

# **FREMONT ENVIRONMENTAL INC.**

September 16, 2024

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

Subject: **Excavation Report**  
Farr T4N-R64W-S18 L01  
NWSW Sec. 18, T4N, R64W  
Weld County, Colorado  
Fremont Project No. C022-201  
Facility # 482511, Remediation #24344

Dear Mr. Peterson:

Enclosed please find a copy of the above referenced Excavation Report for the Farr T4N-R64W-S18 L01 release site in Weld County, Colorado. The enclosed report describes excavation and sampling efforts to remediate impacted soil at the site.

Please contact me at (314) 795-2372 if you require any additional information.

Fremont appreciates the opportunity to provide this service.

Sincerely,  
**FREMONT ENVIRONMENTAL INC.**

Jeff T. Griggs  
Consultant

Enclosure

**EXCAVATION REPORT**  
**NOBLE ENERGY INC.**  
**FARR T4N-R64W-S18 L01**  
**WELD COUNTY, COLORADO**  
**FREMONT PROJECT NO. C022-201**  
**FACILITY #482511, REMEDIATION #24344**

**Prepared by:**  
**Fremont Environmental Inc.**  
**1759 Redwing Lane**  
**Broomfield, CO 80020**  
**(303) 956-8714**

**September 16, 2024**

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**EXCAVATION REPORT**  
**NOBLE ENERGY INC.**  
**FARR T4N-R64W-S18 L01**  
**WELD COUNTY, COLORADO**  
**FREMONT PROJECT NO. C022-201**  
**FACILITY #482511, REMEDIATION #24344**

**1.0 INTRODUCTION**

The purpose of this document is to present information collected during the excavation of petroleum-impacted soil at the Farr T4N-R64W-S18 L01 location in Weld County, Colorado. This excavation project was completed on July 10, 2024.

**2.0 BACKGROUND INFORMATION**

**2.1 Site Location**

The Farr T4N-R64W-S18 L01 is located approximately 4.86 miles northeast of Kersey, Colorado in Weld County as shown on Figure 1. The site is located in an agricultural area approximately 0.43 miles northeast of the intersection of Colorado Road 49 and Weld County Road 44. The location is further described as the NW  $\frac{1}{4}$  of the SW  $\frac{1}{4}$  of Section 18, Township 4N, Range 64W.

**2.2 Site History**

The site consisted of the Farr T4N-R64W-S18 L01 tank battery which serviced the Farr 2, Farr 18-12 and Farr C 18-25 natural gas wells. The Farr 2 natural gas well was drilled in 1985 to a depth of approximately 7,234 feet. The Farr 18-12 natural gas well was drilled in 1993 to a depth of approximately 7,240 feet. The Farr C 18-25 natural gas well was drilled in 2006 to a depth of approximately 7,169 feet.

A release was discovered adjacent to the Farr T4N-R64W-S18 L01 former facility's produced water vault (PWV) and aboveground storage tank (AST) during decommissioning activities in December 2022. Groundwater was not encountered at that time.

### **3.0 FIELD ACTIVITIES**

#### **3.1 Soil Excavation and Sampling**

Soil remediation efforts consisted of the excavation and removal of petroleum-impacted soil directly adjacent to the site's former PWV and AST. The excavation extent measured approximately 65 feet x 40 feet, with a maximum depth of 13 feet below ground surface (bgs). The soil consisted of sandy clay extending to the excavation's maximum depth of approximately 13 feet. The excavation extent is illustrated on Figures 2 through 5. Groundwater was not encountered within the excavation and is measured at approximately 40 feet deep in the nearest downgradient well (stock) 2,612 feet southeast of the release location (DWR Permit No. 247461).

The excavation of impacts adjacent to the former Farr T4N-R64W-S18 L01 facility PWV and AST was completed on July 10, 2024. Soil samples were collected, as grab samples, from the excavation's sidewalls at eight, nine and 12 feet, and from the floor of the excavation at 13 feet bgs.

The soil samples were analyzed by Summit Scientific, Inc. in Golden, Colorado for benzene, toluene, ethylbenzene and total xylenes (BTEX), naphthalene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene (TMB), total petroleum hydrocarbons - gasoline range organics (TPH-GRO) by EPA method 8260B, TPH - diesel range organics (TPH-DRO), extended range organics (TPH-ORO) by EPA method 8015, polycyclic aromatic hydrocarbons (PAH) acenaphthene, anthracene, benzo (a) anthracene, benzo (a) pyrene, benzo (b) fluoranthene, chrysene, dibenz (a,h) anthracene, fluoranthene,

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Farr T4N-R64W-S18 L01

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fluorene, indeno (1,2,3-cd) pyrene, pyrene, 1-methylnaphthalene, 2-methylnaphthalene by EPA method 8270D, specific conductance (EC) by EPA Method 120.1 saturated paste extraction, saturated paste extraction of soluble nutrients by EPA method 6020/USDA60 6(2) for calculated analysis of sodium absorption ratio (SAR), pH by saturated paste extraction APHA/ASTM/EPA methods, Total Metals by EPA method 6020B, and Hexavalent Chromium by EPA method 7196. The laboratory reports and chain-of-custody documentation are included in Appendix B.

A summary of the soil laboratory data is included in Tables 2 through 5. The laboratory analyses indicate that organic petroleum constituents in soil samples collected from the sidewalls and floor of the excavation achieved the ECMC Table 915-1 Protection of Groundwater Soil Screening Levels (PGSSLs). However, seven samples exceeded ECMC Table 915-1 soil suitability limits for pH, six samples exceeded ECMC Table 915-1 Protection of Groundwater Soil Screening Limits (PGSSLs) for barium, three samples exceeded ECMC Table 915-1 PGSSLs for cadmium, one sample exceeded ECMC Table 915-1 PGSSLs for selenium and all samples exceeded the ECMC Table 915-1 Residential Soil Screen Limits (RSSLs) for arsenic. These exceedances are present below the root zone at twelve feet and are separated from communication with groundwater by more than 25 feet of soil.

