



Facility Closure Investigation and Environmental Summary

Todd 20-02 Wellhead

ECMC Remediation Project #34774

Weld County, Colorado

Attachments:

Figure 1 – General Location Map

Figure 2 – Wellhead Soil Sample and Field Screening Locations

Table 1 – Soil Sample and Field Screening Location Information

Table 2 – Soil Analytical Results Summary Table – Volatile Organics

Table 3 – Soil Analytical Results Summary Table – PAHs

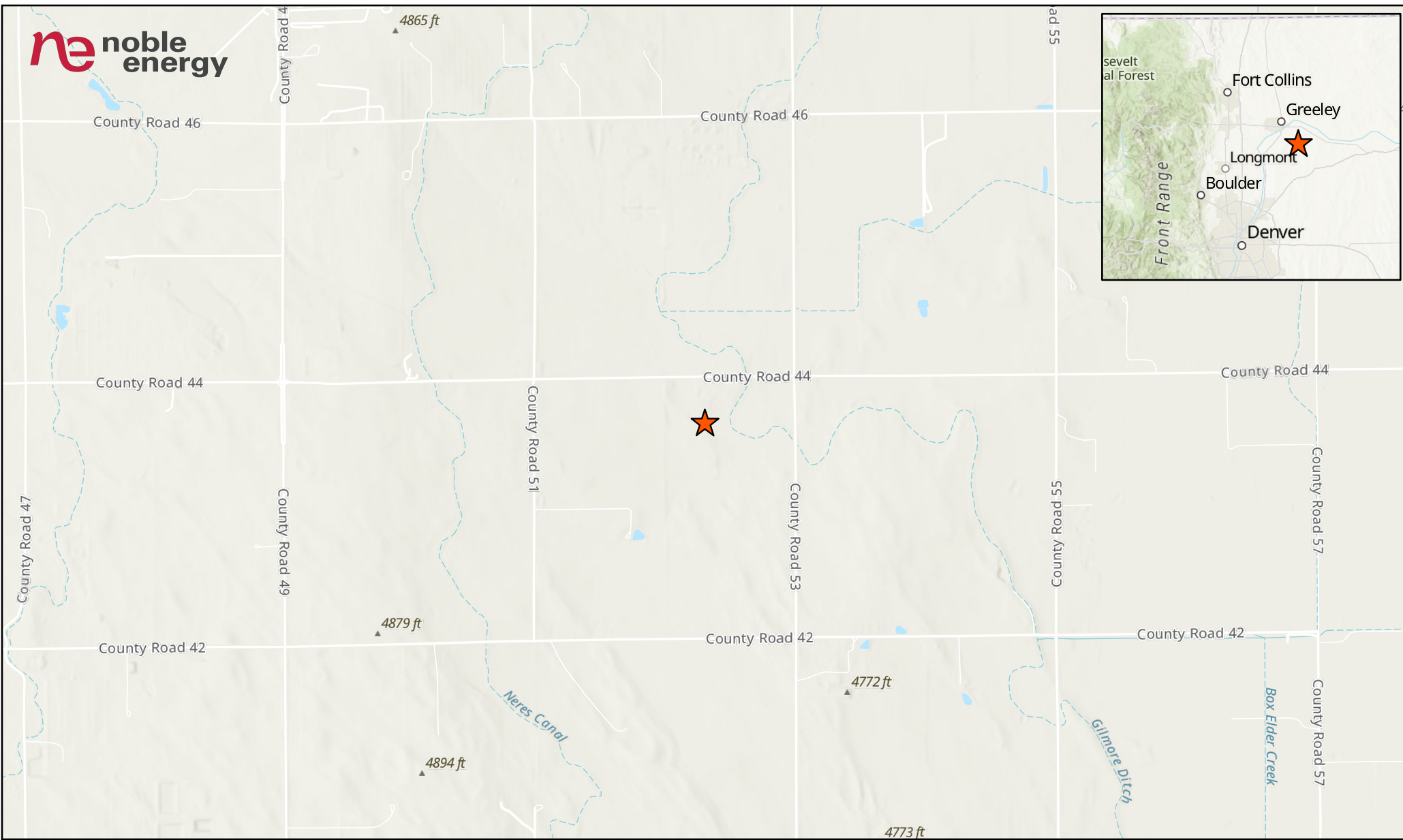
Table 4 – Soil Analytical Results Summary Table – Soil Suitability

