TWO DOT
A Montrose Environmental Company

Facility Feuerstein I28-63-1HN Date 12/5/2024

Sampler Name(s) Friedman and Lafollette

Two Dot Soil Sampling Field Form					
Sample/ Screening Name	**Soil Type**	**PID Reading (ppm)**	**Staining/ odor?**	**Sample Time**	**Location/Comments**
BKG01@3'	ML	N/A	NO	0844	
BKG01@6'	ML	N/A	NO	0857	
BKG02@3'	ML	N/A	NO	0918	
BKG02@6'	ML	N/A	NO	0930	
BKG03@3'	ML	N/A	NO	0948	
BKG03@6'	ML	N/A	NO	1001	

Photo Log

Feuerstein I28-63-1HN

December 5, 2024

Two Dot Consulting, A Montrose Environmental Company
7674 Grandview Avenue, Suite 210 | Arvada CO 80002 | www.2dotconsulting.com

Initial BKG01 Photo

BKG01 Closure Photo

Initial BKG02 Photo

BKG02 Closure Photo

Initial BKG03 Photo

BKG03 Closure Photo

Facility Closure Investigation and Environmental Summary

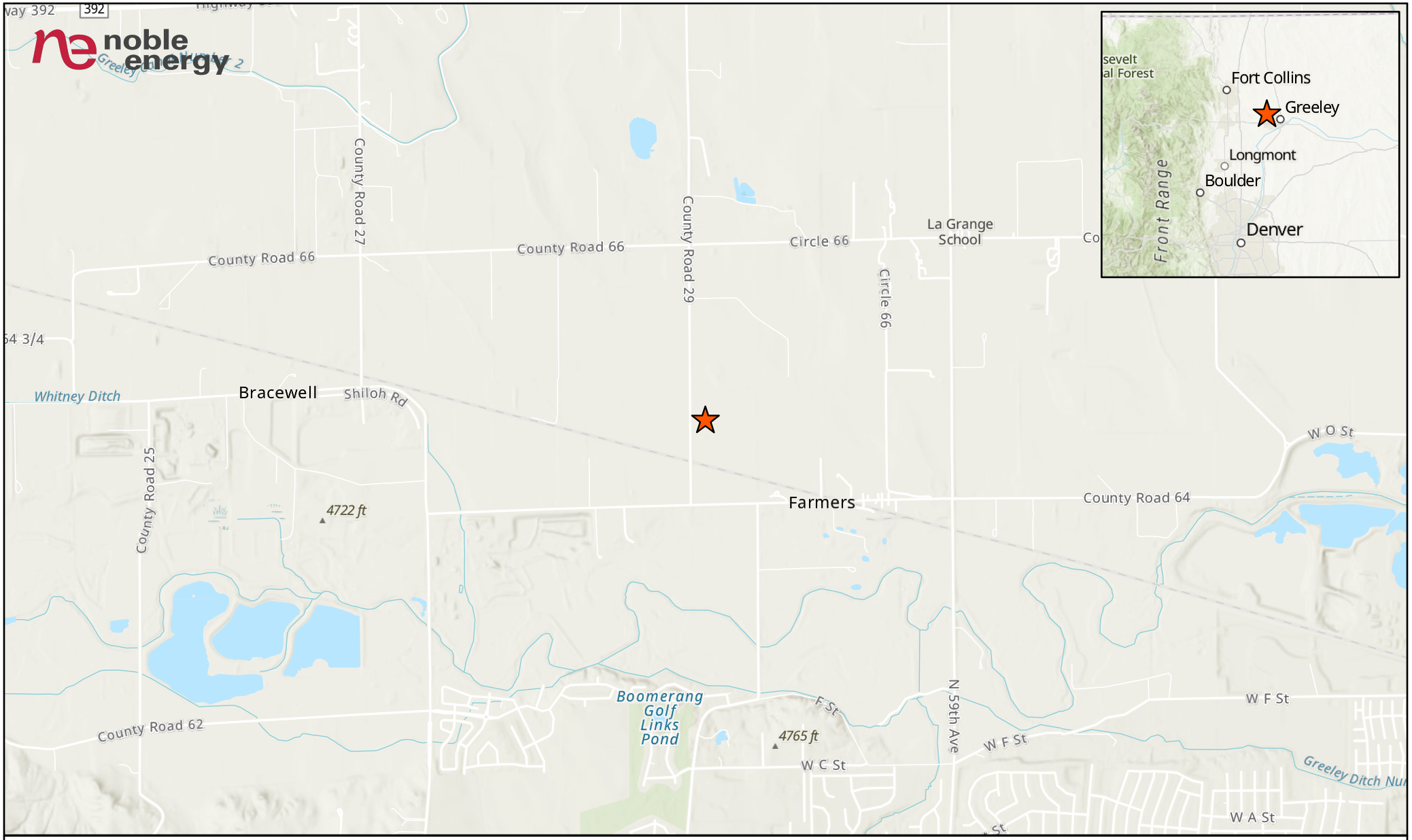
Feuerstein I28-63-1HN Wellhead

ECMC Remediation Project #33105

Weld County, Colorado

Attachments:

