

# FREMONT ENVIRONMENTAL INC.

June 3, 2024

Mr. Daniel Peterson  
Noble Energy Inc.  
2115 117<sup>th</sup> Avenue  
Greeley, CO 80634

Subject:           **Flowline Closure Data Submittal**  
                  Jepsen 1  
                  API # 05-123-10192  
                  SESW Sec. 2, T3N, R65W  
                  Weld County, Colorado  
                  Fremont Project No. C023-217  
                  Remediation # 27049

Dear Mr. Peterson:

As requested, Fremont Environmental Inc. (Fremont) personnel conducted flowline closure activities for the Noble Energy Inc. (Noble) Jepsen 1 flowline. Organic compound-impacted soil was not encountered during abandonment activities, however, elevated concentrations of constituents including arsenic, barium, and lead were present. The attached Closure Report documents details of the Jepsen 1 flowline closure activities. Groundwater was not encountered during flowline abandonment activities.

Please contact me at (970) 213-7488 if you require any additional information. Fremont appreciates the opportunity to provide this service.

Sincerely,

**FREMONT ENVIRONMENTAL INC.**



Chris Lattes  
Consultant

Attachments:

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

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

## Flowline Closure Checklist

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

Additional Attachments:		Tank Battery Closure		Wellhead Closure		Pit Closure		Partially Buried Vault Closure
Site Name & COGCC Facility Number: <b>Jepsen 1 (API: 05-123-10192)</b>		Date: <b>8/8/2024</b>		Remediation Project #: <b>27049</b>				
Associated Wells:		Age of Site: <b>~1981</b>				Number of Photos Attached: <b>See Attached</b>		

Starting point: (GPS coordinates and descriptions)  
40.2500268, -104.6338456

End point: (GPS coordinates and descriptions)  
40.2490776, -104.6337852

USCS Soil Type: Sand (SW)      Estimated Depth to Groundwater: Unknown

Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)  
**No observed hydrocarbon impacted soil or spills.**

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.**

Flowlines								
Flowline type	Wellhead Line							
Depth	4.5 to 6 feet							
Age	~1981							
Length	~350 feet							
Construction Material	2" FBE Steel							
Were flowlines pulled?	Partial							
Visual Integrity of lines	Good condition							
Visual impacts if trenched	N/A							
PID Readings if trenched	N/A							
Sample taken? Location/Sample ID#	Yes, See Attached							
Photo Number(s)	See Attached							

Other observations regarding on location flowlines:  
Flowline was abandoned in place between FL03 and SEP01 (50 feet) because the facility will remain active.

### Summary

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

Total number of samples field screened: 4      Total number of samples collected: 4

Highest PID Reading: High @ 9.2ppm (FL01 @ 4.5')      Total number of samples submitted to lab for analysis: 2

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

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**  
**FIELD DATA SUMMARY TABLE**  
**NOBLE 100322**  
**JEPSEN 1, WELD COUNTY, COLORADO**  
**REM # 27049**

Sample ID	Sample Date	Depth (ft)	GPS Data		PDOP Value	VOC Concentration (ppm)
			Latitude	Longitude		
FL01 @ 4.5'	8/3/2023	4.5 Ft	40.2500268	-104.6338456	-	9.2
FL02@6'	8/8/2023	6.0 Ft	40.2496597	-104.6338088	-	4.4
FL03@6'	8/8/2023	6.0 Ft	40.2492123	-104.6337612	-	4.3
SEP01 @ 6.0'	8/8/2023	6.0 Ft	40.2490776	-104.6337852	-	0.0

1. Global Positioning System (GPS) data is provided in decimal degrees using North American Datum (NAD) 83 UTMZone 13 North.

