

FREMONT ENVIRONMENTAL INC.

December 4, 2021

Mr. Jacob Evans
Noble Energy Inc.
2115 117th Ave,
Greeley, CO 80634

Subject: **Site Investigation Report**
Harper Kona Pipeline Release
NESW Sec 21, T6N, R64W
Weld County, Colorado
Fremont Project No. C021-074
Facility # 449370, Spill #480529

Dear Mr. Evans:

Enclosed please find a copy of the above referenced Site Investigation Report for the Harper Kona pipeline release site in Weld County, Colorado. The enclosed report describes site investigation and sampling efforts to assess soil and groundwater quality at the site.

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.



Paul V. Henehan, P.E.
Senior Consultant

Enclosure

SITE INVESTIGATION REPORT
NOBLE ENERGY INC.
HARPER KONA PIPELINE
WELD COUNTY, COLORADO
FREMONT PROJECT NO. C021-074
FACILITY #449370, SPILL #480529

Prepared by:

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

December 4, 2021

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SITE INVESTIGATION REPORT
NOBLE ENERGY INC.
HARPER KONA PIPELINE
WELD COUNTY, COLORADO
FREMONT PROJECT NO. C021-074
FACILITY #449370, SPILL #480529

1.0 INTRODUCTION

The purpose of this document is to present information collected during a site investigation at the Harper Kona pipeline release location in Weld County, Colorado. Impacted groundwater was identified at this location due to a release from the pipeline. Ten monitoring wells were installed at this site on October 29, 2021 to delineate the magnitude and extent of subsurface impacts.

2.0 BACKGROUND INFORMATION

2.1 Site Location

The Harper Kona Pipeline release site is located approximately 1.5 miles northwest of Gill, Colorado in Weld County as shown on Figure 1. The site is in a rural area approximately 0.9 miles southwest of the intersection of State Hwy 392 and County Road 55. The location is further described as the NE $\frac{1}{4}$ of the SW $\frac{1}{4}$ of Section 21, Township 6N, Range 64W.

2.2 Site History

The site consists of the active Harper Kona Pipeline. A release from the Harper Kona Pipeline was discovered when approximately 491 bbls of oil and produced water surfaced adjacent to the pipeline. Initial actions to stop and contain the release included isolating the pipeline, placing absorbent socks on the spill margin and hydro-vacuuming (hydrovacing) standing liquids at ground surface. Soil impacts were present

aboveground as well as directly beneath and adjacent to the pipeline leak; this prompted the immediate excavation of the spill area. During August and September 2021, approximately 13,946 tons (10,738 cubic yards) of impacted soil were removed from the site. During the excavation work, groundwater was encountered in two locations. One of these two samples exceeded the Colorado Oil and Gas Conservation Commission's (COGCC's) Table 915-1 standard for benzene with a concentration of 8.9 ug/L. As a result, a site investigation to determine the extent of subsurface impacts was conducted.

3.0 SITE INVESTIGATION ACTIVITIES

3.1 Soil Borings/Monitoring Wells

A site investigation was conducted at the location on October 29, 2021. A total of 10 soil borings were advanced utilizing a Geoprobe rig. The 10 borings were completed as flush-mounted, one-inch diameter monitoring wells. These monitoring wells were intended to be used to delineate the extent of soil and groundwater impacts at the site. The locations of the monitoring wells are illustrated on the attached figures.

Generally, the subsurface is comprised of sandy silt and silty sand that extends to a depth of at least 18 feet. The maximum depth of the borings was 18 feet; refusal was encountered at depths varying from 14 to 18 feet. Groundwater was present in only 5 of the 10 wells one week after installation. Geologic cross sections illustrating the soil lithology are presented on Figure 4.

The one-inch diameter monitoring wells were constructed with 10 foot sections of well screen that were placed at a total depth of approximately 14 to 18 feet and completed at the ground surface with flush-mounted vaults. Soil samples from each of the borings

were evaluated in the field using a photoionization detector (PID). Logs of the monitoring wells are presented in Appendix A.

Soil samples were collected from each of the borings and sent to Summit Scientific, Inc. in Golden, Colorado for the analyses of BTEX, naphthalene, TPH-gasoline range organics (TPH-GRO), and TPH-diesel range organics (TPH-DRO). Soil impacts above the COGCC's Table 915-1 standards were not observed in any of the 10 borings. The soil chemistry is presented on Figure 5 and summarized on Table 1. The laboratory's report is provided in Appendix B.

3.2 Groundwater Monitoring

Groundwater levels were measured in the 10 monitoring wells on November 4, 2021. As noted above, 5 of the 10 monitoring wells did not have groundwater within them and therefore could not be measured. The data are summarized in Table 2.

Water table contours inferred from the November 2021 data are illustrated on Figure 6. Based on these data, groundwater is inferred to flow to the south. The water table gradient was calculated at approximately 0.0027 feet per foot (ft/ft) for the November 2021 data.

3.3 Groundwater Sampling and Analysis

Groundwater samples were collected from the 4 of the 10 monitoring wells on November 4, 2021. A fifth well (MW-6) had enough groundwater to obtain a depth to water measurement, but insufficient water to collect a sample. The groundwater samples were submitted to Summit Scientific, Inc. for analyses of BTEX, naphthalene, and trimethylbenzenes by EPA Method 8260B. The samples were also analyzed for total dissolved solids (TDS), chlorides and sulfates.

The groundwater concentrations for the four monitoring wells were below their respective COGCC Table 915-1 standards for petroleum constituents. Since a groundwater sample was not collected from upgradient of the release site, the background concentrations for inorganic constituents have not been established. The groundwater chemistry is shown on Figure 7. The groundwater analytical data are summarized in Tables 2 and 3. A copy of the laboratory's reports are presented in Appendix B.

4.0 DISCUSSION

A site investigation was conducted at the Harper Kona pipeline location in October and November 2021 as a result of a release from the pipeline. Ten soil borings were advanced and completed as monitoring wells to delineate the magnitude and extent of soil and groundwater impacts. Soil impacts above the COGCC Table 915-1 standards were not observed in any of the 10 soil borings/monitoring wells.


Six of the 10 monitoring wells did not have an adequate amount of groundwater to collect samples. However, based on the data collected from the monitoring wells that had adequate water, the groundwater flow direction is to the south. Further, the concentrations of petroleum constituents in the four monitoring wells did not exceed the COGCC Table 915-1 standards. The groundwater data are shown on Figure 7.

Noble will sample the groundwater at this site on a quarterly basis to evaluate the concentrations relative to the COGCC's Table 915-1 standards. Inorganic constituents will be sampled and analyzed for one additional quarter. In addition, dissolved barium will be analyzed in all groundwater samples during the next sampling event. After four consecutive quarters of COGCC-compliant concentrations, Noble will request closure of this site.

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.**



12/4/21

Date _____

Ethan D. Black

Geologist

Reviewed by:



12/4/21

Date _____

Paul V. Henehan, P.E.

Senior Consultant

TABLES

TABLE 1
SUMMARY OF VOLATILE ORGANIC SOIL CHEMISTRY DATA
NOBLE ENERGY INC
HARPER KONA PIPELINE, WELD COUNTY, COLORADO
FREMONT PROJECT NO. C021-074

Sample	Depth (ft)	Date Sampled	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)
MW-1 8 Ft	8	10/29/2021	<0.002	<0.005	<0.005	<0.010	<0.005	<0.005	<0.0038	<0.50	<50	<50
MW-2 8 Ft	8	10/29/2021	<0.002	<0.005	<0.005	<0.010	<0.005	<0.005	<0.0038	<0.50	<50	<50
MW-3 8 Ft	8	10/29/2021	<0.002	<0.005	<0.005	<0.010	<0.005	<0.005	<0.0038	<0.50	<50	<50
MW-4 8 Ft	8	10/29/2021	<0.002	<0.005	<0.005	<0.010	<0.005	<0.005	<0.0038	<0.50	<50	<50
MW-5 8 Ft	8	10/29/2021	<0.002	<0.005	<0.005	<0.010	<0.005	<0.005	<0.0038	<0.50	<50	<50
MW-6 8 Ft	8	10/29/2021	<0.002	<0.005	<0.005	<0.010	<0.005	<0.005	<0.0038	<0.50	<50	<50
MW-7 8 Ft	8	10/29/2021	<0.002	<0.005	<0.005	<0.010	<0.005	<0.005	<0.0038	<0.50	<50	<50
MW-8 8 Ft	8	10/29/2021	<0.002	<0.005	<0.005	<0.010	<0.005	<0.005	<0.0038	<0.50	<50	<50
MW-9 8 Ft	8	10/29/2021	<0.002	<0.005	<0.005	<0.010	<0.005	<0.005	<0.0038	<0.50	<50	<50
MW-10 8 Ft	8	10/29/2021	<0.002	<0.005	<0.005	<0.010	<0.005	<0.005	<0.0038	<0.50	<50	<50
COGCC Table 915-1 Limits (Residential SSL)			1.2	490	5.8	58	30	27	2	500	500	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*	500*	500*