FIGURES



LEGEND

★ Site Location

0 0.5 1 Miles

1 inch = 0.5 Mile

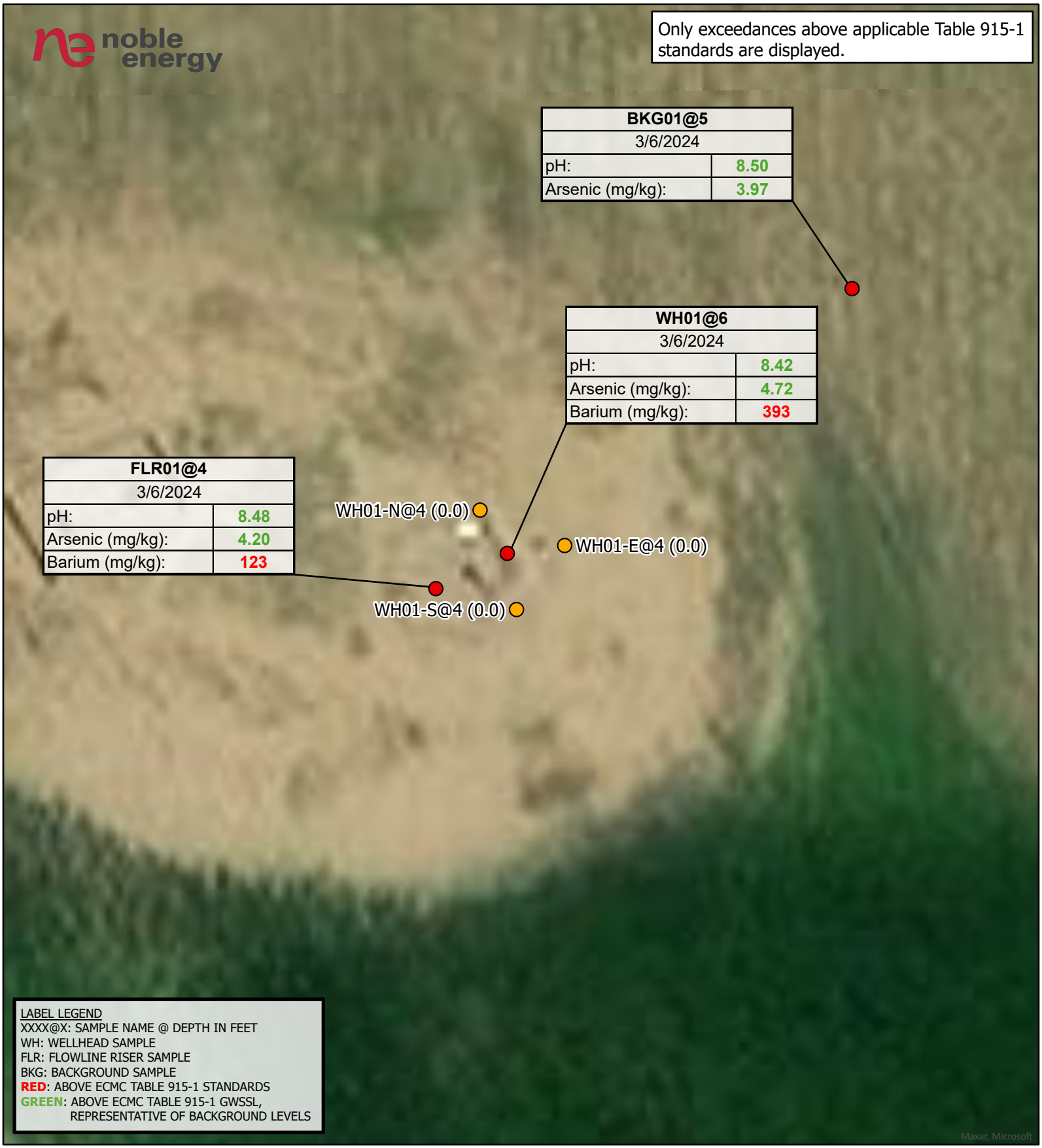
N W E S

Project No:	024-014
Map By:	JW
Date:	06/03/2024

FEUERSTEIN I28-63-1HN WELLHEAD
GENERAL LOCATION MAP
NOBLE ENERGY
NW 1/4 SW 1/4 SECTION 28
T6N R66W, 6TH PM
WELD COUNTY, COLORADO

ENTRADA CONSULTING GROUP
1843 Sunlight Dr.
Longmont, CO 80504
303.378.4036

Figure
1



Legend

Soil Sample Screening Location

NOTES:
- Sample Label (PID Result in ppm)
- ppm = parts per million
- PID = photoionization detector

0 8 16 Feet

1 inch = 16 Feet

N W E S

Project No:	024-014
Map By:	JW
Date:	06/03/2024

FEUERSTEIN I28-63-1HN WELLHEAD
SOIL SAMPLE AND FIELD SCREENING LOCATIONS
NOBLE ENERGY
NW 1/4 SW 1/4 SECTION 28
T6N R66W, 6TH PM
WELD COUNTY, COLORADO

ENTRADA CONSULTING GROUP
1843 Sunlight Drive
Longmont, CO 80504
