

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: Howard USX A #09-06D		Date: 01/30/24					Remediation Project #: 31680		
Associated Wells: 05-123-33532		Age of Site: Years					Number of Photos Attached: 6		
Location: (GPS coordinates of wellhead or southeastern most wellhead for multiple)						40.504020 / -104.559900			Estimated Facility Size (acres):
General Condition of Site: (General observations regarding housekeeping, corrosion, waste management, etc.) Good condition.									
USCS Soil Type: SC				Estimated Depth to Groundwater: Approx. 20-40'					
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	05-123-33532								
Age	Years								
Condition of surface around wellhead	Good - Per Crew								
PID Readings	WH-N: 0.3	WH-E: 0.1	WH-S: 0.2	WH-W: 0.2					
Condition of subsurface (staining present)	Good - No odor/no staining								
PID Readings	0.9	1.2	1.1	1.3	1.5				
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? <input checked="" type="checkbox"/> 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: 1.5				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:					
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:					
Sheen on groundwater? Yes				N/A					
Free product observed? Yes No				Volume of groundwater removed prior to sampling:					
				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

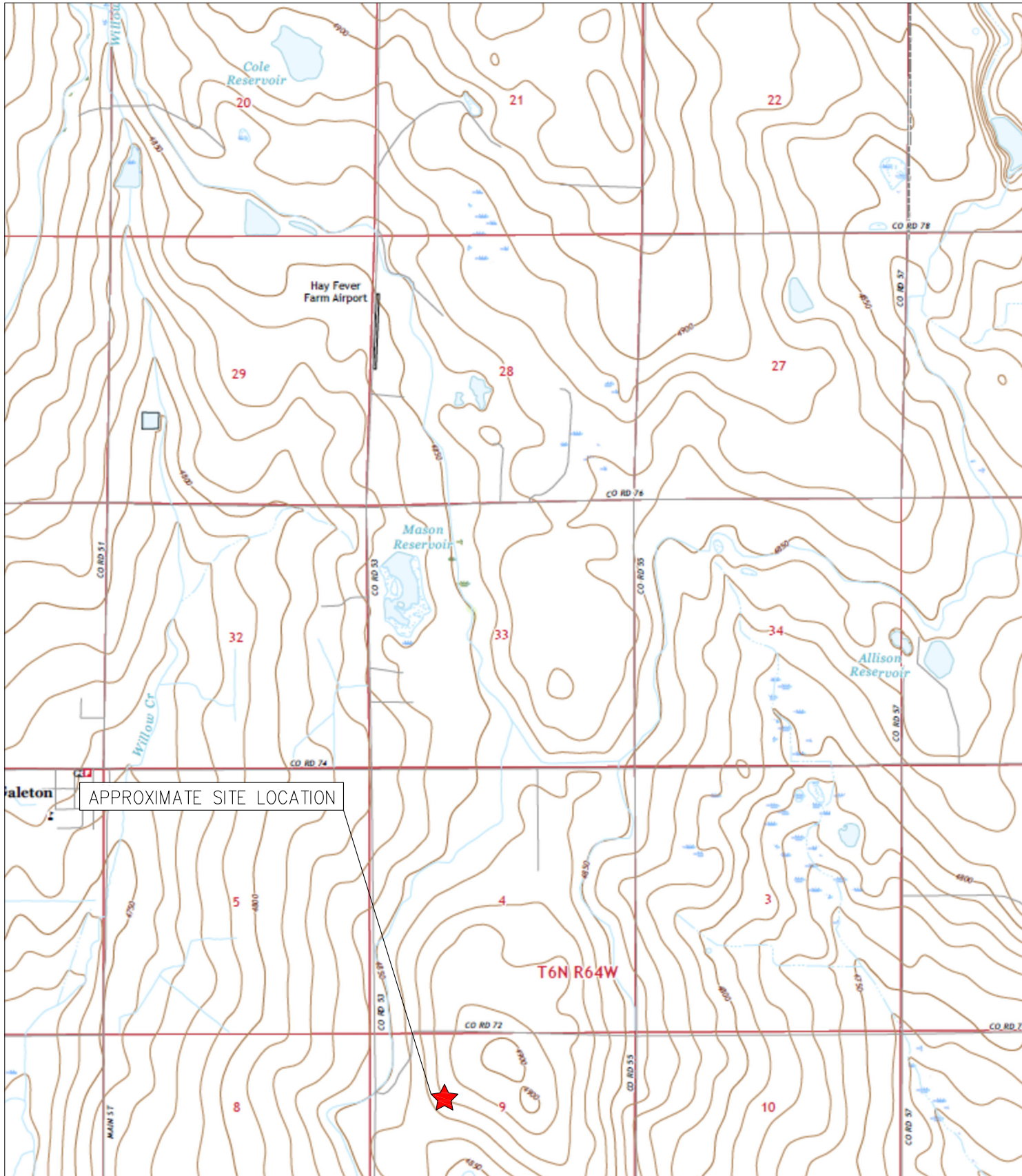
Figure 1: Topographic Site Location Map

Figure 2: Aerial Site Location Map

Figure 3: Soil Sampling Location Map

Figure 4: Soil Analytical Map

Figure 5: Metals in Soil Map



APPROXIMATE SITE LOCATION

T6N R64W



TOPOGRAPHIC SITE LOCATION MAP
 HOWARD UX A #09-06D
 CLOSURE ASSESSMENT
 40.504020 / -104.559900
 SW¼ NW¼ SEC.9 T6N R64W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-33532
 REMEDIATION # 31680



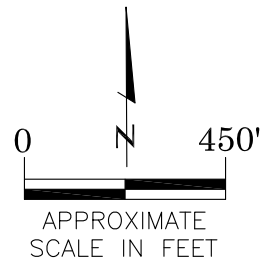
