



Facility Closure Investigation and Excavation Environmental Summary

Duell 20-1 Wellhead

ECMC Remediation Project #39139

Weld County, Colorado

Attachments:

Figure 1 – General Location Map

Figure 2 – Initial Facility Closure Wellhead Soil Sample and Screening Locations

Figure 3 – Excavation Extent and Soil Sample 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

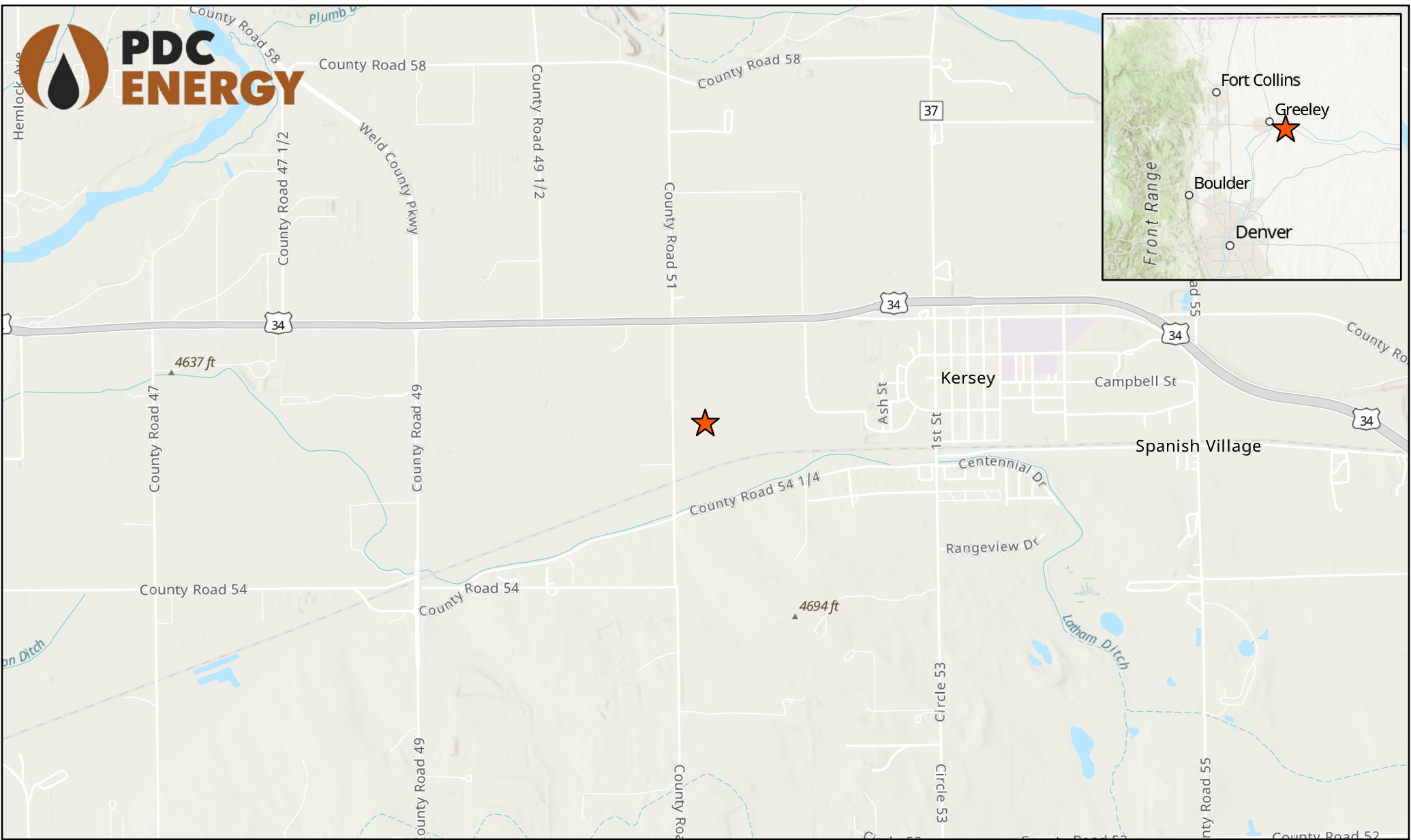
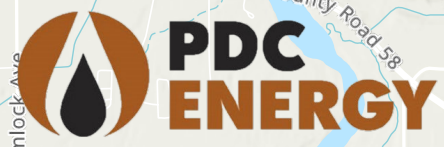
Table 4 – Soil Analytical Results Summary Table – Soil Suitability