303.378.4036

Figure 2

TABLES

TABLE 1

FIELD DATA SUMMARY TABLE

NOBLE 100322

FEUERSTEIN I28-63-1HN WELLHEAD, WELD COUNTY, COLORADO

REM # 33105

Sample ID	Sample Date	Depth (ft)	GPS Data Latitude/Longitude		VOC Concentration (ppm)
WH01@6	3/6/2024	6	40.4567135	-104.7912856	0.0
FLR01@4	3/6/2024	4	40.4567014	-104.7913184	0.0
WH01-S@4	3/6/2024	4	40.4566939	-104.7912816	0.0
WH01-E@4	3/6/2024	4	40.4567161	-104.7912593	0.0
WH01-N@4	3/6/2024	4	40.4567287	-104.7912979	0.0
BKG01@5	3/6/2024	5	40.4568052	-104.7911268	NM
BKG01@3'	12/5/2024	3	40.4576	-104.792	NM
BKG01@6'	12/5/2024	6	40.4576	-104.792	NM
BKG02@3'	12/5/2024	3	40.4575	-104.791	NM
BKG02@6'	12/5/2024	6	40.4575	-104.791	NM
BKG03@3'	12/5/2024	3	40.4568	-104.790	NM
BKG03@6'	12/5/2024	6	40.4568	-104.790	NM

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).