Table 5 – Soil Analytical Results Summary Table – Metals

Attachment A: Photographic Log

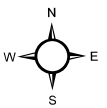
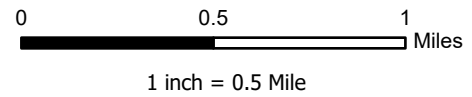
Attachment B: Facility Closure Checklists

FIGURES



LEGEND

 Site Location



Project No: 024-226

Map By: JW

Date: 07/25/2024

**TODD 20-02 WELLHEAD
GENERAL LOCATION MAP**
NOBLE ENERGY
NW 1/4 NE 1/4 SECTION 20
T4N R64W, 6TH PM
WELD COUNTY, COLORADO



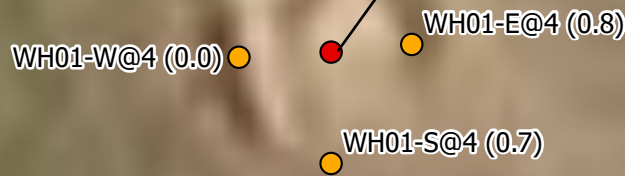
1843 Sunlight Dr.
Longmont, CO 80504
303.378.4036

Figure

1

FLR01@4	
5/17/2024	
pH:	8.46
Arsenic (mg/kg):	2.11

WH01@6	
5/17/2024	
pH:	8.32
Arsenic (mg/kg):	3.12

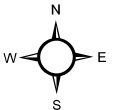
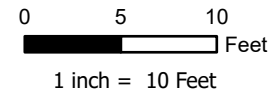


LABEL LEGEND
XXXX@X: SAMPLE NAME @ DEPTH IN FEET
WH: WELLHEAD SAMPLE
FLR: FLOWLINE RISER SAMPLE
RED : ABOVE ECMC TABLE 915-1 GWSSL

Legend

- Soil Sample
- Screening Location

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



Project No: 024-226
Map By: JW
Date: 07/25/2024

TODD 20-02 WELLHEAD
SOIL SAMPLE AND FIELD SCREENING LOCATIONS
 NOBLE ENERGY
 NW 1/4 NE 1/4 SECTION 20
 T4N R64W, 6TH PM
 WELD COUNTY, COLORADO



1843 Sunlight Drive
 Longmont, CO 80504
 303.378.4036

Figure
 2

TABLES

TABLE 1
FIELD DATA SUMMARY TABLE
NOBLE 100322
TODD 20-02 WELLHEAD, WELD COUNTY, COLORADO
REM # 34774

Sample ID	Sample Date	Depth (ft-bgs)	GPS Data		VOC Concentration (ppm)
			Latitude/Longitude		
WH01@6	5/17/2024	6	40.302666	-104.571639	0.6
FLR01@4	5/17/2024	4	40.302683	-104.571641	0.4
WH01-S@4	5/17/2024	4	40.302650	-104.571639	0.7
WH01-E@4	5/17/2024	4	40.302667	-104.571624	0.8
WH01-W@4	5/17/2024	4	40.302666	-104.571656	0.0

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).

ppm - Parts per million

ft-bgs - feet below ground surface

TABLE 2
SUMMARY OF VOLATILE ORGANIC SOIL CHEMISTRY DATA
NOBLE 100322
TODD 20-02 WELLHEAD, WELD COUNTY, COLORADO
REM # 34774