Table 5 – Soil Analytical Results Summary Table – Metals

Attachment A: Photographic Log

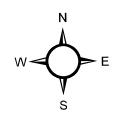
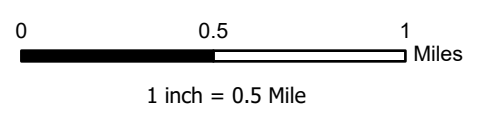
Attachment B: Facility Closure Checklists

FIGURES



LEGEND

 Site Location



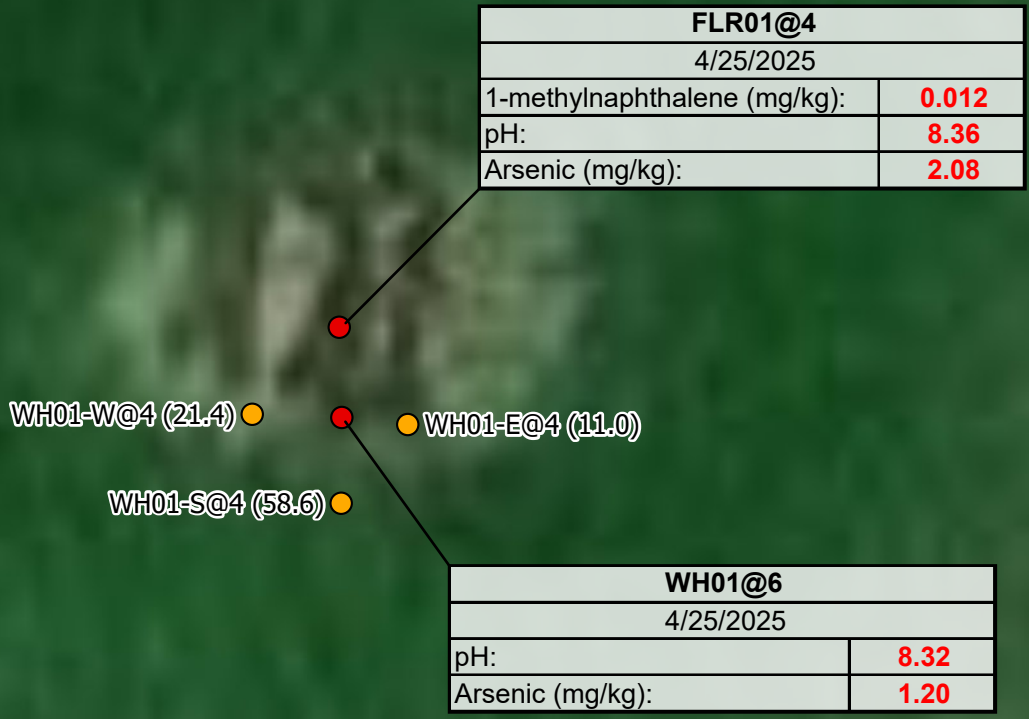
Project No:	025-284
Map By:	JW
Date:	05/22/2025

**DUELL 20-1 WELLHEAD
GENERAL LOCATION MAP**
PDC ENERGY
SW 1/4 NW 1/4 SECTION 20
T5N R64W, 6TH PM
WELD COUNTY, COLORADO



610 Garrison St., Unit T
Lakewood, CO 80215
303.378.4036

Figure
1

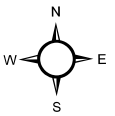
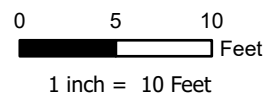


