

December 31, 2024

## Noble Energy Inc. – HSR Fischer 6-23

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### Groundwater Monitoring Report

NWNE Sec 23, T4N, R65W

40.305000, -104.630639

Weld County, Colorado

Fremont Project No. C024-016

Facility # 309888, Remediation #34710

### Site Overview – Site History

Historical soil and groundwater impacts were identified at the site of the former Noble HSR Fischer 6-23 tank battery (HSR Fischer) on January 19, 2024 while potholing for the RBU Madison pipeline. On January 29, 2024, a site investigation was conducted to delineate the extent of soil and groundwater impacts at the HSR Fischer site. Fourteen monitoring wells were installed during the initial site investigation.

On March 5, 2024, the pipeline installation crews installed a 20-inch diameter pipeline through the former HSR Fischer tank battery location. The scope of work included removal and offsite disposal of clean and impacted soil while trenching through the former location. The excavation was intended to accommodate the installation of the pipeline rather than removing all of the impacted soil. Approximately 380 cubic yards of clean and impacted soil were excavated and transported to Waste Management's Buffalo Ridge landfill. During the March 5, 2024 pipeline installation project and subsequent reclamation work, 12 of the 14 monitoring wells were destroyed or damaged. The 14 monitoring well network was re-installed on March 2, 2024 and groundwater samples were collected on March 3, 2024.

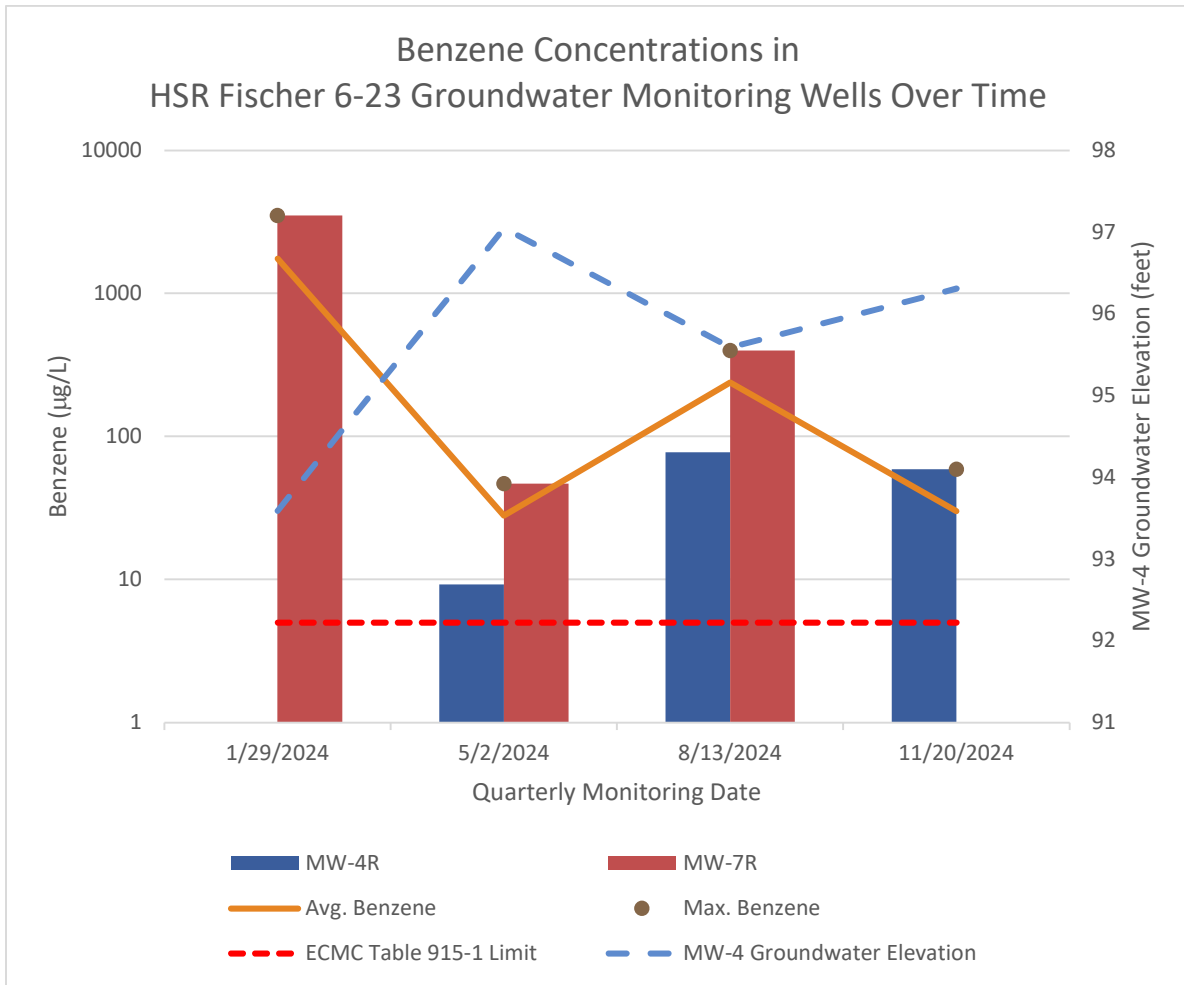
### Conceptual Site Model\*

\*Data presented represents the most recent sampling event

- **Land Use** – Rangeland
- **Soil Type (USCS)** – SP
- **Potential Receptors within ¼ mile** – Surface water within 1000 ft
- **Inferred Groundwater Gradient (Ft/Ft) and Flow Direction** – 0.004 ft/ft north
- **Average Depth to Groundwater** – 3.51 feet (3 to 4 feet)
- **Impacted Media and Extent** – Groundwater, soil
- **LNAPL Present** – No
- **Points of Compliance** – Yes, in all cardinal and ordinal directions
- **Number of Consecutive ECMC Compliant Quarters** – Zero
- **Remediation Type** – MNA
- **Remediation System Operation Date(s)** – NA

