		%	1	BFJ0716	10/26/22	10/26/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.212	0.0100	mmhos/cm	1	BFJ0812	10/28/22	10/28/22	EPA 120.1	

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

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.07		pH Units	1	BFJ0813	10/28/22	10/28/22	EPA 9045D	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

PWVE01@5'
2210453-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFJ0727	10/26/22	10/28/22	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	16	0.50	"	"	"	"	"	"	

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		96.5 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		109 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		166 %	50-150		"	"	"	"	S-02

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BFJ0730	10/26/22	10/27/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		30.8 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

PWVE01@5'
2210453-03 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0786	10/28/22	10/29/22	EPA 8270D SIM	
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	"	"	"	"	"	"	

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		93.7 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		84.0 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0505	0.0100	mg/L	1	BFJ0711	10/26/22	10/27/22	EPA 6020B	

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

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

PWVE01@5'
2210453-03 (Soil)

Summit Scientific

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	69.7	0.0571	mg/L dry	1	BFJ0780	10/27/22	10/30/22	EPA 6020B	
Magnesium	10.7	0.0571	"	"	"	"	"	"	
Sodium	3.41	0.0571	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.100	0.00100	units	1	BFJ0844	10/31/22	10/31/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	87.6		%	1	BFJ0716	10/26/22	10/26/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.564	0.0100	mmhos/cm	1	BFJ0812	10/28/22	10/28/22	EPA 120.1	

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

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.48		pH Units	1	BFJ0813	10/28/22	10/28/22	EPA 9045D	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

PWVB01@6'
2210453-06 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFJ0727	10/26/22	10/28/22	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.041	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	0.10	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	0.20	0.0050	"	"	"	"	"	"	
Naphthalene	0.0040	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	72	5.0	"	10	"	"	"	"	

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		96.1 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		103 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		212 %	50-150		"	"	"	"	S-02

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	110	50	mg/kg	1	BFJ0730	10/26/22	10/27/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		26.5 %	30-150		"	"	"	"	S-02

PAH by EPA Method 8270D SIM

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

PWVB01@6'
2210453-06 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0786	10/28/22	10/29/22	EPA 8270D SIM	
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	0.00651	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	"	"	"	"	"	"	

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		70.1 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		86.7 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.112	0.0100	mg/L	1	BFJ0711	10/26/22	10/27/22	EPA 6020B	

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

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

PWVB01@6'
2210453-06 (Soil)

Summit Scientific

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	46.5	0.0559	mg/L dry	1	BFJ0780	10/27/22	10/30/22	EPA 6020B	
Magnesium	8.16	0.0559	"	"	"	"	"	"	
Sodium	4.09	0.0559	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.145	0.00100	units	1	BFJ0844	10/31/22	10/31/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	89.5		%	1	BFJ0716	10/26/22	10/26/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.401	0.0100	mmhos/cm	1	BFJ0812	10/28/22	10/28/22	EPA 120.1	

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

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.57		pH Units	1	BFJ0813	10/28/22	10/28/22	EPA 9045D	

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

AST01@1'
2210453-07 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BFJ0727	10/26/22	10/28/22	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: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	50-150		"	"	"	"	
Surrogate: Toluene-d8		114 %	50-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		113 %	50-150		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BFJ0730	10/26/22	10/27/22	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		55.4 %	30-150		"	"	"	"	

PAH by EPA Method 8270D SIM

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

AST01@1'
2210453-07 (Soil)

Summit Scientific

PAH by EPA Method 8270D SIM

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BFJ0786	10/28/22	10/29/22	EPA 8270D SIM	
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	"	"	"	"	"	"	

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		48.9 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		95.2 %	40-150		"	"	"	"	

Total Metals by EPA 6020B Hot Water Soluble Extraction

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.0358	0.0100	mg/L	1	BFJ0711	10/26/22	10/27/22	EPA 6020B	

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

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

AST01@1'
2210453-07 (Soil)

Summit Scientific

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

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	36.1	0.0556	mg/L dry	1	BFJ0780	10/27/22	10/30/22	EPA 6020B	
Magnesium	7.47	0.0556	"	"	"	"	"	"	
Sodium	3.71	0.0556	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.147	0.00100	units	1	BFJ0844	10/31/22	10/31/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	89.9		%	1	BFJ0716	10/26/22	10/26/22	Calculation	

Specific Conductance by EPA Method 120.1, Saturated Paste Extraction

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.253	0.0100	mmhos/cm	1	BFJ0812	10/28/22	10/28/22	EPA 120.1	

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

Date Sampled: **10/24/22 00:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.11		pH Units	1	BFJ0813	10/28/22	10/28/22	EPA 9045D	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

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 BFJ0727 - EPA 5030 Soil MS

Blank (BFJ0727-BLK1)

