

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	
Site Name & COGCC Facility Number: Pappenheim #2-32		Date: 04/28/23				Remediation Project #: 28062			
Associated Wells: 05-123-11851		Age of Site: Years				Number of Photos Attached: 1			
Location: (GPS coordinates of wellhead or southeastern most wellhead for multiple) 40.532940 / -104.680130						Estimated Facility Size (acres): N/A			
General Condition of Site: (General observations regarding housekeeping, corrosion, waste management, etc.) Good Condition									
USCS Soil Type: OL				Estimated Depth to Groundwater: >20'					
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	05-123-11851								
Age	Years								
Condition of surface around wellhead	Good - Per Crew								
PID Readings	N/A - Excavated Upon Arrival								
Condition of subsurface (staining present)	Good - No odor/no staining								
PID Readings	0.7	0.0	0.3	0.4	0.6				
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: N/A									
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: 1					
Highest PID Reading: 0.7				Total number of samples submitted to lab for analysis: 1					
If more than 10 cubic yards of impacted soil were observed:									
Vertical extent:				Estimated spill volume:					
Lateral extent:				Volume of soil removed: N/A					
Is additional investigation required? N/A									
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:					
Shear 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:									

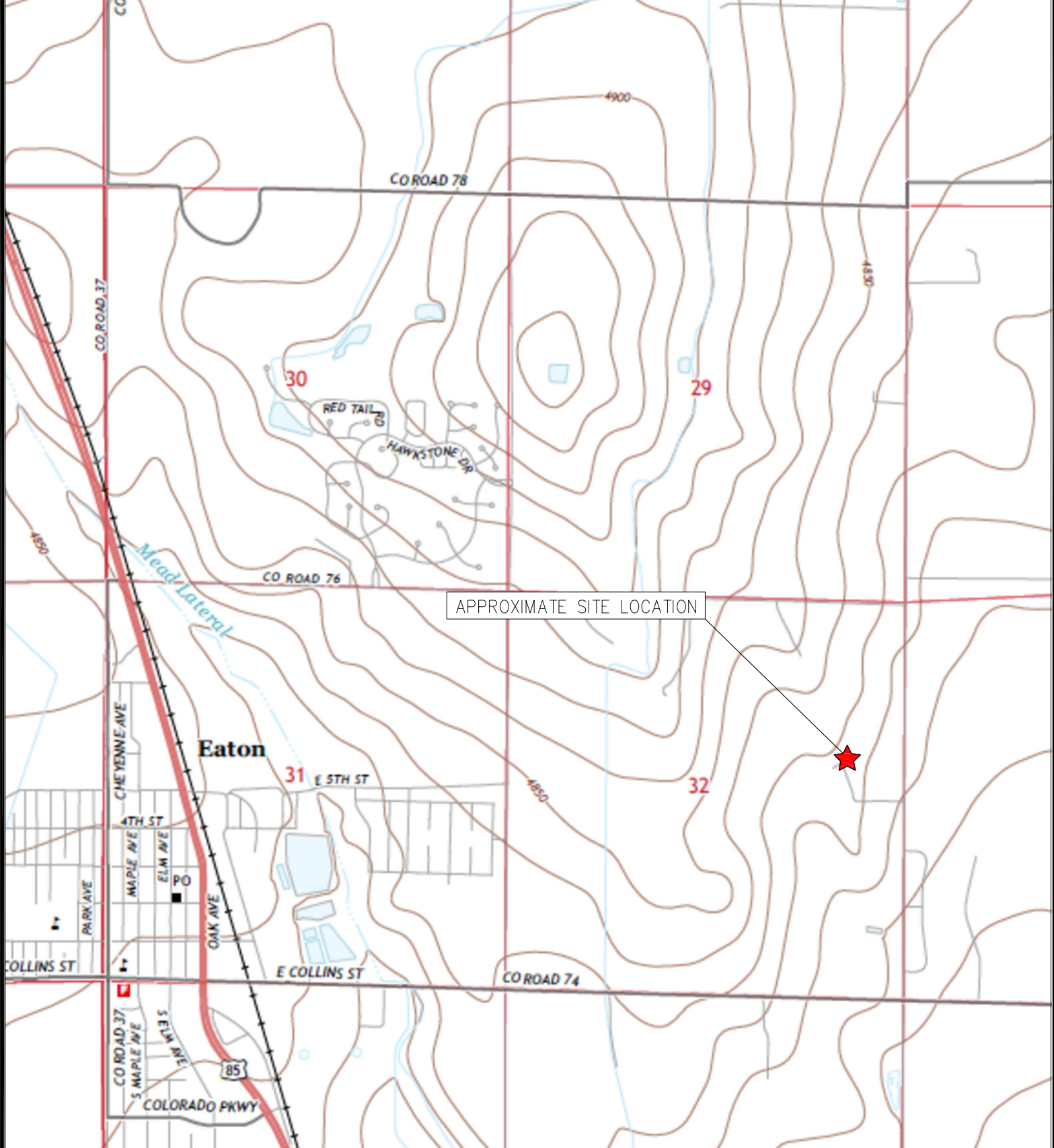


FIGURES

Figure 1: Topographic Site Location Map

Figure 2: Aerial Site Location Map

Figure 3: Soil Analytical Map



APPROXIMATE SITE LOCATION



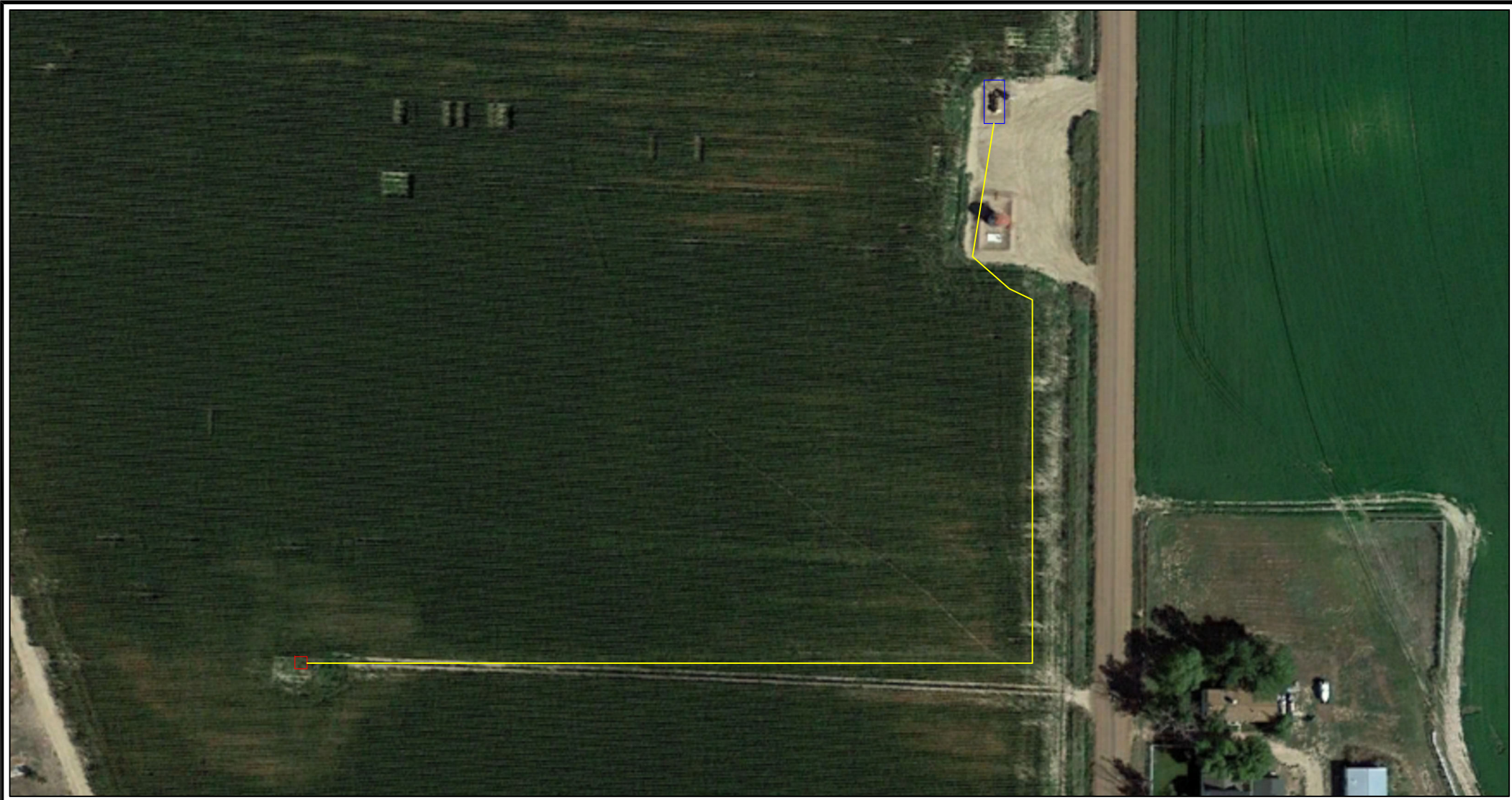
TOPOGRAPHIC SITE LOCATION MAP
 PAPPENHEIM #2-32
 40.532940 / -104.680130
 SE¼ NE¼ SEC.32 T7N R65W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-11851
 REMEDIATION # 28062