2. Volatile organic compound (VOC) concentrations are measured in the field using a photoionization detector (PID).

PDOP = Position Dilution of Precision

ppm = Parts per million

in. = Inches

ft. = Feet

bgs = Below ground surface

TABLE 2  
SUMMARY OF VOLATILE ORGANIC SOIL CHEMISTRY DATA  
NOBLE 100322  
JEPSEN 1, WELD COUNTY, COLORADO  
REM # 27049

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 (mg/kg)	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH ORO (mg/kg)
ECMC Table 915-1 Limits (Residential SSL)			1.2	490	5.8	58	30	27	2	500	500**		
ECMC Table 915-1 Limits (Protection of Groundwater SSL)			0.0026	0.69	0.78	9.9	0.0081	0.0087	0.0038	500	500**		
FL01 @ 4.5'	8/3/2023	4.5 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
SEP01 @ 6.0'	8/8/2023	6.0 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50

1. Bold values exceed the ECMC Table 915-1 limit(s)
  2. Red & blue highlighted soil analytical values indicate an exceedance of the referenced soil screening level (SSL)
  3. \* Indicates laboratory minimum detection limit in excess of SSL
  4. \*\* Summation of GRO+DRO+ORO must be less than 500 mg/kg
- (<) = Analytical result is less than the indicated laboratory reporting limit.  
TPH-GRO = Total petroleum hydrocarbons - gasoline range organics  
TPH-DRO = Total petroleum hydrocarbons - diesel range organics  
TPH-ORO = Total petroleum hydrocarbons - oil range organics  
mg/kg = Milligrams per kilogram  
ft. = Feet  
bgs = Below ground surface  
NA - Not analyzed

TABLE 3  
SUMMARY OF POLYCYCLIC AROMATIC HYDROCARBON SOIL CHEMISTRY DATA  
NOBLE 100322  
JEPSEN 1, WELD COUNTY, COLORADO  
REM # 27049

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)
ECMC 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
ECMC 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 @ 4.5'	8/3/2023	4.5 Ft	<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
SEP01 @ 6.0'	8/8/2023	6.0 Ft	<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

1. Bold values exceed the ECMC Table 915-1 limit(s)
  2. Red & blue highlighted soil analytical values indicate an exceedance of the referenced soil screening level (SSL)
  3. \* Indicates laboratory minimum detection limit in excess of SSL
  4. \*\* Summation of GRO+DRO+ORO must be less than 500 mg/kg
- (<) = Analytical result is less than the indicated laboratory reporting limit.  
TPH-GRO = Total petroleum hydrocarbons - gasoline range organics  
TPH-DRO = Total petroleum hydrocarbons - diesel range organics  
TPH-ORO = Total petroleum hydrocarbons - oil range organics  
mg/kg = Milligrams per kilogram  
ft. = Feet  
bgs = Below ground surface  
NA - Not analyzed

**TABLE 4**  
**SUMMARY OF SOIL SUITABILITY FOR RECLAMATION**  
**NOBLE 100322**  
**JEPSEN 1, WELD COUNTY, COLORADO**  
**REM # 27049**

Sample ID	Sample Date	Depth (ft)	pH (Standard Units)	EC (mmhos/cm)	SAR (Standard Units)	Boron (mg/L)
ECMC Table 915-1 Soil Suitability Limits			6 - 8.3	4	6	2
FL01 @ 4.5'	8/3/2023	4.5 Ft	8.05	0.500	1.69	0.349
SEP01 @ 6.0'	8/8/2023	6.0 Ft	7.44	0.220	0.0591	1.05

1. **Bold** faced values exceed the ECMC Table 915-1 limit(s), but are within background concentrations.
  2. **Bold** faced values exceed the ECMC Table 915-1 limit(s) and native background concentrations.
  3. Brown highlighted soil analytical values indicate a regulatory exceedance.
- NA - Not analyzed/Not applicable