### Contaminants of Concern (COC)

The laboratory data indicate that the dissolved phase organic constituents were below their respective ECMC Table 915-1 standards in 13 of 14 wells sampled during the November 2024 quarterly monitoring event. One monitoring well exceeded the ECMC Table 915-1 standard of 5 µg/L for benzene. The groundwater analytical data are summarized in Table 1 and illustrated on Figure 4. A copy of the laboratory's report, quality control data, and chain-of-custody documentation are included separately.



## Remedial Actions

Monitored natural attenuation (MNA) will be implemented at the site to address dissolved phase groundwater impacts. A no further action designation will be requested from the ECMC following observation of four consecutive quarters of groundwater compliant with the applicable ECMC Table 915-1 standards, under static conditions, at the site. The Q4 2024 sampling event marks zero consecutive quarters of ECMC-compliant groundwater at the site. A solar-powered air sparge (AS) remediation system is being considered to address residual hydrocarbon impacts in the soil and groundwater if concentrations of Table 915-1 organic compounds rebound and do not naturally attenuate. The proposed remediation system layout can be found in attached Figure 5.

## 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.

Please contact me at (970) 213-7488 if you require any additional information.

Fremont appreciates the opportunity to provide this service.

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




12/31/2024

Date \_\_\_\_\_

Chris Lattes

Consultant

Reviewed by:



12/31/2024

Date \_\_\_\_\_

Ethan D. Black, PG  
Geologist

Attachments:

- Tables
- Figures

TABLE 1  
SUMMARY OF GROUNDWATER ELEVATION DATA AND ORGANIC CHEMISTRY DATA  
NOBLE 100322  
HSR FISCHER 6-23, WELD COUNTY, COLORADO  
REM # 34710

Sample ID	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	Naphthalene (µg/L)	1,2,4-Trimethyl-Benzene (µg/L)	1,3,5-Trimethyl-Benzene (µg/L)	TOC Elevation (ft)	Depth to Groundwater Below TOC (ft)	Depth to Groundwater Below Ground Surface (ft)	Groundwater Elevation (ft)	LNAPL Thickness (ft)
ECMC Table 915-1 Limits		5.0	560	700	1400	140	67	67					
GW01	01/19/24	190	<1.0	5.8	68	5.8	94	57	NA	NA	~4	NA	<0.1
MW-1	01/29/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	96.78	3.24	NM	93.54	NP
MW-1R	05/02/24	<1.00	<1.00	<1.00	<1.00	<2.00	<2.00	<2.00	99.97	2.95	NM	97.02	NP
	08/13/24	<1.00	<1.00	<1.00	<1.00	<2.00	<2.00	<2.00		4.00	NM	95.97	NP
	11/20/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0		3.73	NM	96.24	NP
MW-2	01/29/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	96.45	2.86	NM	93.59	NP
MW-2R	05/02/24	<1.00	<1.00	<1.00	<1.00	<2.00	<2.00	<2.00	99.59	2.54	NM	97.05	NP
	08/13/24	<1.00	<1.00	<1.00	<1.00	<2.00	<2.00	<2.00		4.00	NM	95.59	NP
	11/20/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0		3.28	NM	96.31	NP
MW-3	01/29/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	96.58	2.97	NM	93.61	NP
MW-3R	05/02/24	<1.00	<1.00	<1.00	<1.00	<2.00	<2.00	<2.00	99.67	2.55	NM	97.12	NP
	08/13/24	<1.00	<1.00	<1.00	<1.00	<2.00	<2.00	<2.00		4.05	NM	95.62	NP
	11/20/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0		3.32	NM	96.35	NP
MW-4	01/29/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	96.47	2.91	NM	93.56	NP
MW-4R	05/02/24	9.21	<1.00	7.32	81.4	<2.00	18.3	10.3	99.73	2.70	NM	97.03	NP
	08/13/24	77.2	<1.00	8.73	133	4.28	43.6	27.4		4.18	NM	95.55	NP
	11/20/24	59	<1.0	11	29	<1.0	29	1.9		3.45	NM	96.28	NP
MW-5	01/29/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	99.66	5.96	NM	93.70	NP
MW-5R	05/02/24	<1.00	<1.00	<1.00	<1.00	<2.00	<2.00	<2.00	99.88	3.86	NM	96.02	NP
	08/13/24	<1.00	<1.00	<1.00	<1.00	<2.00	<2.00	<2.00		4.14	NM	95.74	NP
	11/20/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0		3.44	NM	96.44	NP
MW-6	01/29/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	99.34	5.80	NM	93.54	NP
MW-6R	05/02/24	<1.00	<1.00	<1.00	<1.00	<2.00	2.41	<2.00	99.76	2.77	NM	96.99	NP
	08/13/24	<1.00	<1.00	<1.00	<1.00	<2.00	<2.00	<2.00		4.31	NM	95.45	NP
	11/20/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0		3.55	NM	96.21	NP
MW-7	01/29/24	3500	<1.0	550	5600	94	790	430	99.69	6.14	NM	93.55	NP