Prepared: 10/26/22 Analyzed: 10/28/22

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	0.0356		"	0.0400		89.1	50-150			
Surrogate: Toluene-d8	0.0434		"	0.0400		108	50-150			
Surrogate: 4-Bromofluorobenzene	0.0397		"	0.0400		99.3	50-150			

LCS (BFJ0727-BS1)

Prepared: 10/26/22 Analyzed: 10/28/22

Benzene	0.0888	0.0020	mg/kg	0.100		88.8	70-130			
Toluene	0.0726	0.0050	"	0.100		72.6	70-130			
Ethylbenzene	0.0980	0.0050	"	0.100		98.0	70-130			
m,p-Xylene	0.196	0.010	"	0.200		97.9	70-130			
o-Xylene	0.0940	0.0050	"	0.100		94.0	70-130			
1,2,4-Trimethylbenzene	0.0950	0.0050	"	0.100		95.0	70-130			
1,3,5-Trimethylbenzene	0.0968	0.0050	"	0.100		96.8	70-130			
Naphthalene	0.112	0.0038	"	0.100		112	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0322		"	0.0400		80.6	50-150			
Surrogate: Toluene-d8	0.0414		"	0.0400		103	50-150			
Surrogate: 4-Bromofluorobenzene	0.0392		"	0.0400		98.0	50-150			

Matrix Spike (BFJ0727-MS1)

Source: 2210403-04

Prepared: 10/26/22 Analyzed: 10/28/22

Benzene	0.0839	0.0020	mg/kg	0.100	ND	83.9	70-130			
Toluene	0.0829	0.0050	"	0.100	ND	82.9	70-130			
Ethylbenzene	0.0710	0.0050	"	0.100	ND	71.0	70-130			
m,p-Xylene	0.168	0.010	"	0.200	ND	84.0	70-130			
o-Xylene	0.0729	0.0050	"	0.100	ND	72.9	70-130			
1,2,4-Trimethylbenzene	0.0811	0.0050	"	0.100	ND	81.1	70-130			
1,3,5-Trimethylbenzene	0.0811	0.0050	"	0.100	ND	81.1	70-130			
Naphthalene	0.103	0.0038	"	0.100	ND	103	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0436		"	0.0400		109	50-150			
Surrogate: Toluene-d8	0.0520		"	0.0400		130	50-150			
Surrogate: 4-Bromofluorobenzene	0.0431		"	0.0400		108	50-150			

Summit Scientific

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Fremont Environmental
 PO Box 1289
 Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
 Project Manager: Paul Henchan

Reported:
 11/01/22 14:26

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		

Batch BFJ0727 - EPA 5030 Soil MS

Matrix Spike Dup (BFJ0727-MSD1)	Source: 2210403-04			Prepared: 10/26/22 Analyzed: 10/28/22						
Benzene	0.0736	0.0020	mg/kg	0.100	ND	73.6	70-130	13.1	30	
Toluene	0.0775	0.0050	"	0.100	ND	77.5	70-130	6.70	30	
Ethylbenzene	0.0759	0.0050	"	0.100	ND	75.9	70-130	6.74	30	
m,p-Xylene	0.150	0.010	"	0.200	ND	75.0	70-130	11.4	30	
o-Xylene	0.0790	0.0050	"	0.100	ND	79.0	70-130	8.14	30	
1,2,4-Trimethylbenzene	0.0813	0.0050	"	0.100	ND	81.3	70-130	0.222	30	
1,3,5-Trimethylbenzene	0.0783	0.0050	"	0.100	ND	78.3	70-130	3.50	30	
Naphthalene	0.101	0.0038	"	0.100	ND	101	70-130	2.32	30	
Surrogate: 1,2-Dichloroethane-d4	0.0381		"	0.0400		95.2	50-150			
Surrogate: Toluene-d8	0.0451		"	0.0400		113	50-150			
Surrogate: 4-Bromofluorobenzene	0.0407		"	0.0400		102	50-150			

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 PO Box 1289
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Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
 Project Manager: Paul Henchan

Reported:
 11/01/22 14:26

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 BFJ0730 - EPA 3550A

Blank (BFJ0730-BLK1)

Prepared: 10/26/22 Analyzed: 10/27/22

C10-C28 (DRO)	ND	50	mg/kg								
C28-C36 (ORO)	ND	50	"								
Surrogate: <i>o</i> -Terphenyl	8.20		"	12.5		65.6	30-150				

LCS (BFJ0730-BS1)

Prepared: 10/26/22 Analyzed: 10/27/22

C10-C28 (DRO)	510	50	mg/kg	500		102	70-130				
Surrogate: <i>o</i> -Terphenyl	8.65		"	12.5		69.2	30-150				

Matrix Spike (BFJ0730-MS1)