Bold faced values exceed the COGCC Table 915-1 concentrations

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

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

NA - Not analyzed

**TABLE 2
SUMMARY OF ORGANIC GROUNDWATER CHEMISTRY DATA
HARPER PIPELINE
FREMONT PROJECT NO. C021-074**

SAMPLE LOCATION	DATE	BENZENE (µg/L)	TOLUENE (µg/L)	ETHYL BENZENE (µg/L)	TOTAL XYLENES (µg/L)	NAPH-THALENE (µg/L)	1,2,4 TMB (µg/L)	1,3,5 TMB (µg/L)	TOC ELEV (FT)	DTW (FT)	GW ELEV (FT)	LNAPL (FT)
MW-1	11/04/21	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	92.97	9.43	83.54	NP
MW-2	11/04/21	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	94.83	10.85	83.98	NP
MW-3	11/04/21	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	94.90	11.09	83.81	NP
MW-4	11/04/21	Dry	Dry	Dry	Dry	Dry	Dry	Dry	98.26	Dry	Dry	Dry
MW-5	11/04/21	Dry	Dry	Dry	Dry	Dry	Dry	Dry	98.39	Dry	Dry	Dry
MW-6	11/04/21	Dry	Dry	Dry	Dry	Dry	Dry	Dry	98.38	13.78	84.60	NP
MW-7	11/04/21	Dry	Dry	Dry	Dry	Dry	Dry	Dry	100.00	Dry	Dry	Dry
MW-8	11/04/21	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	95.00	11.04	83.96	NP
MW-9	11/04/21	Dry	Dry	Dry	Dry	Dry	Dry	Dry	97.91	Dry	Dry	Dry
MW-10	11/04/21	Dry	Dry	Dry	Dry	Dry	Dry	Dry	98.66	Dry	Dry	Dry
Table 915-1 Limits		5	560	700	1,400	140	67	67				

Bold face values exceed the COGCC limits

NP - No Free Product

**TABLE 3
SUMMARY OF INORGANIC GROUNDWATER CHEMISTRY DATA
HARPER PIPELINE
FREMONT PROJECT NO. C021-074**

SAMPLE LOCATION	DATE	TDS (mg/L)	CHLORIDE ION (mg/L)	SULFATE ION (mg/L)
MW-1	11/04/21	1080	55.2	899
MW-2	11/04/21	2550	187	2360
MW-3	11/04/21	2420	46.6	2360
MW-4	11/04/21	Dry	Dry	Dry
MW-5	11/04/21	Dry	Dry	Dry
MW-6	11/04/21	Dry	Dry	Dry
MW-7	11/04/21	Dry	Dry	Dry
MW-8	11/04/21	2820	106	2620
MW-9	11/04/21	Dry	Dry	Dry
MW-10	11/04/21	Dry	Dry	Dry
Table 915-1 Limits		<1.25 x local background	250 or 1.25x background	250 or 1.25x background

Bold face values exceed the COGCC limits

NA - Not Analyzed

NAP - Not Applicable

FIGURES

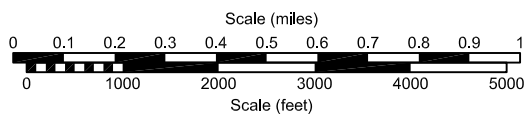
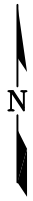
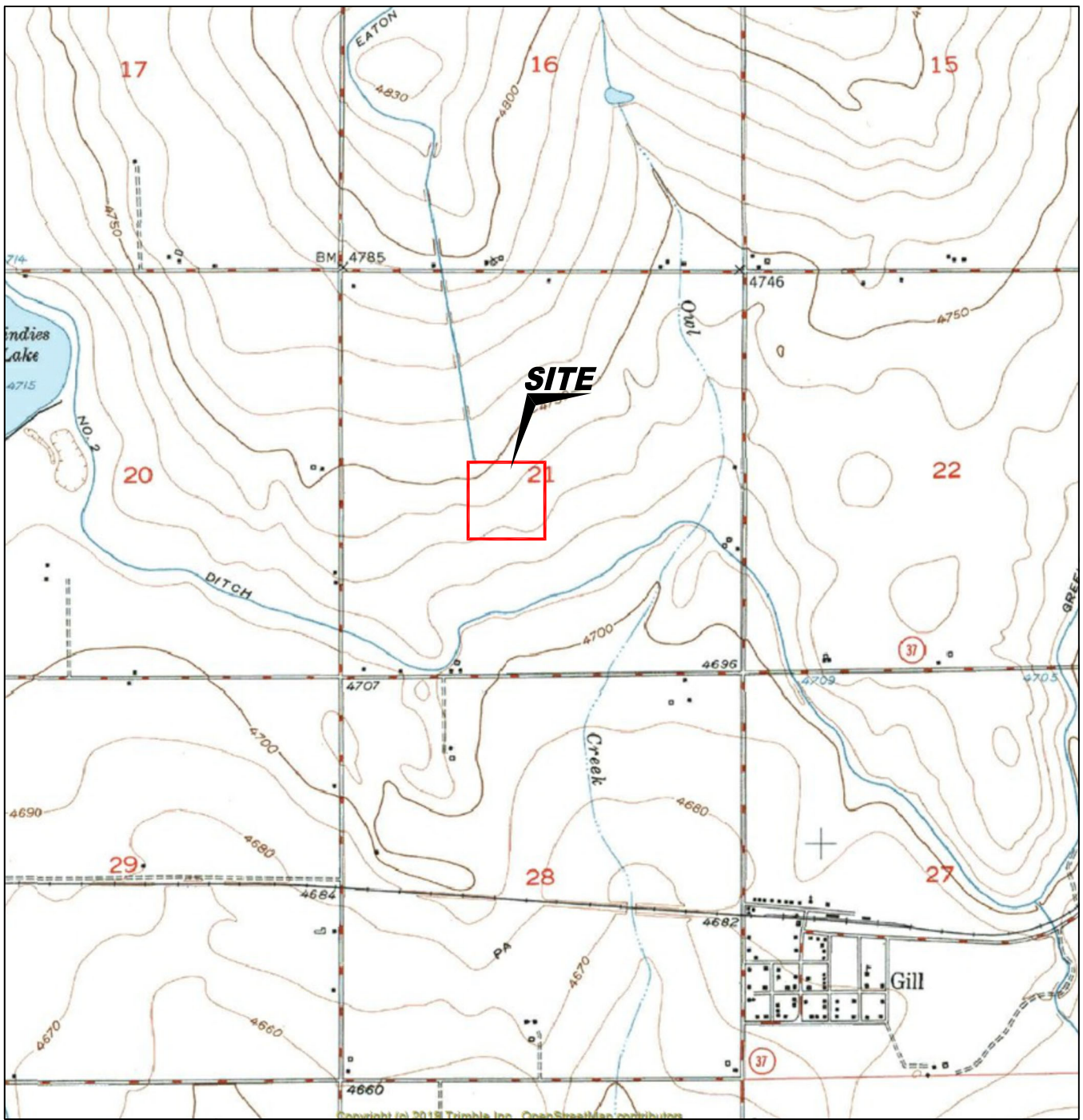
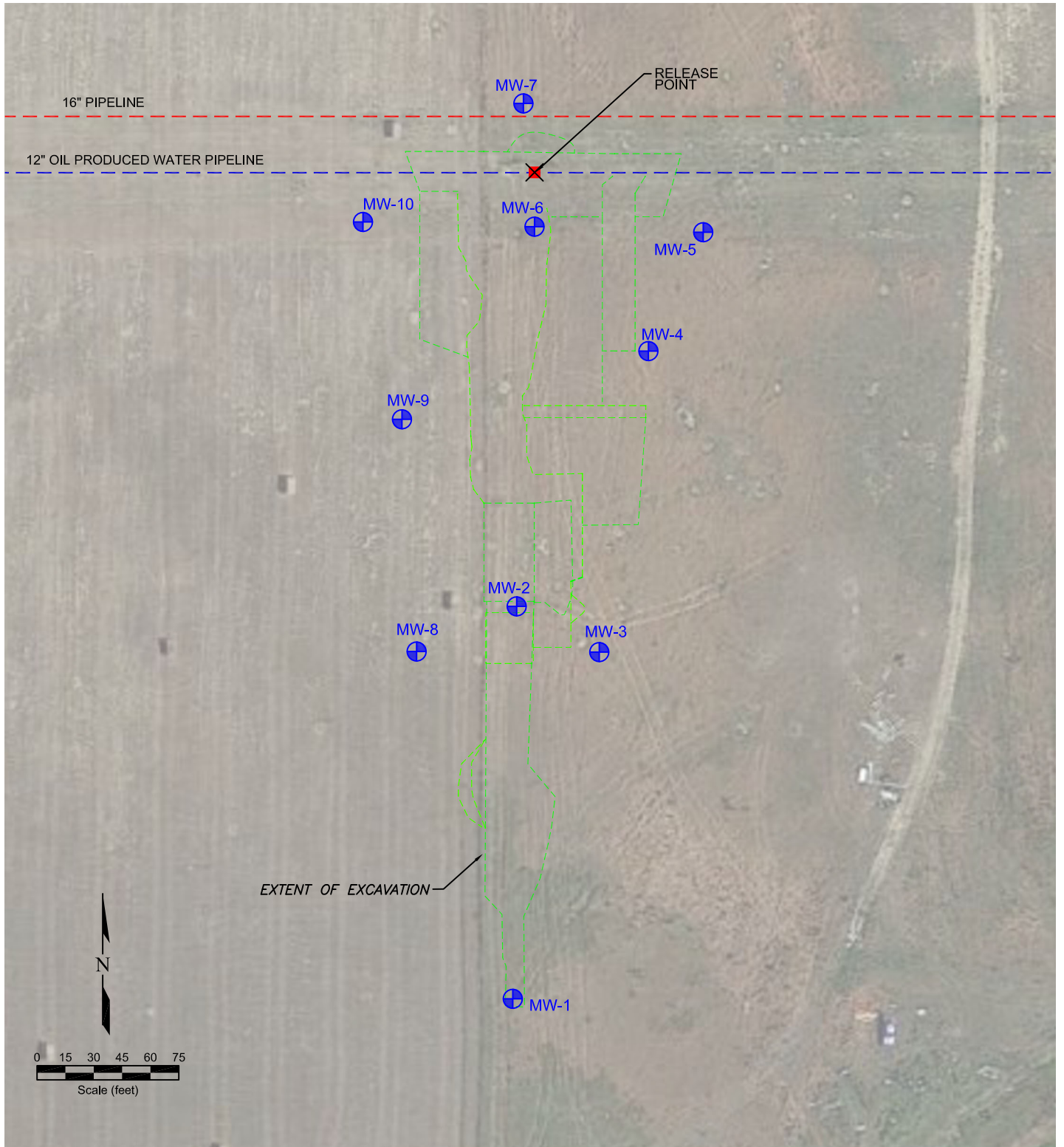