Sample ID	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	Naphthalene (µg/L)	1,2,4-Trimethyl-Benzene (µg/L)	1,3,5-Trimethyl-Benzene (µg/L)	TOC Elevation (ft)	Depth to Groundwater Below TOC (ft)	Depth to Groundwater Below Surface (ft)	Groundwater Elevation (ft)	LNAPL Thickness (ft)
ECMC Table 915-1 Limits		5.0	560	700	1400	140	67	67					
MW-7R	05/02/24	46.7	<1.00	13.7	175	<2.00	28.4	18.8	99.65	2.62	NM	97.03	NP
	08/13/24	399	<1.00	13.0	94.7	2.48	46.7	10.9		4.14	NM	95.51	NP
	11/20/24	<1.0	<1.0	1.2	6.6	<1.0	1.9	<1.0		3.38	NM	96.27	NP
MW-8	01/29/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	99.21	5.77	NM	93.44	NP
MW-8R	05/02/24	<1.00	<1.00	<1.00	<1.00	<2.00	<2.00	<2.00	99.74	2.90	NM	96.84	NP
	08/13/24	<1.00	<1.00	<1.00	<1.00	<2.00	<2.00	<2.00		4.37	NM	95.37	NP
	11/20/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0		3.63	NM	96.11	NP
MW-9	01/29/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	99.78	6.46	NM	93.32	NP
MW-9R	05/02/24	<1.00	<1.00	<1.00	<1.00	<2.00	<2.00	<2.00	NF	3.17	NM	NM	NP
	08/13/24	<1.00	<1.00	<1.00	<1.00	<2.00	<2.00	<2.00		4.75	NM	NM	NP
	11/20/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0		3.97	NM	NM	NP
MW-10	01/29/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	99.82	6.52	NM	93.30	NP
MW-10R	05/02/24	<1.00	<1.00	<1.00	<1.00	<2.00	<2.00	<2.00	100.00	3.25	NM	96.75	NP
	08/13/24	<1.00	<1.00	<1.00	<1.00	<2.00	<2.00	<2.00		4.77	NM	95.23	NP
	11/20/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0		4.03	NM	95.97	NP
MW-11	01/29/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	98.87	5.39	NM	93.48	NP
MW-11R	05/02/24	<1.00	<1.00	<1.00	<1.00	<2.00	<2.00	<2.00	99.39	2.45	NM	96.94	NP
	08/13/24	<1.00	<1.00	<1.00	<1.00	<2.00	<2.00	<2.00		4.02	NM	95.37	NP
	11/20/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0		3.20	NM	96.19	NP
MW-12	01/29/24	<1.0	<1.0	<1.0	10	<1.0	<1.0	<1.0	96.61	3.03	NM	93.58	NP
MW-12R	05/02/24	<1.00	<1.00	<1.00	<1.00	<2.00	<2.00	<2.00	99.81	2.75	NM	97.06	NP
	08/13/24	<1.00	<1.00	<1.00	<1.00	<2.00	<2.00	<2.00		4.23	NM	95.58	NP
	11/20/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0		3.49	NM	96.32	NP
MW-13	01/29/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	99.11	5.64	NM	93.47	NP
MW-13R	05/02/24	<1.00	<1.00	<1.00	<1.00	<2.00	<2.00	<2.00	99.46	2.57	NM	96.89	NP
	08/13/24	<1.00	<1.00	<1.00	<1.00	<2.00	<2.00	<2.00		4.05	NM	95.41	NP
	11/20/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0		3.36	NM	96.10	NP
MW-14	01/29/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	100.00	6.52	NM	93.48	NP
MW-14R	05/02/24	<1.00	<1.00	<1.00	<1.00	<2.00	<2.00	<2.00	99.54	2.56	NM	96.98	NP
	08/13/24	<1.00	<1.00	<1.00	<1.00	<2.00	<2.00	<2.00		4.12	NM	95.42	NP

Sample ID	Sample Date	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	Naphthalene (µg/L)	1,2,4-Trimethyl-Benzene (µg/L)	1,3,5-Trimethyl-Benzene (µg/L)	TOC Elevation (ft)	Depth to Groundwater Below TOC (ft)	Depth to Groundwater Below Ground Surface (ft)	Groundwater Elevation (ft)	LNAPL Thickness (ft)
ECMC Table 915-1 Limits		5.0	560	700	1400	140	67	67					
MW-14R	11/20/24	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	99.54	3.35	NM	96.19	NP

1. Bold values exceed the ECMC limit(s)

2. Red highlighted groundwater analytical values indicate a regulatory exceedance

NP - No measurable LNAPL, NA - Not Analyzed, NL - No Limit, INA - Inaccessible, IW - Insufficient Water, DES - Destroyed

**TABLE 2**  
**SUMMARY OF INORGANIC GROUNDWATER CHEMISTRY DATA**  
**NOBLE 100322**  
**HSR FISCHER 6-23, WELD COUNTY, COLORADO**  
**REM # 34710**

Sample ID	Sample Date	Total Dissolved Solids (mg/L)	Chloride Ion (mg/L)	Sulfate Ion (mg/L)
ECMC Table 915-1 Limits*		<1.25 x local background	250 or <1.25 x local background	250 or <1.25 x local background
GW01	01/19/24	1800	381	241
MW-1	01/29/24	2570	435	942
MW-1R	05/02/24	2410	468	1100
	08/13/24	2490	413	833
	11/20/24	2530	431	974
MW-2	01/29/24	2400	411	929
MW-2R	05/02/24	2260	434	998
	08/13/24	2430	389	810
	11/20/24	2130	375	776
MW-3	01/29/24	3310	554	1390
MW-3R	05/02/24	3190	542	1440
	08/13/24	3220	493	1150
	11/20/24	2550	397	1020
MW-4	01/29/24	2270	406	830
MW-4R	05/02/24	2380	443	1100
	08/13/24	2120	380	713
	11/20/24	2090	368	758
MW-5	01/29/24	2180	393	775
MW-5R	05/02/24	1840	362	838