A total of approximately 1,680 tons (~ 1,200 cubic yards) of petroleum impacted soil was removed from the excavation by 4X during remediation efforts. Impacted soil was disposed of at Buffalo Ridge Landfill in Keenesburg, Colorado as non-hazardous waste, and the excavation was backfilled using clean fill.

#### **4.0 DISCUSSION**

As demonstrated by the soil sampling, petroleum impacted soil was removed at the Farr T4N-R64W-S18 L01 facility former PWV and AST via excavation. This was confirmed by analysis of soil samples collected from the exterior sidewalls and floor of the excavation which were below the ECMC Table 915-1 PGSSLs for organic petroleum constituents. Approximately 1,200 cubic yards of impacted soil were removed and transported to the landfill. The soil data for the excavation is illustrated and summarized in the attached tables and figures.

Since groundwater was not observed in the excavation, Noble Energy Inc. (Noble) requests the usage of the ECMC Table 915-1 RSSLs based on a separation of approximately 25 feet between groundwater and soil exceeding the PGSSLs preventing a clear pathway for elevated barium, cadmium and selenium concentrations to communicate with groundwater. Noble proposes to leave elevated concentrations of pH in place following a reclamation survey demonstrating elevated concentrations have been horizontally and vertically defined and do not pose a threat to future land use.

Additionally, Noble will resample and analyze arsenic at sidewall sample locations S02@12.0' and S03@12.0' to verify arsenic concentrations of greater the natural variability seen at the location in the background soil samples. Noble will request an NFA be granted if the reanalyzed samples are within the Table 915-1 concentration range.

#### **5.0 REMARKS**

The discussion and conclusions contained in this report represent our professional opinions. These opinions are based on currently available information and are arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Other than this, no warranty is implied or intended.

This report was prepared by **FREMONT ENVIRONMENTAL INC.**

Prepared By:



09/16/24

Date \_\_\_\_\_

Jeff T. Griggs

Geologist

Reviewed by:



09/16/24

Date \_\_\_\_\_

Ethan D. Black, PG

Geologist

## **TABLES**

**TABLE 1**  
**FIELD DATA SUMMARY TABLE**  
**NOBLE 100322**  
**FARR T4N-R64W-S18 L01, WELD COUNTY, COLORADO**  
**REM # 24344**

Sample ID	Sample Date	Depth	GPS Data Latitude/Longitude		PDOP Value	VOC Concentration (ppm)
N01@8.0'	6/25/2024	8.0 Ft	40.3106515	-104.5983193	1.00	5.3 ppm
B01@10.0'	6/26/2024	10.0 Ft	40.3106105	-104.5983117	-	159.2 ppm
W01@9.0'	6/26/2024	9.0 Ft	40.3106176	-104.5983668	1.10	13.1 ppm
B02@13.0'	6/27/2024	13.0 Ft	40.3106119	-104.5983135	-	6.4 ppm
N02@12.0'	7/1/2024	12.0 Ft	40.3106525	-104.5982685	0.90	0.0 ppm
N03@12.0'	7/1/2024	12.0 Ft	40.3106553	-104.5982112	0.90	0.0 ppm
E01@12.0'	7/2/2024	12.0 Ft	40.3106267	-104.5981508	0.90	0.0 ppm
B03@13.0'	7/3/2024	13.0 Ft	40.3106253	-104.5982127	1.00	1.7 ppm
S01@12.0'	7/3/2024	12.0 Ft	40.3105525	-104.5982139	0.90	0.7 ppm
E02@12.0'	7/3/2024	12.0 Ft	40.3105937	-104.5981505	0.90	2.3 ppm
B04@13.0'	7/8/2024	13.0 Ft	40.3105777	-104.5982089	-	0.0 ppm
B05@13.0'	7/9/2024	13.0 Ft	40.3105907	-104.5982588	-	0.0 ppm
S02@12.0'	7/9/2024	12.0 Ft	40.3105443	-104.5982700	0.90	0.4 ppm
B06@13.0'	7/10/2024	13.0 Ft	40.3105687	-104.5983131	-	0.1 ppm
S03@12.0'	7/10/2024	12.0 Ft	40.3105402	-104.5983205	1.00	1.7 ppm
W02@12.0'	7/10/2024	12.0 Ft	40.3105710	-104.5983610	1.10	0.7 ppm

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

bgs = Below ground surface

in. = Inches

ft. = Feet

= Source material characterization sample, excavated and transported off site for disposal.

= Material excavated and transported off site for disposal.

**TABLE 2**  
**SUMMARY OF VOLATILE ORGANIC SOIL CHEMISTRY DATA**  
**NOBLE 100322**  
**FARR T4N-R64W-S18 L01, WELD COUNTY, COLORADO**  
**REM # 24344**

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**	
AST01 Cen. Surf	12/08/2022	Surface	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
PWV Floor 4ft	12/08/2022	4 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	56	<50
SEPO1 Surf	12/08/2022	Surface	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
SB-CEN 8ft	06/12/2023	8 Ft	<0.0020	<0.0050	0.020	<0.010	25	<0.0050	0.23	2,970	410	2300	260
SB-EAST 2 6ft	06/12/2023	6 Ft	<0.0020	<0.0050	<0.0050	<0.010	0.0062	<0.0050	0.013	<500	<0.50	<50	<50
SB-NORTH 8ft	06/12/2023	8 Ft	<0.0020	<0.0050	<0.0050	<0.010	0.18	0.10	0.038	<500	3.7	160	<50
SB-SOUTH 8ft	06/12/2023	8 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	0.53	<50	<50
SB-WEST	06/12/2023	N/A	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
BKG-1 12ft	06/12/2023	12 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
BKG-1 4ft	06/12/2023	4 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
BKG-2 4ft	06/12/2023	4 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
BKG-3 4ft	06/12/2023	4 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
BKG-4 4ft	06/12/2023	4 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
BKG-5 12ft	06/12/2023	12 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
BKG-5 4ft	06/12/2023	4 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
N01@8.0'	6/25/2024	8.0 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
B01@10.0'	6/26/2024	10.0 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
W01@9.0'	6/26/2024	9.0 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
B02@13.0'	6/27/2024	13.0 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
N02@12.0'	7/1/2024	12.0 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
N03@12.0'	7/1/2024	12.0 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
E01@12.0'	7/2/2024	12.0 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
B03@13.0'	7/3/2024	13.0 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
S01@12.0'	7/3/2024	12.0 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
E02@12.0'	7/3/2024	12.0 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
B04@13.0'	7/8/2024	13.0 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
B05@13.0'	7/9/2024	13.0 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
S02@12.0'	7/9/2024	12.0 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
B06@13.0'	7/10/2024	13.0 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
S03@12.0'	7/10/2024	12.0 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50
W02@12.0'	7/10/2024	12.0 Ft	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<500	<0.50	<50	<50