LABEL LEGEND
 XXXX@X: SAMPLE NAME @ DEPTH IN FEET
 WH: WELLHEAD SAMPLE
 FLR: FLOWLINE RISER SAMPLE
BOLD: ABOVE ECMC TABLE 915-1 GWSSL

Legend

● Soil Sample ● Screening Location

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



Project No: 025-284
 Map By: JW
 Date: 05/22/2025

**DUELL 20-1 WELLHEAD
 INITIAL FACILITY CLOSURE
 SOIL SAMPLE AND FIELD SCREENING LOCATIONS PDC
 ENERGY**
 SW 1/4 NW 1/4 SECTION 20
 T5N R64W, 6TH PM
 WELD COUNTY, COLORADO



610 Garrison St., Unit T
 Lakewood, CO 80215
 303.378.4036

Figure
 2

Only exceedances above applicable Table 915-1 standards are displayed.

EX05@4	
11/25/2025	
Arsenic (mg/kg):	4.11
Chromium (VI) (mg/kg):	0.451
Selenium (mg/kg):	0.271

EX01@8	
11/25/2025	
pH:	8.49
Arsenic (mg/kg):	1.59

EX03@4	
11/25/2025	
Arsenic (mg/kg):	3.45
Barium (mg/kg):	119
Chromium (VI) (mg/kg):	0.278

EX04@4	
11/25/2025	
Arsenic (mg/kg):	5.92
Barium (mg/kg):	116
Chromium (VI) (mg/kg):	0.329
Lead (mg/kg):	20.9
Selenium (mg/kg):	0.312

EX02@4	
11/25/2025	
Arsenic (mg/kg):	5.84
Barium (mg/kg):	91.7
Chromium (VI) (mg/kg):	0.254
Selenium (mg/kg):	0.330

BKG01@4	
11/25/2025	
Arsenic (mg/kg):	6.21
Barium (mg/kg):	166
Lead (mg/kg):	14.6
Selenium (mg/kg):	0.355

BKG02@4	
11/25/2025	
Arsenic (mg/kg):	6.15
Barium (mg/kg):	183
Cadmium (mg/kg):	0.471
Lead (mg/kg):	22.1
Selenium (mg/kg):	0.570

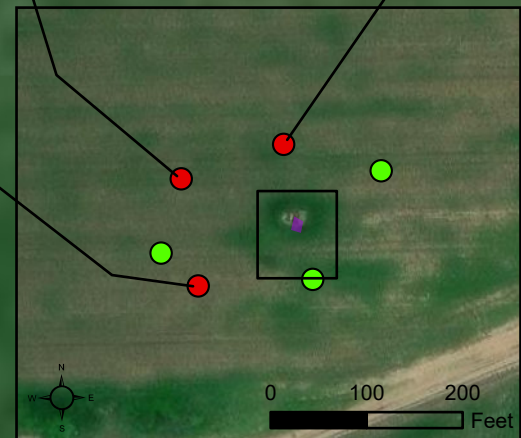
BKG01@8	
11/25/2025	
Arsenic (mg/kg):	6.55
Barium (mg/kg):	152
Cadmium (mg/kg):	0.528
Lead (mg/kg):	15.2
Selenium (mg/kg):	0.465

BKG02@8	
11/25/2025	
Arsenic (mg/kg):	7.57
Barium (mg/kg):	160
Chromium (VI) (mg/kg):	0.209
Lead (mg/kg):	19.6
Selenium (mg/kg):	0.503

BKG03@4	
11/25/2025	
Arsenic (mg/kg):	6.24
Barium (mg/kg):	166
Cadmium (mg/kg):	0.447
Lead (mg/kg):	21.1
Selenium (mg/kg):	0.597

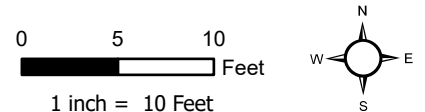
BKG03@8	
11/25/2025	
Arsenic (mg/kg):	5.74
Barium (mg/kg):	174
Cadmium (mg/kg):	0.451
Chromium (VI) (mg/kg):	0.209
Lead (mg/kg):	21.3
Selenium (mg/kg):	0.343

