



Facility Closure Investigation and Environmental Summary

WELLS RANCH AE32-640 Wellhead

ECMC Remediation Project #34952

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

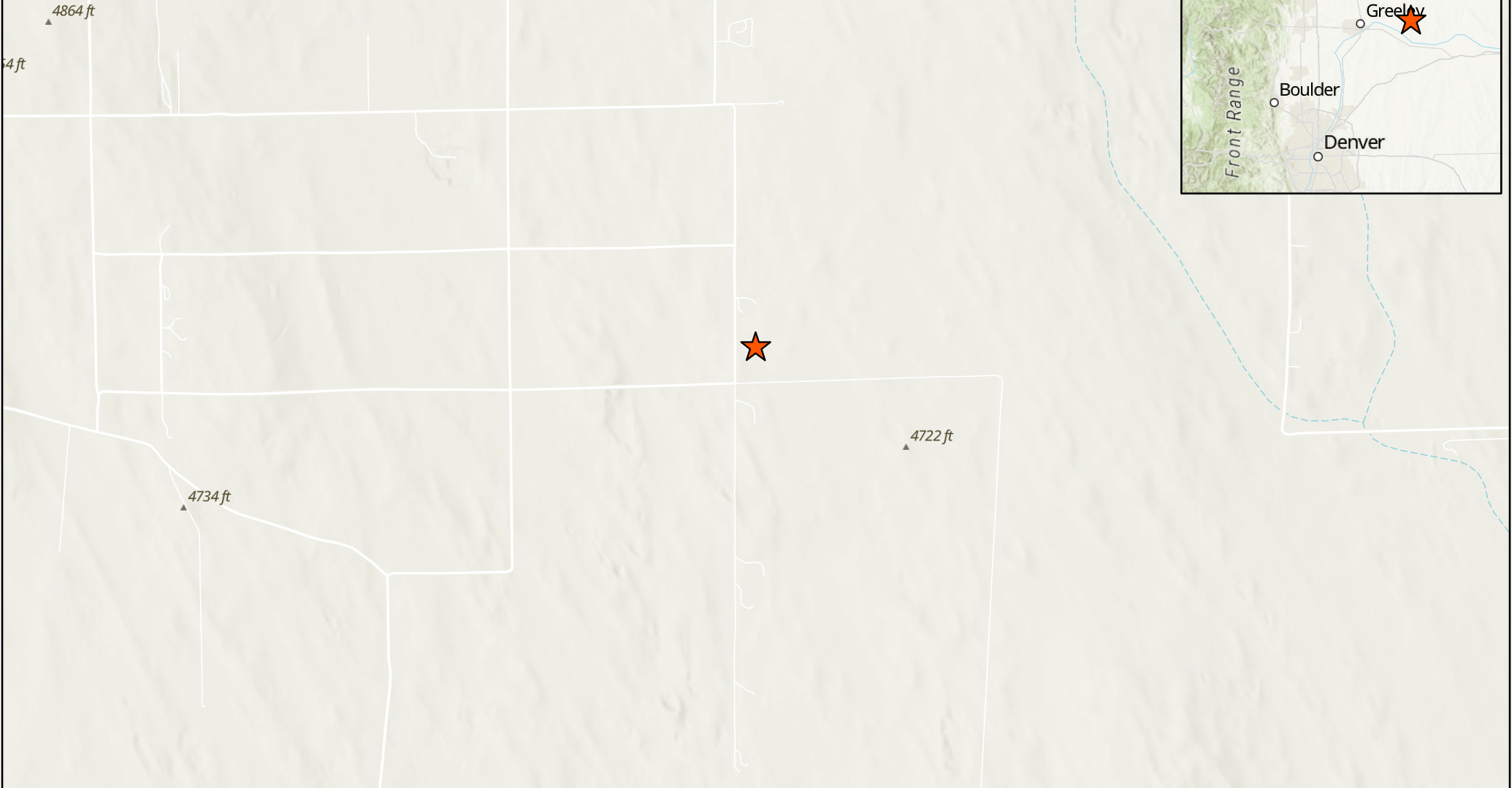
Table 5 – Soil Analytical Results Summary Table – Metals

Table 6 – Groundwater Analytical Results Summary Table – Organics

Table 5 – Groundwater Analytical Results Summary Table – Inorganics

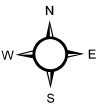
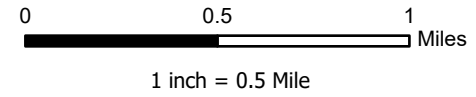
Attachment A: Facility Closure Checklist