Figure 1
SITE LOCATION MAP



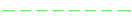



Noble Midstream, Inc.
Harper Pipeline Release
 NESW Sec. 21, T6N, R64W, 6th PM
 Weld County, Colorado

Project # C021-074	Prepared By	Drawn By TA
Date 11/19/21	Reviewed By PH	Filename 21074T





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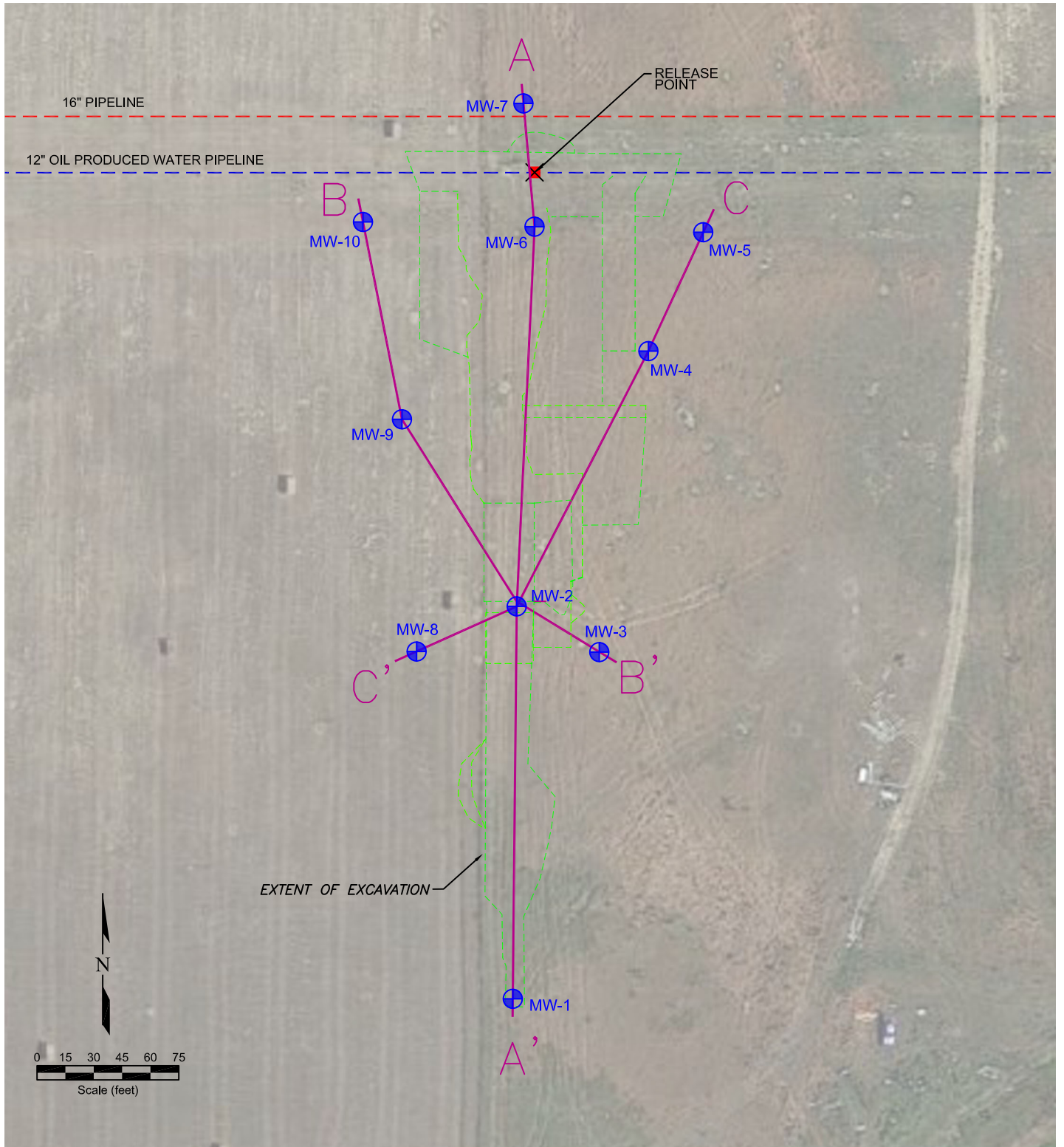
-  RELEASE POINT
-  MONITORING WELL LOCATION
-  EXTENT OF EXCAVATION
-  12" OIL PRODUCED WATER PIPELINE
-  16" PIPELINE
-  FENCE LINE

**Figure 2
SITE MAP**



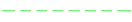




Noble Midstream, Inc.
 Harper Pipeline Release
 NESW Sec. 21, T6N, R64W, 6th PM
 Weld County, Colorado

Project No. CO21-074	Prepared by TA	Drawn by TA
Date 11/22/21	Reviewed by PH	Filename 21074QL





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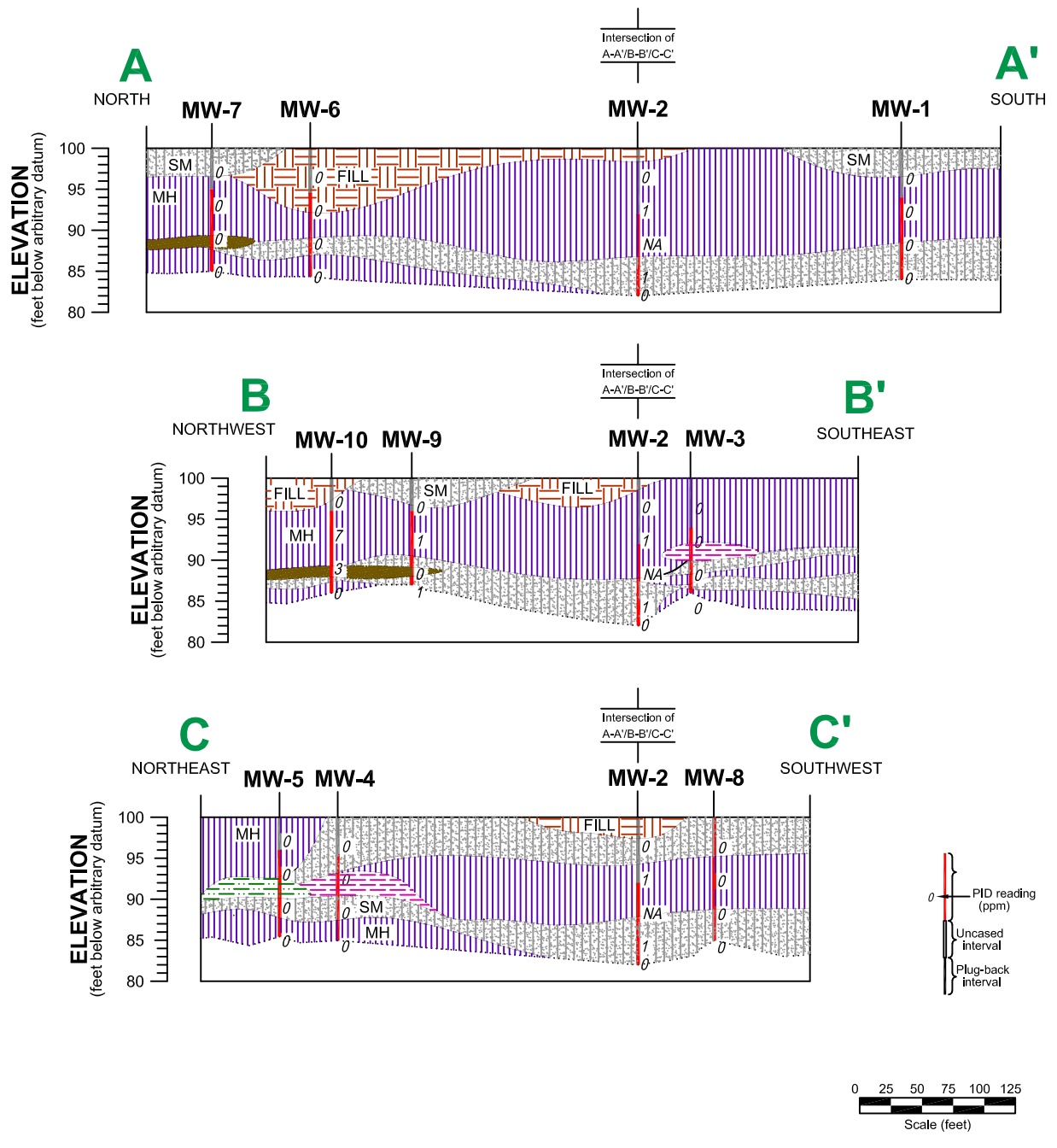
-  RELEASE POINT
-  MONITORING WELL LOCATION
-  EXTENT OF EXCAVATION
-  12" OIL PRODUCED WATER PIPELINE
-  16" PIPELINE
-  FENCE LINE
-  CROSS SECTION CUT LINE