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LEGEND

- FORMER HOWARD USX A #09-06D WELLHEAD (PLUGGED AND ABANDONED)
- ASSOCIATED SEPARATOR
- APPROXIMATE FLOWLINE LOCATION



AERIAL SITE LOCATION MAP
 HOWARD USX A #09-06D
 CLOSURE ASSESSMENT
 40.504020 / -104.559900
 SW¼ NW¼ SEC.9 T6N R64W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-33532
 REMEDIATION # 31680

FIGURE NO.
2

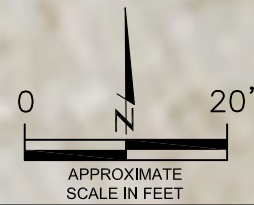
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RS



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LEGEND

- WELLHEAD ASSESSMENT BOUNDARIES
- SS-02 APPROXIMATE LOCATION OF SOIL SAMPLES FIELD SCREENED, ONLY, WITH PHOTOIONIZATION DETECTOR
- APPROXIMATE LOCATION OF SOIL SAMPLES SUBMITTED FOR LABORATORY ANALYSIS



SOIL SAMPLING LOCATION MAP
HOWARD USX A #09-06D
CLOSURE ASSESSMENT
40.504020 / -104.559900
SW¼ NW¼ SEC.9 T6N R64W 6PM
WELD COUNTY, COLORADO
API # 05-123-33532
REMEDIAATION # 31680

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 = 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 IN **BOLD** EXCEED ECMC TABLE 915-1 REGULATORY LIMITS AND APPLICABLE LOCAL CLEAN-UP LEVELS.

ECMC = ENERGY & CARBON MANAGEMENT COMMISSION

SOIL ANALYTICAL MAP
 HOWARD USX A #09-06D
 CLOSURE ASSESSMENT
 40.504020 / -104.559900
 SW¼ NW¼ SEC.9 T6N R64W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-33532
 REMEDIATION # 31680

FIGURE NO.
4

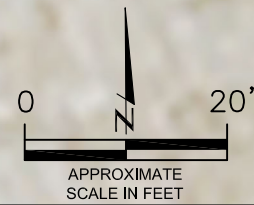
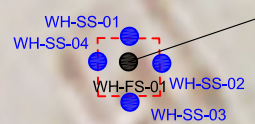
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BACKGROUND-01@2'
 01/30/24
 2'
 Brn= 0.44
 EC = 0.436
 SAR= 0.421
 pH = **8.33**

WH-FS-01@7'
 01/30/24
 7'
 pH = **8.43**
 ALL OTHERS = BRL



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 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

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 WHERE APPLICABLE.