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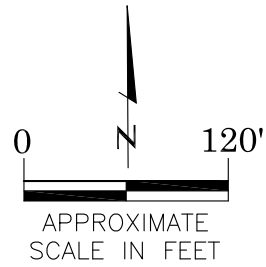
8000 W 44th Ave, Wheat Ridge, CO 80033
 Ph: 303-433-0479 • F: 303-325-5449





LEGEND

- FORMER PAPPENHEIM #2-32 WELLHEAD (PLUGGED AND ABANDONED)
- ASSOCIATED SEPARATOR
- APPROXIMATE FLOWLINE LOCATION



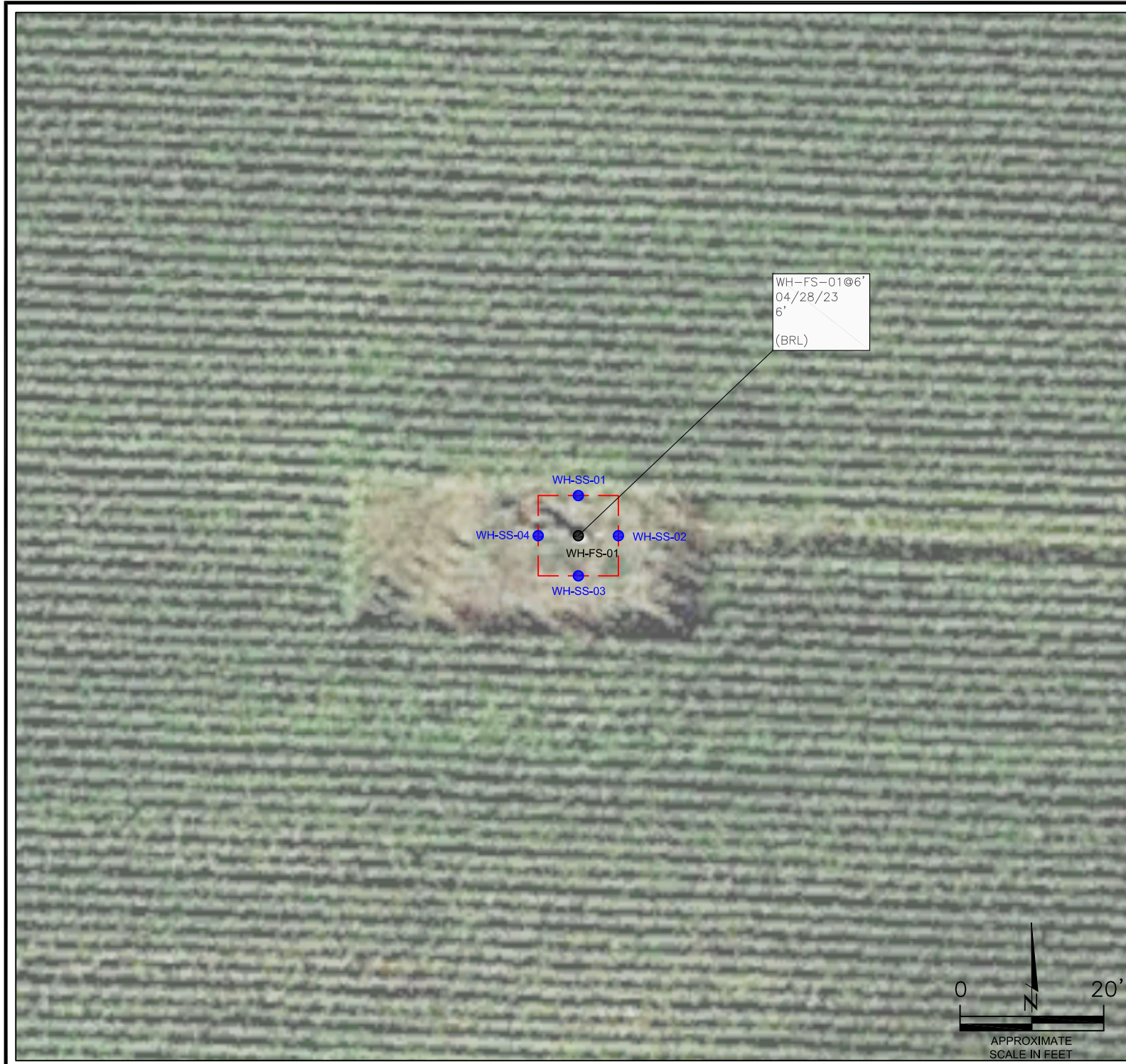
AERIAL SITE LOCATION MAP
 PAPPENHEIM #2-32
 CLOSURE ASSESSMENT
 40.532940 / -104.680130
 SE¼ NE¼ SEC.32 T7N R64W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-11851
 REMEDIATION # 28062

FIGURE NO.
2

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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)
 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) = ALL VALUES 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 ECOM TABLE 915-1 REGULATORY LIMITS

VALUES PRESENTED WITH ASTERISK (*) EXCEED ECOM TABLE 915-1 PROTECTION OF GROUNDWATER SOIL SCREENING LEVELS, ONLY.

ECMC = ENERGY AND CARBON MANAGEMENT COMMISSION

SOIL ANALYTICAL MAP
 PAPPENHEIM #2-32
 CLOSURE ASSESSMENT
 40.532940 / -104.680130
 SE¼ NE¼ SEC.32 T7N R65W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-11851
 REMEDIATION # 28062

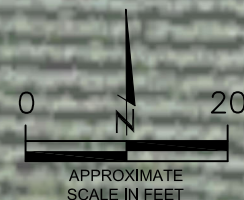


FIGURE NO.
3

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TABLES

Table 1: Photoionization Detector Reading Summary

Table 2: Soil Analytical Results Summary

TABLE 1
PHOTOIONIZATION DETECTOR READING SUMMARY
PAPPENHEIM #2-32
CLOSURE ASSESSMENT
40.532940 / -104.680130
SE¼ NE¼ SEC.32 T7N R65W 6PM
WELD COUNTY, COLORADO
API # 05-123-11851
REMEDIAION # 28062