NM = Not Measured

ppm = Parts per million

in. = Inches

ft. = Feet

bgs = Below ground surface

TABLE 2

SUMMARY OF VOLATILE ORGANIC SOIL CHEMISTRY DATA

NOBLE 100322

FEUERSTEIN I28-63-1HN WELLHEAD, WELD COUNTY, COLORADO

REM # 33105

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**	
WH01@6	3/6/2024	6	*<0.00200*	*<0.00200*	*<0.00200*	*<0.00200*	*<0.00200*	*<0.00200*	*<0.002*	*<125.200*	*<0.200*	*<25.0*	*<100*
FLR01@4	3/6/2024	4	*<0.00200*	*<0.00200*	*<0.00200*	*<0.00200*	*<0.00200*	*<0.00200*	*<0.002*	*<125.200*	*<0.200*	*<25.0*	*<100*

1. Bold values exceed the ECMC Table 915-1 limit(s)
2. Red & blue highlighted soil analytical values indicate an exceedance of the referenced soil screening level (SSL)
3. * Indicates laboratory minimum detection limit in excess of SSL
4. ** Summation of GRO+DRO+ORO must be less than 500 mg/kg

(<) = Analytical result is less than the indicated laboratory reporting limit.
TPH-GRO = Total petroleum hydrocarbons - gasoline range organics
TPH-DRO = Total petroleum hydrocarbons - diesel range organics
TPH-ORO = Total petroleum hydrocarbons - oil range organics
mg/kg = Milligrams per kilogram
ft. = Feet
bgs = Below ground surface
NA - Not analyzed

TABLE 3
SUMMARY OF POLYCYCLIC AROMATIC HYDROCARBON SOIL CHEMISTRY DATA
NOBLE 100322
FEUERSTEIN I28-63-1HN WELLHEAD, WELD COUNTY, COLORADO
REM # 33105

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
WH01@6	3/6/2024	6	*<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*
FLR01@4	3/6/2024	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 exceed the ECMC Table 915-1 limit(s)
2. Red & blue highlighted soil analytical values indicate an exceedance of the referenced soil screening level (SSL)
3. * Indicates laboratory minimum detection limit in excess of SSL
4. ** Summation of GRO+DRO+ORO must be less than 500 mg/kg
(<) = Analytical result is less than the indicated laboratory reporting limit.
TPH-GRO = Total petroleum hydrocarbons - gasoline range organics
TPH-DRO = Total petroleum hydrocarbons - diesel range organics
TPH-ORO = Total petroleum hydrocarbons - oil range organics
mg/kg = Milligrams per kilogram
ft. = Feet
bgs = Below ground surface
NA - Not analyzed

TABLE 4

SUMMARY OF SOIL SUITABILITY FOR RECLAMATION

NOBLE 100322

FEUERSTEIN I28-63-1HN WELLHEAD, WELD COUNTY, COLORADO

REM # 33105

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
WH01@6	3/6/2024	6	**8.42**	0.33	0.405	0.327
FLR01@4	3/6/2024	4	**8.48**	0.278	0.232	0.224
BKG01@5	3/6/2024	5	**8.50**	0.626	1.8	0.264
BKG01@3'	12/5/2024	3	**8.43**	0.499	2.09	0.483
BKG01@6'	12/5/2024	6	8.19	1.15	2.14	0.475
BKG02@3'	12/5/2024	3	8.24	0.774	1.65	0.344
BKG02@6'	12/5/2024	6	**8.36**	0.646	1.88	0.387
BKG03@3'	12/5/2024	3	**8.37**	0.772	2.79	0.399
BKG03@6'	12/5/2024	6	**8.38**	0.629	2.20	0.377
Maximum Background Concentration			8.50	1.15	2.79	0.483

1. **Bold** faced values exceed the ECMC Table 915-1 limit(s), but are within background concentrations.

2. **Bold** faced values exceed the ECMC Table 915-1 limit(s) and native background concentrations.

