

Wellhead Closure Checklist

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

Additional attachments (optional):		Pit Closure <u> </u>		Tank Battery Closure		Flowline Closure		Partially Buried Vault Closure
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Site Name & COGCC Facility Number: Derr #21-4	Date: 09/06/23	Remediation Project #: 29994
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Associated Wells: 05-123-30775	Age of Site: Years	Number of Photos Attached: 6
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Location: (GPS coordinates of wellhead or southeastern most wellhead for multiple) 40.431342 -104.663468	Estimated Facility Size (acres):
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General Condition of Site: (General observations regarding housekeeping, corrosion, waste management, etc.)

Good condition.

USCS Soil Type: SC	Estimated Depth to Groundwater: Approx. 30-50'
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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	05-123-30775				
Age	Years				
Condition of surface around wellhead	Good - Per Crew				
PID Readings	WH-N: 4.2	WH-E: 5.0	WH-S: 3.6	WH-W: 2.8	
Condition of subsurface (staining present)	Good - No odor/no staining				
PID Readings	29.1	127.4	150.6	36.7	51.5
Sample taken? Location/Sample ID#	WH-SS-01	WH-SS-02	WH-SS-03	WH-SS-04	WH-FS-01
Photo Number(s)	See photolog				

Other observations regarding wellheads:

Well casing cut/capped following assessment.

Summary

Was impacted soil identified? **No** Yes - less than 10 cubic yards Yes - more than 10 cubic yards

Total number of samples field screened: **9** Total number of samples collected: **9**

Highest PID Reading: **150.6** Total number of samples submitted to lab for analysis: **1**

If more than 10 cubic yards of impacted soil were observed:

Vertical extent: **N/A** Estimated spill volume:

Lateral extent: **N/A** 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 **N/A** Volume of groundwater removed prior to sampling:

Free product observed? Yes No **N/A** 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:



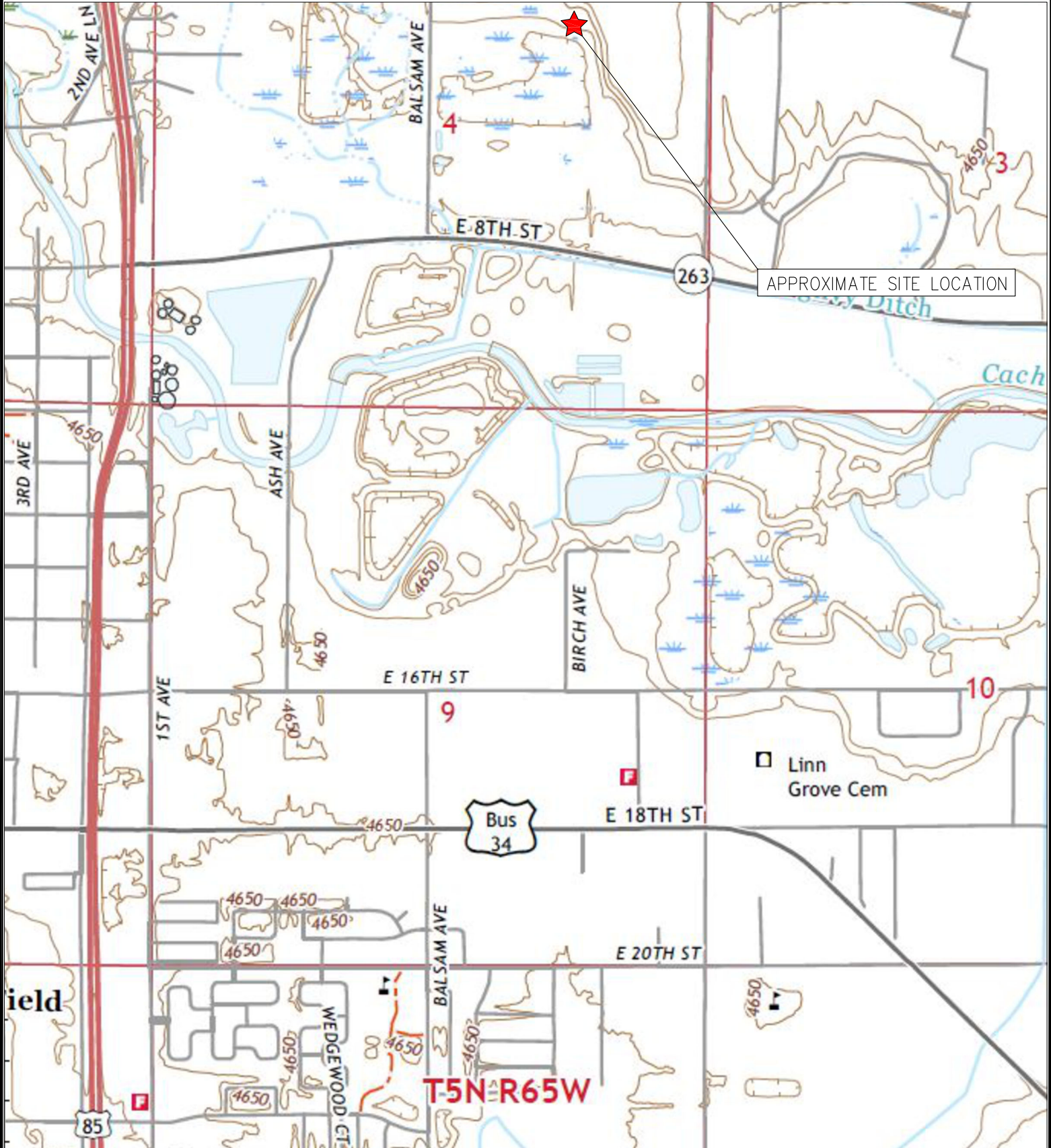
FIGURES

Figure 1: Topographic Site Location Map

Figure 2: Aerial Site Location Map

Figure 3: Soil Sampling Location Map

Figure 4: Soil Analytical Map



TOPOGRAPHIC SITE LOCATION MAP
 DERR #21-4
 CLOSURE ASSESSMENT
 40.431342 / -104.663468
 SE¼ NE¼ SEC.4 T5N R65W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-30775
 REMEDIATION # 29994



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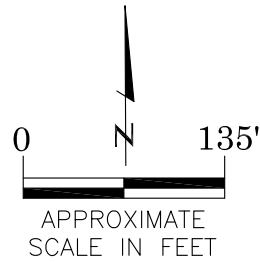
SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC MAP,
 GREELEY, CO QUADRANGLE 2022

FIGURE NO. 1



LEGEND

- FORMER DERR #21-4 WELLHEAD (PLUGGED AND ABANDONED)
- ASSOCIATED SEPARATOR
- APPROXIMATE FLOWLINE LOCATION



AERIAL SITE LOCATION MAP
 DERR #21-4
 CLOSURE ASSESSMENT
 40.431342 / -104.663468
 SE¼ NE¼ SEC.4 T5N R65W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-30775
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FIGURE NO.
2

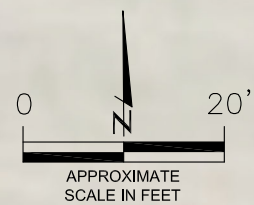
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BU



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LEGEND

-  WELLHEAD ASSESSMENT BOUNDARIES