Sample Location (Latitude/Longitude)	Date	Approximate Depth (feet)	PID Reading (ppm-v)	Lab Submission (Y/N)
WH-SS-01 @ 5' 40.315858 / -104.404846	04/28/23	5	0.7	N
WH-SS-02 @ 5' 40.315855 / -104.404842	04/28/23	5	0.0	N
WH-SS-03 @ 5' 40.315851 / -104.404846	04/28/23	5	0.3	N
WH-SS-04 @ 5' 40.315855 / -104.404852	04/28/23	5	0.4	N
WH-FS-01 @ 6' 40.315855 / -104.404846	04/28/23	6	0.6	Y
(Y/N) = Yes or No ppm-v = parts per million by volume PID = Photoionization Detector				

TABLE 2
SOIL ANALYTICAL RESULTS SUMMARY
PAPPENHEIM #2-32
CLOSURE ASSESSMENT
40.532940 / -104.680130
SE¼ NE¼ SEC.32 T7N R65W 6PM
WELD COUNTY, COLORADO
API # 05-123-11851
REMEDATION # 28062

Sample Location					WH-FS-01 @ 6'
(Latitude / Longitude)					40.315855 / -104.404846
Sample Date					4/28/2023
Sample Depth					6'
PID Reading (ppm-v)					0.6
Regulatory Limits					
Chemical of Concern	Units	COGCC Table 915-1 RSSLs	COGCC Table 915-1 GSSLs	Local Clean-Up Level	
VOCS					
Benzene	mg/kg	1.2	0.0026	--	<0.00200
Toluene	mg/kg	490	0.69	--	<0.00200
Ethylbenzene	mg/kg	5.8	0.78	--	<0.00200
Total Xylenes	mg/kg	58	9.9	--	<0.00200
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	--	<0.00201
2-Methyl-naphthalene	mg/kg	24	0.019	--	<0.00201
Acenaphthene	mg/kg	360	0.55	--	<0.00067
Anthracene	mg/kg	1800	5.8	--	<0.00067
Benzo(a)-anthracene	mg/kg	1.1	0.011	--	<0.00067
Benzo(a)-pyrene	mg/kg	0.11	0.24	--	<0.00067
Benzo(b)-fluoranthene	mg/kg	1.1	0.3	--	<0.00067
Benzo(k)-fluoranthene	mg/kg	11	2.9	--	<0.00067
Chrysene	mg/kg	110	9	--	0.00125
Dibenzo(a,h)-anthracene	mg/kg	0.11	0.096	--	0.000891
Fluoranthene	mg/kg	240	8.9	--	<0.00067
Fluorene	mg/kg	240	0.54	--	<0.00067
Indeno(1,2,3-cd)-pyrene	mg/kg	1.1	0.98	--	<0.00067
Naphthalene	mg/kg	2	0.0038	--	<0.00201
Pyrene	mg/kg	180	1.3	--	<0.00067
SOIL SUITABILITY (Inorganics)					
Boron	mg/L	2	--	--	0.344
pH	standard unit	6-8.3	--	--	8.27
Sodium Adsorption Ratio (SAR)	--	<6	--	--	0.305
Specific Conductance (EC)	mmhos/cm	<4	--	--	0.888
COGCC = Colorado Oil and Gas Conservation Commission		NA - Not Analyzed	VOCS - Volatile Organic Compounds		
mg/kg = milligrams per kilogram					
mmhos/cm = millimhos per centimeter		RSSLs = Residential Soil Screening Levels			
PID = Photoionization Detector		GSSLs = Protection of Groundwater Soil Screening Levels			
ppm-v = parts per million by volume		TPH-GRO = Total Petroleum Hydrocarbons - Gasoline Range Organics			
mg/L = milligrams per liter		TPH-DRO = Total Petroleum Hydrocarbons - Diesel Range Organics			
SAR = Sodium Adsorption Ratio		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 COGCC Table 915-1 Regulatory Limits. Values presented with asterisk (*) exceed COGCC Table 915-1 GSSLs					
**Achievable practical quantitative limits for Hexavalent Chromium in soils is in the range of 0.1 to 1 mg/kg.					
***Arsenic is naturally occurring in Colorado.					