ECMC = ENERGY & CARBON MANAGEMENT COMMISSION

BACKGROUND-01@2'
 01/30/24
 2'
 Arsenic = 3.36
 Barium = 49.9
 Cadmium = 0.197
 Chromium (VI) = <0.244**
 Copper = <8.35
 Lead = 7.85
 Nickel = 6.55
 Selenium = 0.170
 Silver = <0.0835
 Zinc = 36.5

WH-FS-01@7'
 01/30/24
 7'
 Arsenic = 3.78
 Barium = **93.1***
 Cadmium = 0.237
 Chromium (VI) = <0.244**
 Copper = 10.6
 Lead = 11.0
 Nickel = 12.4
 Selenium = 0.240
 Silver = <0.0961
 Zinc = 59.3

WH-SS-01
 WH-SS-04
 WH-FS-01
 WH-SS-02
 WH-SS-03

BACKGROUND-01

METALS IN SOIL MAP
 HOWARD USX A #09-06D
 CLOSURE ASSESSMENT
 40.504020 / -104.559900
 SW¼ NW¼ SEC.9 T6N R64W 6PM
 WELD COUNTY, COLORADO
 API # 05-123-33532
 REMEDIATION # 31680

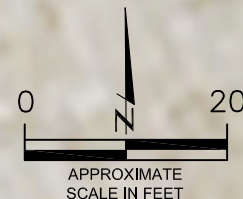


FIGURE NO.
5

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TABLES

Table 1: Photoionization Detector Reading Summary

Table 2: Soil Analytical Results Summary

TABLE 1
PHOTOIONIZATION DETECTOR READING SUMMARY
HOWARD USX A #09-06D
CLOSURE ASSESSMENT
40.504020 / -104.559900
SW¼ NW¼ SEC.9 T6N R64W 6PM
WELD COUNTY, COLORADO
API # 05-123-33532
REMEDIAION # 31680

Sample Location (Latitude/Longitude)	Date	Approximate Depth (feet)	PID Reading (ppm-v)	Lab Submission (Y/N)
WH-FS-01 @ 7' (40.504010 / -104.559905)	01/30/24	7	1.5	Y
WH-SS-01 @ 6' (40.504031 / -104.559903)	01/30/24	6	0.9	N
WH-SS-02 @ 6' (40.504004 / -104.559886)	01/30/24	6	1.2	N
WH-SS-03 @ 6' (40.503993 / -104.559906)	01/30/24	6	1.1	N
WH-SS-04 @ 6' (40.504019 / -104.559924)	01/30/24	6	1.3	N
WH-N @ 0.5' (40.504050 / -104.559905)	01/30/24	0.5	0.3	N
WH-E @ 0.5' (40.504005 / -104.559849)	01/30/24	0.5	0.1	N
WH-S @ 0.5' (40.503970 / -104.559901)	01/30/24	0.5	0.2	N
WH-W @ 0.5' (40.504014 / -104.559948)	01/30/24	0.5	0.2	N
Background-01 @ 2' (40.504047 / -104.559873)	01/30/24	2	0.7	Y
(Y/N) = Yes or No ppm-v = parts per million by volume PID = Photoionization Detector				



TABLE 2
SOIL ANALYTICAL RESULTS SUMMARY
HOWARD USX A #09-06D
CLOSURE ASSESSMENT
40.504020 / -104.559900
SW¼ NW¼ SEC.9 T6N R64W 6PM
WELD COUNTY, COLORADO
API # 05-123-33532
REMEDATION # 31680