-  APPROXIMATE LOCATION OF SOIL SAMPLES FIELD SCREENED, ONLY, WITH PHOTOIONIZATION DETECTOR
-  APPROXIMATE LOCATION OF SOIL SAMPLES SUBMITTED FOR LABORATORY ANALYSIS



SOIL SAMPLING LOCATION MAP
DERR #21-4
CLOSURE ASSESSMENT
40.431342 / -104.663468
SE¼ NE¼ SEC.4 T5N R65W 6PM
WELD COUNTY, COLORADO
API # 05-123-30775
REMEDATION # 29994

FIGURE NO.
3
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LEGEND

- - - WELLHEAD ASSESSMENT BOUNDARIES
- SS-02 APPROXIMATE LOCATION OF SOIL SAMPLES FIELD SCREENED, ONLY, WITH PHOTOIONIZATION DETECTOR
- SS-02 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)
R = TPH-RRO (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)
EC = SPECIFIC CONDUCTANCE (mmhos/cm)
SAR = SODIUM ADSORPTION RATIO
pH = pH (pH UNITS)
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) (mg/kg)

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

BRL = BELOW REGULATORY LIMITS

TPH-GRO = TOTAL PETROLEUM HYDROCARBONS - GASOLINE RANGE ORGANICS
TPH-DRO = TOTAL PETROLEUM HYDROCARBONS - DIESEL RANGE ORGANICS
TPH-RRO = TOTAL PETROLEUM HYDROCARBONS - RESIDUAL RANGE ORGANICS

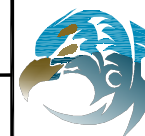
NOTES:
VALUES PRESENTED IN **BOLD** EXCEED ECMC TABLE 915-1 REGULATORY LIMITS.

