

Wellhead Closure Checklist

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

Additional attachments (optional): <u> </u>		Pit Closure <u> </u>		Tank Battery Closure <u> </u>		Flowline Closure <u> </u>		Partially Buried Vault Closure <u> </u>
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Site Name & COGCC Facility Number: Frico 20-15	Date: 1/18/24	Remediation Project #: 32083
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Associated Wells: 05-123-24176	Age of Site: years	Number of Photos Attached: 3
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Location: (GPS coordinates of wellhead or southeastern most wellhead for multiple) 40.223500 / -104.656720	Estimated Facility Size (acres): <u> </u>
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General Condition of Site: (General observations regarding housekeeping, corrosion, waste management, etc.)

Good condition

USCS Soil Type: Clayey Sand	Estimated Depth to Groundwater: ~10-15'
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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	05-123-24176					
Age	years					
Condition of surface around wellhead	Good - No odor/no staining					
PID Readings	WH-N: 0.5	WH-E: 0.4	WH-S: 0.2	WH-W: 1.0		
Condition of subsurface (staining present)	Good - No odor/no staining					
PID Readings	0.7	0.4	0.8	1.1	1.8	1.2
Sample taken? Location/Sample ID#	WH-SS-01	WH-SS-02	WH-SS-03	WH-SS-04	WH-FS-01	Background-01
Photo Number(s)	See photo log					

Other observations regarding wellheads:

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
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Highest PID Reading: 1.8	Total number of samples submitted to lab for analysis: 1
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If more than 10 cubic yards of impacted soil were observed:

Vertical extent:	Estimated spill volume:
N/A	
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
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Date Groundwater was encountered:	Commencement date of removal:
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Sheen on groundwater? Yes No	Volume of groundwater removed prior to sampling:
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Free product observed? Yes No	Volume of groundwater removed post sampling:
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Total number of samples collected:	Total Volume of groundwater removed:
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Total number of samples submitted to lab for analysis:	
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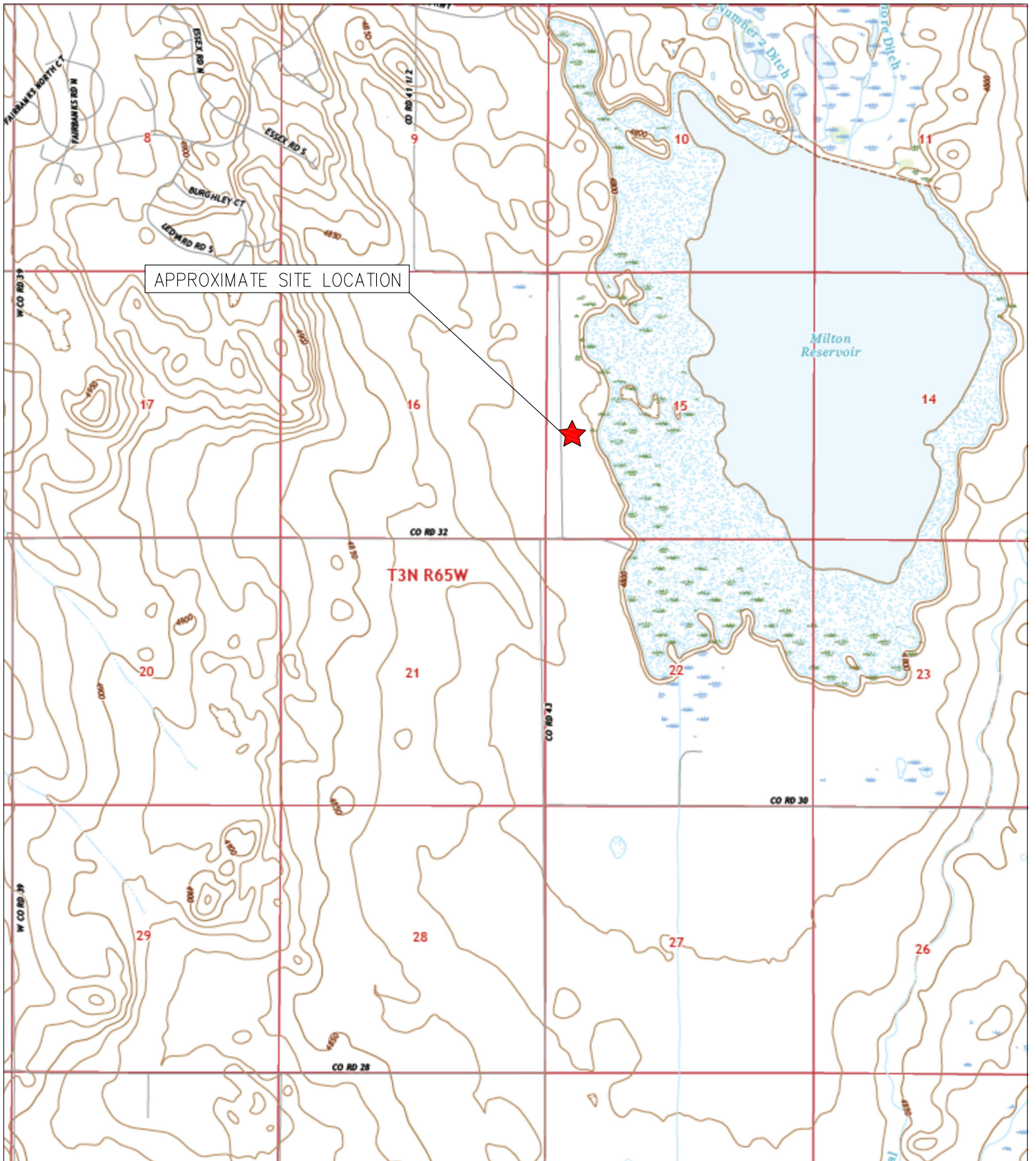
FIGURES

