

Flowline Closure Checklist

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

Additional Attachments:		Tank Battery Closure <u> </u>	Wellhead Closure <u> </u>	Pit Closure <u> </u>	Partially Buried Vault Closure <u> </u>
Site Name & COGCC Facility Number: Reichert #9-5		Date: 5/17/24			Remediation Project #: 34125
Associated Wells: 05-123-13629		Age of Site: _____ Years			Number of Photos Attached: 2

Starting point: (GPS coordinates and descriptions)
40.328924, -104.675208 (At Wellhead)

End point: (GPS coordinates and descriptions)
40.325964, -104.668365 (At Separator)

USCS Soil Type: Silty SAND Estimated Depth to Groundwater: ~10-15'

Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)
None observed.

Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth)
None observed.

Flowlines

Flowline type	O, G, W						
Depth	4'						
Age	Years						
Length	2166'						
Construction Material	Steel						
Were flowlines pulled?	No						
Visual Integrity of lines	Good						
Visual impacts if trenched	None						
PID Readings if trenched	5.1	2.6					
Sample taken? Location/Sample ID#	FL01R-W	FL02R-S					
Photo Number(s)	See photolog						

Other observations regarding on location flowlines:
Approximately 2,166' of flowline abandoned in place. Point A and point B submitted for lab analysis.

Summary

Was impacted soil identified?		<input checked="" type="checkbox"/> No	Yes - less than 10 cubic yards	Yes - more than 10 cubic yards
Total number of samples field screened: 2		Total number of samples collected: 2		
Highest PID Reading: 5.1		Total number of samples submitted to lab for analysis: 2		
If more than 10 cubic yards of impacted soil were observed:				
Vertical extent:		Estimated spill volume:		
Lateral extent:		Volume of soil removed:		
Is additional investigation required?				
Was groundwater encountered during the investigation?				
No		Yes - not impacted or in contact with impacted soils		Yes - groundwater impacted and/or in contact with impacted soils
Measured depth to groundwater:		Was remedial groundwater removal conducted? Yes No		
Date Groundwater was encountered:		Commencement date of removal:		
Sheen on groundwater? Yes No		Volume of groundwater removed prior to sampling:		
Free product observed? Yes No		Volume of groundwater removed post sampling:		
Total number of samples collected:		Total Volume of groundwater removed:		
Total number of samples submitted to lab for analysis:				