LABEL LEGEND
 XXXX@X: SAMPLE NAME @ DEPTH IN FEET
 EX: EXCAVATION SAMPLE
 BKG: BACKGROUND SAMPLE
RED: BOLD FACED VALUES EXCEED THE ECMC TABLE 915-1 LIMIT(S)
BOLD: BOLD FACED VALUES EXCEED THE ECMC TABLE 915-1 LIMIT(S) BUT ARE WITHIN BACKGROUND CONCENTRATIONS



Legend

- Soil Sample
- Proposed Background Soil Sample
- Excavation Extent



Project No: 025-284
 Map By: JW
 Date: 02/12/2026

DUELL 20-1 WELLHEAD
EXCAVATION EXTENT AND SOIL SAMPLE LOCATIONS
 PDC ENERGY
 SW 1/4 NW 1/4 SECTION 20
 T5N R64W, 6TH PM
 WELD COUNTY, COLORADO



610 Garrison St., Unit T
 Lakewood, CO 80215
 303.378.4036

Figure
 3

TABLES

TABLE 1
FIELD DATA SUMMARY TABLE
PDC 69175
DUELL 20-1 WELLHEAD, WELD COUNTY, COLORADO
REM # 39139

Sample ID	Sample Date	Depth (ft-bgs)	GPS Data		VOC Concentration (ppm)
			Latitude/Longitude		
WH01@6	4/25/2025	6	40.386404	-104.581053	8.2
FLR01@4	4/25/2025	4	40.386417	-104.581053	61.2
WH01-E@4	4/25/2025	4	40.386403	-104.581040	11.0
WH01-W@4	4/25/2025	4	40.386404	-104.581069	21.4
WH01-S@4	4/25/2025	4	40.386392	-104.581053	58.6
EX01@8	11/25/2025	8	40.386401	-104.581042	0.0
EX02@4	11/25/2025	4	40.386386	-104.581048	0.2
EX03@4	11/25/2025	4	40.386407	-104.581057	0.8
EX04@4	11/25/2025	4	40.386396	-104.581025	0.6
EX05@4	11/25/2025	4	40.386418	-104.581038	0.5
BKG01@4	11/25/2025	4	40.386633	-104.581089	0.3
BKG01@8	11/25/2025	8	40.386633	-104.581089	0.1
BKG02@4	11/25/2025	4	40.386537	-104.581473	0.2
BKG02@8	11/25/2025	8	40.386537	-104.581473	0.5
BKG03@4	11/25/2025	4	40.386231	-104.581414	0.0
BKG03@8	11/25/2025	8	40.386231	-104.581414	0.4

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
PDC 69175
DUELL 20-1 WELLHEAD, WELD COUNTY, COLORADO
REM # 39139

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	4/25/2025	6	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.002	<125.200	<0.200	<25.0	<100
FLR01@4	4/25/2025	4	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	0.00468	<0.002	61.97	0.47	61.5	<100
EX01@8	11/25/2025	8	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<130.215	<0.215	<26.0	<104
EX02@4	11/25/2025	4	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<146.329	<0.229	<29.1	<117
EX03@4	11/25/2025	4	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<144.035	<0.235	<28.8	<115
EX04@4	11/25/2025	4	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<148.937	<0.237	<29.7	<119
EX05@4	11/25/2025	4	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<155.146	<0.246	<30.9	<124

Table created by Entrada Consulting Group

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

** 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

 = Material excavated and transported off site for disposal.