Source: 2210403-04

Prepared: 10/26/22 Analyzed: 10/27/22

C10-C28 (DRO)	443	50	mg/kg	500	27.9	83.1	70-130				
Surrogate: <i>o</i> -Terphenyl	8.04		"	12.5		64.3	30-150				

Matrix Spike Dup (BFJ0730-MSD1)

Source: 2210403-04

Prepared: 10/26/22 Analyzed: 10/27/22

C10-C28 (DRO)	483	50	mg/kg	500	27.9	91.1	70-130	8.66	20		
Surrogate: <i>o</i> -Terphenyl	9.29		"	12.5		74.3	30-150				

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Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

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 BFJ0786 - EPA 5030 Soil MS

Blank (BFJ0786-BLK1)

Prepared & Analyzed: 10/28/22

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	0.0235		"	0.0333		70.4	40-150			
Surrogate: Fluoranthene-d10	0.0296		"	0.0333		88.9	40-150			

LCS (BFJ0786-BS1)

Prepared & Analyzed: 10/28/22

Acenaphthene	0.0349	0.00500	mg/kg	0.0333		105	31-137			
Anthracene	0.0358	0.00500	"	0.0333		107	30-120			
Benzo (a) anthracene	0.0320	0.00500	"	0.0333		95.9	30-120			
Benzo (a) pyrene	0.0308	0.00500	"	0.0333		92.5	30-120			
Benzo (b) fluoranthene	0.0299	0.00500	"	0.0333		89.7	30-120			
Benzo (k) fluoranthene	0.0302	0.00500	"	0.0333		90.6	30-120			
Chrysene	0.0324	0.00500	"	0.0333		97.3	30-120			
Dibenz (a,h) anthracene	0.0285	0.00500	"	0.0333		85.6	30-120			
Fluoranthene	0.0336	0.00500	"	0.0333		101	30-120			
Fluorene	0.0342	0.00500	"	0.0333		103	30-120			
Indeno (1,2,3-cd) pyrene	0.0289	0.00500	"	0.0333		86.6	30-120			
Pyrene	0.0321	0.00500	"	0.0333		96.2	35-142			
1-Methylnaphthalene	0.0316	0.00500	"	0.0333		94.7	35-142			
2-Methylnaphthalene	0.0271	0.00500	"	0.0333		81.3	35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0304		"	0.0333		91.1	40-150			
Surrogate: Fluoranthene-d10	0.0355		"	0.0333		107	40-150			

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

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 BFJ0786 - EPA 5030 Soil MS

Matrix Spike (BFJ0786-MS1)		Source: 2210442-01			Prepared & Analyzed: 10/28/22						
Acenaphthene	0.0225	0.00500	mg/kg	0.0333	ND	67.4	31-137				
Anthracene	0.0222	0.00500	"	0.0333	ND	66.7	30-120				
Benzo (a) anthracene	0.0187	0.00500	"	0.0333	ND	56.1	30-120				
Benzo (a) pyrene	0.0170	0.00500	"	0.0333	ND	51.0	30-120				
Benzo (b) fluoranthene	0.0168	0.00500	"	0.0333	ND	50.4	30-120				
Benzo (k) fluoranthene	0.0173	0.00500	"	0.0333	ND	52.0	30-120				
Chrysene	0.0189	0.00500	"	0.0333	ND	56.7	30-120				
Dibenz (a,h) anthracene	0.0155	0.00500	"	0.0333	ND	46.5	30-120				
Fluoranthene	0.0220	0.00500	"	0.0333	ND	66.0	30-120				
Fluorene	0.0222	0.00500	"	0.0333	ND	66.6	30-120				
Indeno (1,2,3-cd) pyrene	0.0158	0.00500	"	0.0333	ND	47.3	30-120				
Pyrene	0.0190	0.00500	"	0.0333	ND	56.8	35-142				
1-Methylnaphthalene	0.0193	0.00500	"	0.0333	ND	58.0	15-130				
2-Methylnaphthalene	0.0206	0.00500	"	0.0333	ND	61.9	15-130				
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0174</i>		<i>"</i>	<i>0.0333</i>		<i>52.1</i>	<i>40-150</i>				
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0222</i>		<i>"</i>	<i>0.0333</i>		<i>66.5</i>	<i>40-150</i>				