**Figure 3
CROSS SECTION MAP**

Noble Midstream, Inc.
 Harper Pipeline Release
 NESW Sec. 21, T6N, R64W, 6th PM
 Weld County, Colorado

Project No. CO21-074	Prepared by TA	Drawn by TA
Date 11/22/21	Reviewed by PH	Filename 21074QL



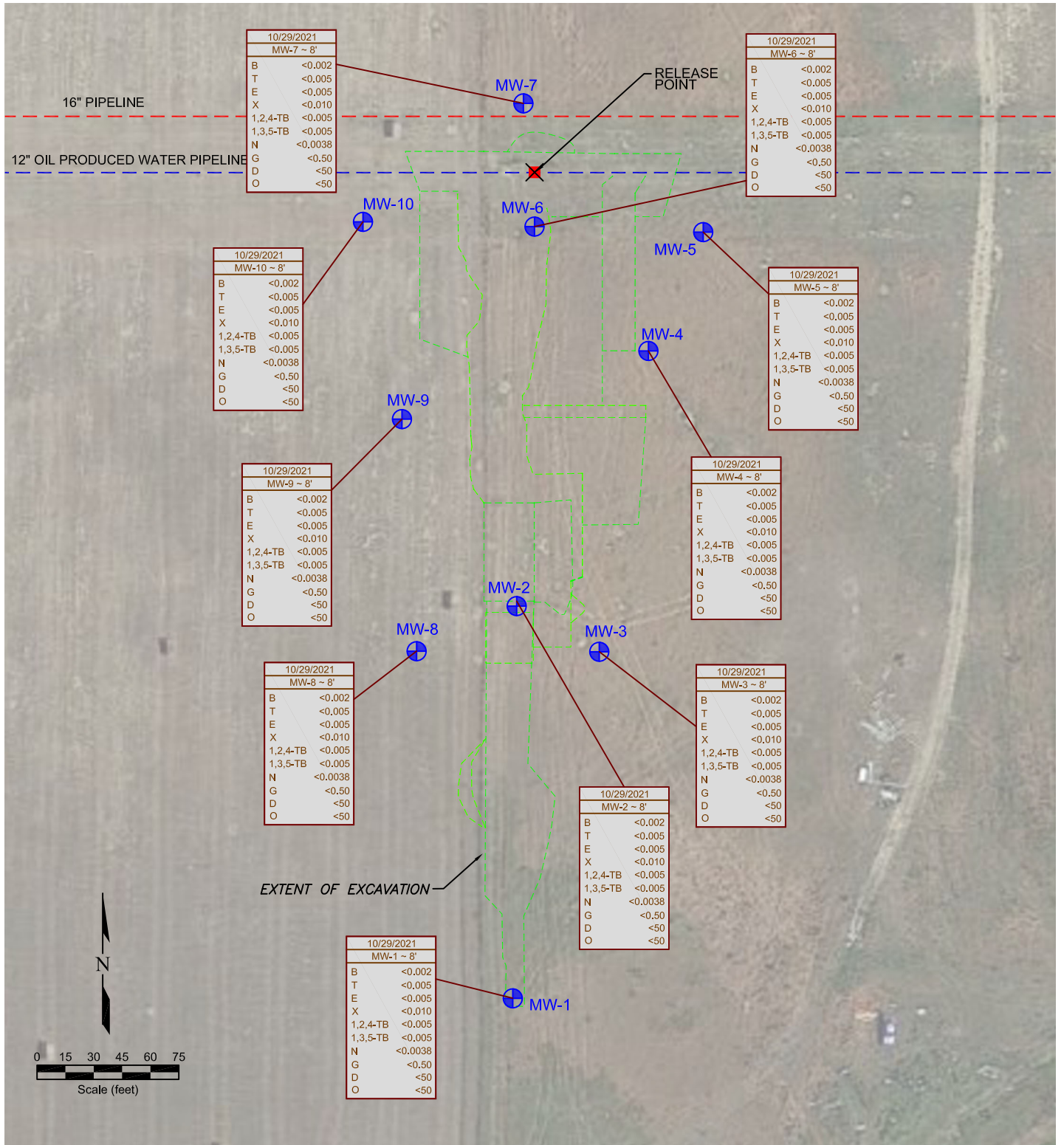


LEGEND

	Clay low plasticity		Fill		Sand silty
	Silt, high plasticity		Siltstone		Gravel, well-graded
	Shale		Sand, well-graded		

Figure 4
CROSS-SECTIONS A-A'; B-B'; C-C'
 Noble Midstream, Inc.
 Harper Pipeline Release
 NESW Sec. 21, T6N, R64W, 6th PM
 Weld County, Colorado

Project No. CO21-074	Prepared by	Drawn by TA	
Date 11/22/21	Reviewed by PH	Filename 21074X	



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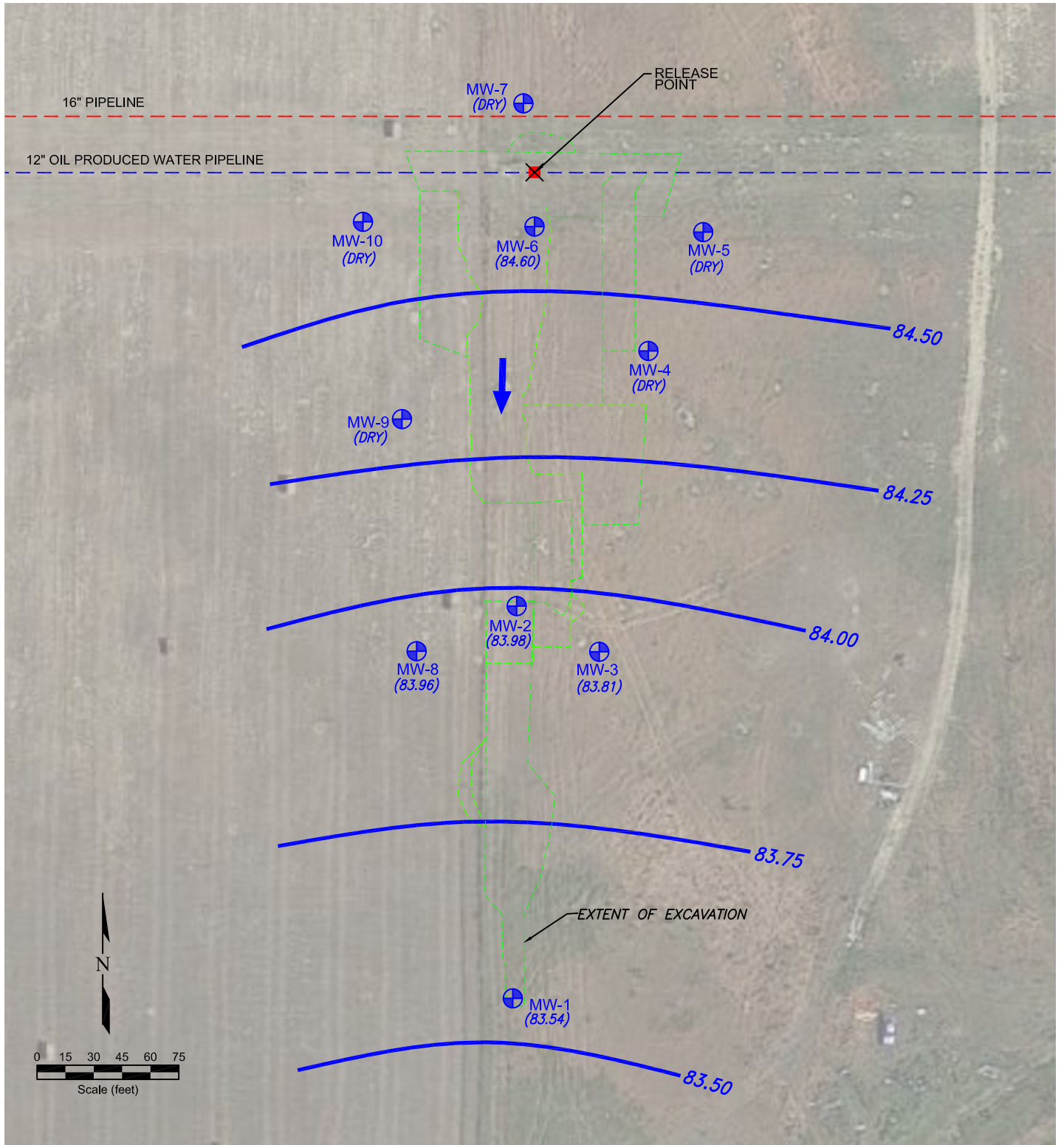
	RELEASE POINT	10/29/2021 MW-1 ~ 8'	DATE SAMPLED
	MONITORING WELL LOCATION	B	SAMPLE ID and DEPTH (ft)
	EXTENT OF EXCAVATION	T	BENZENE (mg/kg)
	12" OIL PRODUCED WATER PIPELINE	E	TOLUENE (mg/kg)
	16" PIPELINE	X	ETHYLBENZENE (mg/kg)
	FENCE LINE	1,2,4-TB	TOTAL XYLENES (mg/kg)
		1,3,5-TB	1,2,4-TRIMETHYLBENZENE (mg/kg)
		N	1,3,5-TRIMETHYLBENZENE (mg/kg)
		G	NAPHTHALENE (mg/kg)
		D	TPH-GRO (mg/kg)
		O	TPH-PRO (mg/kg)
			TPH-ORO (mg/kg)