ATTACHMENT A

Photo Log

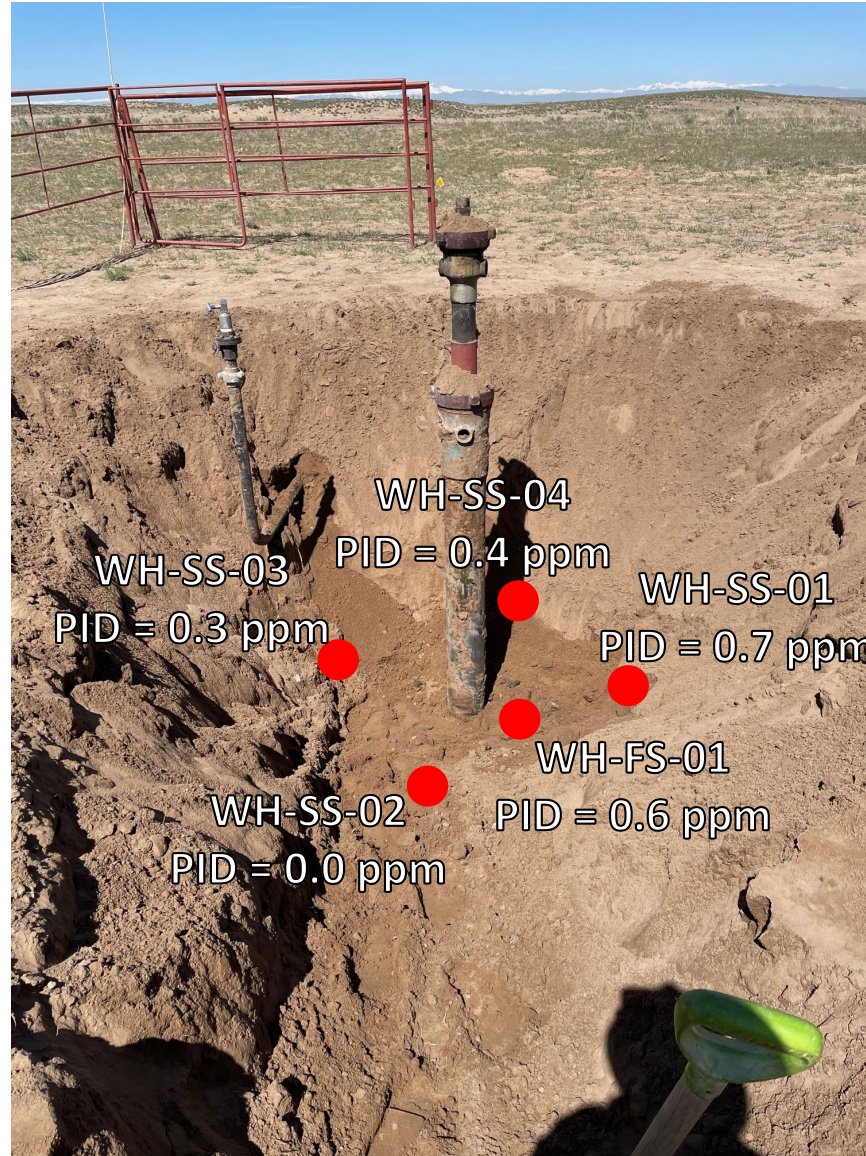
Pappenheim #2-32
API # 05-123-11851
Remediation # 28062

Closure Assessment

April 2023



Wellhead Excavation – 04/28/23



Looking west

No petroleum hydrocarbon staining or odor observed