Sample Location		WH-FS-01 @ 7'		Background-01 @ 2'		
(Latitude / Longitude)		(40.504010 / -104.559905)		(40.504047 / -104.559873)		
Sample Date		01/30/24		01/30/24		
Sample Depth		7		2		
PID Reading (ppm-v)		1.5		0.7		
Regulatory Limits						
Chemical of Concern	Units	ECMC Table 915-1 RSSLs	ECMC Table 915-1 GSSLs	Local Clean-Up Level		
VOCs						
Benzene	mg/kg	1.2	0.0026	--	<0.00200	NA
Toluene	mg/kg	490	0.69	--	<0.00200	NA
Ethylbenzene	mg/kg	5.8	0.78	--	<0.00200	NA
Total Xylenes	mg/kg	58	9.9	--	<0.00200	NA
Naphthalene	mg/kg	2	0.0038	--	<0.00380	NA
1,2,4-Trimethylbenzene	mg/kg	30	0.0081	--	<0.00200	NA
1,3,5-Trimethylbenzene	mg/kg	27	0.0087	--	<0.00200	NA
TOTAL PETROLEUM HYDROCARBONS						
TPH-GRO	mg/kg	500	--	--	<0.200	NA
TPH-DRO	mg/kg	500	--	--	<25.0	NA
TPH-RRO	mg/kg	500	--	--	<100	NA
POLYCYCLIC AROMATIC HYDROCARBONS						
1-Methyl-naphthalene	mg/kg	18	0.006	--	<0.002	NA
2-Methyl-naphthalene	mg/kg	24	0.019	--	<0.002	NA
Acenaphthene	mg/kg	360	0.55	--	<0.020	NA
Anthracene	mg/kg	1800	5.8	--	<0.020	NA
Benzo(a)-anthracene	mg/kg	1.1	0.011	--	<0.005	NA
Benzo(a)-pyrene	mg/kg	0.11	0.24	--	<0.020	NA
Benzo(b)-fluoranthene	mg/kg	1.1	0.3	--	<0.020	NA
Benzo(k)-fluoranthene	mg/kg	11	2.9	--	<0.020	NA
Chrysene	mg/kg	110	9	--	<0.020	NA
Dibenzo(a,h)-anthracene	mg/kg	0.11	0.096	--	<0.020	NA
Fluoranthene	mg/kg	240	8.9	--	<0.020	NA
Fluorene	mg/kg	240	0.54	--	<0.020	NA
Indeno(1,2,3-cd)-pyrene	mg/kg	1.1	0.98	--	<0.020	NA
Pyrene	mg/kg	180	1.3	--	<0.020	NA
SOIL SUITABILITY (Inorganics)						
Boron	mg/L	2	--	--	0.256	0.440
pH	standard unit	6-8.3	--	--	8.43	8.33
Sodium Adsorption Ratio (SAR)	--	<6	--	--	0.511	0.421
Specific Conductance (EC)	mmhos/cm	<4	--	--	0.352	0.436
METALS						
Arsenic	mg/kg	0.68***	0.29***	4.20	3.78	3.36
Barium	mg/kg	15000	82	--	93.1*	49.9
Cadmium	mg/kg	71	0.38	--	0.237	0.197
Copper	mg/kg	3100	46	--	10.6	<8.35
Lead	mg/kg	400	14	--	11.0	7.85
Nickel	mg/kg	1500	26	--	12.4	6.55
Selenium	mg/kg	390	0.26	--	0.240	0.170
Silver	mg/kg	390	0.8	--	<0.0961	<0.0835
Zinc	mg/kg	23000	370	--	59.3	36.5
Hexavalent Chromium	mg/kg	0.3**	0.00067**	0.1 to 1.0**	<0.244**	<0.244**
ECMC = Energy & Carbon Management 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 ECMC Table 915-1 Regulatory Limits and applicable Local Clean-Up Levels. Values presented with asterisk (*) exceed ECMC Table 915-1 GSSLs, only.						
**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. The Local Clean-up Levels are 1.25*Background where applicable.						



ATTACHMENT A

Photo Log

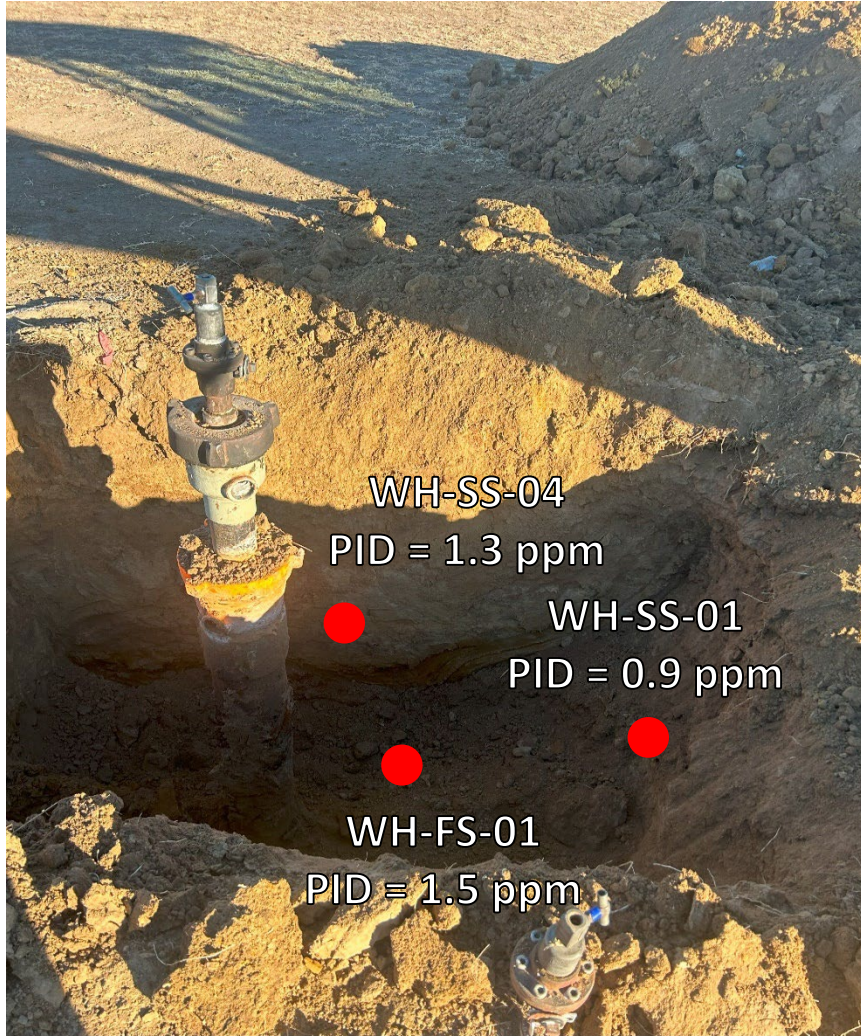
Howard USX A #09-06D
API # 05-123-33532
Remediation # 31680