Sample ID	Sample Date	Depth (ft-bgs)	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	5/17/2024	6	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.002	<125.200	<0.200	<25.0	<100
FLR01@4	5/17/2024	4	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.002	<125.200	<0.200	<25.0	<100

1. Grey highlighted soil analytical values indicate result is less than laboratory reporting limit

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

ft-bgs - feet below ground surface

mg/kg - milligrams per kilogram

TABLE 3
SUMMARY OF POLYCYCLIC AROMATIC HYDROCARBON SOIL CHEMISTRY DATA
NOBLE 100322
TODD 20-02 WELLHEAD, WELD COUNTY, COLORADO
REM # 34774

Sample ID	Sample Date	Depth (ft-bgs)	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	5/17/2024	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	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. Grey highlighted soil analytical values indicate result is less than laboratory reporting limit

ft-bgs - feet below ground surface

mg/kg - milligrams per kilogram

TABLE 4
SUMMARY OF SOIL SUITABILITY FOR RECLAMATION
NOBLE 100322
TODD 20-02 WELLHEAD, WELD COUNTY, COLORADO
REM # 34774

Sample ID	Sample Date	Depth (ft-bgs)	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	5/17/2024	6	8.32	0.334	0.451	0.173
FLR01@4	5/17/2024	4	8.46	0.498	0.336	0.273

1. **RED** - Above ECMC Table 915-1 Standards

ft-bgs - feet below ground surface

EC - Electrical Conductivity

SAR - Sodium adsorption ratio

mmhos/cm - millimhos per centimeter

mg/L - milligrams per liter

TABLE 5
SUMMARY OF METALS IN SOIL CHEMISTRY DATA
NOBLE 100322
TODD 20-02 WELLHEAD, WELD COUNTY, COLORADO
REM # 34774

Sample ID	Sample Date	Depth (ft-bgs)	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	5/17/2024	6	3.12	75.9	0.0910	<0.115*	<8.51	7.05	8.38	<0.221	<0.0851	32.2
FLR01@4	5/17/2024	4	2.11	52.2	0.122	<0.125*	<8.48	12.5	4.77	<0.220	<0.0848	<31.4

1. **RED** - Above ECMC Table 915-1 Standards

2. Red & blue highlighted soil analytical values indicate an exceedance of the referenced soil screening level (SSL)

3. Grey highlighted soil analytical values indicate result is less than laboratory reporting limit

* Indicates laboratory reporting or minimum detection limit in excess of SSL

ft-bgs - feet below ground surface

mg/kg - milligrams per kilogram

**ATTACHMENT A
PHOTOGRAPHIC LOG**

Todd 20-02 Wellhead Photographic Log



Todd 20-02 Wellhead Photographic Log



Todd 20-02 Wellhead Photographic Log



Todd 20-02 Wellhead Photographic Log



**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: Todd 20-02, 249875		Date: 05/17/2024						Remediation Project #: 34774	
Associated Wells: LONG C20-22D		Age of Site: 11/27/1993-spud date						Number of Photos Attached: 4	
Location: (GPS coordinates of wellhead or southeastern most wellhead for multiple) 40.302677 / -104.571630							Estimated Facility Size (acres): ~0.01		
General Condition of Site: (General observations regarding housekeeping, corrosion, waste management, etc.) Overall good									
USCS Soil Type: Silty Sand (SM)				Estimated Depth to Groundwater: Unknown as none encountered					
Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth) None observed or encountered									
Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth) None observed or encountered									
Wellhead(s)									
Well API	05-123-17678								
Age	11/27/1993- spud date								
Condition of surface around wellhead	Good								
PID Readings	0.0 ppm to 0.8 ppm								
Condition of subsurface (staining present)	Good								
PID Readings	0.0 ppm to 0.8 ppm								
Sample taken? Location/Sample ID#	WH01@6, FLR01@4								
Photo Number(s)	1-4								
Other observations regarding wellheads:									
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: 5				Total number of samples collected: 5					
Highest PID Reading: 0.8 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? <input checked="" type="checkbox"/> 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:									