Figure 1: Topographic Site Location Map

Figure 2: Aerial Site Location Map

Figure 3: Soil Analytical Map

Figure 4: Metals in Soil Map

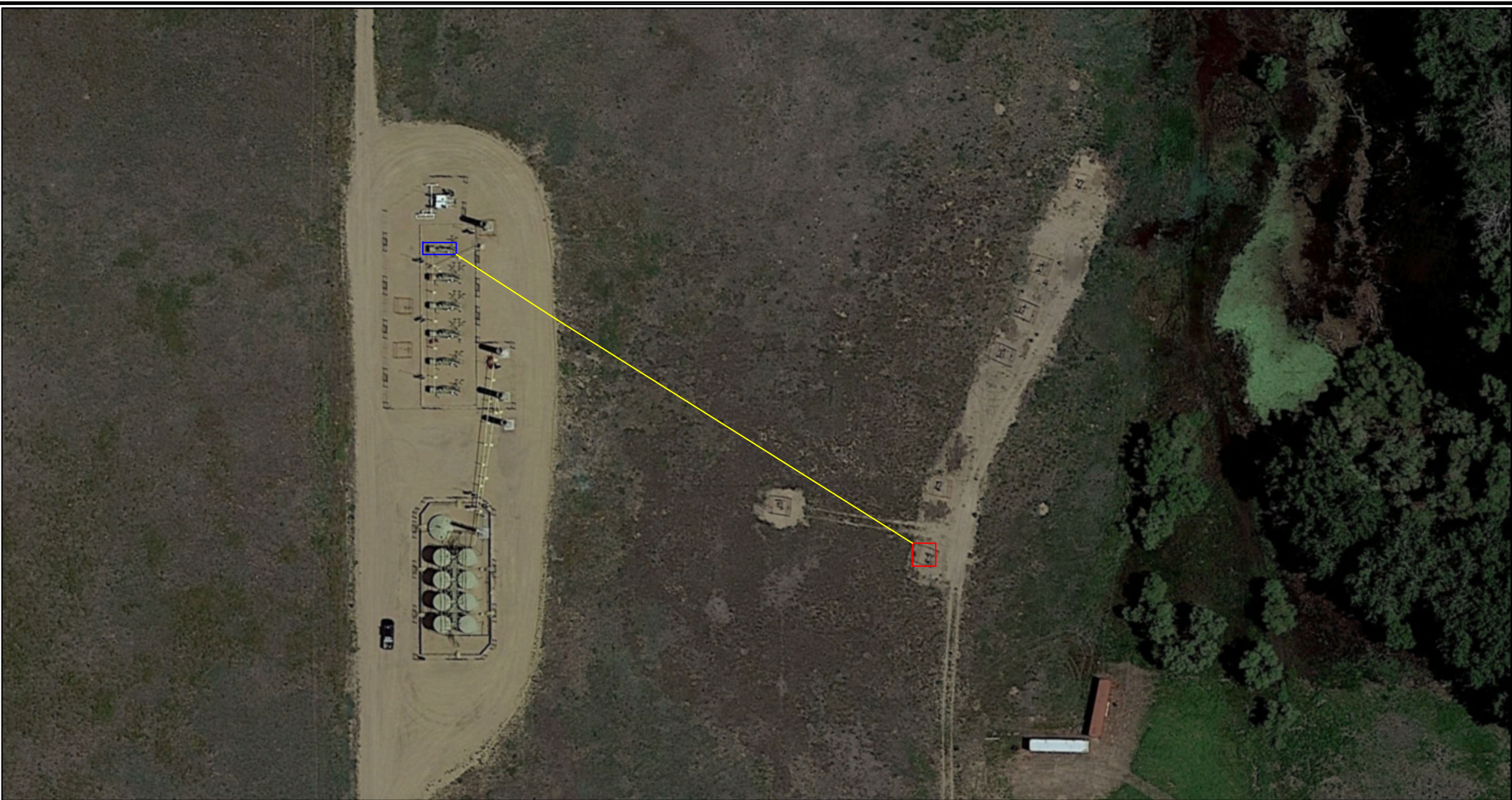


TOPOGRAPHIC SITE LOCATION MAP
 FRICO #20-15
 CLOSURE ASSESSMENT
 40.223500 / -104.656720
 NW¼ SW¼ SEC.15 T3N R65W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-24176
 REMEDIATION # 32083



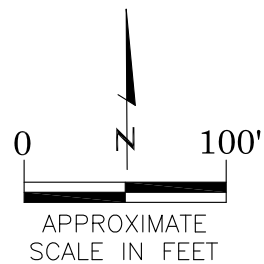
EAGLE
 ENVIRONMENTAL
 CONSULTING, LLC

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



LEGEND

- FORMER FRICO #20-15 WELLHEAD (PLUGGED AND ABANDONED)
- ASSOCIATED SEPARATOR
- APPROXIMATE FLOWLINE LOCATION (REMOVED)



AERIAL SITE LOCATION MAP
 FRICO #20-15
 CLOSURE ASSESSMENT
 40.223500 / -104.656720
 NW¼ SW¼ SEC.15 T3N R65W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-24176
 REMEDIATION # 32083

FIGURE NO.
2

DRAWN BY:
RS



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LEGEND

- INITIAL 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 = MILLIMHOS 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 WITH A LESS THAN SYMBOL (<) DID NOT CONTAIN CONCENTRATIONS AT OR ABOVE LABORATORY DETECTION LIMITS

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

LABORATOR RERUNS WERE COMPLETED ON SAMPLES WITH pH VALUES OUTSIDE ECMC TABLE 915-1 REGULATORY RANGE. RESULTS OF THE RERUNS ARE PRESENTED IN PARENTHESES.

