



PDC Energy, Inc.
Second Quarter 2022 Groundwater Monitoring Summary

June 2, 2022

Former Loloff 35-5 Wellhead
NENE Section 35 T5N R64W
Remediation # 19816

This groundwater monitoring summary has been prepared by Tasman, Inc. for the former Loloff 35-5 wellhead.

Site History and Background

On October 14, 2021, historic hydrocarbon impacts were discovered at the former wellhead during plug and abandonment activities. Following the discovery, mitigation efforts were initiated, and approximately 30 cubic yards of impacted material were removed from the former excavation. During excavation activities, groundwater was encountered within the excavation at approximately 3 feet below ground surface (bgs). Groundwater recovery operations were conducted concurrent with excavation activities and approximately 8 barrels (bbls) of groundwater were removed from the former excavation.

Monitoring Well Installation Activities

On March 23, 2022, four monitoring wells (BH02 – BH05) were installed to confirm the absence of dissolved-phase hydrocarbon impacts within and adjacent to the former excavation extent. Due to reclamation activities and land access requirements, monitoring well BH01 was installed on June 9, 2022. Lithologic descriptions and volatile organic compound (VOC) concentrations, measured using a photoionization detector (PID), were recorded for each monitoring well. Per the approved sampling and analysis plan summarized in the approved Supplemental Form 27, two soil samples were collected from boreholes BH02 – BH05 at depths of 2.5 feet and 4 feet bgs and were submitted to Summit Scientific Laboratory (Summit) for analysis of pH, sodium adsorption ratio (SAR), arsenic, and lead. One soil sample was collected from the terminus of borehole BH01 at approximately 11 feet bgs and was submitted to Summit for analysis of pH.

Soil analytical results indicated that inorganic concentrations were in compliance with the applicable COGCC regulatory standards or within 1.25x background concentrations in all nine soil sample locations, aside from the arsenic concentration in BH05 @ 2.5'. Soil analytical results are summarized in Table 1. The GPS coordinates and field recorded VOC concentrations are summarized in Table 2. The laboratory reports are included in Attachment A. The boring and well completion logs are included as Attachment B.

Groundwater Monitoring Activities

On May 12, 2022, groundwater monitoring was conducted at four monitoring wells (BH02 – BH05). Due to the delay in installation of monitoring well BH01, it was not included in the second quarter 2022 groundwater monitoring event. Four groundwater samples were submitted to Summit for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, 1,2,4-trimethylbenzene (TMB), and 1,3,5-TMB by EPA Method 8260B, chloride and sulfate anions by EPA Method 300.0, and total dissolved solids (TDS) by Method SM 2540C.

Second quarter 2022 analytical results indicated that organic compound concentrations were in compliance with the applicable COGCC Table 915-1 regulatory standards in all four sampled monitoring well locations. Additionally, inorganic parameters were in exceedance of the applicable regulatory standards and above 1.25x the background concentrations of the up-gradient monitoring wells (BH02 and BH05) in monitoring well BH04. Inorganic parameters were in compliance with the applicable regulatory standards or within 1.25x the background concentrations in the monitoring well BH03. Sample locations and corresponding analytical results are illustrated on Figures 1 and 2. Groundwater elevation data is illustrated on Figure 3. Groundwater analytical results are summarized in Tables 3 and 4. The laboratory analytical report is included in Attachment A.

Current Remediation Activities and Path Forward

Monitored natural attenuation (MNA) was selected as the remediation strategy for this site during the second quarter 2022 and will remain the selected remediation strategy through the third quarter 2022.

Third quarter 2022 groundwater sampling will be conducted in August 2022.

BH02	
Compound (µg/L)	5/12/2022
Benzene	<1.0
Toluene	<1.0
Ethylbenzene	<1.0
Total Xylenes	<2.0
Naphthalene	<1.0
1,2,4-TMB	<1.0
1,3,5-TMB	<1.0
Depth to Water (ft. bgs)	1.94

BH05	
Compound (µg/L)	5/12/2022
Benzene	<1.0
Toluene	<1.0
Ethylbenzene	<1.0
Total Xylenes	<2.0
Naphthalene	<1.0
1,2,4-TMB	<1.0
1,3,5-TMB	<1.0
Depth to Water (ft. bgs)	2.21

BH03	
Compound (µg/L)	5/12/2022
Benzene	<1.0
Toluene	<1.0
Ethylbenzene	<1.0
Total Xylenes	<2.0
Naphthalene	<1.0
1,2,4-TMB	<1.0
1,3,5-TMB	<1.0
Depth to Water (ft. bgs)	2.03

BH01	
Compound (µg/L)	5/12/2022
Benzene	Not Sampled*
Toluene	
Ethylbenzene	
Total Xylenes	
Naphthalene	
1,2,4-TMB	
1,3,5-TMB	
Depth to Water (ft. bgs)	NA

BH04	
Compound (µg/L)	5/12/2022
Benzene	<1.0
Toluene	<1.0
Ethylbenzene	<1.0
Total Xylenes	<2.0
Naphthalene	<1.0
1,2,4-TMB	<1.0
1,3,5-TMB	<1.0
Depth to Water (ft. bgs)	2.45

Legend

- Excavation Extent (Collected via Trimble GPS)
- Underground Flowline Location (Collected via Trimble GPS)
- Monitoring Well Location (Collected via Trimble GPS)
- Groundwater Flow Direction (2Q22)

Notes

All locations are approximate unless otherwise noted.

TMB – Trimethylbenzene

µg/L – Micrograms per liter

ft. bgs – Feet below ground surface

GPS – Global Positioning System

NA – Not applicable

* – Well was not installed prior to the second quarter 2022 groundwater monitoring event, and consequently, was not sampled

0 ft.10 ft.20 ft.