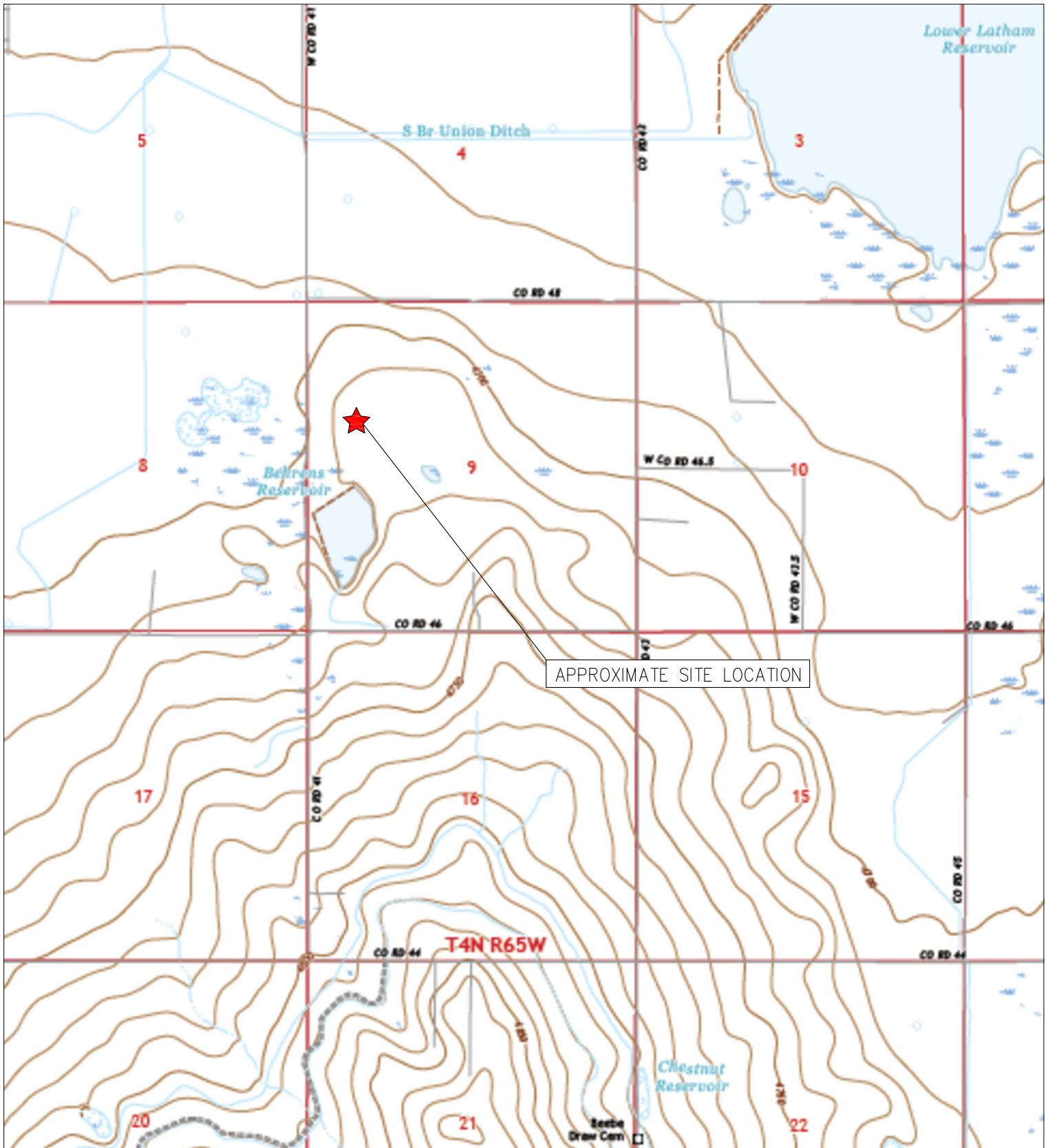
FIGURES

Figure 1: Topographic Site Location Map

Figure 2: Aerial Site Location Map

Figure 3: Soil Analytical Map

Figure 4: Metals in Soil Map



APPROXIMATE SITE LOCATION



TOPOGRAPHIC SITE LOCATION MAP
 REICHERT #9-5
 CLOSURE ASSESSMENT
 40.328910 / -104.675170
 SW¼ NW¼ SEC.9 T4N R65W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-13629
 REMEDIATION # 34125



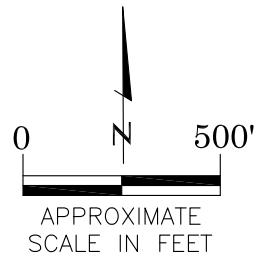
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 ENVIRONMENTAL
 CONSULTING, LLC

8000 W 44th Ave, Wheat Ridge, CO 80033
 Ph: 303-433-0479 • F: 303-325-5449



LEGEND

- FORMER REICHERT #9-5 WELLHEAD
- ASSOCIATED SEPARATOR
- APPROXIMATE FLOWLINE LOCATION (ABANDONED IN PLACE)



AERIAL SITE LOCATION MAP
 REICHERT #9-5
 CLOSURE ASSESSMENT
 40.328910 / -104.675170
 SW¼ NW¼ SEC.9 T4N R65W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-13629
 REMEDIATION # 34125