ECMC = ENERGY & CARBON MANAGEMENT COMMISSION

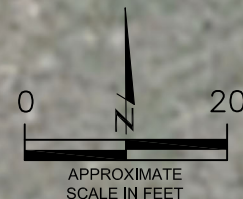
SOIL ANALYTICAL MAP
 FRICO #20-15
 CLOSURE ASSESSMENT
 40.223500 / -104.656720
 NW¼ SW¼ SEC.15 T3N R65W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-24176
 REMEDIATION # 32083

FIGURE NO.
3

DRAWN BY:
RS

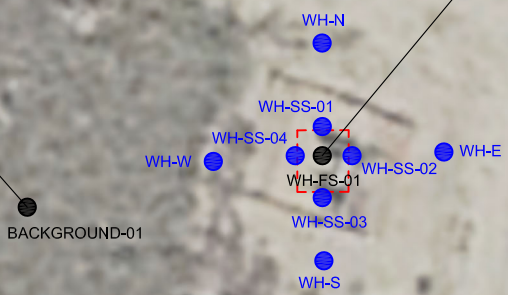


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BACKGROUND-01 @ 2'
 01/18/24
 2'
 Brn= 0.141
 EC = 0.266
 SAR= 0.247
 pH = 8.13

WH-FS-01@7'
 01/18/24
 7'
 pH = **8.42 (8.31/8.34)**
 ALL OTHERS = BRL



LEGEND

- INITIAL 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 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

NA – NOT ANALYZED

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

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.

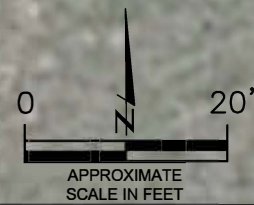
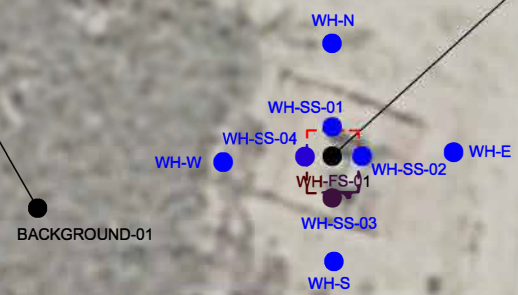
**ACHIEVABLE PRACTICAL QUANTITATIVE LIMITS FOR HEXAVALENT CHROMIUM (Cr VI) IN SOILS IS IN THE RANGE OF 0.1 TO 1 mg/kg.

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

ECMC = ENERGY & CARBON MANAGEMENT COMMISSION

BACKGROUND-01 @ 2'
 01/18/24
 2'
 Arsenic = 2.36
 Barium = 56.9
 Cadmium = <0.0977
 Chromium (VI) = NA
 Copper = <9.77
 Lead = 5.54
 Nickel = 6.07
 Selenium = 0.117
 Silver = <0.0977
 Zinc = 26.7

WH-FS-01 @ 7'
 01/18/24
 7'
 Arsenic = **2.97**
 Barium = 71.9
 Cadmium = 0.0874
 Chromium (VI) = <0.25**
 Copper = <8.40
 Lead = 7.03
 Nickel = 7.85
 Selenium = <0.0840
 Silver = <0.0840
 Zinc = 29.0



METALS IN SOIL MAP
 FRICO #20-15
 CLOSURE ASSESSMENT
 40.223500 / -104.656720
 NW¼ SW¼ SEC.15 T3N R65W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-24176
 REMEDIATION # 32083

FIGURE NO.
 4
 DRAWN BY:
 RS

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TABLES

Table 1: Photoionization Detector Reading Summary

Table 2: Soil Analytical Results Summary

TABLE 1
PHOTOIONIZATION DETECTOR READING SUMMARY
FRICO #20-15
CLOSURE ASSESSMENT
40.223500 / -104.656720
NW¼ SW¼ SEC.15 T3N R65W 6PM
WELD COUNTY, COLORADO
API # 05-123-24176
REMEDICATION # 32083