FIGURES



LEGEND

 Site Location



Project No: 024-345

Map By: JW

Date: 02/19/2025

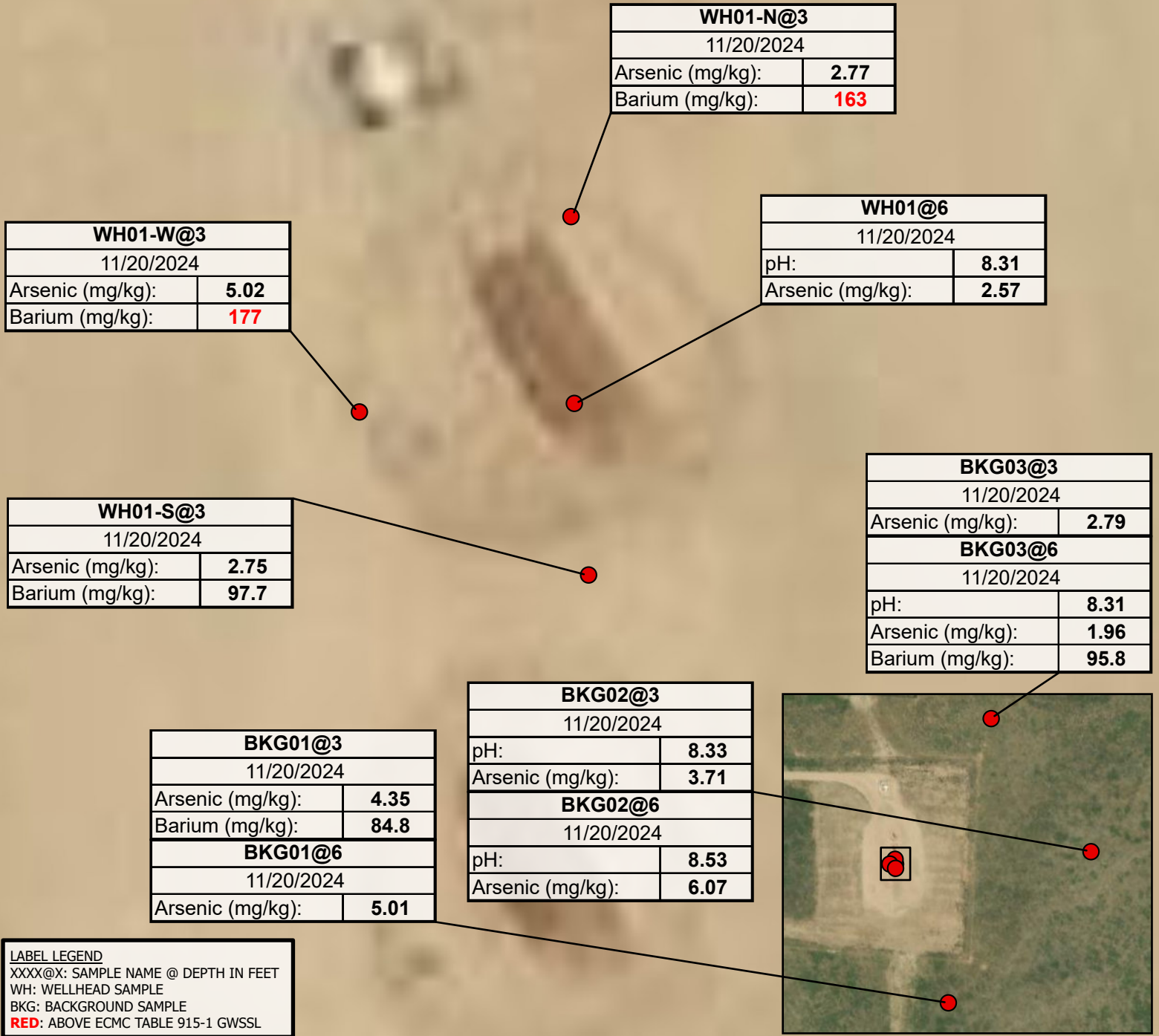
**WELLS RANCH AE32-640 WELLHEAD
GENERAL LOCATION MAP**
NOBLE ENERGY
NW 1/4 SW 1/4 SECTION 32
T6N R62W, 6TH PM
WELD COUNTY, COLORADO