TABLE 5  
SUMMARY OF METALS IN SOIL CHEMISTRY DATA  
NOBLE 100322  
JEPSEN 1, WELD COUNTY, COLORADO  
REM # 27049

Sample ID	Sample Date	Depth (ft)	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (VI) (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Zinc (mg/kg)
ECMC Table 915-1 Limits (Residential SSL)			0.68	15000	71	0.3	3100	400	1500	390	390	23000
ECMC Table 915-1 Limits (Protection of Groundwater SSL)			0.29	82	0.38	0.00067	46	14	26	0.26	0.8	370
FL01 @ 4.5'	8/3/2023	4.5 Ft	<b>0.610</b>	<b>253</b>	<0.200	<0.30	4.64	<b>20.3</b>	1.06	<0.260	<0.0200	8.46
SEP01 @ 6.0'	8/8/2023	6.0 Ft	<b>0.366</b>	32.4	<0.200	<0.30	0.696	1.94	0.776	<0.260	<0.0200	2.90

1. **Bold** faced values exceed the ECMC Table 915-1 limit(s), but are within 1.25x background concentrations.
2. **Bold** faced values exceed the ECMC Table 915-1 limit(s) and native background concentrations.
3. Red & blue highlighted soil analytical values indicate an exceedance of the referenced soil screening level (SSL).
4. Non-detect background results accounted for in the highest background concentration by using the reporting limit.

ECMC = Energy & Carbon Management Commission

(<) = Analytical result is less than the indicated laboratory reporting limit.

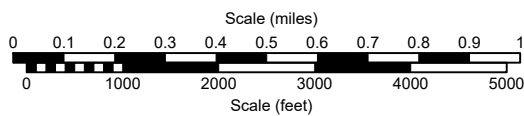
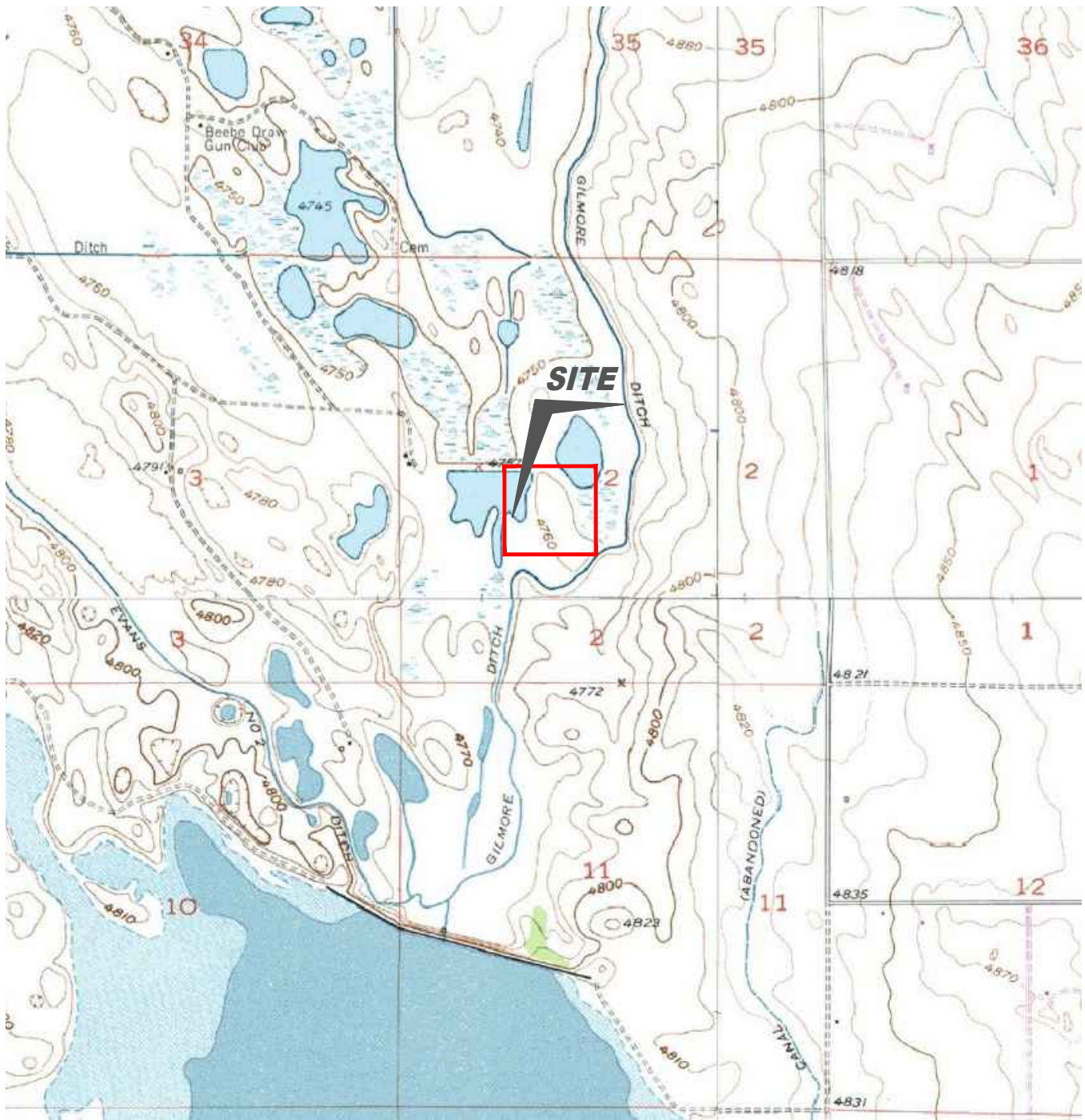
mg/kg = Milligrams per kilogram