Matrix Spike Dup (BFJ0786-MSD1)		Source: 2210442-01			Prepared & Analyzed: 10/28/22						
Acenaphthene	0.0224	0.00500	mg/kg	0.0333	ND	67.2	31-137	0.244	30		
Anthracene	0.0231	0.00500	"	0.0333	ND	69.4	30-120	3.89	30		
Benzo (a) anthracene	0.0208	0.00500	"	0.0333	ND	62.3	30-120	10.5	30		
Benzo (a) pyrene	0.0191	0.00500	"	0.0333	ND	57.4	30-120	11.8	30		
Benzo (b) fluoranthene	0.0187	0.00500	"	0.0333	ND	56.0	30-120	10.5	30		
Benzo (k) fluoranthene	0.0192	0.00500	"	0.0333	ND	57.6	30-120	10.2	30		
Chrysene	0.0208	0.00500	"	0.0333	ND	62.4	30-120	9.53	30		
Dibenz (a,h) anthracene	0.0173	0.00500	"	0.0333	ND	52.0	30-120	11.1	30		
Fluoranthene	0.0226	0.00500	"	0.0333	ND	67.9	30-120	2.84	30		
Fluorene	0.0224	0.00500	"	0.0333	ND	67.2	30-120	0.767	30		
Indeno (1,2,3-cd) pyrene	0.0177	0.00500	"	0.0333	ND	53.2	30-120	11.7	30		
Pyrene	0.0201	0.00500	"	0.0333	ND	60.4	35-142	5.99	30		
1-Methylnaphthalene	0.0206	0.00500	"	0.0333	ND	61.8	15-130	6.37	50		
2-Methylnaphthalene	0.0229	0.00500	"	0.0333	ND	68.7	15-130	10.4	50		
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0188</i>		<i>"</i>	<i>0.0333</i>		<i>56.3</i>	<i>40-150</i>				
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0230</i>		<i>"</i>	<i>0.0333</i>		<i>68.9</i>	<i>40-150</i>				

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Fremont Environmental
 PO Box 1289
 Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
 Project Manager: Paul Henchan

Reported:
 11/01/22 14:26

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 BFJ0711 - EPA 3050B

Blank (BFJ0711-BLK1)

Prepared & Analyzed: 10/26/22

Boron ND 0.0100 mg/L

LCS (BFJ0711-BS1)

Prepared & Analyzed: 10/26/22

Boron 5.40 0.0100 mg/L 5.00 108 80-120

Duplicate (BFJ0711-DUP1)

Source: 2210442-01

Prepared: 10/26/22 Analyzed: 10/27/22

Boron 0.00980 0.0100 mg/L 0.0117 17.9 20

Matrix Spike (BFJ0711-MS1)

Source: 2210442-01

Prepared: 10/26/22 Analyzed: 10/27/22

Boron 5.37 0.0100 mg/L 5.00 0.0117 107 75-125

Matrix Spike Dup (BFJ0711-MSD1)

Source: 2210442-01

Prepared: 10/26/22 Analyzed: 10/27/22

Boron 5.50 0.0100 mg/L 5.00 0.0117 110 75-125 2.42 25

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Fremont Environmental
 PO Box 1289
 Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
 Project Manager: Paul Henchan

Reported:
 11/01/22 14:26

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 BFJ0780 - General Preparation

Blank (BFJ0780-BLK1)

Prepared: 10/27/22 Analyzed: 10/28/22

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

LCS (BFJ0780-BS1)

Prepared: 10/27/22 Analyzed: 10/28/22

Calcium	4.48	0.0500	mg/L wet	5.00	89.6	70-130
Magnesium	4.96	0.0500	"	5.00	99.2	70-130
Sodium	5.13	0.0500	"	5.00	103	70-130

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Fremont Environmental
 PO Box 1289
 Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
 Project Manager: Paul Henchan

Reported:
 11/01/22 14:26

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

Summit Scientific

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

Batch BFJ0716 - General Preparation

Duplicate (BFJ0716-DUP1)

Source: 2210452-01

Prepared & Analyzed: 10/26/22

% Solids	89.8		%		88.9			1.10	20	
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Fremont Environmental
 PO Box 1289
 Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
 Project Manager: Paul Henchan

Reported:
 11/01/22 14:26

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 BFJ0812 - General Preparation

Blank (BFJ0812-BLK1)

Prepared & Analyzed: 10/28/22

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BFJ0812-BS1)

Prepared & Analyzed: 10/28/22

Specific Conductance (EC) 0.149 0.0100 mmhos/cm 0.150 99.1 95-105

Duplicate (BFJ0812-DUP1)

Source: 2210449-01

Prepared & Analyzed: 10/28/22

Specific Conductance (EC) 0.927 0.0100 mmhos/cm 0.950 2.42 20

Summit Scientific

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Fremont Environmental
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 Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
 Project Manager: Paul Henchan

Reported:
 11/01/22 14:26

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 BFJ0813 - General Preparation

LCS (BFJ0813-BS1)

Prepared & Analyzed: 10/28/22

pH	9.18	pH Units	9.18	100	95-105
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Duplicate (BFJ0813-DUP1)

Source: 2210286-10

Prepared & Analyzed: 10/28/22

pH	8.13	pH Units	8.18	0.613	20
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Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Sandau 64N66W/34NWSW

Project Number: [none]
Project Manager: Paul Henchan

Reported:
11/01/22 14:26

Notes and Definitions

S-02	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
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