1843 Sunlight Dr.
Longmont, CO 80504
303.378.4036

Figure

1

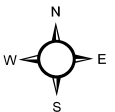
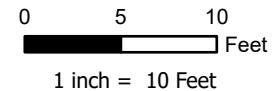


LABEL LEGEND
 XXXX@X: SAMPLE NAME @ DEPTH IN FEET
 WH: WELLHEAD SAMPLE
 BKG: BACKGROUND SAMPLE
RED: ABOVE ECMC TABLE 915-1 GWSSL

Legend

● Soil Sample

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



Project No:	024-345
Map By:	JW
Date:	02/19/2025

**WELLS RANCH AE32-640 WELLHEAD
 SOIL SAMPLE AND FIELD SCREENING LOCATIONS**
 NOBLE ENERGY
 NW 1/4 SW 1/4 SECTION 32
 T6N R62W, 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
WELLS RANCH AE32-640 WELLHEAD, WELD COUNTY, COLORADO
REM # 34952

Sample ID	Sample Date	Depth (ft-bgs)	GPS Data		VOC Concentration (ppm)
			Latitude/Longitude		
WH01@6'	11/20/2024	6	40.441570	-104.354401	0.0
WH01-N@3'	11/20/2024	3	40.441606	-104.354401	0.0
WH01-W@3'	11/20/2024	3	40.441568	-104.354455	0.0
WH01-S@3'	11/20/2024	3	40.441537	-104.354398	0.0
BKG01@3'	11/20/2024	3	40.440494	-104.353886	NM
BKG01@6'	11/20/2024	6	40.440494	-104.353886	NM
BKG02@3'	11/20/2024	3	40.441644	-104.352431	NM
BKG02@6'	11/20/2024	6	40.441644	-104.352431	NM
BKG03@3'	11/20/2024	3	40.442678	-104.353416	NM
BKG03@6'	11/20/2024	6	40.442678	-104.353416	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).

ppm - Parts per million

ft-bgs - feet below ground surface

TABLE 2
SUMMARY OF VOLATILE ORGANIC SOIL CHEMISTRY DATA
NOBLE 100322
WELLS RANCH AE32-640 WELLHEAD, WELD COUNTY, COLORADO
REM # 34952

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'	11/20/2024	6	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00126	<125.200	<0.200	<25.0	<100
WH01-N@3'	11/20/2024	3	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00124	<125.200	<0.200	<25.0	<100
WH01-W@3'	11/20/2024	3	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00118	<125.200	<0.200	<25.0	<100
WH01-S@3'	11/20/2024	3	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00125	<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
- TPH-GRO = Total petroleum hydrocarbons - gasoline range organics
TPH-DRO = Total petroleum hydrocarbons - diesel range organics
TPH-ORO = Total petroleum hydrocarbons - oil range organics
ft-bgs - feet below ground surface
mg/kg - milligrams per kilogram

TABLE 3
SUMMARY OF POLYCYCLIC AROMATIC HYDROCARBON SOIL CHEMISTRY DATA
NOBLE 100322
WELLS RANCH AE32-640 WELLHEAD, WELD COUNTY, COLORADO
REM # 34952

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'	11/20/2024	6	<0.00126	<0.00126	<0.00126	<0.00126	<0.00126	<0.00126	<0.00126	<0.00126	<0.00126	<0.00126	<0.00126	<0.00126	<0.00126	<0.00126
WH01-N@3'	11/20/2024	3	<0.00124	<0.00124	<0.00124	<0.00124	<0.00124	<0.00124	<0.00124	<0.00124	<0.00124	<0.00124	<0.00124	<0.00124	<0.00124	<0.00124
WH01-W@3'	11/20/2024	3	<0.00118	<0.00118	<0.00118	<0.00118	<0.00118	<0.00118	<0.00118	<0.00118	<0.00118	<0.00118	<0.00118	<0.00118	<0.00118	<0.00118
WH01-S@3'	11/20/2024	3	<0.00125	<0.00125	<0.00125	<0.00125	<0.00125	<0.00125	<0.00125	<0.00125	<0.00125	<0.00125	<0.00125	<0.00125	<0.00125	<0.00125