FIGURE NO.
2

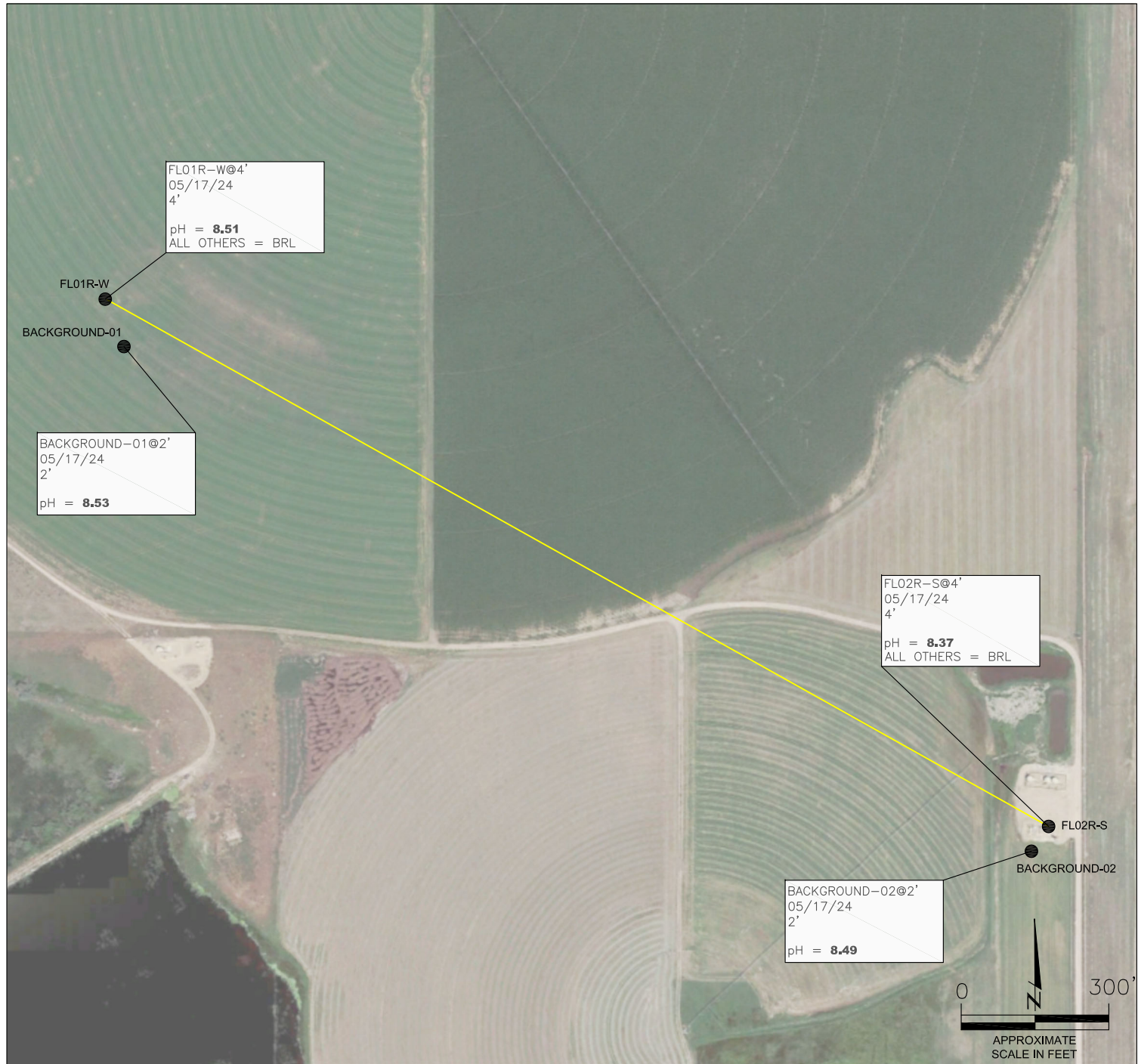
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LEGEND

- APPROXIMATE FLOWLINE LOCATION (ABANDONED)
- APPROXIMATE LOCATION OF SOIL SAMPLES SUBMITTED FOR LABORATORY ANALYSIS

PARAMETERS

SAMPLE LOCATION
DATE
DEPTH (FEET)
 B = BENZENE (mg/kg)
 T = TOLUENE (mg/kg)
 E = ETHYLBENZENE (mg/kg)
 X = TOTAL XYLENES (mg/kg)
 N = NAPHTHALENE (mg/kg)
 G = TPH-GRO (mg/kg)
 D = TPH-DRO (mg/kg)
 O = TPH-ORO (mg/kg)
 1,2,4-TMB = 1,2,4 TRIMETHYLBENZENE (mg/kg)
 1,3,5-TMB = 1,3,5 TRIMETHYLBENZENE (mg/kg)
 Brn= BORON (mg/L)
 pH = pH (PH UNITS)
 SAR= SODIUM ADSORPTION RATIO
 EC = SPECIFIC CONDUCTANCE (mmhos/cm)
 POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (mg/kg)

mg/kg = MILLIGRAMS PER KILOGRAM
 mg/L = MILLIGRAMS PER LITER
 mmhos/cm = MILLIMHOS PER CENTIMETER

BRL = BELOW REGULATORY LIMITS

TPH-GRO = TOTAL PETROLEUM HYDROCARBONS – GASOLINE RANGE ORGANICS
 TPH-DRO = TOTAL PETROLEUM HYDROCARBONS – DIESEL RANGE ORGANICS
 TPH-ORO = TOTAL PETROLEUM HYDROCARBONS – OIL RANGE ORGANICS