Image Source: Google Earth; July 2019
Projection: WGS 84 UTM Zone 13 North

DATE:	June 2, 2022
DESIGNED BY:	C. Hamlin
DRAWN BY:	T. Murrel

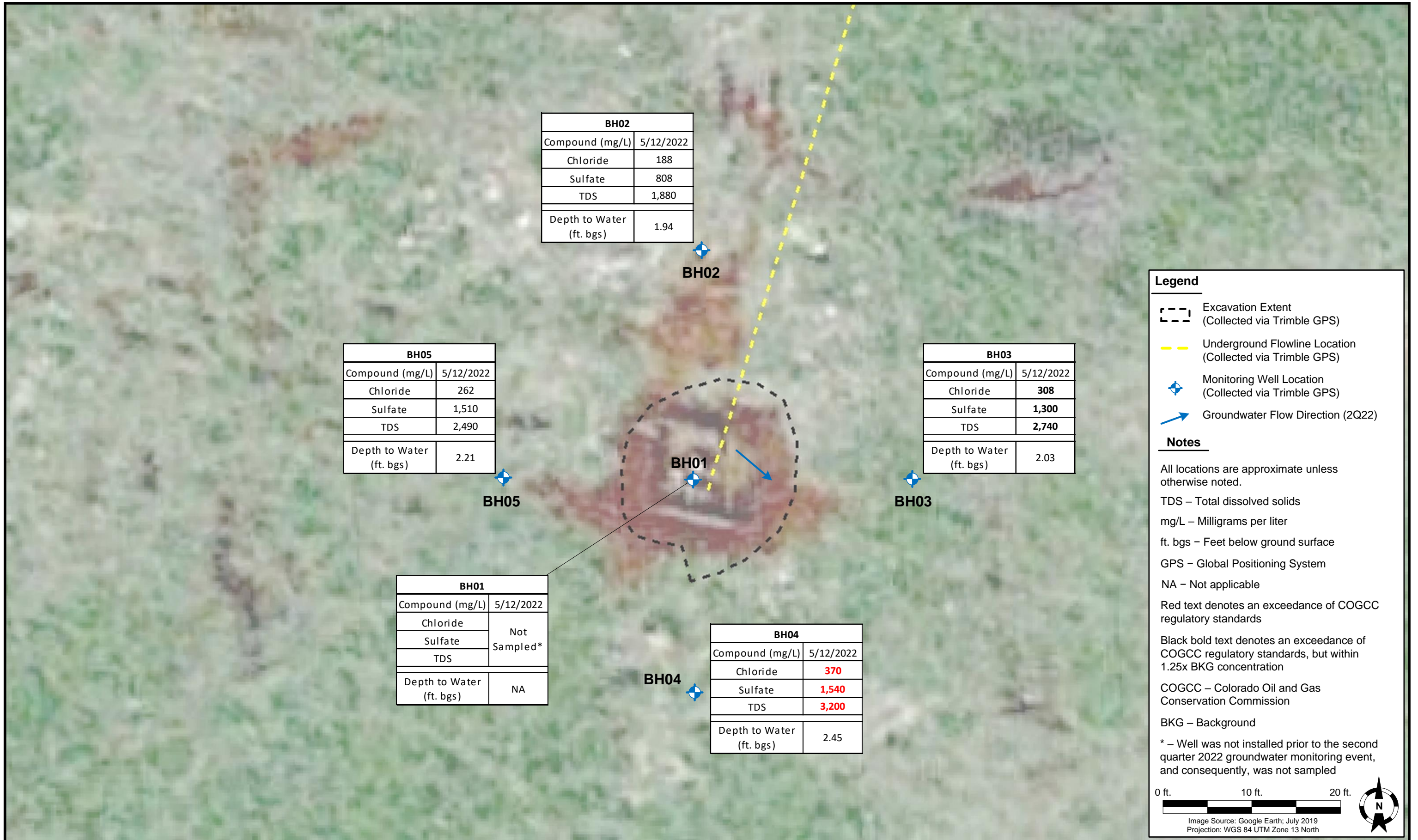
TASMAN

Tasman, Inc.
6855 W. 119th Ave.
Broomfield, CO 80020

PDC Energy, Inc. – DJ Basin
Former Loloff 35-5 Wellhead
NENE, Section 35, Township 5 North, Range 64 West
Weld County, Colorado

GROUNDWATER
ANALYTICAL RESLUTS
MAP

FIGURE
1



Legend

Excavation Extent
(Collected via Trimble GPS)

Underground Flowline Location
(Collected via Trimble GPS)

Monitoring Well Location
(Collected via Trimble GPS)

Groundwater Flow Direction (2Q22)

Notes

All locations are approximate unless otherwise noted.

TDS – Total dissolved solids

mg/L – Milligrams per liter

ft. bgs – Feet below ground surface

GPS – Global Positioning System

NA – Not applicable

Red text denotes an exceedance of COGCC regulatory standards

Black bold text denotes an exceedance of COGCC regulatory standards, but within 1.25x BKG concentration

COGCC – Colorado Oil and Gas Conservation Commission

BKG – Background

* – Well was not installed prior to the second quarter 2022 groundwater monitoring event, and consequently, was not sampled

0 ft.10 ft.20 ft.

Image Source: Google Earth; July 2019
Projection: WGS 84 UTM Zone 13 North





DATE:	July 15, 2022
DESIGNED BY:	C. Hamlin
DRAWN BY:	J. Marcus

**TASMAN**

Tasman, Inc.
6855 W. 119th Ave.
Broomfield, CO 80020

PDC Energy, Inc. – DJ Basin
Loloff 35-5 Wellhead
NENE, Section 35, Township 5 North, Range 64 West
Weld County, Colorado

**PROPOSED SOIL BORING
LOCATION MAP**

**FIGURE
4**

TABLE 1
FORMER LOLOFF 35-5 WELLHEAD
SOIL ANALYTICAL RESULTS SUMMARY TABLE
CONTAMINANTS OF CONCERN

Sample ID	Date Sampled	Depth	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	1, 2, 4-TMB (mg/kg)	1, 3, 5-TMB (mg/kg)	Naphthalene (mg/kg)	TPH ⁽⁴⁾ (mg/kg)	pH (units)	SAR (units)	Arsenic ⁽⁵⁾ (mg/kg)	Lead (mg/kg)
Residential SSL ^(1,2)			1.2	490	5.8	58	30	27	2	500	-	-	0.68	400
Soil Suitabilty for Reclamation Standard ⁽¹⁾			-	-	-	-	-	-	-	-	6-8.3	<6	-	-
Protection of Groundwater SSL ^(1,2,3)			0.0026	0.69	0.78	9.9	0.0081	0.0087	0.0038	500	-	-	0.29	14
FL01-01 @ 3'	10/14/2021	3 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	NA	NA	NA	NA
SS01 @ 2'	10/14/2021	2 ft. bgs	0.28	<0.0050	4.8	47	15	10	0.10	4,180	8.33	9.10	2.48	130
SS02 @ 5'	10/14/2021	5 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	8.44	3.69	0.790	2.83
SS03 @ 4'	10/14/2021	4 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	8.50	4.43	0.833	3.16
SS04 @ 2.5'	10/14/2021	2.5 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	8.57	6.16	1.64	3.10
SS05 @ 4'	10/14/2021	4 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	8.42	4.80	1.31	2.63
SS06 @ 2.5'	10/14/2021	2.5 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	8.41	5.52	2.72	4.15
SS07 @ 4'	10/14/2021	4 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	8.40	6.86	2.79	4.19
SS08 @ 2.5'	10/14/2021	2.5 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	8.29	6.38	1.80	4.74
SS09 @ 4'	10/14/2021	4 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	420	8.63	6.78	0.787	3.03
SS10 @ 2.5'	10/14/2021	2.5 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50	7.85	6.79	2.25	34.3
BH01 @ 11'	6/9/2022	11 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	8.08	NA	NA	NA
BH02 @ 2.5'	3/23/2022	2.5 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	7.95	4.83	1.72	5.02
BH02 @ 4'	3/23/2022	4 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	8.06	5.11	1.21	3.90
BH03 @ 2.5'	3/23/2022	2.5 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	7.97	3.66	1.06	4.93
BH03 @ 4'	3/23/2022	4 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	7.99	4.25	1.53	4.17
BH04 @ 2.5'	3/23/2022	2.5 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	7.92	3.76	2.17	6.99
BH04 @ 4'	3/23/2022	4 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	8.12	5.55	1.53	3.36
BH05 @ 2.5'	3/23/2022	2.5 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	7.92	3.52	4.03	8.48
BH05 @ 4'	3/23/2022	4 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	8.11	4.52	1.13	3.56
BKG01 @ 2.5'	10/15/2021	2.5 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	8.14	5.58	1.82	5.31
BKG01 @ 4'	10/15/2021	4 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	8.05	4.61	0.640	2.69
BKG01 @ 5'	10/15/2021	5 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	8.03	4.06	0.975	3.26
BKG02 @ 2.5'	11/30/2021	2.5 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	8.11	4.56	1.16	3.95
BKG02 @ 4'	11/30/2021	4 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	7.86	4.83	0.939	3.26
BKG02 @ 5'	11/30/2021	5 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	7.97	4.59	1.38	4.04
BKG03 @ 2.5'	11/30/2021	2.5 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	8.28	2.90	1.81	4.91
BKG03 @ 4'	11/30/2021	4 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	7.97	3.45	1.65	2.98
BKG03 @ 5'	11/30/2021	5 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	7.99	4.83	0.997	3.01

Notes:

1. Compounds referenced from the COGCC 2 CCR 404-1, Table 915-1, effective January 15, 2021.
2. Soil Screening Levels (SSL) referenced from EPA Regional Screening Levels (EPA RSLs) for Chemical Contaminants at Superfund Sites, effective November 2020.
3. SSLs are applicable if a pathway for communication with groundwater is present.
4. Value calculated by adding TVPH-GRO, TEPH-DRO, and TEPH-ORO concentrations.
5. The highest arsenic concentration (SS10 - 2.25 mg/kg) recorded within the unsaturated interval (2.5 ft. bgs), aside from SS06 and BH05 is within 1.25x background concentrations recorded in background soil borings BKG01 and BKG03 (2.5 ft. bgs) The highest arsenic concentration (BH04 and BH05 - 1.53 mg/kg) recorded within the saturated interval (4 ft. bgs), aside from SS07, is below the background concentration recorded in background soil boring BKG03 (4 ft. bgs) and within 1.25x the background concentration recoded in background soil boring BKG02 (5 ft. bgs).
- COGCC = Colorado Oil and Gas Conservation Commission
- (<) = Analytical result is less than the indicated laboratory reporting limit.
- TVPH-GRO = Total volatile petroleum hydrocarbons - gasoline range organics
- TEPH-DRO = Total extractable petroleum hydrocarbons - diesel range organics
- TEPH-ORO = Total extactable petroleum hydrocarbons - oil range organics
- mg/kg = Milligrams per kilogram
- TMB = Trimethylbenzene
- SAR = Sodium adsorption ratio
- = Source material characterization sample
- NA = Constituent not analyzed
- ft. = Feet
- bgs = Below ground surface
- BOLD** = Analytical result is in exceedance of applicable standard.
- BOLD** = Analytical result is in exceedance of applicable standard, but within 1.25x background concentration.

TABLE 2
FORMER LOLOFF 35-5 WELLHEAD
FIELD DATA SUMMARY TABLE

Sample ID	Date Sampled	Depth	GPS Data ⁽¹⁾ Latitude / Longitude		PDOP Value	VOC Concentration ⁽²⁾ (ppm)
FL01-01 @ 3'	10/14/2021	3 ft. bgs	40.361485	-104.509586	1.2	0.2
FL01-02 @ 3'	10/14/2021	3 ft. bgs	40.361558	-104.509513	1.2	0.0
FL01-03 @ 3'	10/14/2021	3 ft. bgs	40.362229	-104.508509	1.7	0.0
SS01 @ 2'	10/14/2021	2 ft. bgs	40.361127	-104.509731	1.2	803
SS02 @ 5'	10/14/2021	5 ft. bgs	NC	NC	NC	0.3
SS03 @ 4'	10/14/2021	4 ft. bgs	40.361109	-104.509741	1.3	0.0
SS04 @ 2.5'	10/14/2021	2.5 ft. bgs	40.361109	-104.509741	1.3	0.1
SS05 @ 4'	10/14/2021	4 ft. bgs	40.361135	-104.509759	1.3	0.3
SS06 @ 2.5'	10/14/2021	2.5 ft. bgs	40.361135	-104.509759	1.3	0.2
SS07 @ 4'	10/14/2021	4 ft. bgs	40.361144	-104.509696	1.3	3.1
SS08 @ 2.5'	10/14/2021	2.5 ft. bgs	40.361144	-104.509696	1.3	0.5
SS09 @ 4'	10/14/2021	4 ft. bgs	40.361156	-104.509732	1.3	125
SS10 @ 2.5'	10/14/2021	2.5 ft. bgs	40.361156	-104.509732	1.3	0.5
BKG01 @ 2.5'	10/15/2021	2.5 ft. bgs	40.361145	-104.509956	1.3	0.1
BKG01 @ 4'	10/15/2021	4 ft. bgs	40.361145	-104.509956	1.3	0.0
BKG01 @ 5'	10/15/2021	5 ft. bgs	40.361145	-104.509956	1.3	0.2
BKG02 @ 2.5'	11/30/2021	2.5 ft. bgs	40.361150	-104.509550	1.1	4.1
BKG02 @ 4'	11/30/2021	4 ft. bgs	40.361150	-104.509550	1.1	6.3
BKG02 @ 5'	11/30/2021	5 ft. bgs	40.361150	-104.509550	1.1	7.7
BKG03 @ 2.5'	11/30/2021	2.5 ft. bgs	40.361001	-104.509744	1.6	3.3
BKG03 @ 4'	11/30/2021	4 ft. bgs	40.361001	-104.509744	1.6	6.3
BKG03 @ 5'	11/30/2021	5 ft. bgs	40.361001	-104.509744	1.6	7.5
BH01	6/9/2022	12 ft. bgs	40.361136	-104.509734	NC	0.8
BH02	3/23/2022	6 ft. bgs	40.361204	-104.509718	NC	0.0
BH03	3/23/2022	7 ft. bgs	40.361133	-104.509635	NC	0.0
BH04	3/23/2022	7 ft. bgs	40.361070	-104.509728	NC	0.0
BH05	3/23/2022	7 ft. bgs	40.361128	-104.509801	NC	0.0

Notes:

1. Global Positioning System (GPS) data is provided in decimal degrees using World Geodetic System (WGS) 84 UTM Zone 13

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

bgs = Below ground surface

 = Source material characterization sample

NC = Data not collected

TABLE 3
FORMER LOLOFF 35-5 WELLHEAD
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE
ORGANIC COMPOUNDS

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Naphthalene (µg/L)	1,2,4-TMB (µg/L)	1,3,5-TMB (µg/L)	Depth to Water ⁽²⁾ (ft.)	Groundwater Elevation (ft. AMSL)
COGCC Table 915-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	140	67	67	-	-
BH01	NA	Not Sampled - Installed 6/9/2022							NA	NA
BH02	5/12/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	1.94	4522.15
BH03	5/12/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	2.03	4521.86
BH04	5/12/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	2.45	4522.00
BH05	5/12/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	2.21	4522.08

Notes:

- Groundwater standards referenced from 2 CCR 404-1, Table 915-1, January 15, 2021.
 - Depth to water measurements were measured from ground surface for excavation samples. Monitoring well measurements were collected from top of casing and adjusted using survey data to reflect depth of water from ground surface.
- TMB = Trimethylbenzene
COGCC = Colorado Oil and Gas Conservation Commission
µg/L = Micrograms per liter
(<) = Analytical result is less than the indicated laboratory reporting limit.
ft. = Feet
AMSL = Above Mean Sea Level
NA = Not Applicable

TABLE 4
FORMER LOLOFF 35-5 WELLHEAD
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE
INORGANIC PARAMETERS

Sample ID	Date Sampled	TDS (unit)	Chloride Ion (mg/L)	Sulfate Ion (mg/L)	Depth to Water ⁽²⁾ (ft.)	Groundwater Elevation (ft. AMSL)
COGCC Table 915-1 Groundwater Standard (mg/L) ⁽¹⁾		<1.25 x BCKG	250 or <1.25 x BCKG	250 or <1.25 x BCKG	-	-
BH01	NA	Not Sampled - Installed 6/9/2022			NA	NA
BH02	5/12/2022	1,880	188	808	1.94	4522.15
BH03	5/12/2022	2,740	308	1,300	2.03	4521.86
BH04	5/12/2022	3,200	370	1,540	2.45	4522.00
BH05	5/12/2022	2,490	262	1,150	2.21	4522.08

Notes:

1. Groundwater standards referenced from 2 CCR 404-1, Table 915-1, January 15, 2021.

2. Depth to water measurements were measured from ground surface for excavation samples. Monitoring well measurements were collected from top of casing and adjusted using survey data to reflect depth of water from ground surface.

TDS = Total dissolved solids

COGCC = Colorado Oil and Gas Conservation Commission

BCKG = Background

mg/L = Milligrams per liter

ft. = Feet

AMSL = Above Mean Sea Level

NA = Not applicable

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

 = Up-gradient well location used for background concentration.

BOLD = Analytical result is in exceedance of applicable standard and above 1.25x background concentration.

BOLD = Analytical result is in exceedance of applicable standard and below 1.25x background concentration.

Attachment A

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

April 11, 2022

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Loloff 35-5 Wellhead

Work Order #2203381

Enclosed are the results of analyses for samples received by Summit Scientific on 03/23/22 13:20. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, reading "Muri Premer", on a light blue background.

Muri Premer

Project Manager



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/11/22 09:06

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH02@2.5'	2203381-01	Soil	03/23/22 08:40	03/23/22 13:20
BH02@4'	2203381-02	Soil	03/23/22 08:45	03/23/22 13:20
BH03@2.5'	2203381-03	Soil	03/23/22 09:00	03/23/22 13:20
BH03@4'	2203381-04	Soil	03/23/22 09:10	03/23/22 13:20
BH04@2.5'	2203381-05	Soil	03/23/22 09:30	03/23/22 13:20
BH04@4'	2203381-06	Soil	03/23/22 09:40	03/23/22 13:20
BH05@2.5'	2203381-07	Soil	03/23/22 09:50	03/23/22 13:20
BH05@4'	2203381-08	Soil	03/23/22 09:55	03/23/22 13:20

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Summit Scientific

2203381

S₂

4653 Table Mountain Drive ♦ Golden, Colorado 80403

303-277-9310 ♦ 303-374-5933 (f)

Page 1 of 1

Client: PDC / Tasman

Project Manager: Mark Loughurst

Address: 6855 W 119th Ave.

E-Mail: mark.loughurst@PDC-E.com

City/State/Zip: Broomfield CO 80020


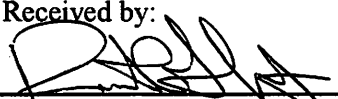
Phone: (303) 487-1228

Project Name: LoLoff 35-5 Wellhead

Sampler Name: Kris Shepherd

Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested								Special Instructions
					HCl	HNO ₃	None	Other	Water	Soil	Air-Canister #	Other	pH	SAR	Arsenic	Lead					
1	BH02@2.5'	3/23/22	0840	2			X			X				X	X	X	X				
2	BH02@4'		0845																		
3	BH03@2.5'		0900																		
4	BH03@4'		0910																		
5	BH04@2.5'		0930																		
6	BH04@4'		0940																		
7	BH05@2.5'		0950																		
8	BH05@4'	✓	0955	✓										✓	✓	✓	✓				
9																					
10																					

Relinquished by: 	Date/Time: <u>3/23/22 1320</u>	Received by: 	Date/Time: <u>3/23/22 1320</u>	Turn Around Time (Check) Same Day <input type="checkbox"/> 72 hours 24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 hours <input type="checkbox"/> Sample Integrity: Temperature Upon Receipt: <u>5.6</u> Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	Notes: <u>pH & SAR by saturated paste.</u>
Relinquished by:	Date/Time:	Received by:	Date/Time:		
Relinquished by:	Date/Time:	Received by:	Date/Time:		



Sample Receipt Checklist

S2 Work Order# 2203381Client: POC/TasmanClient Project ID: Wolff 35-5 wellheadShipped Via: ☐ H.D./P.U./FedEx/UPS/USPS/Other ☐ Airbill #: _____Matrix (check all that apply): ☐ Air ☒ Soil/Solid ☐ Water ☐ Other: _____
(Describe)Temp (°C) 5.6

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	on ICE
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Additional Comments (if any):

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.[Signature]
Custodian Printed Name or Initials3-23-22
Date/Time



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/11/22 09:06

BH02@2.5'
2203381-01 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **03/23/22 08:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	1.72	0.200	mg/kg dry	1	BFC0717	03/30/22	04/08/22	EPA 6020B	
Lead	5.02	0.200	"	"	"	"	"	"	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **03/23/22 08:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	42.7	0.0568	mg/L dry	1	BFC0676	03/29/22	04/08/22	EPA 6020B	
Magnesium	31.7	0.0568	"	"	"	"	"	"	
Sodium	171	0.0568	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **03/23/22 08:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	4.83	0.00100	units	1	BFD0172	04/08/22	04/08/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **03/23/22 08:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	88.0		%	1	BFC0628	03/28/22	03/28/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **03/23/22 08:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	7.95		pH Units	1	BFC0709	03/30/22	03/30/22	EPA 9045D	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/11/22 09:06

BH02@4'
2203381-02 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **03/23/22 08:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.21	0.200	mg/kg dry	1	BFC0717	03/30/22	04/08/22	EPA 6020B	
Lead	3.90	0.200	"	"	"	"	"	"	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **03/23/22 08:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	66.8	0.0582	mg/L dry	1	BFC0676	03/29/22	04/08/22	EPA 6020B	
Magnesium	34.9	0.0582	"	"	"	"	"	"	
Sodium	207	0.0582	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **03/23/22 08:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	5.11	0.00100	units	1	BFD0172	04/08/22	04/08/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **03/23/22 08:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	85.8		%	1	BFC0628	03/28/22	03/28/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **03/23/22 08:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.06		pH Units	1	BFC0709	03/30/22	03/30/22	EPA 9045D	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/11/22 09:06

BH03@2.5'
2203381-03 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **03/23/22 09:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	1.06	0.200	mg/kg dry	1	BFC0717	03/30/22	04/08/22	EPA 6020B	
Lead	4.93	0.200	"	"	"	"	"	"	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **03/23/22 09:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	64.6	0.0571	mg/L dry	1	BFC0676	03/29/22	04/08/22	EPA 6020B	
Magnesium	36.0	0.0571	"	"	"	"	"	"	
Sodium	148	0.0571	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **03/23/22 09:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	3.66	0.00100	units	1	BFD0172	04/08/22	04/08/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **03/23/22 09:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	87.6		%	1	BFC0628	03/28/22	03/28/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **03/23/22 09:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	7.97		pH Units	1	BFC0709	03/30/22	03/30/22	EPA 9045D	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/11/22 09:06

BH03@4'
2203381-04 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **03/23/22 09:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	1.53	0.200	mg/kg dry	1	BFC0717	03/30/22	04/08/22	EPA 6020B	
Lead	4.17	0.200	"	"	"	"	"	"	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **03/23/22 09:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	81.3	0.0569	mg/L dry	1	BFC0676	03/29/22	04/08/22	EPA 6020B	
Magnesium	47.3	0.0569	"	"	"	"	"	"	
Sodium	195	0.0569	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **03/23/22 09:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	4.25	0.00100	units	1	BFD0172	04/08/22	04/08/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **03/23/22 09:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	87.9		%	1	BFC0628	03/28/22	03/28/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **03/23/22 09:10**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	7.99		pH Units	1	BFC0709	03/30/22	03/30/22	EPA 9045D	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/11/22 09:06

BH04@2.5'
2203381-05 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **03/23/22 09:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	2.17	0.200	mg/kg dry	1	BFC0717	03/30/22	04/08/22	EPA 6020B	
Lead	6.99	0.200	"	"	"	"	"	"	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **03/23/22 09:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	353	0.0594	mg/L dry	1	BFC0676	03/29/22	04/08/22	EPA 6020B	
Magnesium	146	0.0594	"	"	"	"	"	"	
Sodium	333	0.0594	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **03/23/22 09:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	3.76	0.00100	units	1	BFD0172	04/08/22	04/08/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **03/23/22 09:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	84.2		%	1	BFC0628	03/28/22	03/28/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **03/23/22 09:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	7.92		pH Units	1	BFC0709	03/30/22	03/30/22	EPA 9045D	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/11/22 09:06

BH04@4'
2203381-06 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **03/23/22 09:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	1.53	0.200	mg/kg dry	1	BFC0717	03/30/22	04/08/22	EPA 6020B	
Lead	3.36	0.200	"	"	"	"	"	"	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **03/23/22 09:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	78.7	0.0573	mg/L dry	1	BFC0676	03/29/22	04/08/22	EPA 6020B	
Magnesium	56.4	0.0573	"	"	"	"	"	"	
Sodium	264	0.0573	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **03/23/22 09:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	5.55	0.00100	units	1	BFD0172	04/08/22	04/08/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **03/23/22 09:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	87.3		%	1	BFC0628	03/28/22	03/28/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **03/23/22 09:40**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.12		pH Units	1	BFC0709	03/30/22	03/30/22	EPA 9045D	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/11/22 09:06

BH05@2.5'
2203381-07 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **03/23/22 09:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	4.03	0.200	mg/kg dry	1	BFC0717	03/30/22	04/08/22	EPA 6020B	
Lead	8.48	0.200	"	"	"	"	"	"	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **03/23/22 09:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	418	0.0635	mg/L dry	1	BFC0676	03/29/22	04/08/22	EPA 6020B	
Magnesium	155	0.0635	"	"	"	"	"	"	
Sodium	332	0.0635	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **03/23/22 09:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	3.52	0.00100	units	1	BFD0172	04/08/22	04/08/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **03/23/22 09:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	78.7		%	1	BFC0628	03/28/22	03/28/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **03/23/22 09:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	7.92		pH Units	1	BFC0709	03/30/22	03/30/22	EPA 9045D	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/11/22 09:06

BH05@4'
2203381-08 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **03/23/22 09:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Arsenic	1.13	0.200	mg/kg dry	1	BFC0717	03/30/22	04/08/22	EPA 6020B	
Lead	3.56	0.200	"	"	"	"	"	"	

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction

Date Sampled: **03/23/22 09:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Calcium	75.9	0.0594	mg/L dry	1	BFC0676	03/29/22	04/08/22	EPA 6020B	
Magnesium	45.8	0.0594	"	"	"	"	"	"	
Sodium	202	0.0594	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **03/23/22 09:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Sodium Adsorption Ratio	4.52	0.00100	units	1	BFD0172	04/08/22	04/08/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **03/23/22 09:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
% Solids	84.2		%	1	BFC0628	03/28/22	03/28/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **03/23/22 09:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.11		pH Units	1	BFC0709	03/30/22	03/30/22	EPA 9045D	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/11/22 09:06

Total Metals by EPA 6020B - Quality Control

Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch BFC0717 - EPA 3050B

Blank (BFC0717-BLK1)

Prepared: 03/30/22 Analyzed: 04/08/22

Arsenic	ND	0.200	mg/kg wet
Lead	ND	0.200	"

LCS (BFC0717-BS1)

Prepared: 03/30/22 Analyzed: 04/08/22

Arsenic	35.1	0.200	mg/kg wet	40.0	87.7	80-120
Lead	18.1	0.200	"	20.0	90.5	80-120

Duplicate (BFC0717-DUP1)

Source: 2203381-01

Prepared: 03/30/22 Analyzed: 04/08/22

Arsenic	2.05	0.200	mg/kg dry	1.72	17.4	20
Lead	5.03	0.200	"	5.02	0.286	20

Matrix Spike (BFC0717-MS1)

Source: 2203381-01

Prepared: 03/30/22 Analyzed: 04/08/22

Arsenic	42.4	0.200	mg/kg dry	45.5	1.72	89.5	75-125
Lead	23.4	0.200	"	22.7	5.02	80.8	75-125

Matrix Spike Dup (BFC0717-MSD1)

Source: 2203381-01

Prepared: 03/30/22 Analyzed: 04/08/22

Arsenic	39.6	0.200	mg/kg dry	45.5	1.72	83.2	75-125	6.94	25
Lead	23.8	0.200	"	22.7	5.02	82.7	75-125	1.84	25

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/11/22 09:06

Soluble Nutrients by EPA 6020/USDA60 6(2) - Saturated Paste Extraction - Quality Control
Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD	
		Limit	Units		Result	%REC	Limits	RPD	Limit	Notes

Batch BFC0676 - General Preparation

Blank (BFC0676-BLK1)

Prepared: 03/29/22 Analyzed: 04/08/22

Calcium	ND	0.0500	mg/L wet
Magnesium	ND	0.0500	"
Sodium	ND	0.0500	"

LCS (BFC0676-BS1)

Prepared: 03/29/22 Analyzed: 04/08/22

Calcium	5.79	0.0500	mg/L wet	5.00	116	70-130
Magnesium	5.15	0.0500	"	5.00	103	70-130
Sodium	5.01	0.0500	"	5.00	100	70-130

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/11/22 09:06

Physical Parameters by APHA/ASTM/EPA Methods - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD	
		Limit	Units		Result	%REC	Limits	RPD	Limit	Notes

Batch BFC0628 - General Preparation

Duplicate (BFC0628-DUP1)

Source: 2203095-06

Prepared & Analyzed: 03/28/22

% Solids	85.7	%	85.7	0.0328	20
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Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
04/11/22 09:06

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD	
		Limit	Units		Result	%REC	Limits	RPD	Limit	Notes

Batch BFC0709 - General Preparation

LCS (BFC0709-BS1)

Prepared & Analyzed: 03/30/22

pH	9.05	pH Units	9.18	98.6	95-105
----	------	----------	------	------	--------

Duplicate (BFC0709-DUP1)

Source: 2203356-16

Prepared & Analyzed: 03/30/22

pH	7.62	pH Units	7.72	1.30	20
----	------	----------	------	------	----

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/11/22 09:06

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

May 19, 2022

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Loloff 35-5 Wellhead

Work Order #2205185

Enclosed are the results of analyses for samples received by Summit Scientific on 05/12/22 17:40. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury

President



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/19/22 13:32

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH02	2205185-01	Water	05/12/22 13:59	05/12/22 17:40
BH03	2205185-02	Water	05/12/22 13:50	05/12/22 17:40
BH04	2205185-03	Water	05/12/22 14:07	05/12/22 17:40
BH05	2205185-04	Water	05/12/22 14:21	05/12/22 17:40

Summit Scientific

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Summit Scientific

S₂

2205185

4653 Table Mountain Drive ♦ Golden, Colorado 80403
303-277-9310

Page 1 of 1

Client: PDC / Tasman

Project Manager: Mark Longhurst

Address: 6855 W 119th Ave

E-Mail: mark.longhurst@PDCE.com

City/State/Zip: Broomfield/ CO/ 80020

Phone: 303-487-1228

Project Name: LoloFF 35-S wellhead

Sampler Name: J. Marcus

Project Number: N/A

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested								Special Instructions
					HCl	HNO ₃	None	Other	Water	Soil	Air-Canister #	Other	BTEXN - 8260B	TPH - (C6 - C36)	1,2,4 & 1,3,5-TMB	Boron - HWS	pH, EC, SAR	Chlorides, Sol Fats	TDS		
1	BH02	5/12/22	1359	3			1		X				X		X			X	X		
2	BH03	↓	1350	3			1		X				X		X			X	X		
3	BH04	↓	1407	3			1		X				X		X			X	X		
4	BH05	↓	1421	4			1		X				X		X			X	X		
5																					
6																					
7																					
8																					
9																					
10																					

Relinquished by: <u>[Signature]</u>	Date/Time: <u>5/12/22 1630</u>	Received by: <u>Tasman's Lock Box</u>	Date/Time: <u>5/12/22 1630</u>	Turn Around Time (Check) Same Day <input type="checkbox"/> 72 hours <input type="checkbox"/> 24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 hours <input type="checkbox"/> Sample Integrity: Temperature Upon Receipt: <u>2.3</u> Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	Notes:
Relinquished by: <u>Tasman's Lock Box</u>	Date/Time: <u>5/12/22 1740</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5/12/22 1740</u>		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

S₂

Sample Receipt Checklist

S2 Work Order# 2205185

Client: Re/Asman Client Project ID: 10104 35-S wellhead

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other _____ Airbill #: _____

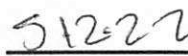
	-			
--	---	--	--	--

Matrix (Check all that apply) Air ☐ Soil/Solid ☐ Water ☒ Other ☐Temp (°C) 2.3Thermometer # 1

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature $< 6^{\circ}\text{C}$ ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	-			on ICE
Were all samples received intact ⁽¹⁾ ?	-			
Was adequate sample volume provided ⁽¹⁾ ?	-			
If custody seals are present, are they intact ⁽¹⁾ ?	-			
Are samples due within 48 hours present?		-		
Are water samples with short hold times present? Note the short hold analysis in the comments column - pH, Nitrate/Nitrite, Ferrous Iron (Fe^{2+}), Hexavalent Chromium (Cr^{6+} , Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen			-	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	-			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	-			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	-			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	-			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		-	*	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the comments column – HCl, H_2SO_4 , NaOH, HNO_3 , etc.	-		*	HCl
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.			-	
If dissolved metals are requested, were samples field filtered?			-	
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.


Custodian Printed Name



Date/Time



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/19/22 13:32

BH02
2205185-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/12/22 13:59**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	BFE0318	05/16/22	05/17/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **05/12/22 13:59**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4	15.9	119 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	14.3	107 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	11.1	83.6 %	21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **05/12/22 13:59**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chloride	188	12.0	mg/L	200	BFE0365	05/17/22	05/18/22	EPA 300.0	
Sulfate	808	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **05/12/22 13:59**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Total Dissolved Solids	1880	10.0	mg/L	1	BFE0334	05/16/22	05/16/22	SM2540C	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/19/22 13:32

BH03
2205185-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/12/22 13:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFE0318	05/16/22	05/17/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **05/12/22 13:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	15.2	114 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	15.0	112 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	11.3	84.6 %	21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **05/12/22 13:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Chloride	308	12.0	mg/L	200	BFE0365	05/17/22	05/18/22	EPA 300.0	
Sulfate	1300	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **05/12/22 13:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	2740	10.0	mg/L	1	BFE0334	05/16/22	05/16/22	SM2540C	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/19/22 13:32

BH04
2205185-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/12/22 14:07**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFE0318	05/16/22	05/17/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **05/12/22 14:07**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	14.0	105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	14.5	109 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	10.4	78.0 %	21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **05/12/22 14:07**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Chloride	370	12.0	mg/L	200	BFE0365	05/17/22	05/18/22	EPA 300.0	
Sulfate	1540	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **05/12/22 14:07**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	3200	10.0	mg/L	1	BFE0334	05/16/22	05/16/22	SM2540C	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/19/22 13:32

BH05
2205185-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/12/22 14:21**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFE0318	05/16/22	05/17/22	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	1.0	"	"	"	"	"	"	

Date Sampled: **05/12/22 14:21**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	17.3	130 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	14.3	107 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	11.3	84.5 %	21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **05/12/22 14:21**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Chloride	262	12.0	mg/L	200	BFE0365	05/17/22	05/18/22	EPA 300.0	
Sulfate	1150	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **05/12/22 14:21**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	2490	10.0	mg/L	1	BFE0334	05/16/22	05/16/22	SM2540C	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/19/22 13:32

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch BFE0318 - EPA 5030 Water MS

Blank (BFE0318-BLK1)

Prepared & Analyzed: 05/16/22

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Naphthalene	ND	1.0	"							
1,2,4-Trimethylbenzene	ND	1.0	"							
1,3,5-Trimethylbenzene	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	17.2		"	13.3		129	23-173			
Surrogate: Toluene-d8	14.0		"	13.3		105	20-170			
Surrogate: 4-Bromofluorobenzene	12.8		"	13.3		96.1	21-167			

LCS (BFE0318-BS1)

Prepared & Analyzed: 05/16/22

Benzene	34.1	1.0	ug/l	33.3		102	51-132			
Toluene	42.7	1.0	"	33.3		128	51-138			
Ethylbenzene	40.6	1.0	"	33.3		122	58-146			
m,p-Xylene	77.4	2.0	"	66.7		116	57-144			
o-Xylene	41.9	1.0	"	33.3		126	53-146			
Naphthalene	40.7	1.0	"	33.3		122	70-130			
1,2,4-Trimethylbenzene	33.4	1.0	"	33.3		100	70-130			
1,3,5-Trimethylbenzene	41.9	1.0	"	33.3		126	70-130			
Surrogate: 1,2-Dichloroethane-d4	18.8		"	13.3		141	23-173			
Surrogate: Toluene-d8	14.8		"	13.3		111	20-170			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		100	21-167			

Matrix Spike (BFE0318-MS1)

Source: 2205134-01

Prepared & Analyzed: 05/16/22

Benzene	34.4	1.0	ug/l	33.3	ND	103	34-141			
Toluene	43.1	1.0	"	33.3	ND	129	27-151			
Ethylbenzene	41.6	1.0	"	33.3	ND	125	29-160			
m,p-Xylene	78.6	2.0	"	66.7	ND	118	20-166			
o-Xylene	43.1	1.0	"	33.3	ND	129	33-159			
Naphthalene	34.9	1.0	"	33.3	ND	105	70-130			
1,2,4-Trimethylbenzene	33.7	1.0	"	33.3	ND	101	70-130			
1,3,5-Trimethylbenzene	42.7	1.0	"	33.3	ND	128	70-130			
Surrogate: 1,2-Dichloroethane-d4	19.2		"	13.3		144	23-173			
Surrogate: Toluene-d8	14.8		"	13.3		111	20-170			
Surrogate: 4-Bromofluorobenzene	13.3		"	13.3		100	21-167			

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/19/22 13:32

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch BFE0318 - EPA 5030 Water MS

Matrix Spike Dup (BFE0318-MSD1)	Source: 2205134-01			Prepared & Analyzed: 05/16/22						
Benzene	33.8	1.0	ug/l	33.3	ND	102	34-141	1.79	30	
Toluene	42.2	1.0	"	33.3	ND	126	27-151	2.23	30	
Ethylbenzene	40.8	1.0	"	33.3	ND	122	29-160	1.99	30	
m,p-Xylene	76.5	2.0	"	66.7	ND	115	20-166	2.77	30	
o-Xylene	42.7	1.0	"	33.3	ND	128	33-159	0.956	30	
Naphthalene	36.8	1.0	"	33.3	ND	110	70-130	5.24	30	
1,2,4-Trimethylbenzene	34.1	1.0	"	33.3	ND	102	70-130	1.36	30	
1,3,5-Trimethylbenzene	42.5	1.0	"	33.3	ND	127	70-130	0.563	30	
Surrogate: 1,2-Dichloroethane-d4	19.9		"	13.3		150	23-173			
Surrogate: Toluene-d8	14.7		"	13.3		110	20-170			
Surrogate: 4-Bromofluorobenzene	13.3		"	13.3		100	21-167			

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/19/22 13:32

Anions by EPA Method 300.0 - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch BFE0365 - General Preparation

Blank (BFE0365-BLK1)

Prepared: 05/17/22 Analyzed: 05/18/22

Chloride	ND	0.0600	mg/L
Sulfate	ND	0.300	"

LCS (BFE0365-BS1)

Prepared: 05/17/22 Analyzed: 05/18/22

Chloride	2.86	0.0600	mg/L	3.00	95.2	90-110
Sulfate	14.8	0.300	"	15.0	98.6	90-110

Duplicate (BFE0365-DUP1)

Source: 2205167-01

Prepared: 05/17/22 Analyzed: 05/18/22

Chloride	3.67	0.0600	mg/L	3.72	1.49	20
Sulfate	19.7	0.300	"	19.8	0.477	20

Matrix Spike (BFE0365-MS1)

Source: 2205167-01

Prepared: 05/17/22 Analyzed: 05/18/22

Chloride	6.86	0.0600	mg/L	3.00	3.72	105	80-120
Sulfate	36.3	0.300	"	15.0	19.8	110	80-120

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/19/22 13:32

Total Dissolved Solids by SM2540C - Quality Control
Summit Scientific

Analyte	Result	Reporting			Spike	Source	%REC		RPD	
		Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch BFE0334 - General Preparation

Blank (BFE0334-BLK1)

Prepared & Analyzed: 05/16/22

Total Dissolved Solids ND 10.0 mg/L

Duplicate (BFE0334-DUP1)

Source: 2205185-01

Prepared & Analyzed: 05/16/22

Total Dissolved Solids 1920 10.0 mg/L 1880 1.79 20

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/19/22 13:32

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

June 17, 2022

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Loloff 35-5 Wellhead

Work Order #2206162

Enclosed are the results of analyses for samples received by Summit Scientific on 06/09/22 17:26. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Mikayla Axtell For Paul Shrewsbury
President



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
06/17/22 11:03

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01@11'	2206162-01	Soil	06/09/22 09:12	06/09/22 17:26

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Summit Scientific

S₂

2206162

4653 Table Mountain Drive ♦ Golden, Colorado 80403
303-277-9310

Page 1 of 1

Client: PDC / Tasman

Project Manager: Mark Longhurst

Address: 6855 W 119th Ave

E-Mail: mark.longhurst@PDCE.com

City/State/Zip: Broomfield/ CO/ 80020


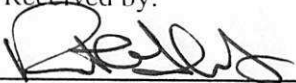
Phone: 303-487-1228

Project Name: Loloff 35-5 wellhead

Sampler Name: Sam Anderson

Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested							Special Instructions
					HCl	HNO ₃	None	Other	Water	Soil	Air-Canister #	Other	BTEXN - 8260B	TPH - (C6 - C36)	1,2,4 & 1,3,5-TMB	Boron - HWS	pH, EC, SAR	pH	
1	Bitore 11'	6/9/22	912	1			X			X									pH, EC, SAR by saturated paste
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Relinquished by: 	Date/Time: 6/9/22	Received by: Tasman's Lock Box	Date/Time: 6/9/22	Turn Around Time (Check) Same Day _____ 72 hours 24 hours _____ Standard <input checked="" type="checkbox"/> 48 hours _____ Sample Integrity: Temperature Upon Receipt: 8.3 Samples Intact: <input checked="" type="checkbox"/> Yes No	Notes:
Relinquished by: Tasman's Lock Box	Date/Time: 6922 1726	Received by: 	Date/Time: 6922 1726		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

S₂

Sample Receipt Checklist

S2 Work Order# 2206162

Client: Rafman Client Project ID: 101off 355 wellhead

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other _____ Airbill #: _____

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Matrix (Check all that apply) Air ☐ Soil/Solid ☒ Water ☐ Other ☐Temp (°C) 8.3Thermometer # 1

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6 °C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	-			ON ICE
Were all samples received intact ⁽¹⁾ ?	-			
Was adequate sample volume provided ⁽¹⁾ ?	-			
If custody seals are present, are they intact ⁽¹⁾ ?	-			
Are samples due within 48 hours present?		-		
Are water samples with short hold times present? Note the short hold analysis in the comments column - pH, Nitrate/Nitrite, Ferrous Iron (Fe ²⁺), Hexavalent Chromium (Cr ⁶⁺ , Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen			-	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	-			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	-			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	-			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	-			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			-	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the comments column – HCl, H ₂ SO ₄ , NaOH, HNO ₃ , etc.			-	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.			-	
If dissolved metals are requested, were samples field filtered?			-	
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.



Custodian Printed Name

6922

Date/Time



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
06/17/22 11:03

BH01@11'
2206162-01 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction

Date Sampled: **06/09/22 09:12**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.08			pH Units	1	BFF0308	06/10/22	06/10/22	EPA 9045D	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
06/17/22 11:03

Physical Parameters by APHA/ASTM/EPA Methods, Saturated Paste Extraction - Quality Control

Summit Scientific

Analyte	Result	Reporting		Spike Level	Source Result	%REC		RPD	Limit	Notes
		Limit	Units			%REC	Limits			

Batch BFF0308 - General Preparation

LCS (BFF0308-BS1)

Prepared & Analyzed: 06/10/22

pH	9.03	pH Units	9.18	98.4	95-105
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Duplicate (BFF0308-DUP1)

Source: 2205408-02

Prepared & Analyzed: 06/10/22

pH	6.64	pH Units	6.71	1.05	20
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Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Loloff 35-5 Wellhead

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
06/17/22 11:03

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Attachment B

Borehole Logging Form

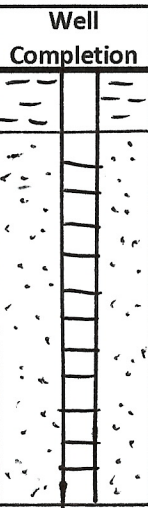
BOREHOLE ID: BH02	SITE NAME: Wdoff 35-5 WH	CLIENT NAME: PDC ENERGY
Date Completed: 3/23/2022	Location: N POC	
Drilling Company: Tasman	Surface Completion: Flush	DTW: ~3.5' TD: ~6'
Type of Drill: Hand Auger	Geologist: Kris Shepherd	Project Manager: B. Nelson
Bit Size: 3"	Logging Method: HA	

Well Const. Material: Diameter: **1"** Screen: Sch 40 PVC Slotted 0.010 Riser: Sch 40 PVC Blank

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1				0.0		SM	Brown, silty sand, fine to medium grain, moist, no odor
2				0.0			
3				0.0	BH02C2.5' (1840)		
4		HA	100%	0.0	BH02C4' (1845)	SM	As above, saturated
5				0.0			
6				0.0		SW	Tan, sand, fine to medium grain, poorly sorted, saturated, no odor
7							
8							
9							
10							
11							
12							
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14							
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23							
24							
25							

Borehole Logging Form

BOREHOLE ID: BH03	SITE NAME: 100ft 35-5 WH	CLIENT NAME: PDC ENERGY
Date Completed: 3/22/2022	Location: E PDC	
Drilling Company: Tasman	Surface Completion: Flush	D _{FW} : ~3' TD: ~7'
Type of Drill: Hand Auger	Geologist: Kris Shepherd	Project Manager: B. Nelson
Bit Size: 3"	Logging Method: HA	

Well Const. Material: Diameter: 1" Screen: Sch 40 PVC Slotted 0.010 Riser: Sch 40 PVC Blank							
Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1		HA	100%	0.0	BH03@2.5' (0900)	SM	Brown, silty sand, fine to medium grain, moist, poorly sorted, no odor
2				0.0			
3				0.0			
4				0.0	BH03@4' (0910)	SM	As above, saturated
5				0.0			
6				0.0		SW	Tan, sand, fine to medium grain, poorly sorted, saturated, no odor
7				0.0			
8							
9							
10							
11							
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24							
25							

Borehole Logging Form

BOREHOLE ID: BH04	SITE NAME: Loboff 35-5 WH	CLIENT NAME: PDC ENERGY
Date Completed: 3/23/2022	Location: S Foc	
Drilling Company: Tasman	Surface Completion: Flush	DTW: ~3' TD: ~7'
Type of Drill: Hand Auger	Geologist: Kris Shepherd	Project Manager: B. Nelson
Bit Size: 3"	Logging Method: HA	

Well Const. Material: Diameter: 1"			Screen: Sch 40 PVC Slotted 0.010		Riser: Sch 40 PVC Blank		
Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1				0.0		SM	Brown, silty sand, fine to medium grain, poorly sorted, moist, no odor
2				0.0			
3				0.0	BH04@25' (0930)		
4		HA	100%	0.0	BH04@4' (0940)	SM	As above, saturated
5				0.0		SW	Tan, sand, fine to medium grain, poorly sorted, saturated, no odor
6				0.0			
7				0.0			
8							
9							
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25							

Borehole Logging Form

BOREHOLE ID: BH05 SITE NAME: loloff 35-5 WH CLIENT NAME: PDC ENERGY

Date Completed: 3/23/2022 Location: W POC

Drilling Company: Tasman Surface Completion: Flush DTW: ~3.5' TD: ~7'

Type of Drill: Hand Auger Geologist: Kris Shepherd Project Manager: B. Nelson

Bit Size: 3" Logging Method: HA

Well Const. Material: Diameter: 1" Screen: Sch 40 PVC Slotted 0.010 Riser: Sch 40 PVC Blank

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1				0.0		SM	Brown, silty sand, fine to medium grain, poorly sorted, moist, no odor
2				0.0			
3				0.0	BH05@2.5' (0950)		
4		HA	100%	0.0	BH05@4' (0955)	SM	- As above, saturated
5				0.0		SW	Tan, sand, fine to medium grain, poorly sorted, saturated, no odor
6				0.0			
7				0.0			
8							
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Borehole Logging Form

BOREHOLE ID: <u>BH01</u>	SITE NAME: <u>Loloff 35-5 wellhead</u>	CLIENT NAME: <u>PDC ENERGY</u>
Date Completed: <u>6/9/22</u>	Location: <u>SWR</u>	
Drilling Company: <u>Tasman</u>	Surface Completion: <u>Concrete/well cover</u>	DTW: <u>7'</u> TD: <u>12'</u>
Type of Drill: <u>Hand Auger (DPT)</u>	Geologist: <u>Smith/Boas</u>	Project Manager: <u>B.Nelson</u>

Bit Size: <u>2 3/8"</u>	Logging Method:
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Well Const. Material: Diameter: <u>1"</u>	Screen: <u>Sch 40 PVC Slotted 0.010</u>	Riser: <u>Sch 40 PVC Blank</u>
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Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1				0.8			
2				0.2		SC	0-1' = Brown, clayey sand, poorly sorted, fine-coarse grain, moist, organic odor.
3				0.0			
4				0.1			
5		HA	100%	0.4		CL	1-4' = Tan/bay, Clay, low plasticity, moist, organic odor.
6				0.6			
7				0.4		CL	4-6' = Tan/bay/black, Sandy clay, low plasticity, poorly sorted, fine-med grain, moist, organic odor.
8							7-12' = Tan/bay/black, Sandy clay, low plasticity, poorly sorted, fine-med grain, moist, organic odor.
9		DPT	40%	0.8			
10							
11				0.6	BH01 11' 912		
12				0.1			
13						CL	7-12' = Tan, Sandy clay, low plasticity, moist, sorting, fine-medium, saturated, organic odor.
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							