ECMC = ENERGY & CARBON MANAGEMENT COMMISSION

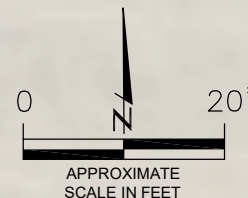
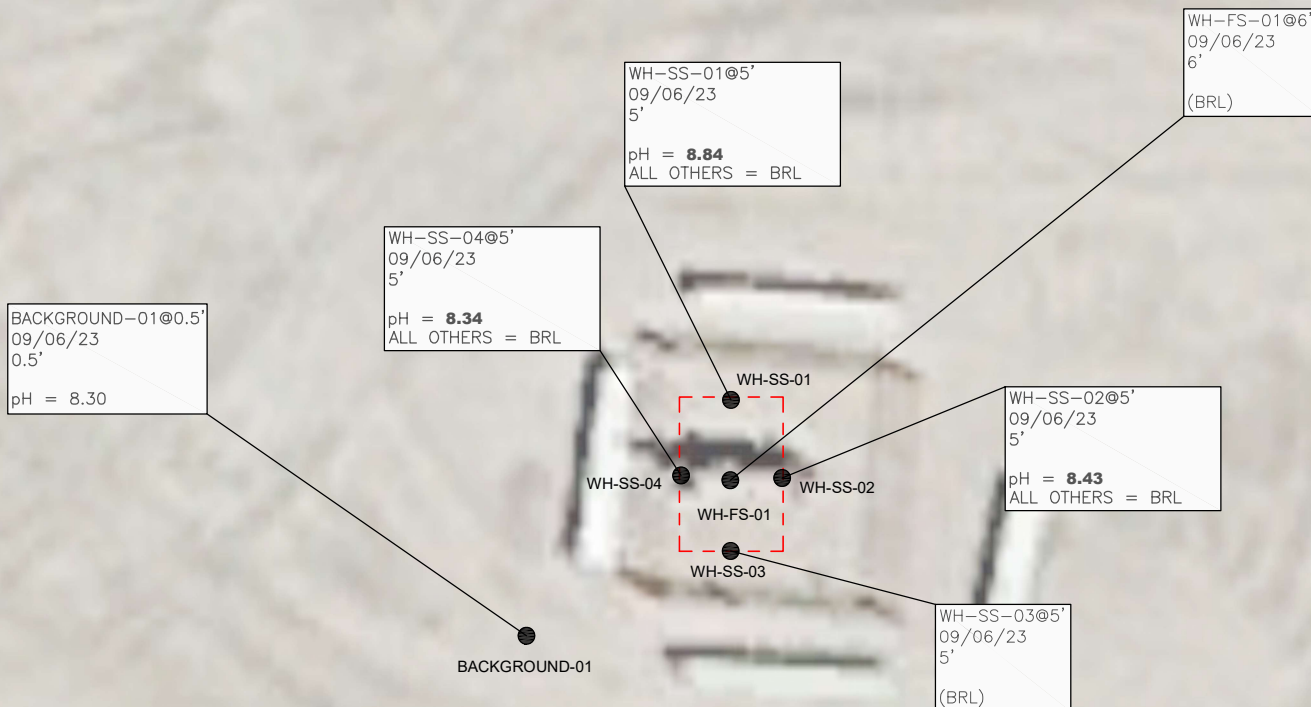
SOIL ANALYTICAL MAP
DERR #21-4
CLOSURE ASSESSMENT
40.431342 / -104.663468
SE¼ NE¼ SEC.4 T5N R65W 6PM
WELD COUNTY, COLORADO
API # 05-123-30775
REMEDATION # 29994

FIGURE NO.
4

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TABLES

Table 1: Photoionization Detector Reading Summary

Table 2: Soil Analytical Results Summary

TABLE 1
PHOTOIONIZATION DETECTOR READING SUMMARY
DERR #21-4
CLOSURE ASSESSMENT
40.431342 / -104.663468
SE¼ NE¼ SEC.4 T5N R65W 6PM
WELD COUNTY, COLORADO
API # 05-123-30775
REMEDIAION # 29994