ft. = Feet

bgs = Below ground surface

\* Indicates laboratory minimum detection limit in excess of SSL

NA - Not analyzed/Not applicable



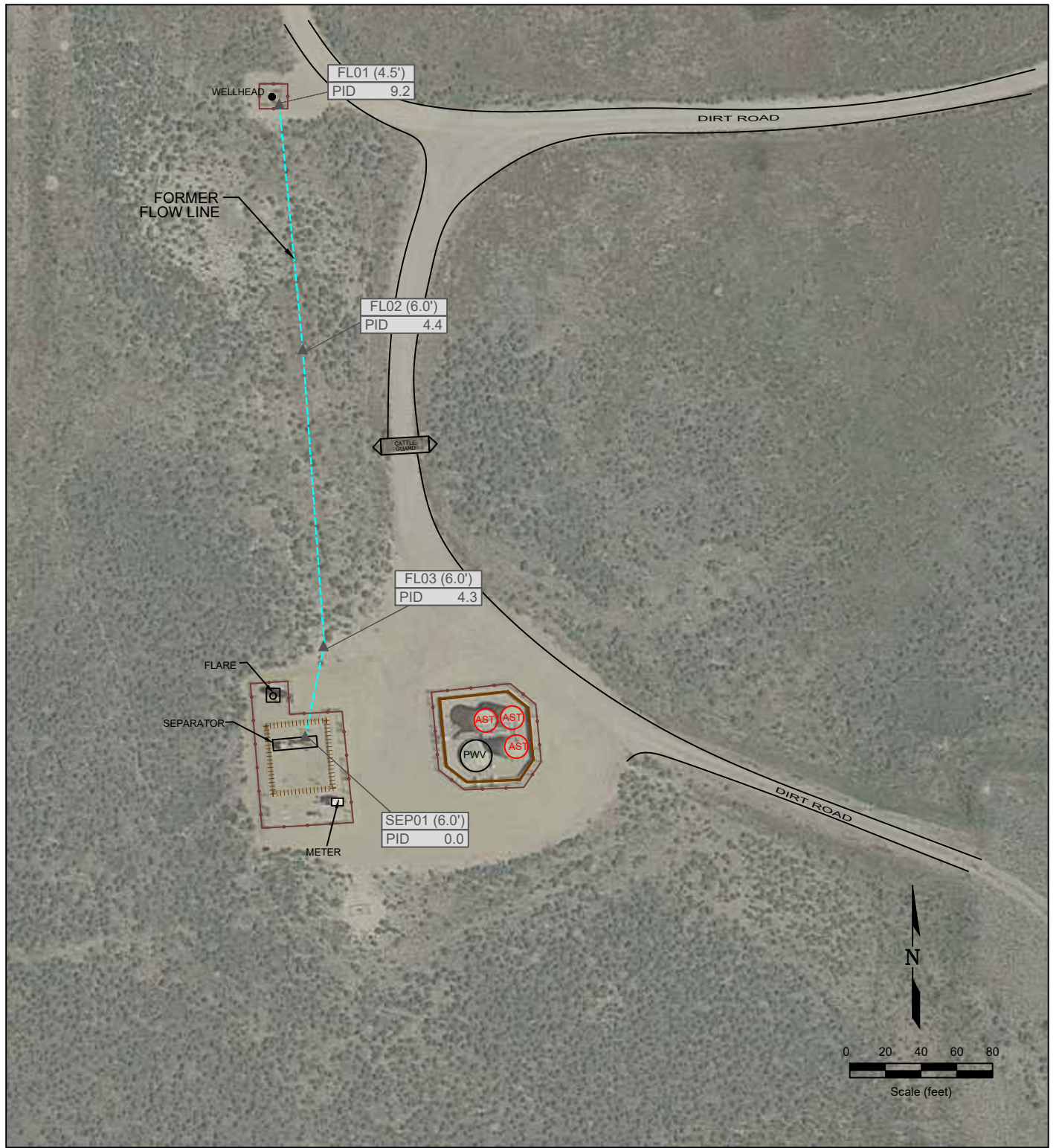
USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)