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**	
Backfill	7/11/2024	N/A	<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

NA - Not analyzed

= Source material characterization sample, excavated and transported off site for disposal.

= Material excavated and transported off site for disposal.



**TABLE 4**  
**SUMMARY OF SOIL SUITABILITY FOR RECLAMATION**  
**NOBLE 100322**  
**FARR T4N-R64W-S18 L01, WELD COUNTY, COLORADO**  
**REM # 24344**

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
AST01 Cen. Surf	12/08/2022	Surface	<b>8.37</b>	0.149	0.138	0.387
PWV Floor 4ft	12/08/2022	4 Ft	8.14	0.662	1.68	1.93
SEP01 Surf	12/08/2022	Surface	7.65	0.554	1.06	1.13
SB-CEN 8ft	06/12/2023	8 Ft	<b>8.43</b>	0.748	1.28	<b>2.39</b>
SB-EAST 2 6ft	06/12/2023	6 Ft	7.13	0.662	1.24	0.822
SB-NORTH 8ft	06/12/2023	8 Ft	8.21	0.712	0.388	0.265
SB-SOUTH 8ft	06/12/2023	8 Ft	7.85	1.11	2.44	0.157
SB-WEST	06/12/2023	N/A	7.71	0.356	0.635	0.155
BKG-1 12ft	06/12/2023	12 Ft	8.02	0.723	2.00	0.176
BKG-1 4ft	06/12/2023	4 Ft	7.22	0.737	2.21	0.459
BKG-2 4ft	06/12/2023	4 Ft	<b>8.69</b>	2.10	2.93	0.739
BKG-3 4ft	06/12/2023	4 Ft	<b>8.55</b>	0.372	1.86	0.957
BKG-4 4ft	06/12/2023	4 Ft	7.79	0.261	1.28	0.176
BKG-5 12ft	06/12/2023	12 Ft	7.86	1.77	2.39	0.0851
BKG-5 4ft	06/12/2023	4 Ft	7.66	1.19	2.49	0.207
N01@8.0'	6/25/2024	8.0 Ft	8.13	0.484	2.16	<2.00
B01@10.0'	6/26/2024	10.0 Ft	<b>8.55</b>	0.554	0.189	<2.00
W01@9.0'	6/26/2024	9.0 Ft	7.97	0.813	2.33	<2.00
B02@13.0'	6/27/2024	13.0 Ft	<b>8.65</b>	0.309	2.14	<2.00
N02@12.0'	7/1/2024	12.0 Ft	8.12	1.42	2.22	<2.00
N03@12.0'	7/1/2024	12.0 Ft	8.19	0.721	1.78	<2.00
E01@12.0'	7/2/2024	12.0 Ft	8.07	0.616	0.135	<2.00

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
B03@13.0'	7/3/2024	13.0 Ft	<b>8.54</b>	0.486	2.79	<2.00
S01@12.0'	7/3/2024	12.0 Ft	<b>8.81</b>	0.309	1.62	<2.00
E02@12.0'	7/3/2024	12.0 Ft	<b>8.74</b>	0.318	2.17	<2.00
B04@13.0'	7/8/2024	13.0 Ft	8.16	0.848	2.59	<2.00
B05@13.0'	7/9/2024	13.0 Ft	<b>8.33</b>	1.12	2.75	<2.00
S02@12.0'	7/9/2024	12.0 Ft	<b>8.43</b>	1.02	3.77	<2.00
B06@13.0'	7/10/2024	13.0 Ft	<b>8.32</b>	0.725	4.98	<2.00
S03@12.0'	7/10/2024	12.0 Ft	8.17	1.20	4.15	<2.00
W02@12.0'	7/10/2024	12.0 Ft	8.20	0.748	3.04	<2.00
Backfill	7/11/2024	N/A	7.75	0.140	0.122	<2.00
Maximum Root Background Concentration (0 - 3 ft)			NA	NA	NA	NA
Average Root Background Concentration (0 - 3 ft)			NA	NA	NA	NA
Maximum Background Concentration			<b>8.69</b>	2.10	2.93	0.957
Average Background Concentration			7.97	1.02	2.17	0.400

1. Bold faced values exceed the ECMC Table 915-1 limit(s)

2. Blue highlighted soil analytical values indicate a regulatory exceedance

NA - Not analyzed

= Source material characterization sample, excavated and transported off site for disposal.

= Material excavated and transported off site for disposal.