Sample Location (Latitude/Longitude)	Date	Approximate Depth (feet)	PID Reading (ppm-v)	Lab Submission (Y/N)
WH-SS-01 @ 5' (40.431350 / -104.663479)	09/06/23	5	29.1	Y
WH-SS-02 @ 5' (40.431338 / -104.663469)	09/06/23	5	127.4	Y
WH-SS-03 @ 5' (40.431328 / -104.663479)	09/06/23	5	150.6	Y
WH-SS-04 @ 5' (40.431338 / -104.663488)	09/06/23	5	36.7	Y
WH-FS-01 @ 6' (40.431338 / -104.663479)	09/06/23	6	51.5	Y
WH-N @ 0.5' (40.431368 / -104.663478)	09/06/23	0.5	4.2	N
WH-E @ 0.5' (40.431338 / -104.663442)	09/06/23	0.5	5.0	N
WH-S @ 0.5' (40.431306 / -104.663477)	09/06/23	0.5	3.6	N
WH-W @ 0.5' (40.431338 / -104.663515)	09/06/23	0.5	2.8	N
Background-01 @ 0.5' (40.431303 / -104.663516)	09/06/23	0.5	5.1	Y
(Y/N) = Yes or No ppm-v = parts per million by volume PID = Photoionization Detector				



TABLE 2
SOIL ANALYTICAL RESULTS SUMMARY
DERR #21-4
CLOSURE ASSESSMENT
40.431342 / -104.663468
SE¼ NE¼ SEC.4 T5N R65W 6PM
WELD COUNTY, COLORADO
API # 05-123-30775
REMEDIAION # 29994

Sample Location		WH-SS-01 @ 5'	WH-SS-02 @ 5'	WH-SS-03 @ 5'	WH-SS-04 @ 5'	WH-FS-01 @ 6'	Background-01 @ 0.5'
(Latitude / Longitude)		(40.431350 / -104.663479)	(40.431338 / -104.663469)	(40.431328 / -104.663479)	(40.431338 / -104.663488)	(40.431338 / -104.663479)	(40.431303 / -104.663516)
Sample Date		9/6/2023	9/6/2023	9/6/2023	9/6/2023	9/6/2023	9/6/2023
Sample Depth		5	5	5	5	6	0.5
PID Reading (ppm-v)		29.1	127.4	150.6	36.7	51.5	5.1
Regulatory Limits							
Chemical of Concern	Units	ECMC Table 915-1 RSSLs	ECMC Table 915-1 GSSLs				
VOLATILE ORGANIC COMPOUNDS							
Benzene	mg/kg	1.2	0.0026	<0.00200	<0.00200	<0.00200	NA
Toluene	mg/kg	490	0.69	<0.00200	<0.00200	<0.00200	NA
Ethylbenzene	mg/kg	5.8	0.78	<0.00200	<0.00200	<0.00200	NA
Total Xylenes	mg/kg	58	9.9	<0.00200	<0.00200	<0.00200	NA
Naphthalene	mg/kg	2	0.0038	<0.00380	<0.00380	<0.00380	NA
1,2,4-Trimethylbenzene	mg/kg	30	0.0081	<0.00200	<0.00200	<0.00200	NA
1,3,5-Trimethylbenzene	mg/kg	27	0.0087	<0.00200	<0.00200	<0.00200	NA
TOTAL PETROLEUM HYDROCARBONS							
TPH-GRO	mg/kg	500	--	<0.200	<0.200	<0.200	NA
TPH-DRO	mg/kg	500	--	<25.0	<25.0	<25.0	NA
TPH-RRO	mg/kg	500	--	<100	<100	<100	NA
POLYCYCLIC AROMATIC HYDROCARBONS							
1-Methyl-naphthalene	mg/kg	18	0.006	<0.002	<0.002	<0.002	NA
2-Methyl-naphthalene	mg/kg	24	0.019	<0.002	<0.002	<0.002	NA
Acenaphthene	mg/kg	360	0.55	<0.020	<0.020	<0.020	NA
Anthracene	mg/kg	1800	5.8	<0.020	<0.020	<0.020	NA
Benzo(a)-anthracene	mg/kg	1.1	0.011	<0.005	<0.005	<0.005	NA
Benzo(a)-pyrene	mg/kg	0.11	0.24	<0.020	<0.020	<0.020	NA
Benzo(b)-fluoranthene	mg/kg	1.1	0.3	<0.020	<0.020	<0.020	NA
Benzo(k)-fluoranthene	mg/kg	11	2.9	<0.020	<0.020	<0.020	NA
Chrysene	mg/kg	110	9	<0.020	<0.020	<0.020	NA
Dibenzo(a,h)-anthracene	mg/kg	0.11	0.096	<0.020	<0.020	<0.020	NA
Fluoranthene	mg/kg	240	8.9	<0.020	<0.020	<0.020	NA
Fluorene	mg/kg	240	0.54	<0.020	<0.020	<0.020	NA
Indeno(1,2,3-cd)-pyrene	mg/kg	1.1	0.98	<0.020	<0.020	<0.020	NA
Pyrene	mg/kg	180	1.3	<0.020	<0.020	<0.020	NA
SOIL SUITABILITY (Inorganics)							
Boron	mg/L	2	--	0.338	<0.0994	0.188	0.425
pH	standard unit	6-8.3	--	8.84	8.43	8.22	8.34
Sodium Adsorption Ratio (SAR)	--	<6	--	1.19	1.06	0.792	0.842
Specific Conductance (EC)	mmhos/cm	<4	--	0.705	0.319	0.385	0.275
ECMC = Energy & Carbon Management Commission mg/kg = milligrams per kilogram mmhos/cm = millimhos per centimeter PID = Photoionization Detector ppm-v = parts per million by volume mg/L = milligrams per liter NA = Not Analyzed RSSLs = Residential Soil Screening Levels GSSLs = Protection of Groundwater Soil Screening Levels TPH-GRO = Total Petroleum Hydrocarbons - Gasoline Range Organics TPH-DRO = Total Petroleum Hydrocarbons - Diesel Range Organics TPH-RRO = Total Petroleum Hydrocarbons - Residual Range Organics Notes: Values presented with a less than symbol (<) did not contain concentrations at or above the laboratory reporting limit and/or minimum detection limit Values presented in BOLD exceed ECMC Table 915-1 Regulatory Limits.							