**Figure 5
SOIL CHEMISTRY MAP
October 29, 2021**

**Noble Midstream, Inc.
Harper Pipeline Release
NESW Sec. 21, T6N, R64W, 6th PM
Weld County, Colorado**

Project No. CO21-074	Prepared by TA	Drawn by TA
Date 11/22/21	Reviewed by PH	Filename 21074QL





LEGEND



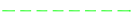







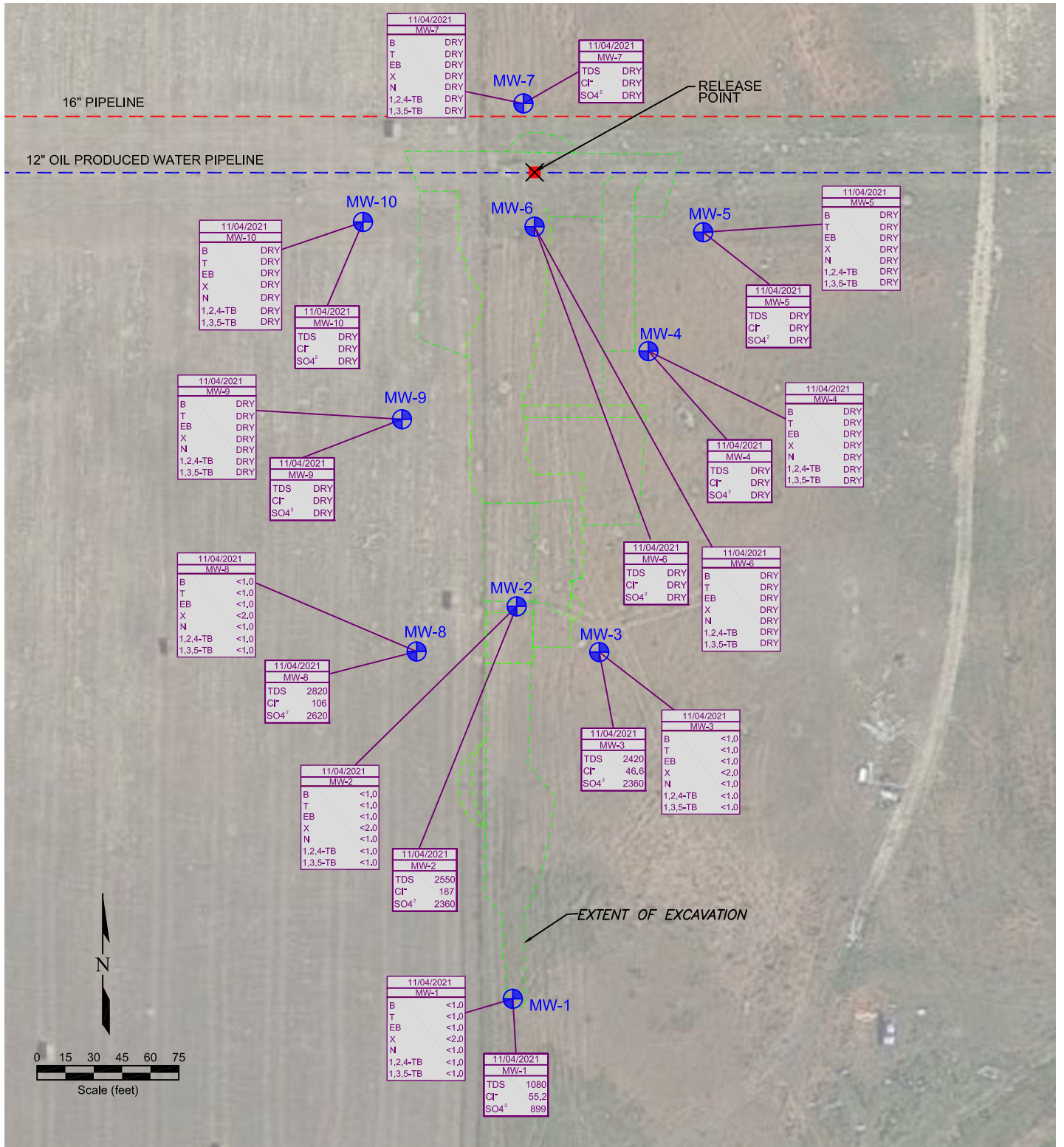
-  RELEASE POINT
-  MONITORING WELL LOCATION
-  EXTENT OF EXCAVATION
-  12" OIL PRODUCED WATER PIPELINE
-  16" PIPELINE
-  FENCE LINE
-  GROUND WATER ELEVATION (ft above arbitrary datum)
-  WATER TABLE CONTOUR
-  GROUND WATER FLOW DIRECTION
-  WATER SUPPLY NOT PRESENT

Figure 6
INFERRED GROUNDWATER CONTOUR MAP
 November 4, 2021

Noble Midstream, Inc.
 Harper Pipeline Release
 NESW Sec. 21, T6N, R64W, 6th PM
 Weld County, Colorado

Project No. CO21-074	Prepared by	Drawn by TA
Date 11/22/21	Reviewed by PH	Filename 21074QL





LEGEND

	RELEASE POINT									
	MONITORING WELL LOCATION									
	EXTENT OF EXCAVATION									
	12" OIL PRODUCED WATER PIPELINE									
	16" PIPELINE									
	FENCE LINE									
<table border="1"> <tr><th>11/04/2021</th></tr> <tr><th>MW-1</th></tr> <tr><td>TDS 1080</td></tr> <tr><td>Cl⁻ 55.2</td></tr> <tr><td>SO₄²⁻ 899</td></tr> </table>	11/04/2021	MW-1	TDS 1080	Cl ⁻ 55.2	SO ₄ ²⁻ 899	DATE SAMPLED SAMPLE ID TOTAL DISSOLVED SOLIDS (mg/L) CHLORIDE ION (mg/L) SULFATE ION (mg/L)				
11/04/2021										
MW-1										
TDS 1080										
Cl ⁻ 55.2										
SO ₄ ²⁻ 899										
	WATER SUPPLY NOT PRESENT									
<table border="1"> <tr><th>11/04/2021</th></tr> <tr><th>MW-1</th></tr> <tr><td>B <1.0</td></tr> <tr><td>T <1.0</td></tr> <tr><td>EB <1.0</td></tr> <tr><td>X <2.0</td></tr> <tr><td>N <1.0</td></tr> <tr><td>1,2,4-TB <1.0</td></tr> <tr><td>1,3,5-TB <1.0</td></tr> </table>	11/04/2021	MW-1	B <1.0	T <1.0	EB <1.0	X <2.0	N <1.0	1,2,4-TB <1.0	1,3,5-TB <1.0	DATE SAMPLED SAMPLE ID BENZENE (ug/L) TOLUENE (ug/L) ETHYLBENZENE (ug/L) TOTAL XYLENES (ug/L) NAPHTHALENE (ug/L) 1,2,4-TRIMETHYLBENZENE (ug/L) 1,3,5-TRIMETHYLBENZENE (ug/L)
11/04/2021										
MW-1										
B <1.0										
T <1.0										
EB <1.0										
X <2.0										
N <1.0										
1,2,4-TB <1.0										
1,3,5-TB <1.0										

Figure 7
GROUNDWATER CHEMISTRY MAP
November 4, 2021

Noble Midstream, Inc.
Harper Pipeline Release
NESW Sec. 21, T6N, R64W, 6th PM
Weld County, Colorado