Figure 1  
SITE LOCATION MAP

**Noble Energy, Inc. ~ Jepsen 1**  
 SESW Sec. 2, T3N, R65W, 6th PM  
 Weld County, Colorado  
 40.250054°, -104.633833°

Project # <b>CO23-217</b>	API # <b>05-123-10192</b>	Facility #
Date <b>3/8/24</b>	Remediation # <b>27049</b>	Filename <b>23217T</b>





**LEGEND**

- WELLHEAD LOCATION
  - ▲ PID READING LOCATION
  - ABOVE GROUND STORAGE TANK
  - FORMER FACILITY
  - FORMER FLOW LINE
  - CONTAINMENT BERM
  - CONTAINMENT WALL
  - FENCE LINE
- FL01 (4.5') PID 9.2 PID READING SAMPLE IDENTIFICATION AND DEPTH (ft)  
 PID 0.0 PHOTO IONIZATION DETECTION / PARTS PER MILLION

**Figure 2  
SITE MAP**

**Noble Energy, Inc. ~ Jepsen 1**  
 SESW Sec. 2, T3N, R65W, 6th PM  
 Weld County, Colorado  
 40.250054°, -104.633833°

Project # <b>CO23-217</b>	API # <b>05-123-10192</b>	Facility #
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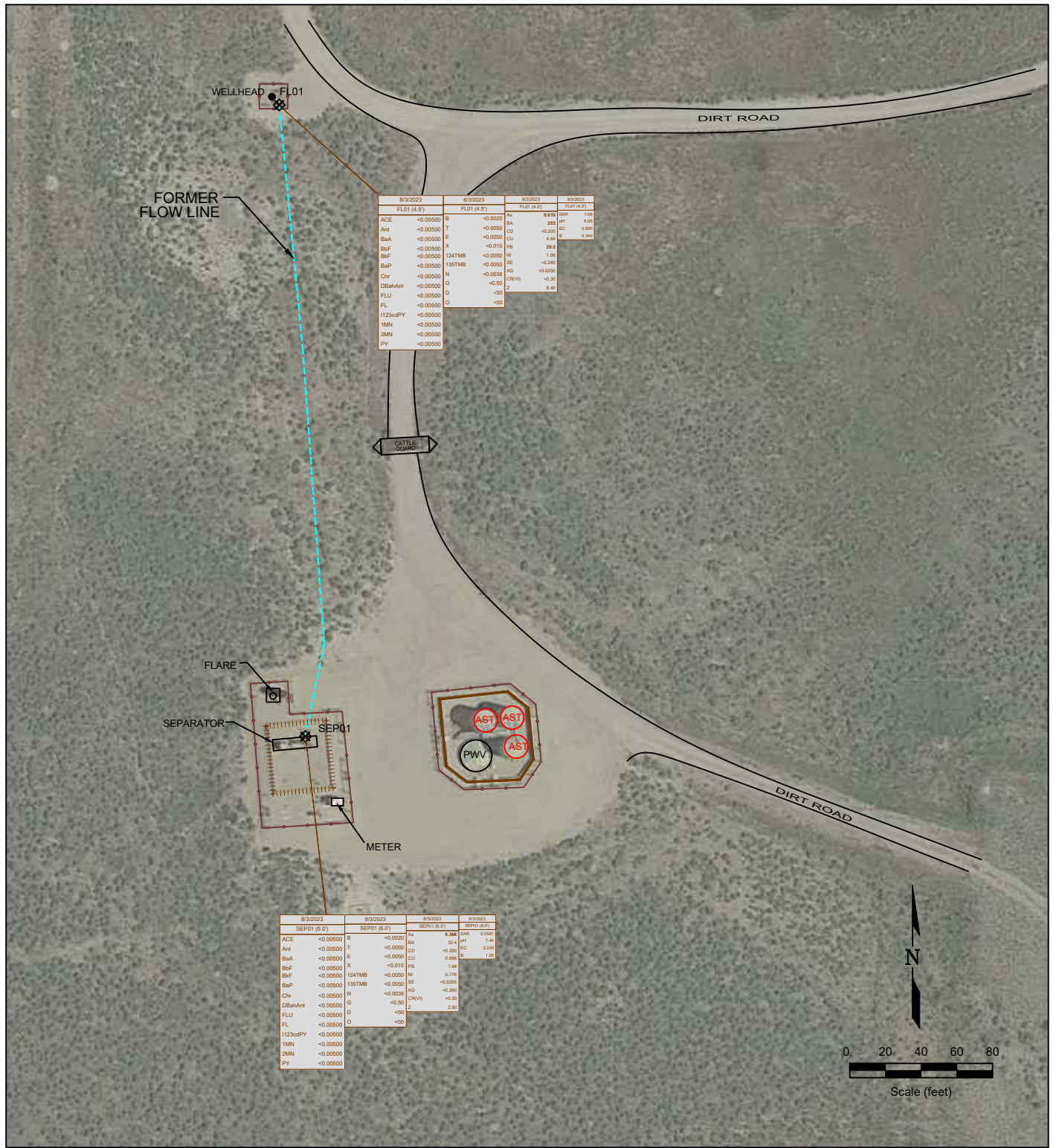


Figure 3  
SOIL CHEMISTRY MAP

Noble Energy, Inc. ~ Jepsen 1  
SESW Sec. 2, T3N, R65W, 6th PM  
Weld County, Colorado  
40.250054°, -104.633833°