**TABLE 5**  
**SUMMARY OF METALS IN SOIL CHEMISTRY DATA**  
**NOBLE 100322**  
**FARR T4N-R64W-S18 L01, WELD COUNTY, COLORADO**  
**REM # 24344**

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
SB-CEN 8ft	06/12/2023	8 Ft	2.42	82.0	0.263	<0.30	4.68	5.80	4.67	<0.298	<0.0229	16.1
SB-EAST 2 6ft	06/12/2023	6 Ft	2.40	97.9	0.478	<0.30	7.65	12.7	5.49	<0.312	0.0437	22.1
SB-NORTH 8ft	06/12/2023	8 Ft	3.75	60.3	0.242	<0.30	7.27	6.61	7.17	<0.281	<0.0216	14.7
SB-SOUTH 8ft	06/12/2023	8 Ft	2.53	196	0.304	<0.30	4.84	6.12	5.63	<0.299	<0.0230	18.0
SB-WEST	06/12/2023	N/A	3.20	174	<0.231	<0.30	<0.461	7.12	5.17	<0.300	0.0254	17.0
BKG-1 12ft	06/12/2023	12 Ft	3.47	28.9	0.322	<0.30	<0.465	8.05	5.35	<0.302	<0.0233	20.0
BKG-1 4ft	06/12/2023	4 Ft	1.86	57.9	0.332	<0.30	<0.441	7.22	3.88	<0.287	0.0274	14.7
BKG-2 4ft	06/12/2023	4 Ft	2.79	98.3	0.239	<0.30	<0.429	6.86	5.35	<0.279	0.0425	15.8
BKG-3 4ft	06/12/2023	4 Ft	2.87	89.5	<0.226	<0.30	<0.453	4.71	4.37	<0.294	<0.0226	12.8
BKG-4 4ft	06/12/2023	4 Ft	2.29	69.2	<0.232	<0.30	<0.464	7.27	5.18	<0.302	0.0539	18.9
BKG-5 12ft	06/12/2023	12 Ft	3.54	182	<0.225	<0.30	<0.451	6.66	5.66	<0.293	<0.0225	17.8
BKG-5 4ft	06/12/2023	4 Ft	2.34	72.1	0.228	<0.30	<0.444	6.43	4.59	<0.289	0.0320	16.1
N01@8.0'	6/25/2024	8.0 Ft	2.69	121	0.285	<0.30	7.98	7.12	9.29	<0.260	0.0251	17.6
B01@10.0'	6/26/2024	10.0 Ft	3.69	146	0.400	<0.30	11.4	10.3	8.99	<0.260	0.0259	48.7
W01@9.0'	6/26/2024	9.0 Ft	2.40	135	0.250	<0.30	8.14	7.33	9.63	<0.236	0.0202	31.6
B02@13.0'	6/27/2024	13.0 Ft	1.49	22.8	0.390	<0.30	9.79	8.69	8.19	<0.260	0.0238	54.3
N02@12.0'	7/1/2024	12.0 Ft	0.653	8.75	<0.200	<0.30	1.94	7.66	1.74	<0.260	0.0278	11.1
N03@12.0'	7/1/2024	12.0 Ft	0.775	21.2	0.816	<0.30	2.83	13.9	3.26	<0.260	0.0477	13.9
E01@12.0'	7/2/2024	12.0 Ft	3.57	61.6	0.292	<0.30	9.25	9.00	10.5	<0.260	0.0281	42.0
B03@13.0'	7/3/2024	13.0 Ft	1.32	41.4	0.364	<0.30	12.8	12.2	11.6	<0.260	0.0361	73.0
S01@12.0'	7/3/2024	12.0 Ft	1.50	45.1	0.241	<0.30	7.49	7.76	6.70	<0.260	0.0248	46.8
E02@12.0'	7/3/2024	12.0 Ft	2.43	250	0.353	<0.30	9.88	10.1	12.6	<0.260	0.0218	43.3
B04@13.0'	7/8/2024	13.0 Ft	2.10	25.6	0.229	<0.30	6.13	10.2	5.75	<0.260	0.0236	31.1
B05@13.0'	7/9/2024	13.0 Ft	2.13	52.1	0.256	<0.30	6.88	10.9	5.93	<0.260	0.0262	31.6
S02@12.0'	7/9/2024	12.0 Ft	15.7	210	0.503	<0.30	8.94	11.4	7.37	0.338	0.0287	26.3
B06@13.0'	7/10/2024	13.0 Ft	2.63	27.5	0.299	<0.30	5.64	11.6	7.51	<0.260	0.0395	25.7

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
S03@12.0'	7/10/2024	12.0 Ft	<b>3.85</b>	<b>119</b>	0.208	<0.30	4.92	8.55	5.29	<0.260	0.0248	20.0
W02@12.0'	7/10/2024	12.0 Ft	<b>2.80</b>	<b>102</b>	<0.200	<0.30	3.93	6.52	4.34	<0.260	0.0202	15.6
Backfill	7/11/2024	N/A	<b>0.927</b>	69.6	<0.200	<0.30	1.58	5.21	1.81	<0.260	0.0578	6.74
Maximum Root Zone Background Concentration (0 - 3 ft)			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
125% Average Root Zone Background Concentration (0 - 3 ft)			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Maximum Background Concentration			<b>3.54</b>	<b>182</b>	0.332	<0.30	<0.465	8.05	5.66	<0.302	0.0539	20.0
125% Average Background Concentration			<b>3.42</b>	<b>107</b>	0.320	<0.30	<0.465	8.43	6.14	<b>0.365</b>	0.0400	20.7

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)