Sample ID	Sample Date	Total Dissolved Solids (mg/L)	Chloride Ion (mg/L)	Sulfate Ion (mg/L)
ECMC Table 915-1 Limits*		<1.25 x local background	250 or <1.25 x local background	250 or <1.25 x local background
MW-5R	08/13/24	2510	403	823
	11/20/24	3300	452	1790
MW-6	01/29/24	2450	451	928
MW-6R	05/02/24	2520	494	1150
	08/13/24	2370	444	574
	11/20/24	2090	385	801
MW-7	01/29/24	2170	409	409
MW-7R	05/02/24	2360	467	948
	08/13/24	2220	430	391
	11/20/24	2680	553	571
MW-8	01/29/24	2110	394	838
MW-8R	05/02/24	2260	432	1050
	08/13/24	2270	380	785
	11/20/24	2150	390	858
MW-9	01/29/24	1930	340	701
MW-9R	05/02/24	1940	392	800
	08/13/24	1980	337	610
	11/20/24	2020	375	713
MW-10	01/29/24	2160	367	694
MW-10R	05/02/24	2120	386	814
	08/13/24	2060	356	635
	11/20/24	1760	338	648
MW-11	01/29/24	2380	430	462

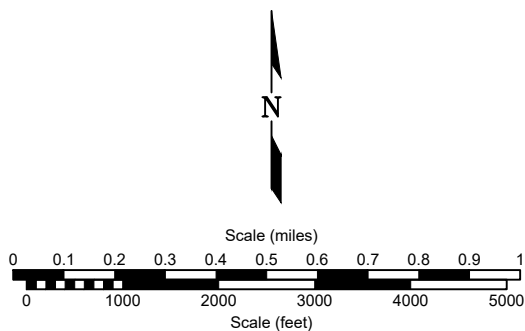
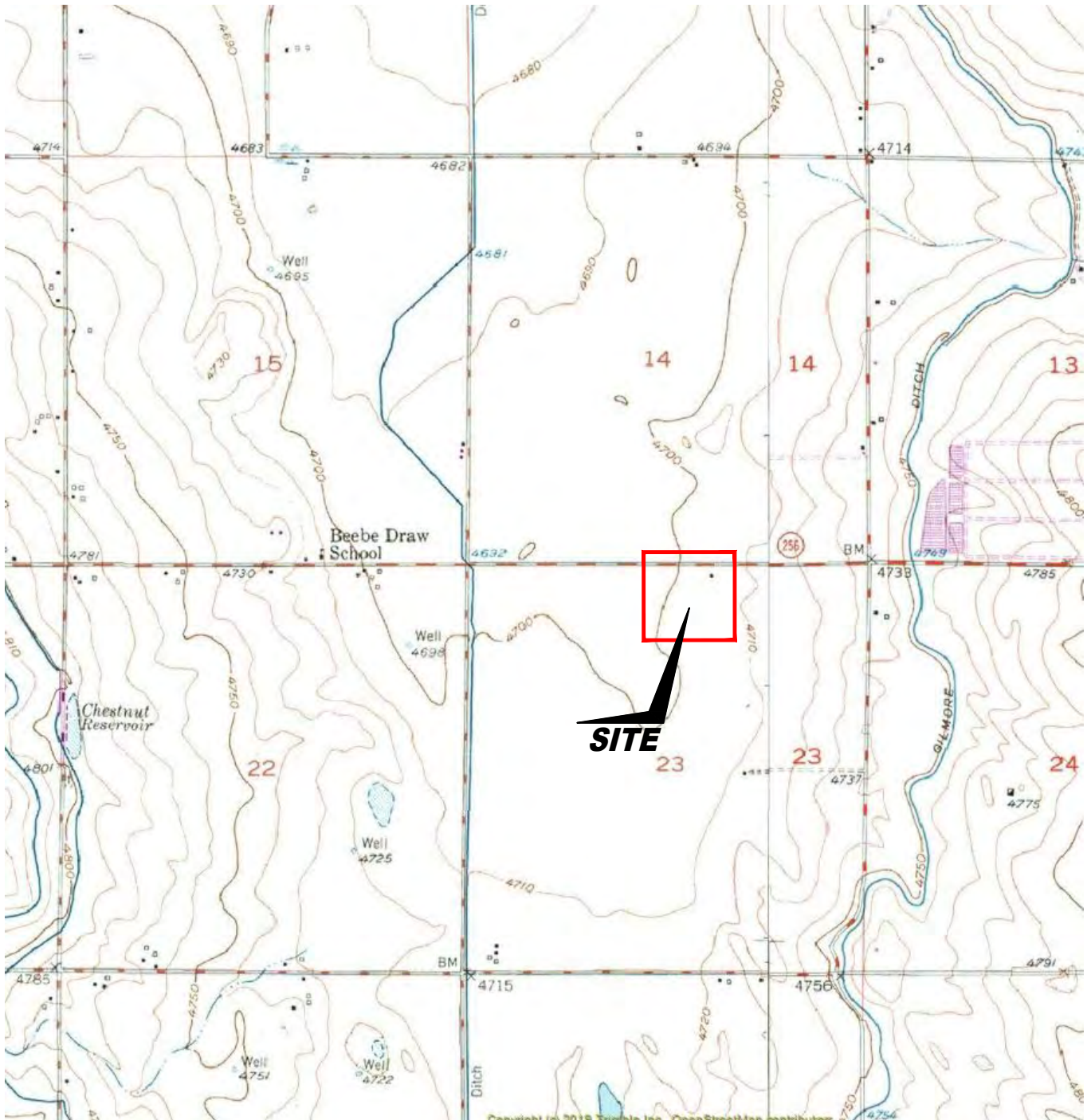
Sample ID	Sample Date	Total Dissolved Solids (mg/L)	Chloride Ion (mg/L)	Sulfate Ion (mg/L)
ECMC Table 915-1 Limits*		<1.25 x local background	250 or <1.25 x local background	250 or <1.25 x local background
MW-11R	05/02/24	2610	584	890
	08/13/24	2280	420	430
	11/20/24	1970	252	814
MW-12	01/29/24	2230	411	840
MW-12R	05/02/24	2240	421	995
	08/13/24	2430	379	827
	11/20/24	2160	388	910
MW-13	01/29/24	2910	517	1090
MW-13R	05/02/24	2640	474	1170
	08/13/24	3030	475	1000
	11/20/24	2280	388	862
MW-14	01/29/24	2140	400	778
MW-14R	05/02/24	2220	448	1070
	08/13/24	2270	385	756
	11/20/24	2250	385	806
Background Concentration (Current)		4125	565	2237.5