ATTACHMENT A

Photo Log

Derr #21-4
API # 05-123-30775
Remediation # 29994

Closure Assessment

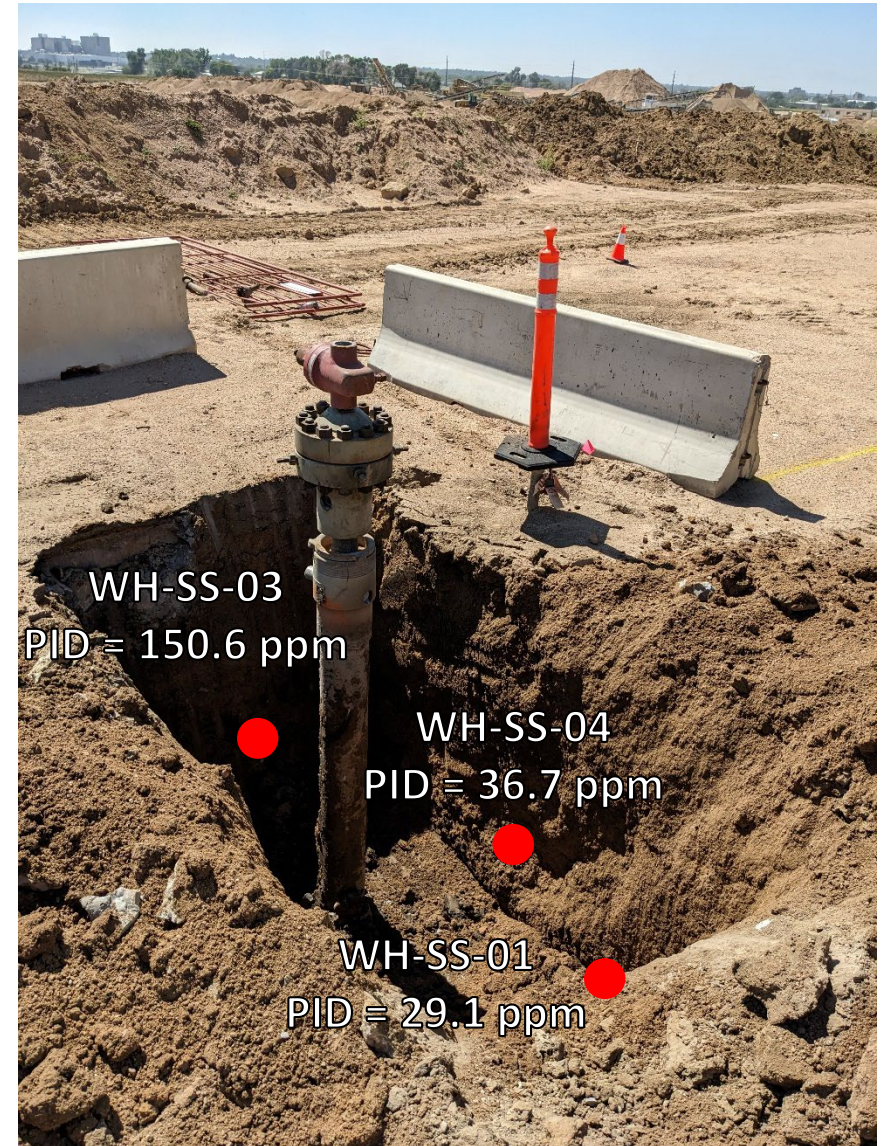
September 2023



Wellhead Excavation – 09/06/23

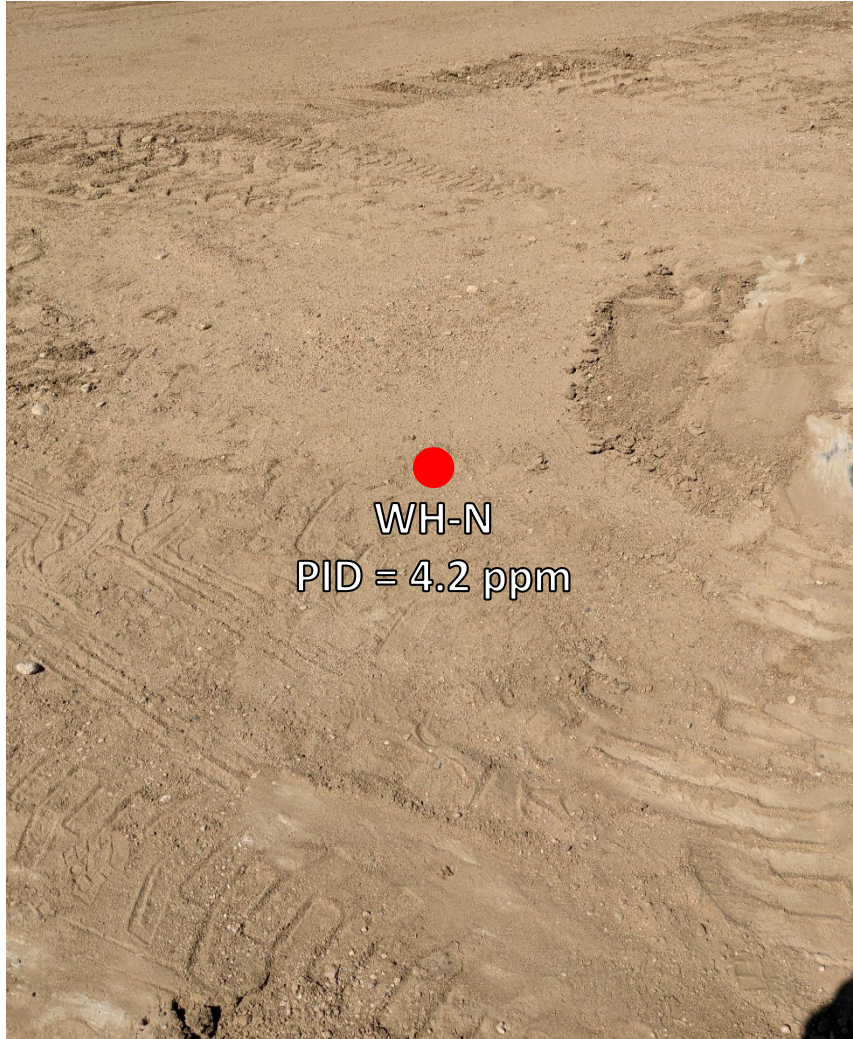


Looking southeast
No petroleum hydrocarbon staining or odor observed



Looking southwest
No petroleum hydrocarbon staining or odor observed

Wellhead Excavation – 09/06/23



Looking north at surface screen
No petroleum hydrocarbon staining or odor observed



Looking east at surface screen
No petroleum hydrocarbon staining or odor observed

Wellhead Excavation – 09/06/23



Looking south at surface screen
No petroleum hydrocarbon staining or odor observed



Looking west at surface screen
No petroleum hydrocarbon staining or odor observed