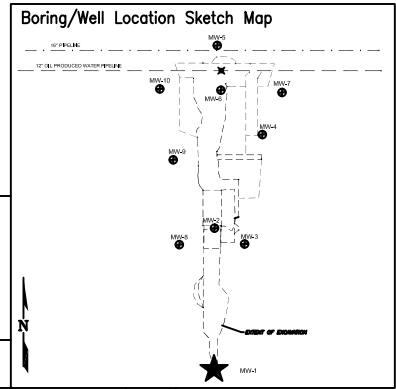
Project No. CO21-074	Prepared by	Drawn by TA
Date 11/22/21	Reviewed by PH	Filename 21074QL



APPENDIX A
BORING LOGS



BORING/WELL CONSTRUCTION LOG



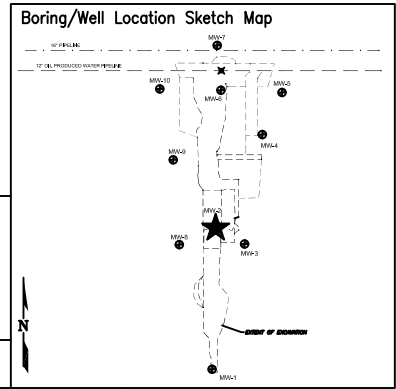
Page 1 of 1

Boring/Well No. MW-1		Total Depth 16'	Location Noble Midstream, Inc. Harper Pipeline Release NESW Sec 21, T6N, R64W, 6th PM Weld County, Colorado			
Project No./Name C021-074 / Noble ~ Harper Pipeline Release		Drilling Contractor/Driller Drill Pro				
Geologist/Office Paul Henehan / Fremont Environmental, Inc.		Approved By				
Drilling Equipment/Method Geoprobe / Direct Push		Size/Type of Bit 2.5" direct push	Sampling Method direct push	Start/Finish Date 10/29/21		
Well Installed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Casing Mtrl./Dia. 1" PVC	Screen: Type .	Mtrl. .	Length .	Dia. 1"	
Elevation of: (ft. above datum)		Ground Surface 92.97	Top of Well Casing 8.85	Top of Screen	Bottom of Screen	
					Ground Water Surface/Date Measured 10/29/21	

DEPTH (feet)	WELL CONSTRUCTION		LITHOLOGY		Penetration Rate (blows/6")	Recovery Recovery (%)	Sample Interval (feet)	PID Values (ppm)
			GRAPHIC LOG	VISUAL DESCRIPTION				
5	Bentonite	1" Blank	SM	Silty fine sand, brown, moist, no stain, no odor				0
10	#10-20 Silica Sand	1" Screen	MH	Silty fine sand to 6' then sandy silt, brown, moist, no stain, no odor Sandy silt, wet at 11'				0
15			SM	Silty fine sand, wet, brown with rust streaks, no stain, no odor				0
20				TD 16' Silty fine sand, wet, brown with rust streaks, no Refusal, sand is pack too tightly				0



BORING/WELL CONSTRUCTION LOG



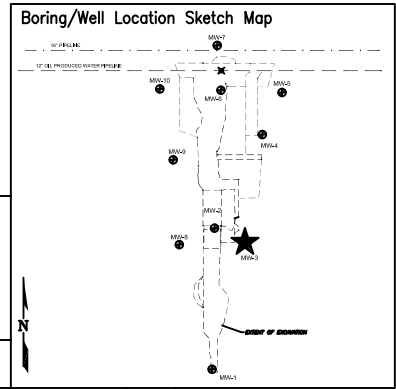
Page 1 of 1

Boring/Well No. MW-2		Total Depth 18'	Location Noble Midstream, Inc. Harper Pipeline Release NESW Sec 21, T6N, R64W, 6th PM Weld County, Colorado			
Project No./Name C021-074 / Noble ~ Harper Pipeline Release			Drilling Contractor/Driller Drill Pro			
Geologist/Office Paul Henehan / Fremont Environmental, Inc.			Approved By			
Drilling Equipment/Method Geoprobe / Direct Push			Size/Type of Bit 2.5" direct push	Sampling Method direct push	Start/Finish Date 10/29/21	
Well Installed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Casing Mtrl./Dia. 1" PVC	Screen: Type .	Mtrl. .	Length .	Dia. 1"	Slot Size .
Elevation of: (ft. above datum)	Ground Surface 94.83	Top of Well Casing 6.99	Top of Screen	Bottom of Screen	Ground Water Surface/Date Measured 10/29/21	

DEPTH (feet)	WELL CONSTRUCTION		LITHOLOGY		Penetration Rate (blows/6")	Recovery (%)	Sample Interval (feet)	PID Values (ppm)
			GRAPHIC LOG	VISUAL DESCRIPTION				
	Bentonite	1" Blank	MH	Topsoil to 1' then fill (firm sandy silt with gravel), brown, moist, no stain, no odor				0
5				Fill, brown, moist, no stain, no odor				1
10	#10-20 Silica Sand	1" Screen		No recovery in sleeve probably due to inadequate compaction of fill material				NA
15			SM	Fill to 14' then silty fine sand, brown, wet at 14', no stain, no odor				1
				Refusal at 18', silty fine sand, wet, brown with rust streaks				0
20				TD 18'				



BORING/WELL CONSTRUCTION LOG



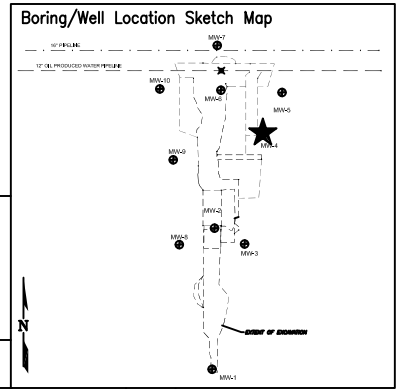
Page 1 of 1

Boring/Well No. MW-3		Total Depth 14'	Location Noble Midstream, Inc. Harper Pipeline Release NESW Sec 21, T6N, R64W, 6th PM Weld County, Colorado			
Project No./Name C021-074 / Noble ~ Harper Pipeline Release		Drilling Contractor/Driller Drill Pro				
Geologist/Office Paul Henehan / Fremont Environmental, Inc.		Approved By				
Drilling Equipment/Method Geoprobe / Direct Push		Size/Type of Bit 2.5" direct push	Sampling Method direct push	Start/Finish Date 10/29/21		
Well Installed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Casing Mtrl./Dia. 1" PVC	Screen: Type .	Mtrl. .	Length .	Dia. 1" Slot Size .	
Elevation of: (ft. above datum)	Ground Surface 94.90	Top of Well Casing 6.92	Top of Screen	Bottom of Screen	Ground Water Surface/Date Measured 10/29/21	

DEPTH (feet)	WELL CONSTRUCTION		LITHOLOGY		Penetration Rate (blows/6")	Recovery (%)	Sample Interval (feet)	PID Values (ppm)
			GRAPHIC LOG	VISUAL DESCRIPTION				
	Bentonite	1" Blank	MH	Firm sandy silt, light brown, dry, no stain, no odor				0
5	#10-20 Silica Sand	1" Screen	MH SHALE	Firm sandy silt to 5' then very firm sandy silt, "weatherized shale 7' to 8', dry, no stain, no odor				0
10			SM MH SM	Silt sand with yellowish tint to 10' then firm sandy silt to 11' then silty sand to 12'				0
15			MH	Refusal at 14', sandy silt, light gray with rust streaks, wet at 12', no odor				0
20				TD 14'				0



BORING/WELL CONSTRUCTION LOG



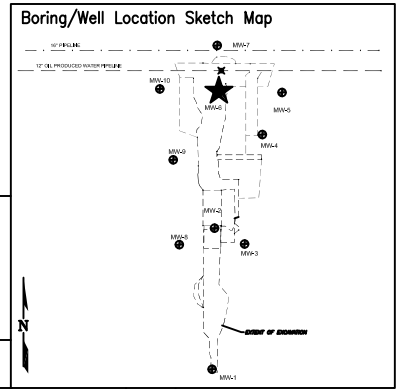
Page 1 of 1

Boring/Well No. MW-4		Total Depth 15'	Location Noble Midstream, Inc. Harper Pipeline Release NESW Sec 21, T6N, R64W, 6th PM Weld County, Colorado			
Project No./Name C021-074 / Noble ~ Harper Pipeline Release		Drilling Contractor/Driller Drill Pro				
Geologist/Office Paul Henehan / Fremont Environmental, Inc.		Approved By				
Drilling Equipment/Method Geoprobe / Direct Push		Size/Type of Bit 2.5" direct push	Sampling Method direct push	Start/Finish Date 10/29/21		
Well Installed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Casing Mtrl./Dia. 1" PVC	Screen: Type .	Mtrl. .	Length .	Dia. 1"	
Elevation of: (ft. above datum)		Ground Surface 98.26	Top of Well Casing 3.56	Top of Screen	Bottom of Screen	
					Ground Water Surface/Date Measured 10/29/21	