1. Bold values exceed the ECMC limit(s)

2. Blue highlighted groundwater analytical values indicate a regulatory exceedance

NP - No measurable LNAPL, NA - Not Analyzed, INA - Inaccessible, IW - Insufficient Water, DES - Destroyed

MW-5R is used as upgradient/cross gradient well



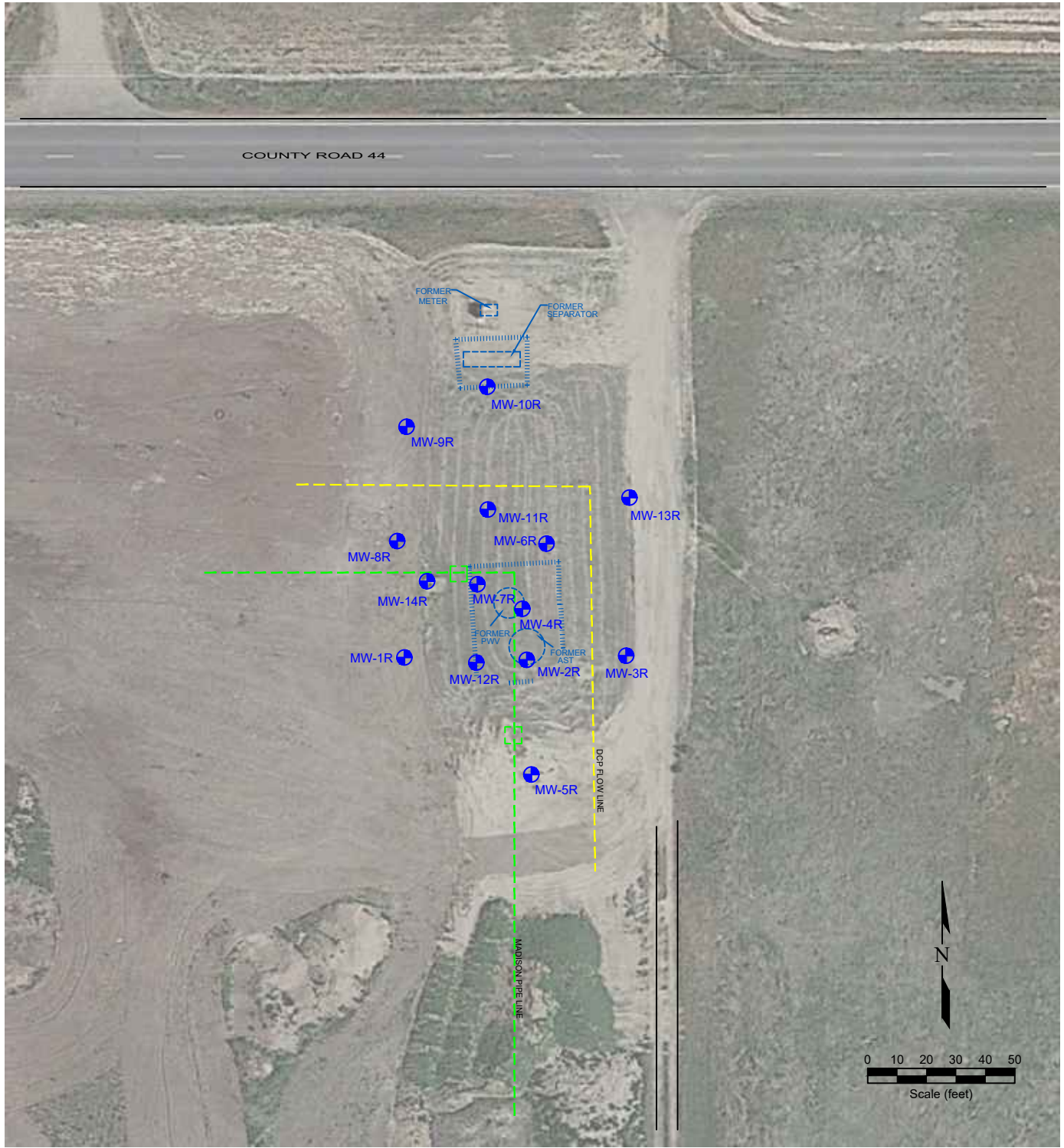
USGS 7.5 MINUTE SERIES (TOPOGRAPHIC)