Sample Location (Latitude/Longitude)	Date	Approximate Depth (feet)	PID Reading (ppm-v)	Lab Submission (Y/N)
WH-FS-01 @ 7' (40.223491 / -104.656716)	01/18/24	7	1.8	Y
WH-SS-01 @ 6' (40.223500 / -104.656713)	01/18/24	6	0.7	N
WH-SS-02 @ 6' (40.223495 / -104.656700)	01/18/24	6	0.4	N
WH-SS-03 @ 6' 40.223484 / -104.656714)	01/18/24	6	0.8	N
WH-SS-04 @ 6' 40.223496 / -104.656722)	01/18/24	6	1.1	N
WH-N @ 0.5' (40.223526 / -104.656712)	01/18/24	0.5	0.5	N
WH-E @ 0.5' (40.223495 / -104.656672)	01/18/24	0.5	0.4	N
WH-S @ 0.5' (40.223466 / -104.656713)	01/18/24	0.5	0.2	N
WH-W @ 0.5' (40.223493 / -104.656754)	01/18/24	0.5	1.0	N
Background-01 @ 2' (40.223479 / -104.656821)	01/18/24	2	1.2	Y
(Y/N) = Yes or No ppm-v = parts per million by volume PID = Photoionization Detector				



TABLE 2
SOIL ANALYTICAL RESULTS SUMMARY
FRICO #20-15
CLOSURE ASSESSMENT
40.223500 / -104.656720
NW¼ SW¼ SEC. 15 T3N R65W 6PM
WELD COUNTY, COLORADO
API # 05-123-24176
REMEDIATION # 32083

Sample Location		WH-FS-01 @ 7'		Background-01 @ 2'	
(Latitude / Longitude)		(40.223491 / -104.656716)		(40.223479 / -104.656821)	
Sample Date		1/18/2024		1/18/2024	
Sample Depth		7		2	
PID Reading (ppm-v)		1.8		1.2	
Regulatory Limits					
Chemical of Concern	Units	ECMC Table 915-1 RSSLs	ECMC Table 915-1 GSSLs	Local Clean-Up Level	
VOLATILE ORGANIC COMPOUNDS					
Benzene	mg/kg	1.2	0.0026	--	<0.00200
Toluene	mg/kg	490	0.69	--	0.00204
Ethylbenzene	mg/kg	5.8	0.78	--	<0.00200
Total Xylenes	mg/kg	58	9.9	--	<0.00200
Naphthalene	mg/kg	2	0.0038	--	<0.00380
1,2,4-Trimethylbenzene	mg/kg	30	0.0081	--	<0.00200
1,3,5-Trimethylbenzene	mg/kg	27	0.0087	--	<0.00200
TOTAL PETROLEUM HYDROCARBONS					
TPH-GRO	mg/kg	500	--	--	<0.200
TPH-DRO	mg/kg	500	--	--	<25.0
TPH-RRO	mg/kg	500	--	--	<100
POLYCYCLIC AROMATIC HYDROCARBONS					
1-Methyl-naphthalene	mg/kg	18	0.006	--	<0.002
2-Methyl-naphthalene	mg/kg	24	0.019	--	<0.002
Acenaphthene	mg/kg	360	0.55	--	<0.020
Anthracene	mg/kg	1800	5.8	--	<0.020
Benzo(a)-anthracene	mg/kg	1.1	0.011	--	<0.005
Benzo(a)-pyrene	mg/kg	0.11	0.24	--	<0.020
Benzo(b)-fluoranthene	mg/kg	1.1	0.3	--	<0.020
Benzo(k)-fluoranthene	mg/kg	11	2.9	--	<0.020
Chrysene	mg/kg	110	9	--	<0.020
Dibenzo(a,h)-anthracene	mg/kg	0.11	0.096	--	<0.020
Fluoranthene	mg/kg	240	8.9	--	<0.020
Fluorene	mg/kg	240	0.54	--	<0.020
Indeno(1,2,3-cd)-pyrene	mg/kg	1.1	0.98	--	<0.020
Pyrene	mg/kg	180	1.3	--	<0.020
SOIL SUITABILITY (Inorganics)					
Boron	mg/L	2	--	--	0.138
pH	standard unit	6-8.3	--	--	8.42 (8.31/8.34)
Sodium Adsorption Ratio (SAR)	--	<6	--	--	1.38
Specific Conductance (EC)	mmhos/cm	<4	--	--	0.433
METALS					
Arsenic	mg/kg	0.68***	0.29***	2.95	2.97
Barium	mg/kg	15000	82	--	71.9
Cadmium	mg/kg	71	0.38	--	0.0874
Copper	mg/kg	3100	46	--	<8.40
Lead	mg/kg	400	14	--	7.03
Nickel	mg/kg	1500	26	--	7.85
Selenium	mg/kg	390	0.26	--	<0.0840
Silver	mg/kg	390	0.8	--	<0.0840
Zinc	mg/kg	23000	370	--	29.0
Hexavalent Chromium	mg/kg	0.3**	0.00067**	0.1 to 1.0**	<0.25**