TABLE 3
SUMMARY OF POLYCYCLIC AROMATIC HYDROCARBON SOIL CHEMISTRY DATA
PDC 69175
DUELL 20-1 WELLHEAD, WELD COUNTY, COLORADO
REM # 39139

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	4/25/2025	6	<0.020	<0.020	<0.005	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.005	<0.002
FLR01@4	4/25/2025	4	<0.020	<0.020	<0.005	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.012	0.003
EX01@8	11/25/2025	8	<0.021	<0.021	<0.005	<0.021	<0.021	<0.021	<0.021	<0.021	<0.021	<0.021	<0.021	<0.021	<0.002	<0.002
EX02@4	11/25/2025	4	<0.023	<0.023	<0.006	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.002	<0.002
EX03@4	11/25/2025	4	<0.023	<0.023	<0.006	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.023	<0.002	<0.002
EX04@4	11/25/2025	4	<0.024	<0.024	<0.006	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	<0.002	<0.002
EX05@4	11/25/2025	4	<0.025	<0.006	<0.006	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.002	<0.002

Table created by Entrada Consulting Group

Bold faced values exceed the ECMC Table 915-1 limit(s)

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
PDC 69175
DUELL 20-1 WELLHEAD, WELD COUNTY, COLORADO
REM # 39139

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	4/25/2025	6	8.32	0.738	0.996	0.12
FLR01@4	4/25/2025	4	8.36	1.33	1.12	0.186
EX01@8	11/25/2025	8	8.49	0.268	1.09	<0.105
EX02@4	11/25/2025	4	8.16	0.702	1.93	0.223
EX03@4	11/25/2025	4	8.16	0.657	1.93	0.171
EX04@4	11/25/2025	4	8.04	0.907	1.69	0.262
EX05@4	11/25/2025	4	8.26	0.579	1.90	0.196
BKG01@4	11/25/2025	4	8.01	1.33	2.76	1.56
BKG01@8	11/25/2025	8	8.12	1.07	2.61	1.12
BKG02@4	11/25/2025	4	8.00	1.58	2.72	1.70
BKG02@8	11/25/2025	8	8.14	1.11	2.50	0.802
BKG03@4	11/25/2025	4	8.08	1.43	2.67	1.60
BKG03@8	11/25/2025	8	8.10	1.04	2.59	0.687
Maximum Background Concentration			8.14	1.58	2.76	1.70

Table created by Entrada Consulting Group

Bold faced values exceed the ECMC Table 915-1 limit(s)

Brown highlighted soil analytical values indicate a regulatory exceedance.

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

= Material excavated and transported off site for disposal.

TABLE 5
SUMMARY OF METALS IN SOIL CHEMISTRY DATA
PDC 69175
DUELL 20-1 WELLHEAD, WELD COUNTY, COLORADO
REM # 39139

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	4/25/2025	6	1.20	30.7	<0.0999	<0.5*	<9.99	6.05	7.66	<0.260	<0.0999	<37.0
FLR01@4	4/25/2025	4	2.08	59.3	<0.0944	<0.516*	<9.44	9.83	4.18	<0.246	<0.0944	<34.9
EX01@8	11/25/2025	8	1.59	<55.4	<0.257	<0.214*	<31.1	<9.47	<17.6	<0.166	<0.541	<250
EX02@4	11/25/2025	4	5.84	91.7	<0.287	0.254	<34.7	13.7	<19.6	0.330	<0.603	<279
EX03@4	11/25/2025	4	3.45	119	<0.313	0.278	<37.9	<11.5	<21.4	0.221	<0.659	<305
EX04@4	11/25/2025	4	5.92	116	0.316	0.329	<37.7	20.9	<21.3	0.312	<0.655	<303
EX05@4	11/25/2025	4	4.11	75.6	<0.308	0.451	<37.3	11.5	<21.1	0.271	<0.648	<300
BKG01@4	11/25/2025	4	6.21	166	<0.312	<0.240*	<37.8	14.6	<21.4	0.355	<0.657	<304
BKG01@8	11/25/2025	8	6.55	152	0.528	<0.235*	<38.7	15.2	<21.9	0.465	<0.674	<311
BKG02@4	11/25/2025	4	6.15	183	0.471	<0.239*	<39.0	22.1	<22.0	0.570	<0.678	<314
BKG02@8	11/25/2025	8	7.57	160	0.362	0.209	<39.2	19.6	<22.1	0.503	<0.682	<315
BKG03@4	11/25/2025	4	6.24	166	0.447	<0.231*	<35.3	21.1	<20.0	0.597	<0.614	<284
BKG03@8	11/25/2025	8	5.74	174	0.451	0.209	<42.2	21.3	<23.9	0.343	<0.734	<339
1.25x Maximum Background Concentration			9.46	229	0.660	0.261	-	27.6	-	0.746	-	-