3. Brown highlighted soil analytical values indicate a regulatory exceedance.

NA - Not analyzed

TABLE 5
SUMMARY OF METALS IN SOIL CHEMISTRY DATA
NOBLE 100322
FEUERSTEIN I28-63-1HN WELLHEAD, WELD COUNTY, COLORADO
REM # 33105

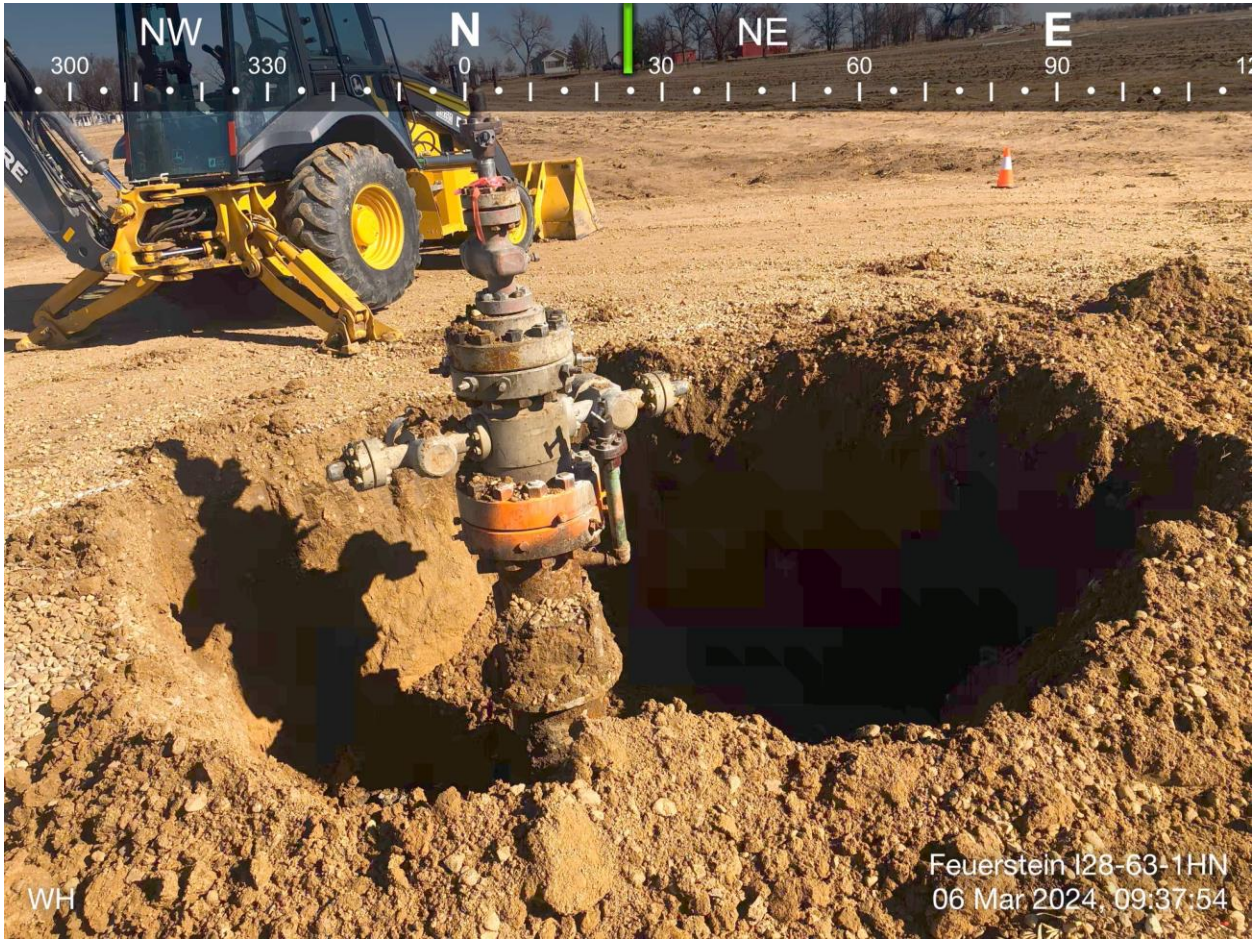
Sample ID	Sample Date	Depth (ft)	Arsenic (mg/kg)	Barium (mg/kg)	Cadmium (mg/kg)	Chromium (VI) (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Zinc (mg/kg)
ECMC Table 915-1 Limits (Residential SSL)			0.68	15000	71	0.3	3100	400	1500	390	390	23000
ECMC Table 915-1 Limits (Protection of Groundwater SSL)			0.29	82	0.38	0.00067	46	14	26	0.26	0.8	370
WH01@6	3/6/2024	6	**4.72**	**393**	0.161	*<0.244 **	12.4	7.71	10.9	*<0.224*	*<0.0861*	40.3
FLR01@4	3/6/2024	4	**4.20**	**123**	0.161	*<0.244 **	*<9.23*	7.24	10.4	*<0.240*	*<0.0923*	36.2
BKG01@5	3/6/2024	5	**3.97**	73.6	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*	*NA*
BKG01@3'	12/5/2024	3	**4.09**	**102**	0.127	*<0.165 **	*<9.66*	6.71	9.36	*<0.251*	*<0.0966*	*<35.7*
BKG01@6'	12/5/2024	6	**4.18**	**118**	0.164	*<0.137 **	*<9.83*	8.29	11.0	*<0.256*	*<0.0983*	37.2
BKG02@3'	12/5/2024	3	**4.62**	**104**	0.140	*<0.148 **	*<8.71*	7.04	9.76	*<0.226*	*<0.0871*	*<32.2*
BKG02@6'	12/5/2024	6	**6.28**	**120**	0.118	*<0.164 **	*<9.49*	6.96	11.1	*<0.247*	*<0.0949*	*<35.1*
BKG03@3'	12/5/2024	3	**4.89**	**93.5**	0.167	*<0.164 **	*<9.32*	8.01	11.3	*<0.242*	*<0.0932*	35.1
BKG03@6'	12/5/2024	6	**3.90**	77.9	*<0.0939*	*<0.125 **	*<9.39*	5.00	10.2	*<0.244*	*<0.0939*	*<34.7*
1.25x Maximum Background Concentration			7.85	150	0.20875	0	0	10.3625	14.125	0	0	46.5