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. Values presented with asterisk (*) exceed ECMC Table 915-1 GSSLs, only.
Laboratory reruns were completed on samples with pH values outside ECMC Table 915-1 Regulatory Range. Results of the reruns are presented in parentheses.
**Achievable practical quantitative limits for Hexavalent Chromium in soils is in the range of 0.1 to 1 mg/kg.
Elevated metals are naturally occurring in Colorado. Local Clean-up Levels are 1.25*Background concentrations where applicable.





ATTACHMENT A

Photo Log

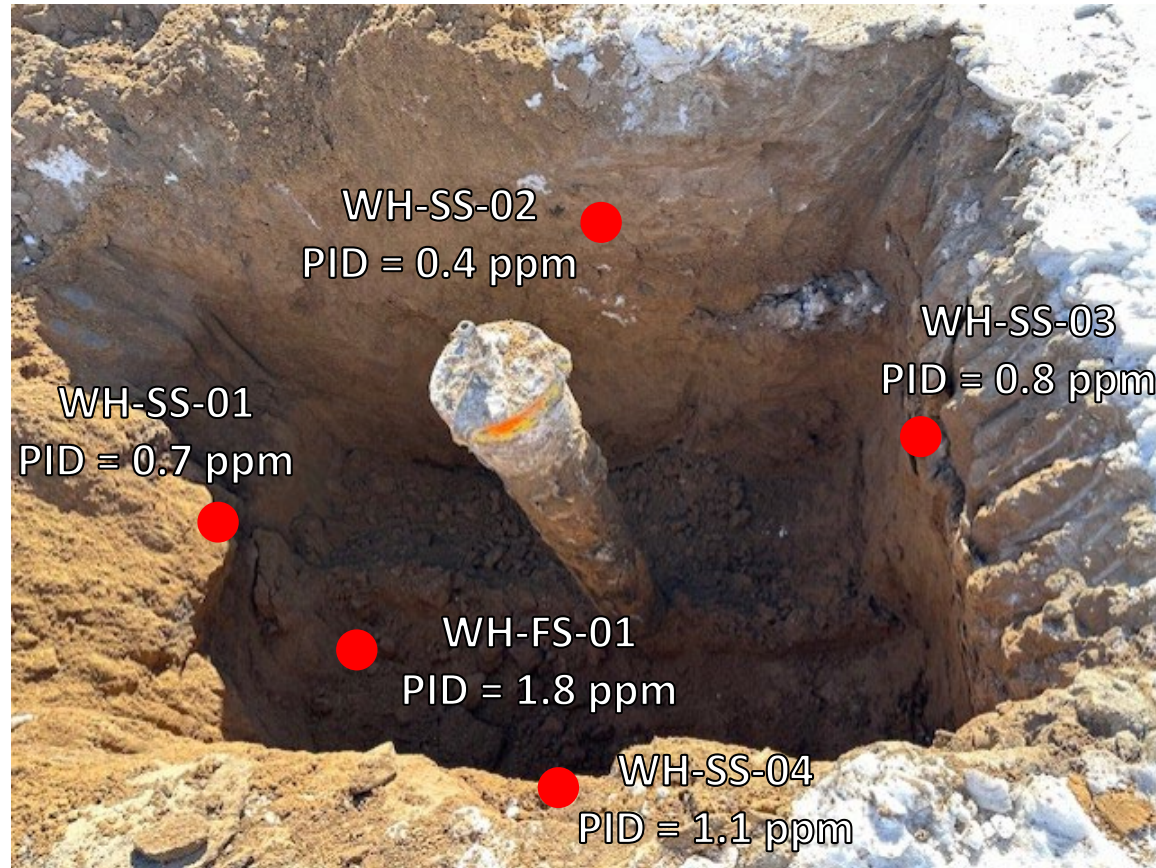
Frico #20-15
API # 05-123-24176
Remediation # 32083