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
WELLS RANCH AE32-640 WELLHEAD, WELD COUNTY, COLORADO
REM # 34952

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'	11/20/2024	6	8.31	0.258	0.527	<0.102
WH01-N@3'	11/20/2024	3	8.20	0.300	0.641	0.139
WH01-W@3'	11/20/2024	3	8.22	0.396	1.32	0.185
WH01-S@3'	11/20/2024	3	8.23	0.253	0.171	0.105
BKG01@3'	11/20/2024	3	7.68	0.0996	0.359	<0.100
BKG01@6'	11/20/2024	6	8.11	0.225	0.323	<0.0994
BKG02@3'	11/20/2024	3	8.33	0.242	0.696	0.119
BKG02@6'	11/20/2024	6	8.53	0.213	1.22	<0.101
BKG03@3'	11/20/2024	3	7.50	0.0924	0.231	0.108
BKG03@6'	11/20/2024	6	8.31	0.310	0.375	0.107
Maximum Background Concentration @ 3'			8.33	0.242	0.696	0.119
Maximum Background Concentration @ 6'			8.53	0.310	1.22	0.107

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)

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

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

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
WELLS RANCH AE32-640 WELLHEAD, WELD COUNTY, COLORADO
REM # 34952

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'	11/20/2024	6	2.57	46.8	<0.0953	<0.147*	<9.53	4.81	4.21	<0.248	<0.0953	<35.3
WH01-N@3'	11/20/2024	3	2.77	163	0.0895	<0.130*	<8.61	4.97	4.26	<0.224	<0.0861	<31.8
WH01-W@3'	11/20/2024	3	5.02	177	0.156	<0.133*	<8.36	5.28	4.73	<0.217	<0.0836	<30.9
WH01-S@3'	11/20/2024	3	2.75	97.7	<0.0899	<0.150*	<8.99	5.27	4.12	<0.234	<0.0899	<33.3
BKG01@3'	11/20/2024	3	4.35	84.8	0.112	<0.165*	<9.54	6.26	6.57	<0.248	<0.0954	<35.3
BKG01@6'	11/20/2024	6	5.01	72.1	0.0894	<0.0919*	<8.85	6.00	4.41	<0.230	<0.0885	<32.8
BKG02@3'	11/20/2024	3	3.71	62.3	0.0974	<0.127*	<8.93	4.31	4.34	<0.232	<0.0893	<33.0
BKG02@6'	11/20/2024	6	6.07	69.7	0.0906	<0.146*	<8.88	8.76	4.55	<0.231	<0.0888	<32.8
BKG03@3'	11/20/2024	3	2.79	63.0	<0.0865	<0.153*	<8.65	4.88	4.97	<0.225	<0.0865	<32.0
BKG03@6'	11/20/2024	6	1.96	95.8	0.113	<0.121*	<9.78	7.18	7.71	<0.254	<0.0978	<36.2
Maximum Background Concentration @ 3'			4.35	84.80	0.11	-	-	6.26	6.57	-	-	-
Maximum Background Concentration X 1.25 @ 3'			5.44	106.00	0.14	-	-	7.83	8.21	-	-	-
Maximum Background Concentration @ 6'			6.07	95.80	0.11	-	-	8.76	7.71	-	-	-
Maximum Background Concentration X 1.25 @ 6'			7.59	119.75	0.14	-	-	10.95	9.64	-	-	-

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)
 3. Red & blue highlighted soil analytical values indicate an exceedance of the referenced soil screening level (SSL)
 4. 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
FACILITY CLOSURE CHECKLIST**

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: Wells Ranch AE32-640, 442209		Date: 11/20/2024						Remediation Project #: 34952	
Associated Wells: N/A		Age of Site: 9/8/2015 - spud date						Number of Photos Attached: N/A	
Location: (GPS coordinates of wellhead or southeastern most wellhead for multiple) 40.441570 / -104.354400							Estimated Facility Size (acres): ~0.01		
General Condition of Site: (General observations regarding housekeeping, corrosion, waste management, etc.) Overall good									
USCS Soil Type: SC, SW, ML				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 encountered or observed									
Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth) None encountered or observed									
Wellhead(s)									
Well API	05-123-41727								
Age	9/8/15 - spud date								
Condition of surface around wellhead	Good								
PID Readings	0.0 ppm								
Condition of subsurface (staining present)	Good								
PID Readings	0.0 ppm								
Sample taken? Location/Sample ID#	WH01@6, BKG01,02,03								
Photo Number(s)	N/A								
Other observations regarding wellheads:									
Summary									
Was impacted soil identified? <input checked="" type="radio"/> No Yes - less than 10 cubic yards Yes - more than 10 cubic yards									
Total number of samples field screened: 4				Total number of samples collected: 4					
Highest PID Reading: 0.0 ppm				Total number of samples submitted to lab for analysis: 4					
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="radio"/> 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:									