LEGEND

● WELLHEAD LOCATION	○ ABOVE GROUND STORAGE TANK	FORMER FLOW LINE	FORMER FACILITY	CONTAINMENT BERM	CONTAINMENT WALL	FENCE LINE
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<table border="1"> <thead> <tr><th>8/3/2023</th><th>DATE SAMPLED</th></tr> <tr><th>FL01 (4.5')</th><th>SAMPLE ID and DEPTH (ft)</th></tr> </thead> <tbody> <tr><td>ACE</td><td>&lt;0.0000</td></tr> <tr><td>Ant</td><td>&lt;0.0000</td></tr> <tr><td>BaA</td><td>&lt;0.0000</td></tr> <tr><td>BbF</td><td>&lt;0.0000</td></tr> <tr><td>BaP</td><td>&lt;0.0000</td></tr> <tr><td>Chr</td><td>&lt;0.0000</td></tr> <tr><td>DBaAnt</td><td>&lt;0.0000</td></tr> <tr><td>FLU</td><td>&lt;0.0000</td></tr> <tr><td>FL</td><td>&lt;0.0000</td></tr> <tr><td>1123cdPY</td><td>&lt;0.0000</td></tr> <tr><td>1MN</td><td>&lt;0.0000</td></tr> <tr><td>2MN</td><td>&lt;0.0000</td></tr> <tr><td>PY</td><td>&lt;0.0000</td></tr> </tbody> </table>	8/3/2023	DATE SAMPLED	FL01 (4.5')	SAMPLE ID and DEPTH (ft)	ACE	<0.0000	Ant	<0.0000	BaA	<0.0000	BbF	<0.0000	BaP	<0.0000	Chr	<0.0000	DBaAnt	<0.0000	FLU	<0.0000	FL	<0.0000	1123cdPY	<0.0000	1MN	<0.0000	2MN	<0.0000	PY	<0.0000	<table border="1"> <thead> <tr><th>8/3/2023</th><th>DATE SAMPLED</th></tr> <tr><th>FL01 (4.5')</th><th>SAMPLE ID and DEPTH (ft)</th></tr> </thead> <tbody> <tr><td>B</td><td>&lt;0.0000</td></tr> <tr><td>T</td><td>&lt;0.0000</td></tr> <tr><td>E</td><td>&lt;0.0000</td></tr> <tr><td>X</td><td>&lt;0.010</td></tr> <tr><td>124TMB</td><td>&lt;0.0000</td></tr> <tr><td>133TMB</td><td>&lt;0.0000</td></tr> <tr><td>N</td><td>&lt;0.0038</td></tr> <tr><td>G</td><td>&lt;0.50</td></tr> <tr><td>D</td><td>&lt;50</td></tr> <tr><td>O</td><td>&lt;50</td></tr> </tbody> </table>	8/3/2023	DATE SAMPLED	FL01 (4.5')	SAMPLE ID and DEPTH (ft)	B	<0.0000	T	<0.0000	E	<0.0000	X	<0.010	124TMB	<0.0000	133TMB	<0.0000	N	<0.0038	G	<0.50	D	<50	O	<50	<table border="1"> <thead> <tr><th>8/3/2023</th><th>DATE SAMPLED</th></tr> <tr><th>FL01 (4.5')</th><th>SAMPLE ID and DEPTH (ft)</th></tr> </thead> <tbody> <tr><td>NA</td><td>NOT ANALYZED</td></tr> </tbody> </table>	8/3/2023	DATE SAMPLED	FL01 (4.5')	SAMPLE ID and DEPTH (ft)	NA	NOT ANALYZED	<table border="1"> <thead> <tr><th>8/3/2023</th><th>DATE SAMPLED</th></tr> <tr><th>FL01 (4.5')</th><th>SAMPLE ID and DEPTH (ft)</th></tr> </thead> <tbody> <tr><td>BA</td><td>0.368</td></tr> <tr><td>CD</td><td>3.4</td></tr> <tr><td>CU</td><td>0.200</td></tr> <tr><td>NI</td><td>0.091</td></tr> <tr><td>PN</td><td>7.44</td></tr> <tr><td>SE</td><td>0.228</td></tr> <tr><td>Z</td><td>1.25</td></tr> </tbody> </table>	8/3/2023	DATE SAMPLED	FL01 (4.5')	SAMPLE ID and DEPTH (ft)	BA	0.368	CD	3.4	CU	0.200	NI	0.091	PN	7.44	SE	0.228	Z	1.25
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# Photo Log



**Description:**

Jepsen 1 Wellhead Placard

# Photo Log

DIRECTION  
S (T)

40.25004°N  
104.63385°W

ACCURACY 5 m  
DATUM WGS84



Jepsen 1

2023-08-03  
11:46:16-06:00

### Description:

Jepsen 1 Overview

# Photo Log



**Description:**

FL01@4.5'

# Photo Log



**Description:**

FL02@6'

# Photo Log



**Description:**

FL03@6'



***Description:***

SEP01@6'