Table created by Entrada Consulting Group

Bold faced values exceed the ECMC Table 915-1 limit(s), but are within 1.25x background concentrations.

Bold faced values exceed the ECMC Table 915-1 limit(s)

Red & blue highlighted soil analytical values indicate an exceedance of the referenced soil screening level (SSL)

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

Material excavated and transported off site for disposal.

**ATTACHMENT A
PHOTOGRAPHIC LOG**

Duell 20-1 Wellhead Photographic Log

Wellhead Initial Facility Closure – April 25, 2025



Duell 20-1 Wellhead Photographic Log



Duell 20-1 Wellhead Photographic Log



Duell 20-1 Wellhead Photographic Log

Final Excavation Extents – November 11, 2025



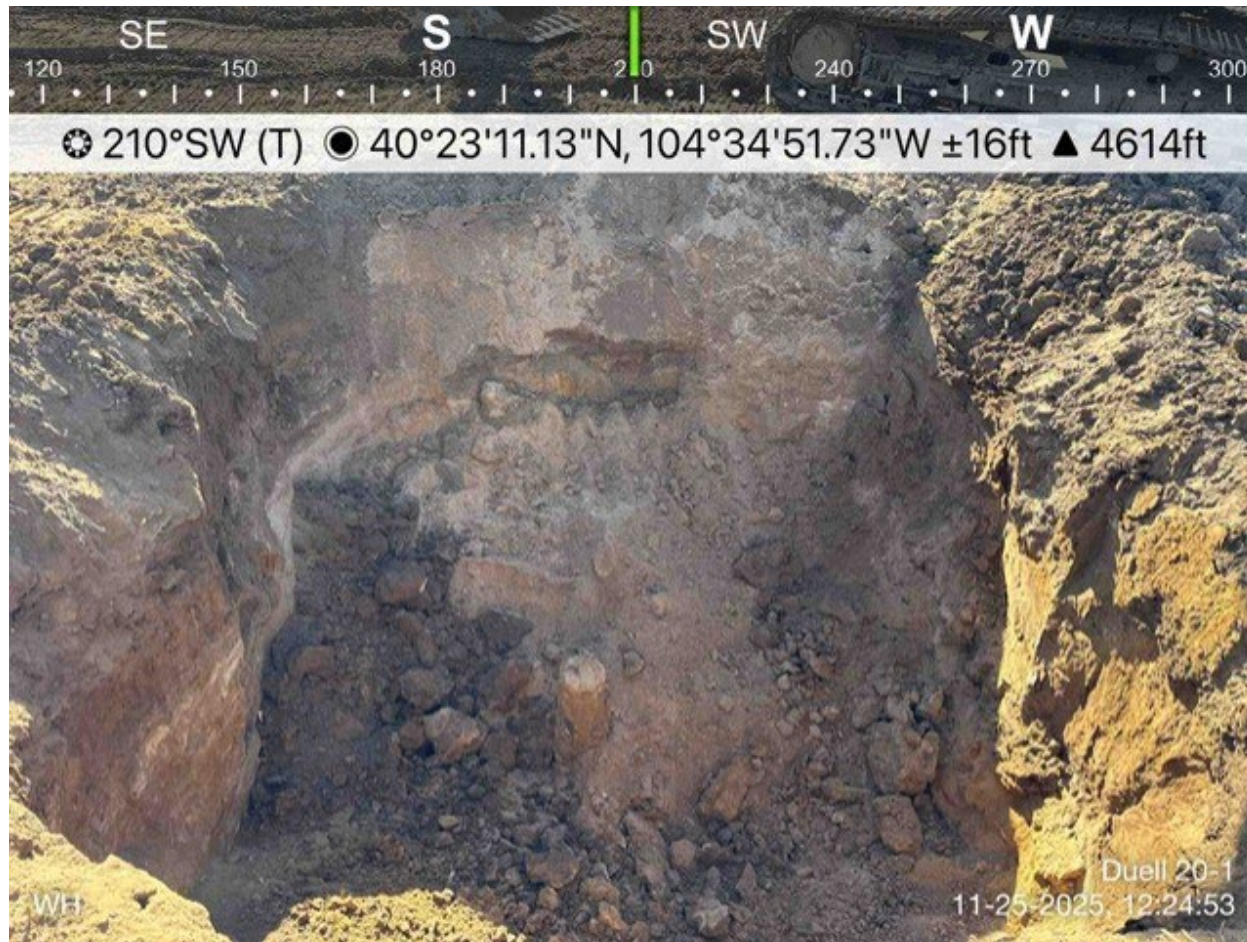
Duell 20-1 Wellhead Photographic Log



Duell 20-1 Wellhead Photographic Log



Duell 20-1 Wellhead Photographic Log



**ATTACHMENT B
FACILITY CLOSURE CHECKLISTS**

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: DUELL #20-1, 245541		Date: 4/25/2025, 11/25/2025					Remediation Project #: 39139		
Associated Wells: NA		Age of Site: 1/26/1987 - spud date					Number of Photos Attached: 3		
Location: (GPS coordinates of wellhead or southeastern most wellhead for multiple) Lat/Long: 40.386389 / -104.580833							Estimated Facility Size (acres): ~.01		
General Condition of Site: (General observations regarding housekeeping, corrosion, waste management, etc.) Overall good									
USCS Soil Type: SP, SC, SM				Estimated Depth to Groundwater: Unknown/not encountered					
Hydrocarbon Impacted Soils / Spills: (Note estimated size and if impact appears to be surficial or extends to an unknown depth) Hydrocarbon impacted soils removed via mechanical excavation. Final extents ~10 ft x 13 ft x 8 ft-bgs, ~40 cubic yards of presumably impacted soils removed									
Salt Crusted Soils or Impacted Vegetation: (Note estimated size and if impact appears to be surficial or extends to an unknown depth) None encountered									