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

ECMC = Energy & Carbon Management Commission
(<) = Analytical result is less than the indicated laboratory reporting limit.
mg/kg = Milligrams per kilogram
ft. = Feet
bgs = Below ground surface
* Indicates laboratory minimum detection limit in excess of SSL
NA - Not analyzed

ATTACHMENT A
PHOTOGRAPHIC LOG

Feuerstein I28-63-1HN Wellhead Photographic Log



Entrada Consulting Group
March 2024

Feuerstein I28-63-1HN Wellhead Photographic Log


W
NW
N
NE
270
300
330
0
30
60
DEERE
WH
Feuerstein I28-63-1HN
06 Mar 2024, 10:28:38

ATTACHMENT B
FACILITY CLOSURE CHECKLISTS

Wellhead Closure Checklist

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

Additional attachments (optional):		Pit Closure		Tank Battery Closure		Flowline Closure		Partially Buried Vault Closure

Site Name & COGCC Facility Number:	*Date:*	*Remediation Project #: 33105*
Feuerstein I28-63-1HN, 431543	3/6/2024	
Associated Wells:	*Age of Site:*	*Number of Photos Attached:* 3
NA	5/7/2013 - Spud Date	
Location: *(GPS coordinates of wellhead or southeastern most wellhead for multiple)*		*Estimated Facility Size (acres):* ~0.01
40.456706 / -104.791279		

General Condition of Site: *(General observations regarding housekeeping, corrosion, waste management, etc.)*

Good overall.

USCS Soil Type: SM, SC	*Estimated Depth to Groundwater:* Unknown/Not encountered

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.

Wellhead(s)

Well API	05-123-36661					
Age	5/7/2013 - Spud Date					
Condition of surface around wellhead	Good					
PID Readings	NA					
Condition of subsurface (staining present	Good					
PID Readings	0.0 ppm					
Sample taken? Location/Sample ID#	WH01@6, FLR01@4					
Photo Number(s)	1-3					

Other observations regarding wellheads:

None observed.

Summary

Was impacted soil identified?

(No) Yes - less than 10 cubic yards Yes - more than 10 cubic yards

Total number of samples field screened: 5	*Total number of samples collected:* 5
Highest PID Reading: 0.0 ppm	*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:	