NOTES:
 VALUES PRESENTED IN **BOLD** EXCEED ECMC TABLE 915-1 REGULATORY LIMITS

ECMC = ENERGY & CARBON MANAGEMENT COMMISSION

SOIL ANALYTICAL MAP
 REICHERT #9-5
 CLOSURE ASSESSMENT
 40.328910 / -104.675170
 SW¼ NW¼ SEC.9 T4N R65W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-13629
 REMEDIATION # 34125

FIGURE NO.
3

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FL01R-W@4'
05/17/24
4'

Arsenic = **3.05**
Barium = 80.6
Cadmium = **0.577**
Chromium (VI) = <0.101**
Copper = 22.8
Lead = 295*
Nickel = 7.31
Selenium = 0.228
Silver = <0.0842
Zinc = 160

FL01R-W

BACKGROUND-01

BACKGROUND-01@2'
05/17/24
2'

Arsenic = 1.70
Barium = 43.5
Cadmium = 0.116
Chromium (VI) = <0.169**
Copper = <9.06
Lead = 12.8
Nickel = 3.71
Selenium = <0.236
Silver = <0.0906
Zinc = <33.5

FL02R-S@4'
05/17/24
4'

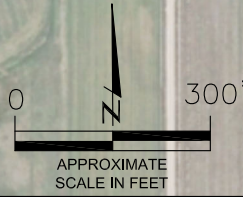
Arsenic = **3.33**
Barium = **92.4***
Cadmium = 0.157
Chromium (VI) = <0.143**
Copper = <9.98
Lead = 7.81
Nickel = 7.36
Selenium = <0.259
Silver = <0.0998
Zinc = <36.9

FL02R-S

BACKGROUND-02

BACKGROUND-02@2'
05/17/24
2'

Arsenic = 1.29
Barium = 35.1
Cadmium = 0.108
Chromium (VI) = <0.149**
Copper = <8.97
Lead = 13.9
Nickel = 2.98
Selenium = <0.233
Silver = <0.0897
Zinc = <33.2



LEGEND

- APPROXIMATE FLOWLINE LOCATION (ABANDONED)
- SS-02 APPROXIMATE LOCATION OF SOIL SAMPLES SUBMITTED FOR LABORATORY ANALYSIS

PARAMETERS

SAMPLE LOCATION
DATE SAMPLE COLLECTED
APPROXIMATE DEPTH
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)

mg/kg = MILLIGRAMS PER KILOGRAM

NOTES:
VALUES PRESENTED WITH A LESS THAN SYMBOL (<) DID NOT CONTAIN CONCENTRATIONS AT/OR ABOVE LABORATORY REPORTING LIMITS AND/OR MINIMUM DETECTION LIMITS.

ELEVATED METALS ARE NATURALLY OCCURRING IN COLORADO. LOCAL CLEAN-UP LEVELS ARE 1.25*BACKGROUND CONCENTRATIONS WHERE APPLICABLE.

VALUES PRESENTED IN **BOLD** EXCEED ECMC TABLE 915-1 REGULATORY LIMITS AND APPLICABLE LOCAL CLEAN-UP LEVELS.

*VALUES EXCEED ECMC TABLE 915-1 PROTECTION OF GROUNDWATER SOIL SCREENING LEVELS, ONLY.