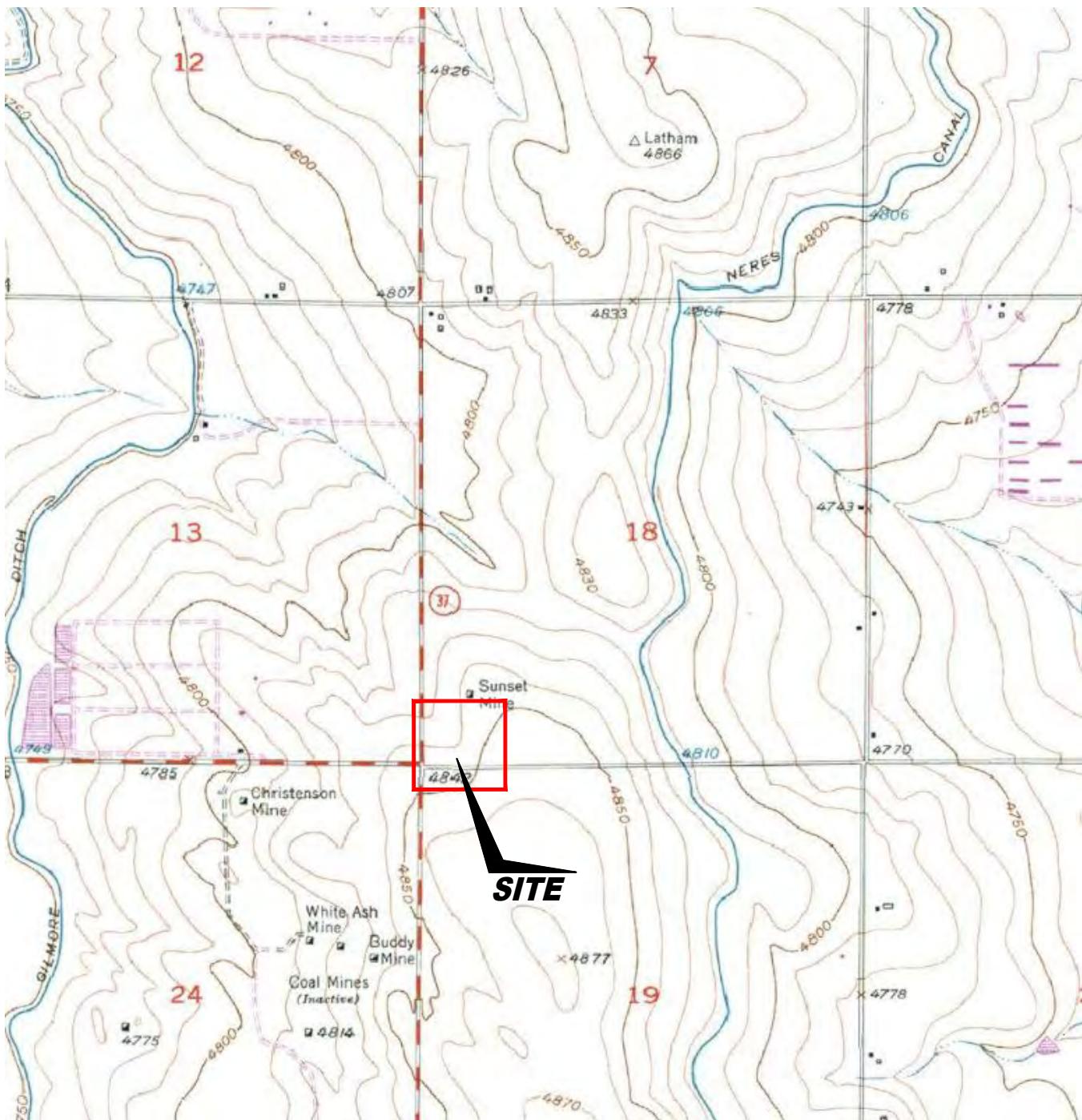
\* Indicates laboratory minimum detection limit in excess of SSL

NA - Not analyzed

= Source material characterization sample, excavated and transported off site for disposal.

= Material excavated and transported off site for disposal.

## **FIGURES**



Scale (miles)  
0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1  
0 1000 2000 3000 4000 5000  
Scale (feet)

USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)

Figure 1  
SITE LOCATION MAP  
NOBLE ENERGY INC ~ FARR T4N-R64-WS18 L01

NWSW Sec. 18, T4N, R64W, 6th PM  
Weld County, Colorado  
40.310579°, -104.598304°

Project # <b>C022-201</b>	API #	Facility # <b>482511</b>	<b>REMONT ENVIRONMENTAL</b>
Date <b>9/12/24</b>	Remediation # <b>24344</b>	Filename <b>22201T2</b>	