DEPTH (feet)	WELL CONSTRUCTION	LITHOLOGY		Penetration Rate (blows/6")	Recovery (%)	Sample Interval (feet)	PID Values (ppm)
		GRAPHIC LOG	VISUAL DESCRIPTION				
0	Bentonite	SM	Silty fine to medium sand with small gravel (fill?)				0
5	#10-20 Silica Sand	SM	Silty fine to medium sand with small gravel (fill?)				0
10		SHALE	Very firm weathered shale to 10' then firm silty sand, brown, no stain, no odor				0
15		SM	Refusal at 15', silty fine sand to 13', very moist to wet, then firm sandy silt, no stain, no odor				0
15		MH	TD 15'				0
20							



BORING/WELL CONSTRUCTION LOG



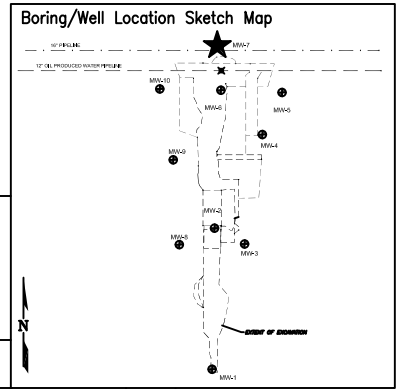
Page 1 of 1

Boring/Well No. MW-6		Total Depth 15.5'	Location Noble Midstream, Inc. Harper Pipeline Release NESW Sec 21, T6N, R64W, 6th PM Weld County, Colorado			
Project No./Name C021-074 / Noble ~ Harper Pipeline Release		Drilling Contractor/Driller Drill Pro				
Geologist/Office Paul Henehan / Fremont Environmental, Inc.		Approved By				
Drilling Equipment/Method Geoprobe / Direct Push		Size/Type of Bit 2.5" direct push	Sampling Method direct push	Start/Finish Date 10/29/21		
Well Installed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Casing Mtrl./Dia. 1" PVC	Screen: Type .	Mtrl. .	Length .	Dia. 1" Slot Size .	
Elevation of: (ft. above datum)	Ground Surface 98.38	Top of Well Casing 3.44	Top of Screen	Bottom of Screen	Ground Water Surface/Date Measured 10/29/21	

DEPTH (feet)	WELL CONSTRUCTION		LITHOLOGY		Penetration Rate (blows/6")	Recovery (%)	Sample Interval (feet)	PID Values (ppm)
			GRAPHIC LOG	VISUAL DESCRIPTION				
5	Bentonite	1" Blank	FILL	Fill, moist, no stain, no odor			0	
10	#10-20 Silica Sand	1" Screen	MH	Very firm sandy silt, brown, with rust streaks, dry, no odor			0	
15			SM MH	Refusal at 15.5', sandy silt to 13' then silty fine sand to 14', then firm sandy silt			0	
20				TD 15.5'			0	



BORING/WELL CONSTRUCTION LOG



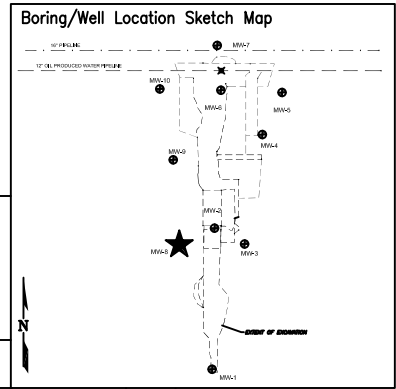
Page 1 of 1

Boring/Well No. MW-7		Total Depth 15'	Location Noble Midstream, Inc. Harper Pipeline Release NESW Sec 21, T6N, R64W, 6th PM Weld County, Colorado			
Project No./Name C021-074 / Noble ~ Harper Pipeline Release		Drilling Contractor/Driller Drill Pro				
Geologist/Office Paul Henehan / Fremont Environmental, Inc.		Approved By				
Drilling Equipment/Method Geoprobe / Direct Push		Size/Type of Bit 2.5" direct push	Sampling Method direct push	Start/Finish Date 10/29/21		
Well Installed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Casing Mtrl./Dia. 1" PVC	Screen: Type .	Mtrl. .	Length .	Dia. 1"	Slot Size .
Elevation of: (ft. above datum)	Ground Surface 100.00	Top of Well Casing 1.82	Top of Screen	Bottom of Screen	Ground Water Surface/Date Measured 10/29/21	

DEPTH (feet)	WELL CONSTRUCTION		LITHOLOGY		Penetration Rate (blows/6")	Recovery (%)	Sample Interval (feet)	PID Values (ppm)
			GRAPHIC LOG	VISUAL DESCRIPTION				
5	Bentonite	1" Blank	SM	Silty fine sand, brown, dry, no stain, no odor			0	
10	#10-20 Silica Sand	1" Screen	MH	Very firm sandy silt, dry, no stain, no odor			0	
15			MH	Refusal at 15', very firm sandy silt, 4" thick lens of fine sand at 13.5, might make water, quite moist, no stain, no odor			0	
20				TD 15'			0	



BORING/WELL CONSTRUCTION LOG



Page 1 of 1

Boring/Well No. MW-8		Total Depth 14.5'	Location Noble Midstream, Inc. Harper Pipeline Release NESW Sec 21, T6N, R64W, 6th PM Weld County, Colorado			
Project No./Name C021-074 / Noble ~ Harper Pipeline Release		Drilling Contractor/Driller Drill Pro				
Geologist/Office Paul Henehan / Fremont Environmental, Inc.		Approved By				
Drilling Equipment/Method Geoprobe / Direct Push		Size/Type of Bit 2.5" direct push	Sampling Method direct push	Start/Finish Date 10/29/21		
Well Installed? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Casing Mtrl./Dia. 1" PVC	Screen: Type .	Mtrl. .	Length .	Dia. 1"	
Elevation of: (ft. above datum)	Ground Surface 95.00	Top of Well Casing 6.82	Top of Screen	Bottom of Screen	Ground Water Surface/Date Measured 10/29/21	

DEPTH (feet)	WELL CONSTRUCTION		LITHOLOGY		Penetration Rate (blows/6")	Recovery (%)	Sample Interval (feet)	PID Values (ppm)
			GRAPHIC LOG	VISUAL DESCRIPTION				
	Bentonite	1" Blank	SM	Silty fine sand, brown, dry, no stain, no odor				0
5	#10-20 Silica Sand	1" Screen	MH	Firm sandy silt, brown, dry, no stain, no odor				0
10			SM	Firm sandy silt to 10' then silty fine to medium sand, light gray with yellowish streaks (mustard colored), sand is very moist, no stain, no odor				0
15				Silty fine to medium sand, very moist, gray with rust streaks to 13' then brown, no stain, no odor refusal at 14.5'				0
20				TD 14.5'				0

APPENDIX B

LABORATORY DOCUMENTATION

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

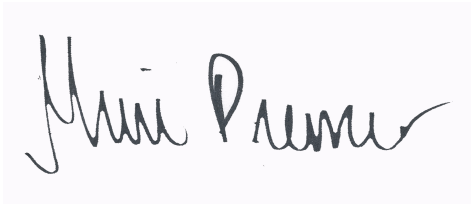
303.277.9310

November 11, 2021

Paul Henehan
Fremont Environmental
PO Box 1289
Wellington, CO 80549
Noble - Harper Kona
Work Order #2111103

Enclosed are the results of analyses for samples received by Summit Scientific on 11/04/21 17:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Muri Premer". The signature is written in a cursive style with a large initial "M" and a long, sweeping underline.

Muri Premer For Paul Shrewsbury
President



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Harper Kona

Project Number: C021-074
Project Manager: Paul Henchan

Reported:
11/11/21 17:26

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	2111103-01	Water	11/04/21 00:00	11/04/21 17:30
MW-2	2111103-02	Water	11/04/21 00:00	11/04/21 17:30
MW-3	2111103-03	Water	11/04/21 00:00	11/04/21 17:30
MW-8	2111103-04	Water	11/04/21 00:00	11/04/21 17:30

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

2111103

S₂

4653 Table Mountain Drive ♦ Golden, Colorado 80403
303-277-9310

Client: Fremont Environmental Inc. Project Manager: Paul Henehan
 Address: E-Mail:
 City/State/Zip: Bill To: JACOBS
 Phone: Project Name: CHEVRON - HARPER KONA
 Sampler Name: HENEHAN Project Number: COZ1-074

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested								Special Instructions	
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	GBTEXN+TMBs	DRO,RRO	PAHs	pH, EC, SAR	Boron	915-1 metals	Arsenic	BTEXN + TMBs	TDS, Cl, Su	
1	MW-1	11/4/21		3			✓		✓										✓	✓		
2	MW-2	↓		↓			↓		↓										↓	↓		
3	MW-3	↓		↓			↓		↓										↓	↓		
4	MW-8	↓		↓			↓		↓										↓	↓		
5																						
6																						
7																						
8																						
9																						
10																						

Relinquished by: <i>[Signature]</i>	Date/Time: 11/4/21 1730	Received by: <i>[Signature]</i>	Date/Time: 11/4/21 1730	Turn Around Time (Check) Same Day ___ 72 hours ___ 24 hours ___ Standard <input checked="" type="checkbox"/> 48 hours ___ Sample Integrity: Temperature Upon Receipt: 7.9 Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	Notes:
Relinquished by:	Date/Time:	Received by:	Date/Time:		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

S₂

2111103

Sample Receipt Checklist

S2 Work Order# _____

Client: Fremont Environmental Client Project ID: Chevron-Harper Kona

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

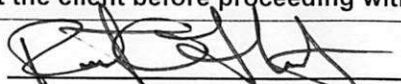
Matrix (check all that apply): Air Soil/Solid Water Other: _____
(Describe)

Temp (°C)	79
-----------	----

Thermometer ID: G86A9201901378

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	on ICE
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any):				

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


Custodian Printed Name or Initials

11.4.21
Date/Time



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Harper Kona

Project Number: C021-074
Project Manager: Paul Henchan

Reported:
11/11/21 17:26

MW-1
2111103-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/04/21 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BEK0178	11/08/21	11/09/21	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **11/04/21 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		72.5 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		115 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.7 %		21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **11/04/21 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	55.2	12.0		mg/L	200	BEK0210	11/09/21	11/10/21	EPA 300.0	
Sulfate	899	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **11/04/21 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	1080	10.0		mg/L	1	BEK0172	11/08/21	11/08/21	SM2540C	

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.