**ACHIEVABLE PRACTICAL QUANTITATIVE LIMITS FOR HEXAVALENT CHROMIUM (Cr VI) IN SOILS IS IN THE RANGE OF 0.1 TO 1 mg/kg.

ECMC = ENERGY & CARBON MANAGEMENT COMMISSION

METALS IN SOIL MAP
REICHERT #9-5
CLOSURE ASSESSMENT
40.328910 / -104.675170
SW¼ NW¼ SEC.9 T4N R65W 6PM
WELD COUNTY, COLORADO
API # 05-123-13629
REMEDIATION # 34125

FIGURE NO.
4

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TABLES

Table 1: Field Data Summary Table

Table 2: Summary of Volatile Organic Soil Chemistry Data

Table 3: Summary of PAH's Soil Chemistry Data

Table 4: Summary of Soil Suitability for Reclamation

Table 5: Summary of Metals in Soil Chemistry Data

TABLE 1
FIELD DATA SUMMARY TABLE
NOBLE ENERGY 100322
REICHERT #9-5, WELD COUNTY, COLORADO
REM # 34125

Sample ID	Sample Date	Depth	GPS Data		VOC Concentration (ppm)
			Latitude	Longitude	
FL01R-W @ 4'	5/17/2024	4	40.328924	-104.675208	5.1
FL02R-S @ 4'	5/17/2024	4	40.325964	-104.668365	2.6
Background-01 @ 2'	5/17/2024	2	40.328738	-104.675124	1.2
Background-02 @ 2'	5/17/2024	2	40.325861	-104.668494	0.7

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 ENERGY 100322
REICHERT #9-5, WELD COUNTY, COLORADO
REM # 34125

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 RRO (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**		
FL01R-W @ 4'	5/17/2024	4	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00380	<500	<0.200	<25.0	<100
FL02R-S @ 4'	5/17/2024	4	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00380	<500	<0.200	<25.0	<100

1. Bold values are equal to or 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

TABLE 3
SUMMARY OF POLYCYCLIC AROMATIC HYDROCARBON SOIL CHEMISTRY DATA
NOBLE ENERGY 100322
REICHERT #9-5, WELD COUNTY, COLORADO
REM # 34125

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
FLO1R-W @ 4'	5/17/2024	4	<0.020	<0.020	<0.005	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.005	0.005
FLO2R-S @ 4'	5/17/2024	4	<0.020	<0.020	<0.005	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.002	<0.002

1. Bold values are equal to or 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
- NA - Not analyzed

TABLE 4
SUMMARY OF SOIL SUITABILITY FOR RECLAMATION
NOBLE ENERGY 100322
REICHERT #9-5, WELD COUNTY, COLORADO
REM # 34125

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
FL01R-W @ 4'	5/17/2024	4	8.51	0.584	2.46	0.347
FL02R-S @ 4'	5/17/2024	4	8.37	0.358	1.10	0.268
Background-01 @ 2'	5/17/2024	2	8.53	0.410	1.34	0.174
Background-02 @ 2'	5/17/2024	2	8.49	0.322	1.36	0.134
Maximum Background Concentration			8.53	0.410	1.36	0.174
Average Background Concentration			8.51	0.366	1.35	0.154

1. Bold values are equal to or exceed the ECMC Table 915-1 limit(s)

2. Blue highlighted soil analytical values indicate a regulatory exceedance

NA - Not analyzed

TABLE 5
SUMMARY OF METALS IN SOIL CHEMISTRY DATA
NOBLE ENERGY 100322
REICHERT #9-5, WELD COUNTY, COLORADO
REM # 34125

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
FL01R-W @ 4'	5/17/2024	4	3.05	80.6	0.577	<0.101*	22.8	295	7.31	0.228	<0.0842	160
FL02R-S @ 4'	5/17/2024	4	3.33	92.4	0.157	<0.143*	<9.98	7.81	7.36	<0.259	<0.0998	<36.9
Background-01 @ 2'	5/17/2024	2	1.70	43.5	0.116	<0.169*	<9.06	12.8	3.71	<0.236	<0.0906	<33.5
Background-02 @ 2'	5/17/2024	2	1.29	35.1	0.108	<0.149*	<8.97	13.9	2.98	<0.233	<0.0897	<33.2
Maximum Background Concentration			1.70	43.5	0.116			13.9	3.71			
125% Maximum Background Concentration			2.13	54.4	0.145			17.4	4.64			

1. Bold values are equal to or 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



ATTACHMENT A

Photo Log

Reichert #9-5
API # 05-123-13629
Remediation # 34125

Closure Assessment

May 2024



Flowline Removal/Assessment – 05/17/24



Looking north at flowline Pt A/terminus at wellhead
No petroleum hydrocarbon staining or odor observed



Looking south at flowline Pt B/terminus at separator
No petroleum hydrocarbon staining or odor observed