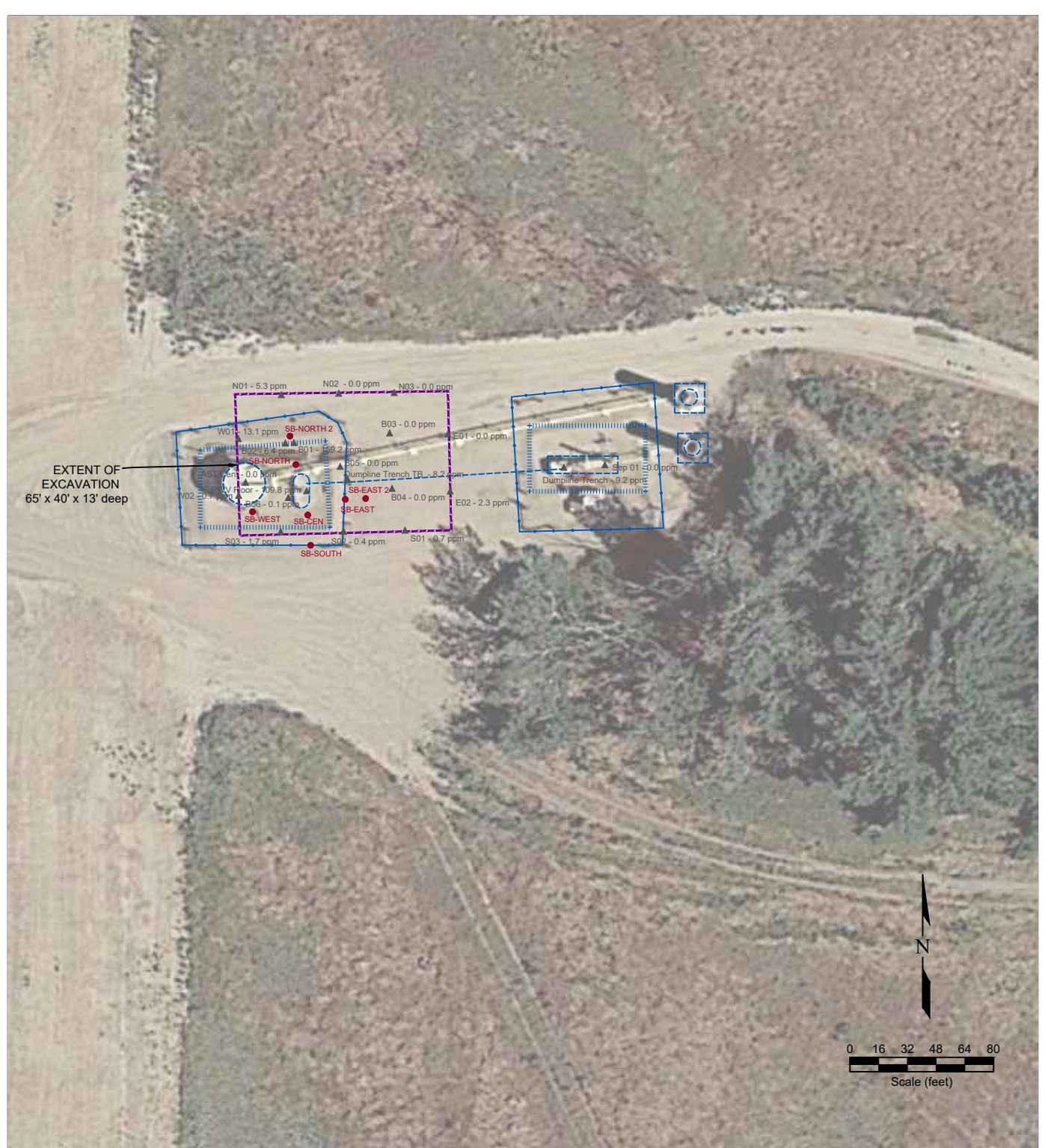


Figure 2  
SITE MAP

NOBLE ENERGY INC ~ FARR T4N-R64W-S18 L01

NWSW Sec. 18, T4N, R64W, 6th PM

Weld County, Colorado

40.310579°, -104.598304°

Project No. <b>C022-201</b>	API #	Facility # <b>482511</b>	<b>REMONT ENVIRONMENTAL</b>
Date <b>9/16/24</b>	Remediation # <b>24344</b>	Filename <b>22201Q2</b>	