Figure 1  
SITE LOCATION MAP

Noble Energy, Inc. ~ HSR Fisher 6-23  
NWNE, Sec 23, T4N, R65W, 6th P.M.  
Weld County, Colorado  
40.30500 ° -104.630639 °

Project No. <b>CO24-016</b>	API #	Facility # <b>309888</b>
Date <b>12/12/24</b>	Remediation #	Filename <b>24016T</b>





**LEGEND**

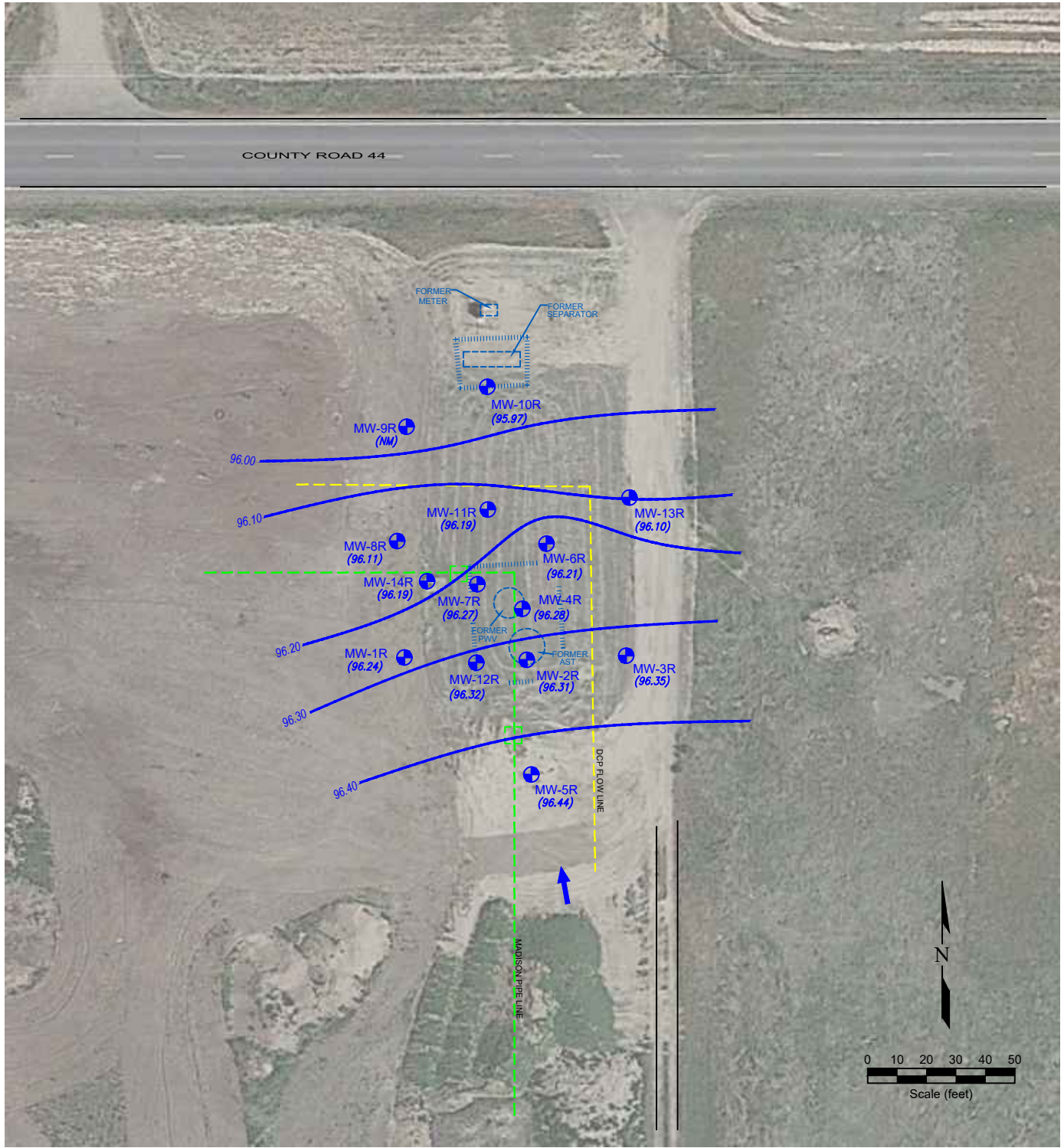
- MONITORING WELL
- ABOVE GROUND STORAGE TANK
- FORMER FACILITY
- DCP FLOW LINE
- MADISON PIPE LINE
- FENCE LINE
- CONTAINMENT BERM
- CONTAINMENT WALL

Figure 2  
**SITE MAP**

**Noble Energy, Inc. ~ HSR Fischer 6-23**  
 NWNE, Sec 23, T4N, R65W, 6th P.M.  
 Weld County, Colorado  
 40.30500 ° -104.630639 °

Project No. <b>CO24-016</b>	API #	Facility # <b>309888</b>
Date <b>12/12/24</b>	Remediation # <b>34710</b>	Filename <b>24016Q</b>