Wellhead(s)									
Well API	05-123-13336								
Age	1/26/1987 - spud date								
Condition of surface around wellhead	Good								
PID Readings	0.2- 0.8 ppm								
Condition of subsurface (staining present)	Good								
PID Readings	0.0 ppm								
Sample taken? Location/Sample ID#	Refer to Tables and Figs								
Photo Number(s)	1-7								
Other observations regarding wellheads: NA									
Summary									
Was impacted soil identified? <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes - less than 10 cubic yards <input checked="" type="checkbox"/> Yes - more than 10 cubic yards									
Total number of samples field screened: 5				Total number of samples collected: 5					
Highest PID Reading: 61.2 ppm				Total number of samples submitted to lab for analysis: 2					
If more than 10 cubic yards of impacted soil were observed:									
Vertical extent: ~ 8 ft-bgs				Estimated spill volume: Unknown					
Lateral extent: ~ 10 ft x 13 ft				Volume of soil removed: ~ 40 cubic yards					
Is additional investigation required? Additional site investigation activities to be conducted									
Was groundwater encountered during the investigation? <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes - not impacted or in contact with impacted soils <input type="checkbox"/> Yes - groundwater impacted and/or in contact with impacted soils									
Measured depth to groundwater:				Was remedial groundwater removal conducted? <input type="checkbox"/> Yes <input type="checkbox"/> No					
Date Groundwater was encountered:				Commencement date of removal:					
Sheen on groundwater? <input type="checkbox"/> Yes <input type="checkbox"/> No				Volume of groundwater removed prior to sampling:					
Free product observed? <input type="checkbox"/> Yes <input type="checkbox"/> 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:									