Closure Assessment

January 2024

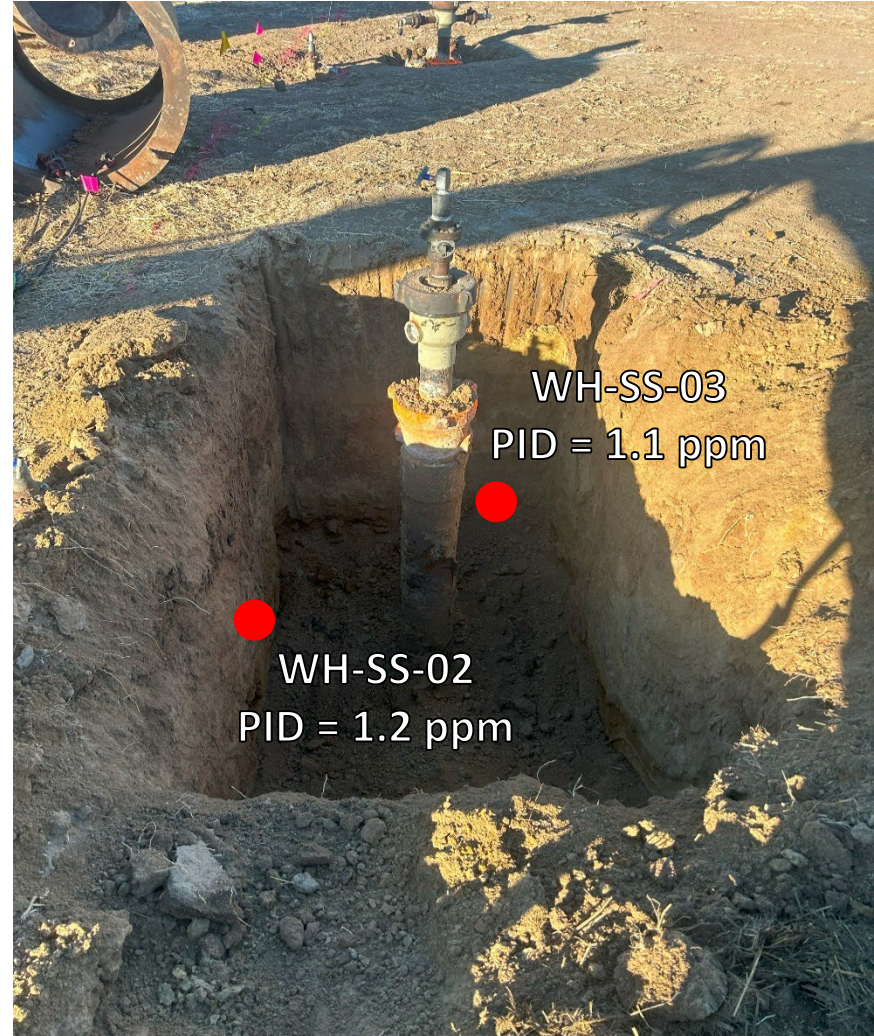


Wellhead Excavation – 01/30/24



Looking west

No petroleum hydrocarbon staining or odor observed



Looking south

No petroleum hydrocarbon staining or odor observed

Wellhead Surface – 01/30/24



Looking north

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



Looking east

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

Wellhead Surface – 01/30/24



Looking south

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



Looking west

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