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Harper Kona

Project Number: C021-074
Project Manager: Paul Henchan

Reported:
11/11/21 17:26

MW-2
2111103-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/04/21 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BEK0178	11/08/21	11/09/21	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **11/04/21 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		72.9 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		120 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.5 %		21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **11/04/21 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	187	12.0		mg/L	200	BEK0210	11/09/21	11/10/21	EPA 300.0	
Sulfate	2360	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **11/04/21 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	2550	10.0		mg/L	1	BEK0172	11/08/21	11/08/21	SM2540C	

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.



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Harper Kona

Project Number: C021-074
Project Manager: Paul Henchan

Reported:
11/11/21 17:26

MW-3
2111103-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/04/21 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BEK0178	11/08/21	11/09/21	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **11/04/21 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		74.7 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		112 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %		21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **11/04/21 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	46.6	12.0		mg/L	200	BEK0210	11/09/21	11/10/21	EPA 300.0	
Sulfate	2360	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **11/04/21 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	2420	10.0		mg/L	1	BEK0172	11/08/21	11/08/21	SM2540C	

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.



Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Harper Kona

Project Number: C021-074
Project Manager: Paul Henchan

Reported:
11/11/21 17:26

MW-8
2111103-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/04/21 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BEK0178	11/08/21	11/09/21	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0		"	"	"	"	"	"	

Date Sampled: **11/04/21 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		77.3 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		111 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.4 %		21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **11/04/21 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	106	12.0		mg/L	200	BEK0210	11/09/21	11/10/21	EPA 300.0	
Sulfate	2620	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **11/04/21 00:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	2820	10.0		mg/L	1	BEK0172	11/08/21	11/08/21	SM2540C	

Summit Scientific

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Fremont Environmental
PO Box 1289
Wellington CO, 80549

Project: Noble - Harper Kona

Project Number: C021-074
Project Manager: Paul Henchan

Reported:
11/11/21 17:26

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BEK0178 - EPA 5030 Water MS

Blank (BEK0178-BLK1)

Prepared: 11/08/21 Analyzed: 11/09/21

Benzene	ND	1.0	ug/l								
Toluene	ND	1.0	"								
Ethylbenzene	ND	1.0	"								
Xylenes (total)	ND	2.0	"								
Naphthalene	ND	1.0	"								
1,2,4-Trimethylbenzene	ND	1.0	"								
1,3,5-Trimethylbenzene	ND	1.0	"								
<i>Surrogate: 1,2-Dichloroethane-d4</i>	13.4		"	13.3		100		23-173			
<i>Surrogate: Toluene-d8</i>	15.6		"	13.3		117		20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	13.3		"	13.3		99.7		21-167			

LCS (BEK0178-BS1)

Prepared: 11/08/21 Analyzed: 11/09/21

Benzene	25.8	1.0	ug/l	25.0		103		51-132			
Toluene	20.4	1.0	"	25.0		81.4		51-138			
Ethylbenzene	24.9	1.0	"	25.0		99.6		58-146			
m,p-Xylene	51.6	2.0	"	50.0		103		57-144			
o-Xylene	26.2	1.0	"	25.0		105		53-146			
Naphthalene	28.3	1.0	"	25.0		113		70-130			
1,2,4-Trimethylbenzene	21.6	1.0	"	25.0		86.3		70-130			
1,3,5-Trimethylbenzene	21.8	1.0	"	25.0		87.1		70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	14.2		"	13.3		107		23-173			
<i>Surrogate: Toluene-d8</i>	14.5		"	13.3		109		20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	13.9		"	13.3		104		21-167			

Matrix Spike (BEK0178-MS1)

Source: 2111100-01

Prepared: 11/08/21 Analyzed: 11/09/21

Benzene	26.0	1.0	ug/l	25.0	ND	104		34-141			
Toluene	21.4	1.0	"	25.0	ND	85.6		27-151			
Ethylbenzene	26.9	1.0	"	25.0	ND	107		29-160			
m,p-Xylene	55.6	2.0	"	50.0	ND	111		20-166			
o-Xylene	27.8	1.0	"	25.0	ND	111		33-159			
Naphthalene	21.3	1.0	"	25.0	ND	85.2		70-130			
1,2,4-Trimethylbenzene	23.7	1.0	"	25.0	ND	94.8		70-130			
1,3,5-Trimethylbenzene	23.9	1.0	"	25.0	ND	95.8		70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	9.25		"	13.3		69.4		23-173			
<i>Surrogate: Toluene-d8</i>	15.0		"	13.3		113		20-170			
<i>Surrogate: 4-Bromofluorobenzene</i>	13.3		"	13.3		100		21-167			

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Project: Noble - Harper Kona

Project Number: C021-074
 Project Manager: Paul Henchan

Reported:
 11/11/21 17:26

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BEK0178 - EPA 5030 Water MS

Matrix Spike Dup (BEK0178-MSD1)	Source: 2111100-01			Prepared: 11/08/21 Analyzed: 11/09/21					
Benzene	26.3	1.0	ug/l	25.0	ND	105	34-141	1.15	30
Toluene	21.2	1.0	"	25.0	ND	84.9	27-151	0.798	30
Ethylbenzene	27.1	1.0	"	25.0	ND	108	29-160	0.963	30
m,p-Xylene	55.7	2.0	"	50.0	ND	111	20-166	0.216	30
o-Xylene	28.3	1.0	"	25.0	ND	113	33-159	2.03	30
Naphthalene	23.6	1.0	"	25.0	ND	94.4	70-130	10.2	30
1,2,4-Trimethylbenzene	23.9	1.0	"	25.0	ND	95.5	70-130	0.757	30
1,3,5-Trimethylbenzene	23.9	1.0	"	25.0	ND	95.7	70-130	0.0836	30
Surrogate: 1,2-Dichloroethane-d4	10.9		"	13.3		81.5	23-173		
Surrogate: Toluene-d8	14.4		"	13.3		108	20-170		
Surrogate: 4-Bromofluorobenzene	13.5		"	13.3		101	21-167		

Summit Scientific

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Project: Noble - Harper Kona

Project Number: C021-074
 Project Manager: Paul Henchan

Reported:
 11/11/21 17:26

Anions by EPA Method 300.0 - Quality Control
Summit Scientific

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

Batch BEK0210 - General Preparation

Blank (BEK0210-BLK1)

Prepared & Analyzed: 11/09/21

Chloride	ND	0.0600	mg/L						
Sulfate	ND	0.300	"						

LCS (BEK0210-BS1)

Prepared & Analyzed: 11/09/21

Chloride	3.26	0.0600	mg/L	3.00	109	90-110		
Sulfate	16.0	0.300	"	15.0	107	90-110		

Duplicate (BEK0210-DUP1)

Source: 2111048-01

Prepared & Analyzed: 11/09/21

Chloride	36.4	12.0	mg/L		30.2		18.6	20
Sulfate	84.6	60.0	"		102		19.0	20

Matrix Spike (BEK0210-MS1)

Source: 2111048-01

Prepared & Analyzed: 11/09/21

Chloride	727	12.0	mg/L	600	30.2	116	80-120	
Sulfate	3510	60.0	"	3000	102	114	80-120	

Summit Scientific

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Project: Noble - Harper Kona

Project Number: C021-074
 Project Manager: Paul Henchan

Reported:
 11/11/21 17:26

Total Dissolved Solids by SM2540C - Quality Control
Summit Scientific

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

Batch BEK0172 - General Preparation

Blank (BEK0172-BLK1)

Prepared & Analyzed: 11/08/21

Total Dissolved Solids ND 10.0 mg/L

Duplicate (BEK0172-DUP1)

Source: 2111081-01

Prepared & Analyzed: 11/08/21

Total Dissolved Solids 1010 10.0 mg/L 1000 0.299 20

Summit Scientific

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PO Box 1289
Wellington CO, 80549

Project: Noble - Harper Kona

Project Number: C021-074
Project Manager: Paul Henchan

Reported:
11/11/21 17:26

Notes and Definitions

DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference