



CDH Consulting, LLC
Thornton, Colorado
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Facility Closure Investigation and Environmental Summary

LUNDVALL-65N66W 18NESW Tank Battery

ECMC Remediation Project #37191

Weld County, Colorado

Attachments:

Field Form

Figure 1 – Site Location Map

Figure 2 – Soil Sample and Field Screening Locations Map

Figure 3 – Supplemental Site Investigation Map

Table 1 – Field Data Summary Table

Table 2 – Summary of Volatile Organic Soil Chemistry Data

Table 3 – Summary of Polycyclic Aromatic Hydrocarbon Soil Chemistry Data

Table 4 – Summary of Soil Suitability for Reclamation

Table 5 – Summary of Metals in Soil Chemistry Data

Photographic Log

RBU Checklist



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FIELD FORM

SITE NAME / REM: LUNDVALL-65N66W 18NESW / REM# 37191								DATE: 6/26/2025	WEATHER: 80s and Sunny	
TYPE OF WORK: Tank Battery Decommissioning								CLIENT: PDC Energy Inc.		
LAT/LONG: 40.395357, -104.829183								PERSONNEL: SHG		
ESTIMATED DEPTH TO GROUNDWATER: Groundwater Not Encountered								OTHER OBSERVATIONS: MH will be left in place (third party)		
SOIL SAMPLING								FACILITY INFRASTRUCTURE		
Date	Soil Sample ID	Soil Type	PID (ppm)	Staining (Y/N)	Odor (Y/N)	Time	Sent to lab on Ice? (Y/N)	EQUIPMENT	Quantity	
								Above Ground Storage Tank (AST)	1	
6/26/2025	AST01@0-0.5'	SC	3.1	N	N	10:20	Y	Buried or Partially Buried Vessel	1	
6/26/2025	PWV01@4'	SC	196.5	Y	Y	10:11	Y	Separator	1	
6/26/2025	PWV01-N@3'	SC	19.6	Y	Y	10:13	Y	Emission Control Device (ECD)	2	
6/26/2025	PWV01-S@3'	SC	3.8	N	N	10:15	N	Dump Line	1	
6/26/2025	PWV01-E@3'	SC	2.9	N	N	10:17	N	Wellhead	-	
6/26/2025	PWV01-W@3'	SC	12.6	Y	Y	10:19	N	Flowline	-	
6/26/2025	SEP01-DL@4'	SC	1.3	N	N	10:38	Y	Third Party Equipment:	1 (Meter House)	
6/26/2025	ECD01@0-0.5'	SC	1.0	N	N	10:41	N	Other:		
6/26/2025	ECD02@0-0.5'	SC	0.3	N	N	10:42	N	Soil Loads Removed		
6/26/2025	BKG01@0-0.5'	SC	1.0	N	N	11:42	Y	IMPACTED SOIL IDENTIFIED? Yes		
6/26/2025	BKG01@3.5'	SC	0.3	N	N	11:44	Y	ESTIMATED VOLUME OF IMPACTS: 15 CY		
6/26/2025	BKG02@0-0.5'	SC	0.4	N	N	11:46	Y	Date	Number	CY
6/26/2025	BKG02@3.5'	SC	0.9	N	N	11:48	Y			
6/26/2025	BKG03@0-0.5'	SC	0.8	N	N	11:50	Y			
6/26/2025	BKG03@3.5'	SC	0.8	N	N	11:52	Y			
								Total Removed		
								Disposal Facility:		
								Groundwater Recovery		
								DATE GW ENCOUNTERED:	DEPTH:	
								GROUNDWATER IN CONTACT WITH IMPACTED SOIL?		
								LNAPL OR SHEEN OBSERVED ON GW?		
GROUNDWATER SAMPLING								Date	BBLs	
Date/Time	Groundwater Sample ID	Depth Collected	Turbid?	Sheen?	Odor?	Photo?	Sent to lab on Ice? (Y/N)			
								Total Removed		
								Disposal Facility:		





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FIGURES

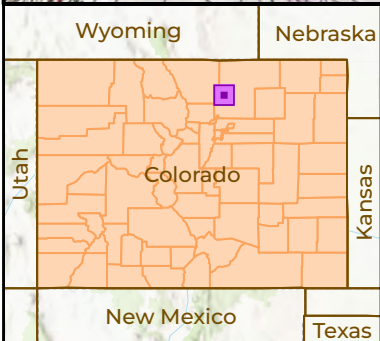
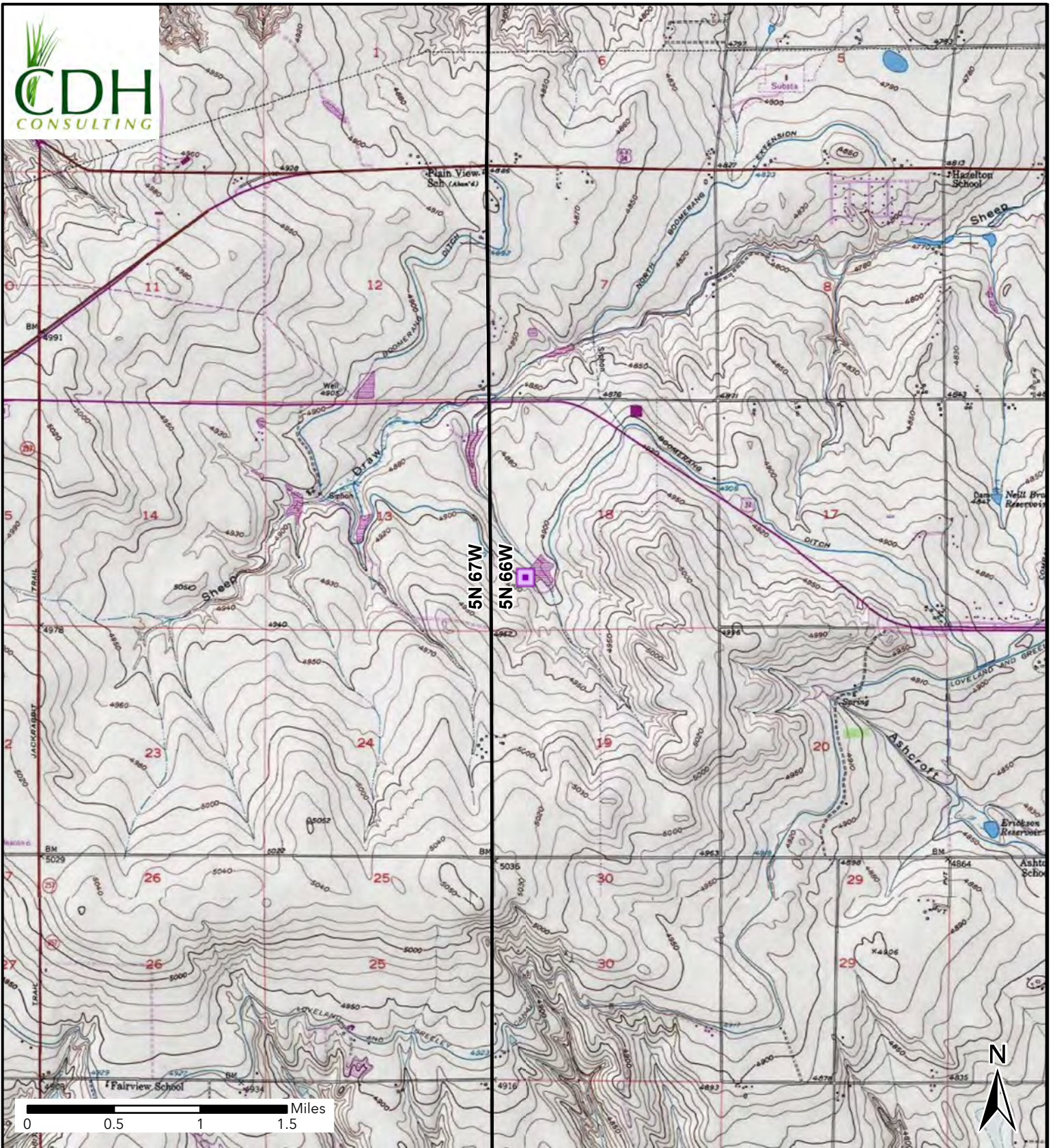


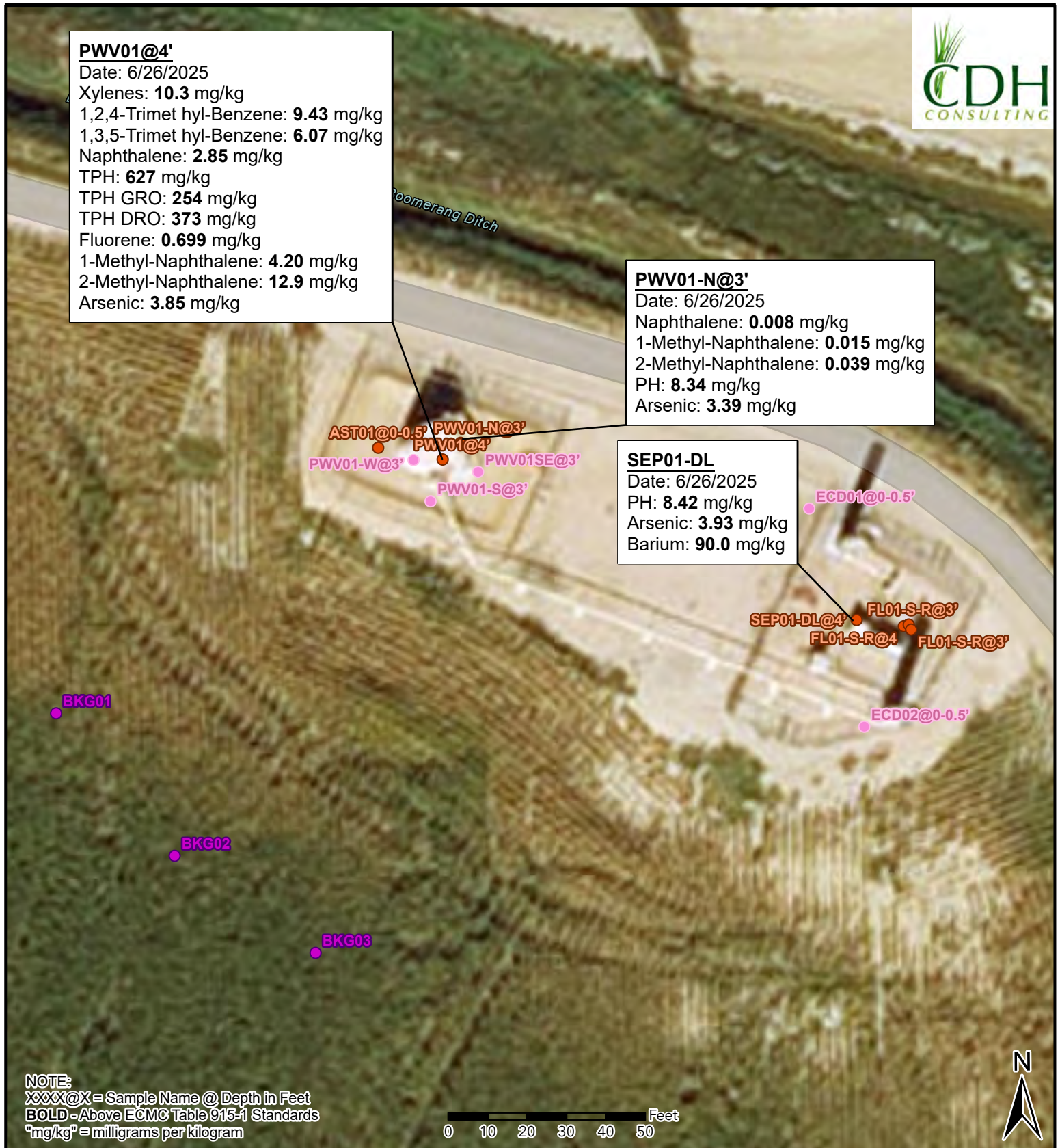
Figure 1
Site Location
LUNDVALL 65N66W 18NESW
L2-SEC 18-T5N-R66W
Weld County, Colorado
PDC Energy Inc.

 Site Location

PWV01@4'
 Date: 6/26/2025
 Xylenes: **10.3** mg/kg
 1,2,4-Trimet hyl-Benzene: **9.43** mg/kg
 1,3,5-Trimet hyl-Benzene: **6.07** mg/kg
 Naphthalene: **2.85** mg/kg
 TPH: **627** mg/kg
 TPH GRO: **254** mg/kg
 TPH DRO: **373** mg/kg
 Fluorene: **0.699** mg/kg
 1-Methyl-Naphthalene: **4.20** mg/kg
 2-Methyl-Naphthalene: **12.9** mg/kg
 Arsenic: **3.85** mg/kg

PWV01-N@3'
 Date: 6/26/2025
 Naphthalene: **0.008** mg/kg
 1-Methyl-Naphthalene: **0.015** mg/kg
 2-Methyl-Naphthalene: **0.039** mg/kg
 PH: **8.34** mg/kg
 Arsenic: **3.39** mg/kg

SEP01-DL
 Date: 6/26/2025
 PH: **8.42** mg/kg
 Arsenic: **3.93** mg/kg
 Barium: **90.0** mg/kg



NOTE:
 XXXX@X = Sample Name @ Depth in Feet
 BOLD = Above ECMC Table 915-1 Standards
 "mg/kg" = milligrams per kilogram



Figure 2
Soil Sample and Field Screening Locations
 LUNDVALL-65N66W 18NESW
 L2-SEC 18-T5N-R66W
 Weld County, Colorado
 PDC Energy Inc.

- Soil Sample
- Background Sample
- Screening Point

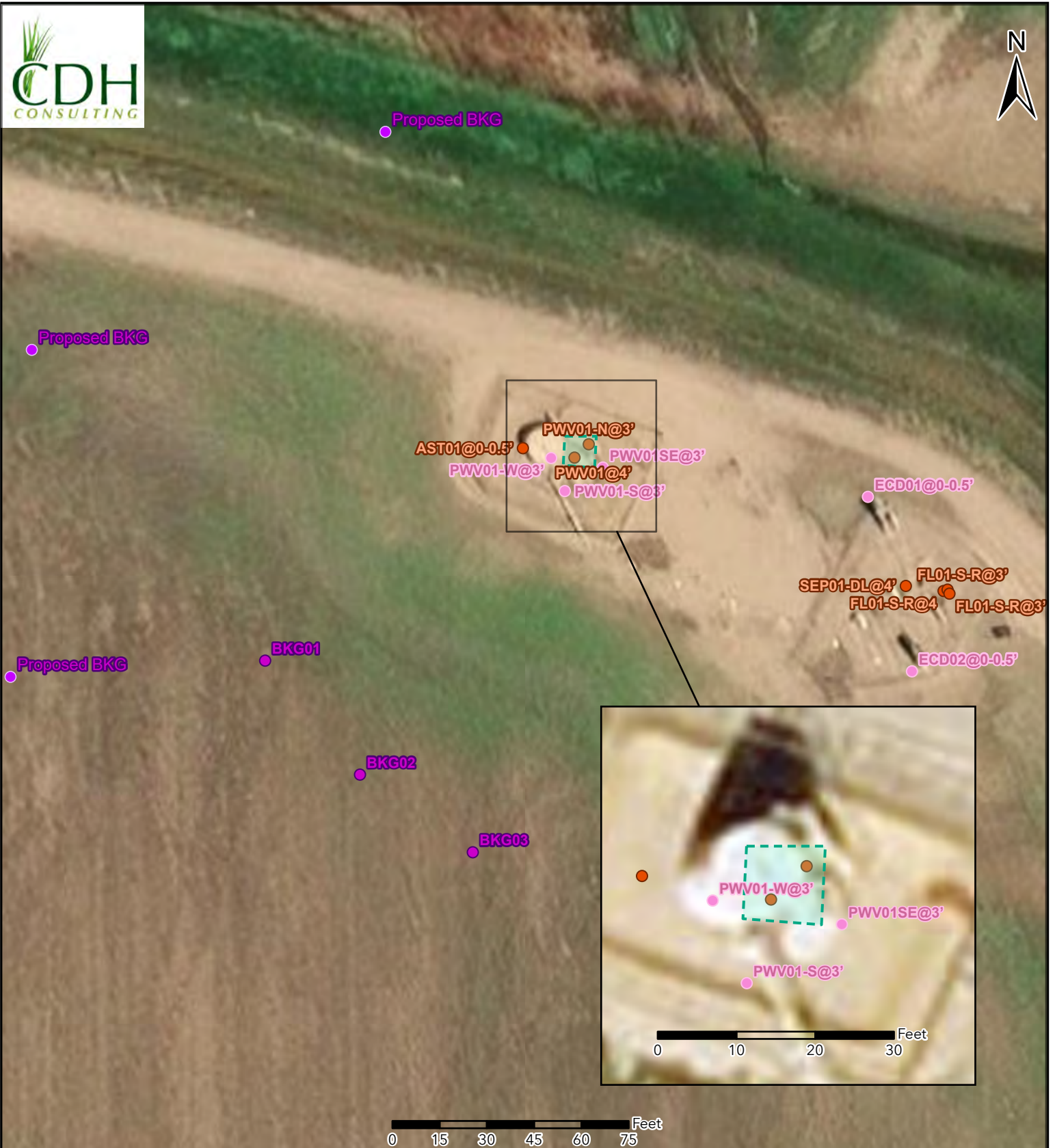


Figure 3
Supplemental Source
Mass Removal Map
LUNDVALL-65N66W 18NESW
 L2-SEC 18-T5N-R66W
 Weld County, Colorado
 PDC Energy Inc.

- Soil Sample
- Background Sample
- Screening Point
- Proposed Background Sample
- 10'x10' Proposed Excavation



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TABLES

TABLE 1
FIELD DATA SUMMARY TABLE
PDC 69175
LUNDVALL 65N66W 18NESW, WELD COUNTY, COLORADO
REM # 37191

Sample ID	Sample Date	Depth (ft)	GPS Data		PDOP Value	VOC Concentration (ppm)
			Latitude/Longitude			
AST01@0-0.5'	6/26/2025	0-0.5	40.395488	-104.829632	1.048301	3.1
PWV01@4'	6/26/2025	4	40.395479	-104.829574	1.459943	196.5
PWV01-N@3'	6/26/2025	3	40.395491	-104.829557	0.873534	19.6
PWV01-S@3'	6/26/2025	3	40.395450	-104.829585	0.840820	3.8
PWV01-E@3'	6/26/2025	3	40.395470	-104.829541	0.862003	2.9
PWV01-W@3'	6/26/2025	3	40.395479	-104.829600	0.968251	12.6
SEP01-DL	6/26/2025	4	40.395365	-104.829197	0.892426	1.3
ECD01@0-0.5'	6/26/2025	0-0.5	40.395443	-104.829240	0.891189	1.0
ECD02@0-0.5'	6/26/2025	0-0.5	40.395291	-104.829191	1.075537	0.3
BKG01@0-0.5'	6/26/2025	0-0.5	40.395304	-104.829928	0.856826	1.0
BKG01@3.5'	6/26/2025	3.5	40.395304	-104.829928	0.856826	0.3
BKG02@0-0.5'	6/26/2025	0-0.5	40.395204	-104.829821	0.926992	0.4
BKG02@3.5'	6/26/2025	3.5	40.395204	-104.829821	0.926992	0.9
BKG03@0-0.5'	6/26/2025	0-0.5	40.395136	-104.829693	0.924357	0.8
BKG03@3.5'	6/26/2025	3.5	40.395136	-104.829693	0.924357	0.8

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).

PDOP = Position Dilution of Precision

ppm = Parts per million

ft = Feet

TABLE 2
SUMMARY OF VOLATILE ORGANIC SOIL CHEMISTRY DATA
PDC 69175
LUNDVALL 65N66W 18NESW, WELD COUNTY, COLORADO
REM # 37191

Sample ID	Sample Date	Depth (ft)	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**		
AST01@0-0.5'	6/26/2025	0-0.5	<0.00200	<0.00200	<0.00200	0.00592	0.00268	0.00228	<0.002	28.5	<0.200	28.5	<100
PWV01@4'	6/26/2025	4	<0.0500	<0.0500	<0.0500	10.3	9.43	6.07	2.85	627	254	373	<100
PWV01-N@3'	6/26/2025	3	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	0.008	2.26	2.26	<25.0	<100
SEP01-DL	6/26/2025	4	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.00200	<0.002	<125.200	<0.200	<25.0	<100

1. Bold values exceed the ECMC Table 915-1 limit(s)
 2. Red & blue highlighted soil analytical values indicate an exceedance of the referenced soil screening level (SSL)
 3. * Indicates laboratory minimum detection limit in excess of SSL
 4. ** Summation of GRO+DRO+ORO must be less than 500 mg/kg
- (<) = Analytical result is less than the indicated laboratory reporting limit.
TPH-GRO = Total petroleum hydrocarbons - gasoline range organics
TPH-DRO = Total petroleum hydrocarbons - diesel range organics
TPH-ORO = Total petroleum hydrocarbons - oil range organics
mg/kg = Milligrams per kilogram
ft = Feet
AP = Analysis pending
NA = Not analyzed

TABLE 3
SUMMARY OF POLYCYCLIC AROMATIC HYDROCARBON SOIL CHEMISTRY DATA
PDC 69175
LUNDVALL 65N66W 18NESW, WELD COUNTY, COLORADO
REM # 37191

Sample ID	Sample Date	Depth (ft)	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
AST01@0-0.5'	6/26/2025	0-0.5	<0.020	<0.020	<0.005	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.002	<0.002
PWV01@4'	6/26/2025	4	<0.200	<0.200	<0.050	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200	0.699	<0.200	<0.200	4.20	12.9
PWV01-N@3'	6/26/2025	3	<0.020	<0.020	<0.005	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.015	0.039
SEP01-DL	6/26/2025	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	<0.002	<0.002

1. Bold values exceed the ECMC Table 915-1 limit(s)
 2. Red & blue highlighted soil analytical values indicate an exceedance of the referenced soil screening level (SSL)
 3. * Indicates laboratory minimum detection limit in excess of SSL
 4. ** Summation of GRO+DRO+ORO must be less than 500 mg/kg
- (<) = Analytical result is less than the indicated laboratory reporting limit.
TPH-GRO = Total petroleum hydrocarbons - gasoline range organics
TPH-DRO = Total petroleum hydrocarbons - diesel range organics
TPH-ORO = Total petroleum hydrocarbons - oil range organics
mg/kg = Milligrams per kilogram
ft = Feet
AP = Analysis pending
NA = Not analyzed

TABLE 4
SUMMARY OF SOIL SUITABILITY FOR RECLAMATION
PDC 69175
LUNDVALL 65N66W 18NESW, WELD COUNTY, COLORADO
REM # 37191

Sample ID	Sample Date	Depth (ft)	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
AST01@0-0.5'	6/26/2025	0-0.5	8.31	0.0667	0.173	0.286
PWV01@4'	6/26/2025	4	8.28	0.134	0.326	0.252
PWV01-N@3'	6/26/2025	3	8.34	0.185	0.267	0.32
SEP01-DL	6/26/2025	4	8.42	0.122	0.244	0.458
BKG01@0-0.5'	6/26/2025	0-0.5	8.04	0.717	0.851	0.758
BKG01@3.5'	6/26/2025	3.5	8.32	3.17	1.72	1.38
BKG02@0-0.5'	6/26/2025	0-0.5	8.29	0.808	1.75	0.776
BKG02@3.5'	6/26/2025	3.5	8.19	2.28	3.6	0.944
BKG03@0-0.5'	6/26/2025	0-0.5	7.90	0.706	1.2	0.683
BKG03@3.5'	6/26/2025	3.5	8.41	3.36	1.19	1.16
Maximum Background Concentration			8.41	3.360	3.60	1.380

1. **Bold** faced values exceed the ECMC Table 915-1 limit(s), but are within background concentrations.
2. **Bold** faced values exceed the ECMC Table 915-1 limit(s) and native background concentrations.
3. Brown highlighted soil analytical values indicate a regulatory exceedance.

AP = Analysis pending

NA = Not analyzed

TABLE 5
SUMMARY OF METALS IN SOIL CHEMISTRY DATA
PDC 69175
LUNDVALL 65N66W 18NESW, WELD COUNTY, COLORADO
REM # 37191

Sample ID	Sample Date	Depth (ft)	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
AST01@0-0.5'	6/26/2025	0-0.5	3.07	<81.3	<0.377	AP	<45.6	24.3	<25.8	<0.258	<0.793	<367
PWV01@4'	6/26/2025	4	3.85	80.5	<0.333	AP	<40.3	<12.3	<22.8	<0.228	<0.702	<324
PWV01-N@3'	6/26/2025	3	3.39	72.0	<0.319	AP	<38.6	<11.8	<21.8	<0.218	<0.672	<311
SEP01-DL	6/26/2025	4	3.93	90.0	<0.324	AP	<39.2	<11.9	<22.2	<0.222	<0.682	<315
BKG01@0-0.5'	6/26/2025	0-0.5	4.36	95.2	<0.375	AP	<45.4	<13.8	<25.7	0.319	<0.789	<365
BKG01@3.5'	6/26/2025	3.5	4.00	100	<0.345	AP	<41.7	<12.7	<23.6	0.277	<0.726	<336
BKG02@0-0.5'	6/26/2025	0-0.5	4.31	96.0	<0.364	AP	<44.0	<13.4	<24.9	0.398	<0.766	<354
BKG02@3.5'	6/26/2025	3.5	5.06	75.6	<0.328	AP	<39.7	<12.1	<22.5	0.367	<0.691	<320
BKG03@0-0.5'	6/26/2025	0-0.5	6.81	219	0.406	AP	<41.7	15.7	<23.6	0.562	<0.725	<335
BKG03@3.5'	6/26/2025	3.5	5.75	127	<0.338	AP	<40.9	<12.4	<23.1	0.451	<0.711	<329
1.25x Maximum Background Concentration			8.51	273.8	0.508	NA	NA	19.6	NA	0.703	NA	NA

1. **Bold** faced values exceed the ECMC Table 915-1 limit(s), but are within 1.25x background concentrations.
2. **Bold** faced values exceed the ECMC Table 915-1 limit(s) and native background concentrations.
3. Red & blue highlighted soil analytical values indicate an exceedance of the referenced soil screening level (SSL).
4. Non-detect background results accounted for in the highest background concentration by using the reporting limit.

ECMC = Energy & Carbon Management Commission

(<) = Analytical result is less than the indicated laboratory reporting limit.

mg/kg = Milligrams per kilogram

ft = Feet

* Indicates laboratory minimum detection limit in excess of SSL

AP = Analysis pending

NA = Not analyzed



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PHOTOGRAPHIC LOG

Photographic Log

LUNDVALL 65N66W 18NESW – REM# 37191

PDC Energy Inc.

June 26, 2025



☉ 87°E (T) ☉ 40.395502°N, 104.829563°W ±16ft ▲ 4911ft



PWV01@4'

LUNDVALL 65N66W 18NESW TB
26 Jun 2025, 10:11:48

Photo 1: View of PWV01@4' sample location, facing east

Photographic Log

LUNDVALL 65N66W 18NESW – REM# 37191

PDC Energy Inc.

June 26, 2025

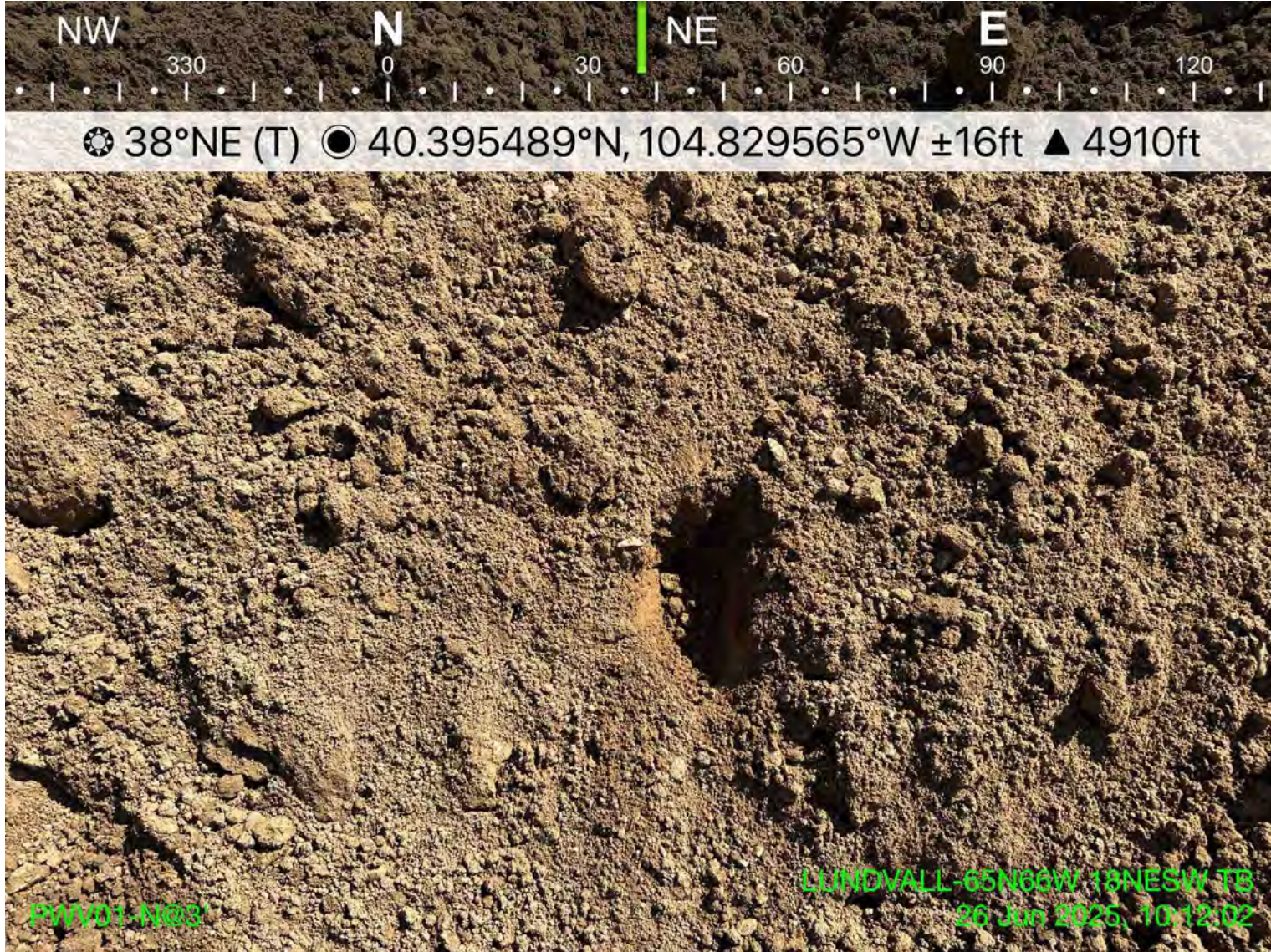


Photo 2: View of PWV01-N@3' sample location, facing northeast

Photographic Log

LUNDVALL 65N66W 18NESW – REM# 37191

PDC Energy Inc.

June 26, 2025



Photo 3: View of PWV01-E@3' sample location, facing east-southeast

Photographic Log

LUNDVALL 65N66W 18NESW – REM# 37191

PDC Energy Inc.

June 26, 2025



Photo 4: View of PWV01-S@3' sample location, facing south-southwest

Photographic Log

LUNDVALL 65N66W 18NESW – REM# 37191

PDC Energy Inc.

June 26, 2025



Photo 5: View of PWV01-W@3' sample location, facing northwest

Photographic Log

LUNDVALL 65N66W 18NESW – REM# 37191

PDC Energy Inc.

June 26, 2025



Photographic Log

LUNDVALL 65N66W 18NESW – REM# 37191

PDC Energy Inc.

June 26, 2025



☀ 305°NW (T) ● 40.395487°N, 104.829557°W ±16ft ▲ 4917ft



Heaving staining to the NW

LUNDVALL 65N66W 18NESW TB
26 Jun 2025, 10:23:57

Photo 7: View of staining observed in the PWV01 excavation area, to the northwest

Photographic Log

LUNDVALL 65N66W 18NESW – REM# 37191

PDC Energy Inc.

June 26, 2025



Photo 8: View of SEP01-DL@4' sample location, facing southwest

Photographic Log

LUNDVALL 65N66W 18NESW – REM# 37191

PDC Energy Inc.

June 26, 2025



Photo 9: View of ECD01@0-0.5' sample location, facing south-southwest

Photographic Log

LUNDVALL 65N66W 18NESW – REM# 37191

PDC Energy Inc.

June 26, 2025



Photo 10: View of ECD02@0-0.5' sample location, facing northeast

Photographic Log

LUNDVALL 65N66W 18NESW – REM# 37191

PDC Energy Inc.

June 26, 2025



Photo 11: View of background location 1, facing south-southwest

Photographic Log

LUNDVALL 65N66W 18NESW – REM# 37191

PDC Energy Inc.

June 26, 2025



Photo 12: View of background location 2, facing south

Photographic Log

LUNDVALL 65N66W 18NESW – REM# 37191

PDC Energy Inc.

June 26, 2025



Photo 13: View of background location 3, facing north-northeast



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RBU CHECKLIST

Chevron Rockies Business Unit

Field Qualitative Criteria for ECMC Reporting Associated with the Discovery of Potentially Impacted Material

If answered **Yes** to any of the questions listed below, this may suggest the presence of potentially impacted materials as outlined in ECMC Rule 912. Out of an abundance of caution, a “Yes” response will be reported to the ECMC within 24 hours after discovery, regardless of laboratory results. **Immediately notify the RBU Remediation Team.** Include a copy of this Field Qualitative Spill Criteria Checklist in the field Report.

Please answer the following questions when on-site:

1. Is there visible petroleum hydrocarbon staining in the soil?
(Yes / No)
2. Does the soil sample from the stained area have a petroleum odor?
(Yes / No)
3. Is there a petroleum hydrocarbon sheen on the nearby surface water?
(Yes / No)
4. Does there appear to be a sheen on the surface of accumulated groundwater or seeps within the excavation indicative of petroleum?
(Yes / No)
5. Is stained soil in contact with groundwater?
(Yes / No)

Please Include relevant photos of the site conditions for items 1-5.

Location name: LUNDVALL-65N66W 18NESW TB (REM # 37191)

Please Circle Facility Type: Well / Flowline / Production Facility / Other