Closure Assessment

January 2024



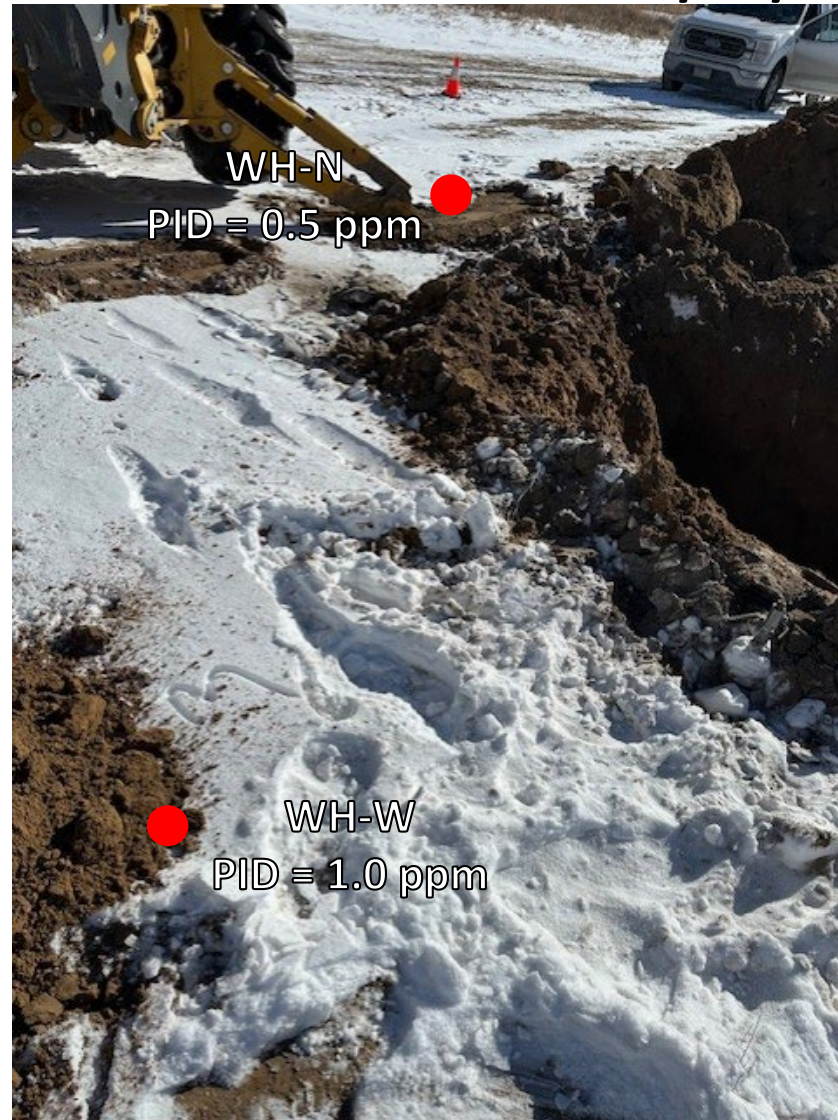
Wellhead Excavation – 01/18/24



Looking east

No petroleum hydrocarbon staining or odor observed

Wellhead Surface – 01/18/24



Looking north and west

Site in good condition – no petroleum hydrocarbon staining or odor
Observed on surface around wellhead

Wellhead Surface – 01/18/24



Looking south and east

Site in good condition – no petroleum hydrocarbon staining or odor
Observed on surface around wellhead