**LEGEND**

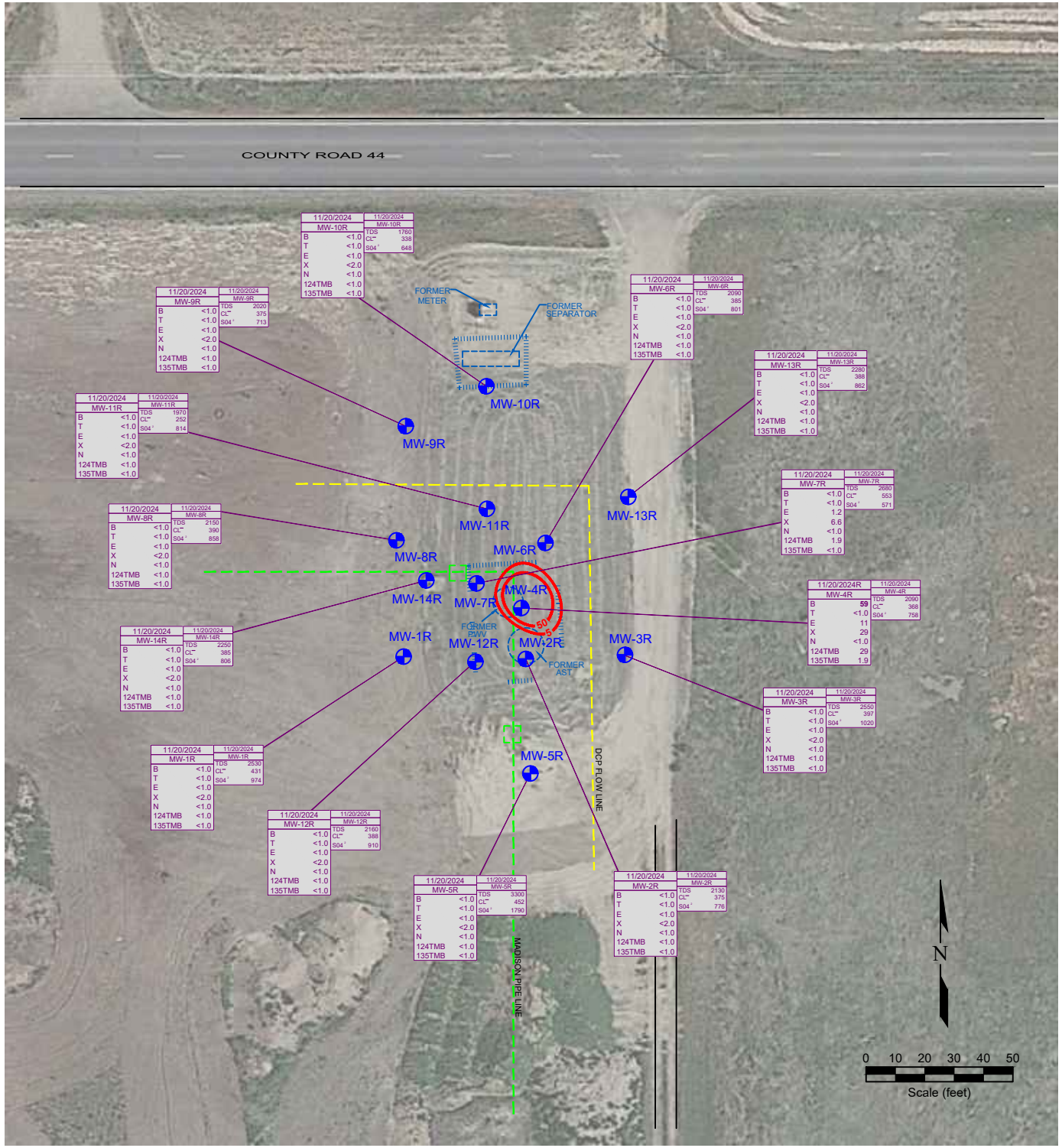
- MONITORING WELL
- AST ABOVE GROUND STORAGE TANK
- FORMER FORMER FACILITY
- DCP FLOW LINE
- MADISON PIPE LINE
- FENCE LINE
- CONTAINMENT BERM
- CONTAINMENT WALL
- (97.74) GROUND WATER ELEVATION (ft above arbitrary datum)
- (NW) NOT MEASURED
- 96.40 WATER TABLE CONTOUR
- GROUND WATER FLOW DIRECTION

Figure 3  
**INFERRED GROUNDWATER CONTOUR MAP**  
 November 20, 2024

**Noble Energy, Inc. ~ HSR Fischer 6-23**  
 NWNE, Sec 23, T4N, R65W, 6th P.M.  
 Weld County, Colorado  
 40.30500 ° -104.630639 °

Project No. <b>CO24-016</b>	API #	Facility # <b>309888</b>
Date <b>12/12/24</b>	Remediation # <b>34710</b>	Filename <b>24016Q</b>