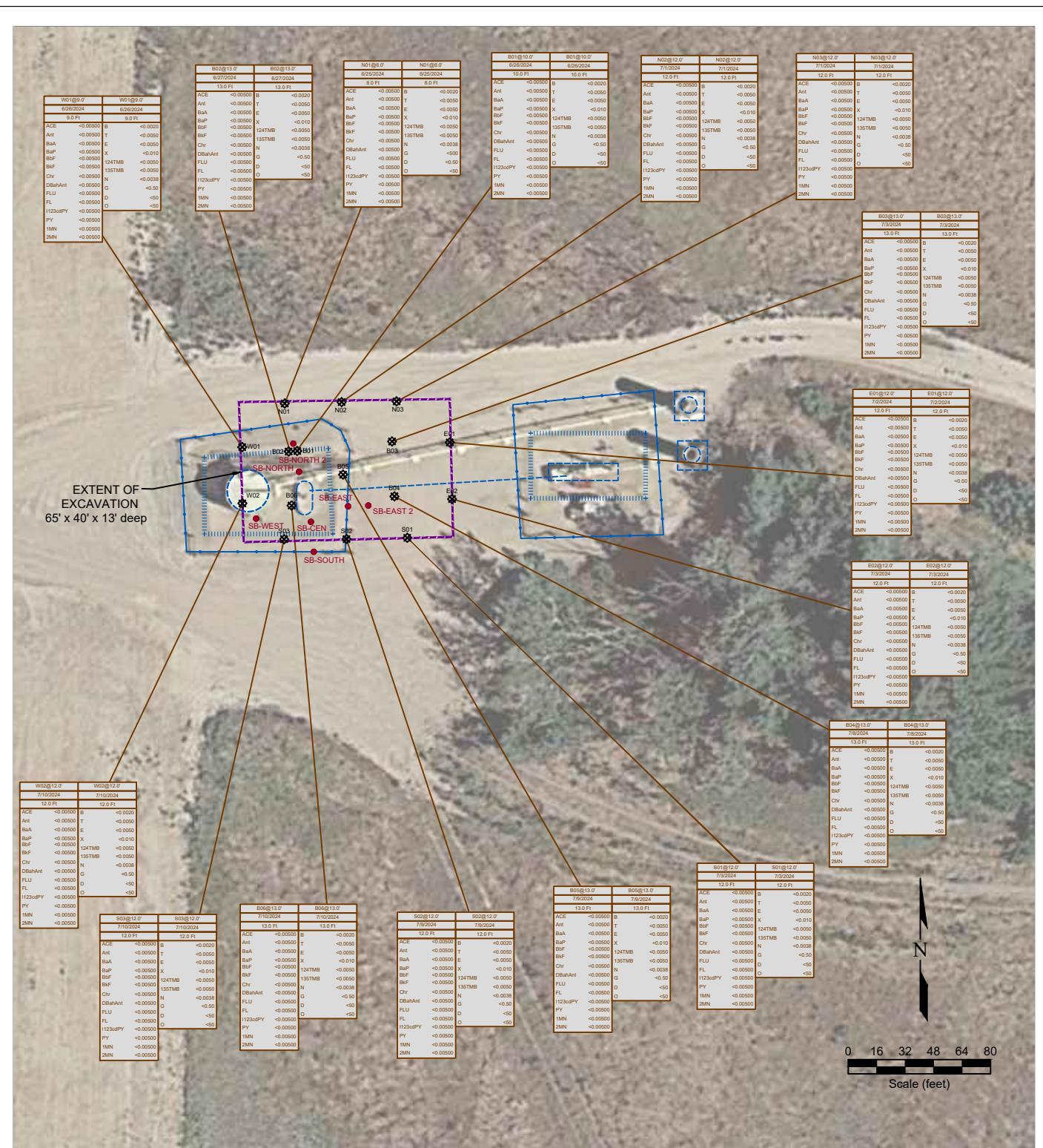


Figure 3  
ORGANIC SOIL CHEMISTRY MAP

NOBLE ENERGY INC ~ FARR T4N-R64W-S18 L01

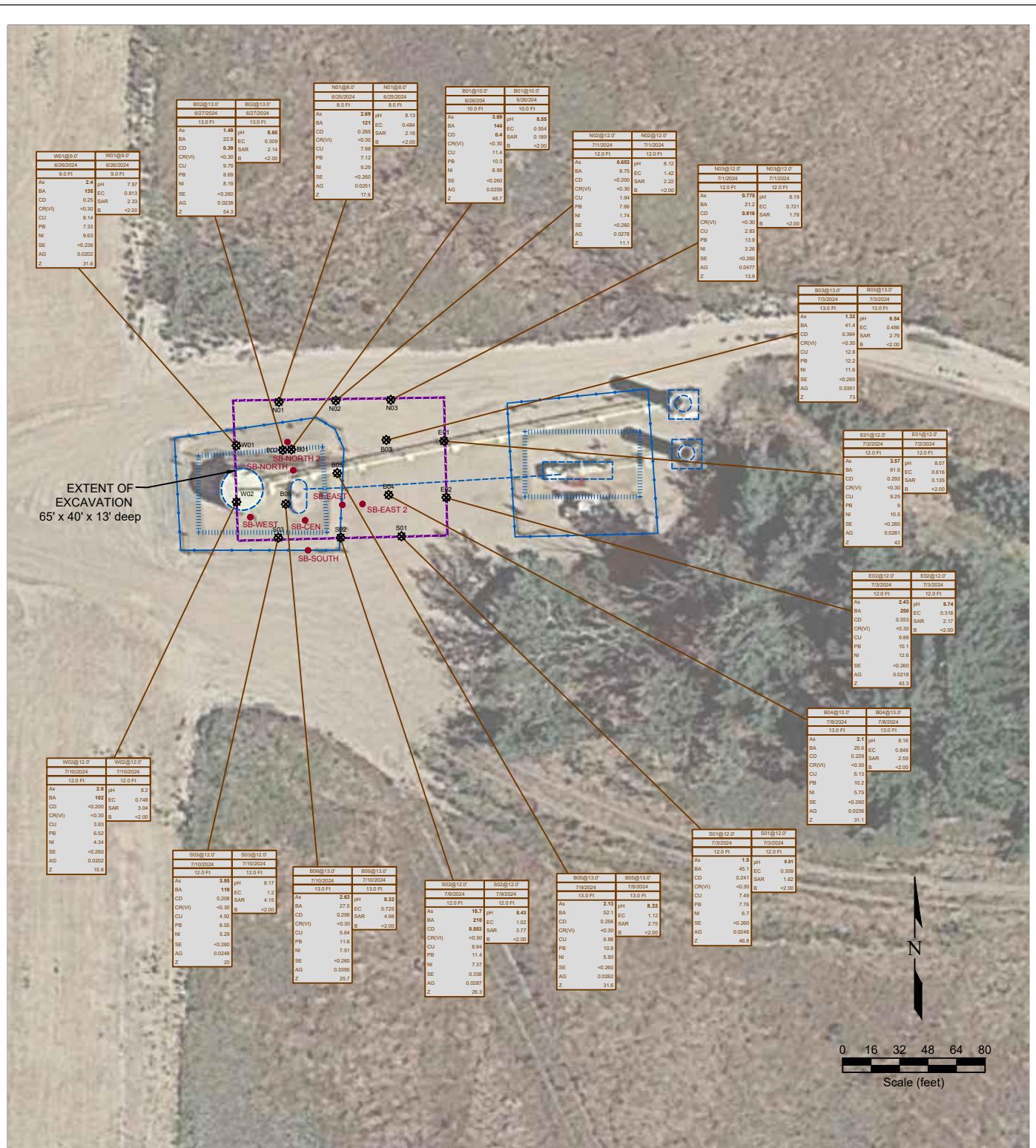
NWSW Sec. 18, T4N, R64W, 6th PM

Weld County, Colorado

40.310579°, -104.598304°

SAMPLE ID	SAMPLE ID	SAMPLE ID	SAMPLE ID
DEPTH	DEPTH	DEPTH	DEPTH
ACE	<0.00500	B	<0.00500
Ant	<0.00500	BENZENE (mg/kg)	<0.00500
BaA	<0.00500	TOLUENE (mg/kg)	<0.00500
BaP	<0.00500	ETHYLBENZENE (mg/kg)	<0.00500
BaF	<0.00500	XYLENE (mg/kg)	<0.00500
BfF	<0.00500	1,2-DIETHYLBENZENE (mg/kg)	<0.00500
BfF	<0.00500	1,3,5-TRIMETHYLBENZENE (mg/kg)	<0.00500
Chr	<0.00500	INDENO (1,2,3- <i>BCD</i> )PYRENE (mg/kg)	<0.00500
DbaAnt	<0.00500	CHRYSENE (mg/kg)	<0.00500
FLU	<0.00500	DIBENZO (A,H)ANTHRACENE (mg/kg)	<0.00500
FuF	<0.00500	FLUORENE (mg/kg)	<0.00500
H23cdPy	<0.00500	INDENO (1,2,3- <i>BCD</i> )PYRENE (mg/kg)	<0.00500
PY	<0.00500	PYRENE (mg/kg)	<0.00500
1MN	<0.00500	1-METHYLNAPHTHALENE (mg/kg)	<0.00500
2MN	<0.00500	2-METHYLNAPHTHALENE (mg/kg)	<0.00500

Project No.	API #	Facility #	
C022-201		482511	
Date 9/16/24	Remediation # 24344	Filename 22201Q2	



## LEGEND

- This legend identifies various symbols and line styles used in the map:

  - SOIL BORING LOCATION
  - ABOVE GROUND STORAGE TANK
  - Former Facility (represented by a blue dashed box)
  - Flowline (red dashed line)
  - Fence Line (black solid line)
  - Containment Berm (orange dotted line)
  - Containment Wall (dark brown solid line)
  - Extent of Excavation (purple dashed line)
  - Soil Sample Location (black hexagon)

SAMPLE	SAMPLE ID	SAMPLE ID
DEPTH (m)	DATE COLLECTED	DATE SAMPLED
DEPTH (m)	DEPTH (m)	DEPTH (m)
Aa	ARSENIC (mg/kg)	<500
Ba	BARIUM (mg/kg)	EC
Cd	CADMIUM (mg/kg)	7.0
Cr(VI)	CHROMIUM (mg/kg)	BAR
Pb	COPPER (mg/kg)	>1
Ni	LEAD (mg/kg)	BAR
Se	NICKEL (mg/kg)	1
Ag	SELENIUM (mg/kg)	BAR
Zn	SILVER (mg/kg)	0.05
	ZINC (mg/kg)	0.05

Figure 4  
**METALS AND INORGANIC SOIL CHEMISTRY MAP**  
**NOBLE ENERGY INC ~ FARR T4N-R64W-S18 L01**

NWSW Sec. 18, T4N, R64W, 6th PM  
Weld County, Colorado  
40.310579°, -104.598304°

Project No. <b>C022-201</b>	API #	Facility # <b>482511</b>	
Date <b>9/16/24</b>	Remediation # <b>24344</b>	Filename <b>22201Q2</b>	

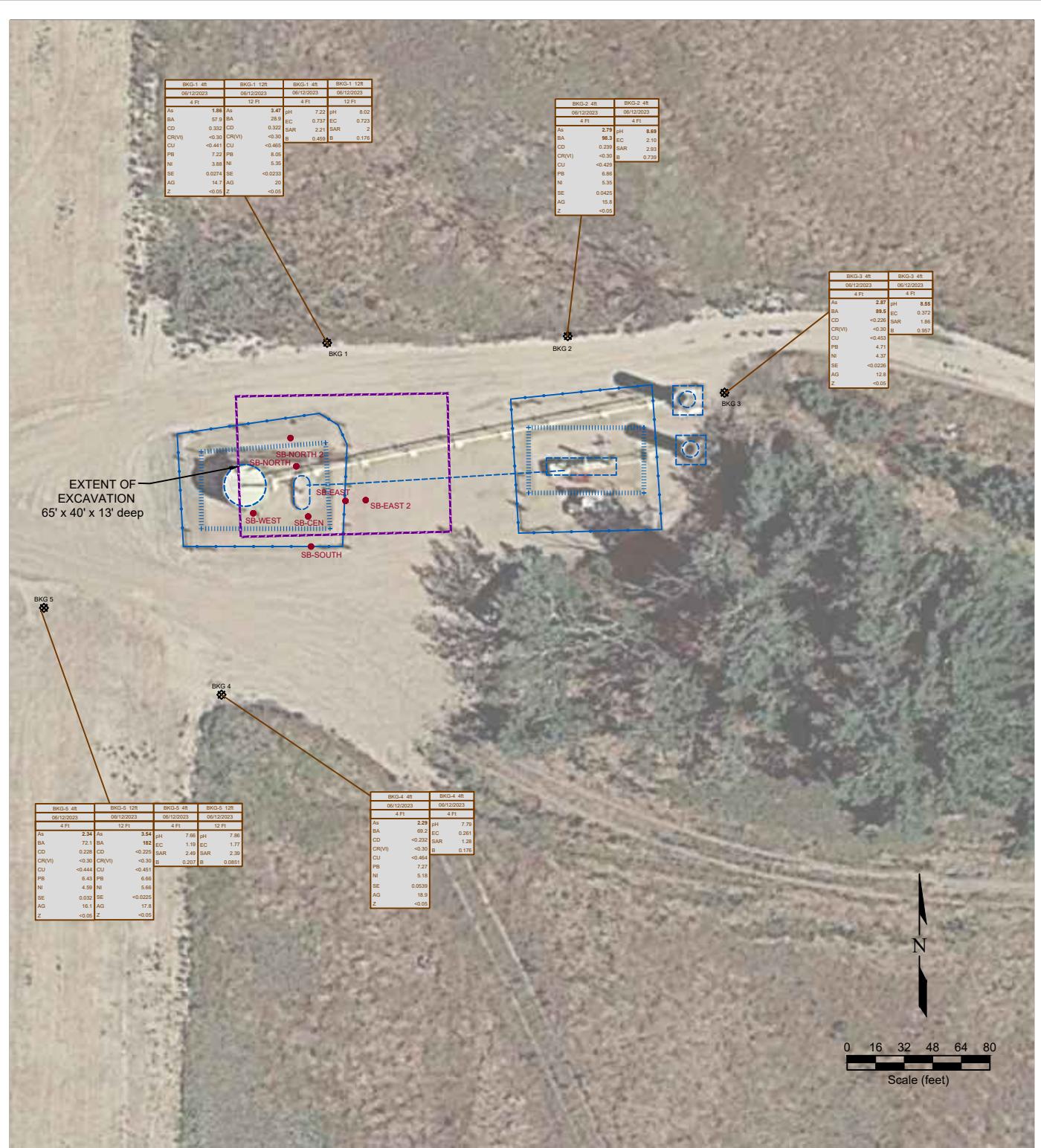


Figure 5  
**BACKGROUND SAMPLE SOIL CHEMISTRY MAP**  
**NOBLE ENERGY INC ~ FARR T4N-R64W-S18 L01**

NWSW Sec. 18, T4N, R64W, 6th PM

Weld County, Colorado

40.310579°, -104.598304°

Project No. <b>C022-201</b>	API #	Facility # <b>482511</b>	<b>REMONT ENVIRONMENTAL</b>
Date <b>9/16/24</b>	Remediation # <b>24344</b>	Filename <b>22201Q2</b>	

**APPENDIX A**

**PHOTO LOG**

# Photo Log



*Description:*

# Photo Log



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# Photo Log



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