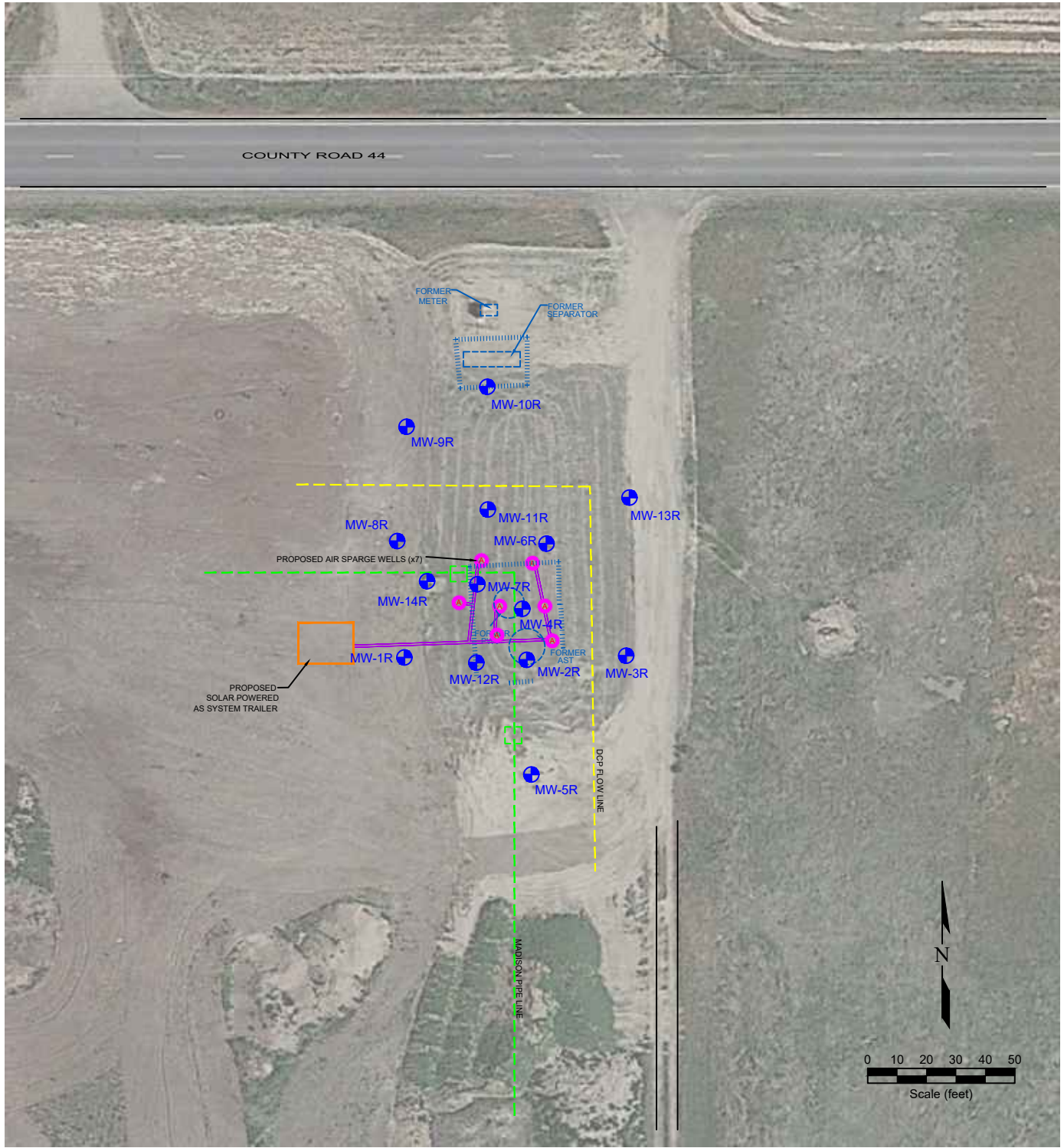
**LEGEND**

- MONITORING WELL
- AST ABOVE GROUND STORAGE TANK
- FORMER FORMER FACILITY
- DCP FLOW LINE
- MADISON PIPE LINE
- FENCE LINE
- CONTAINMENT BERM
- CONTAINMENT WALL

11/20/2024	DATE SAMPLED	11/20/2024	DATE SAMPLED
MW-1	SAMPLE ID	MW-1	SAMPLE ID
B	BENZENE (ug/L)	TDS	TOTAL DISSOLVED SOLIDS (mg/L)
T	TOLUENE (ug/L)	CL <sup>-</sup>	CHLORIDE ION (mg/L)
E	ETHYLBENZENE (ug/L)	S04 <sup>-2</sup>	SULFATE ION (mg/L)
X	TOTAL XYLENES (ug/L)		
N	NAPHTHALENE (ug/L)		
124TMB	1,2,4-TRIMETHYLBENZENE (ug/L)		
135TMB	1,3,5-TRIMETHYLBENZENE (ug/L)		

**Figure 4**  
**GROUNDWATER CHEMISTRY WITH**  
**BENZENE ISO-CONCENTRATION MAP**  
**Noble Energy, Inc. ~ HSR Fischer 6-23**  
**NWNE, Sec 23, T4N, R65W, 6th P.M.**  
**Weld County, Colorado**  
**40.30500° -104.630639°**

Project No. <b>CO24-016</b>	API #	Facility # <b>309888</b>	
Date <b>12/12/24</b>	Remediation # <b>34710</b>	Filename <b>24016Q</b>	



**LEGEND**

- MONITORING WELL
- ⊕ ABOVE GROUND STORAGE TANK
- ⊕ PROPOSED AIR SPARGE WELL
- FORMER FACILITY
- SOLAR POWERED AS SYSTEM TRAILER
- DCP FLOW LINE
- MADISON PIPE LINE
- FENCE LINE
- CONTAINMENT BERM
- CONTAINMENT WALL
- PROPOSED SYSTEM TRENCH

**Figure 5  
PROPOSED AS SYSTEM LAYOUT MAP**

**Noble Energy, Inc. ~ HSR Fischer 6-23**  
 NWNE, Sec 23, T4N, R65W, 6th P.M.  
 Weld County, Colorado  
 40.30500 ° -104.630639 °

Project No. <b>CO24-016</b>	API #	Facility # <b>309888</b>
Date <b>12/12/24</b>	Remediation # <b>34710</b>	Filename <b>24016Q</b>

