PDC Energy, Inc.

Fourth Quarter 2022 Groundwater Monitoring Summary

November 16, 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. 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.

Supplemental Site Investigation Activities

On November 2, 2022, four soil borings (SB01-SB04) were advanced to a depth of approximately 4 to 5 feet bgs using a hand auger and, subsequently, advanced to 8 feet bgs using a Soggy Bottom Sampler System (SBS) to delineate inorganic constituents in soil samples collected during October 2021 source mass removal activities. Lithologic descriptions and volatile organic compound (VOC) concentrations were measured using a photoionization detector (PID) and recorded for each boring. Eight confirmation soil samples were collected from soil borings SB01 – SB04 at depths of approximately 6 feet and 8 feet bgs. Soil samples collected from SB01 were submitted for laboratory analysis of sodium absorption ratio (SAR), soil samples collected from borings SB02 and SB04 were submitted for analysis of pH, and samples collected from boring SB03 were submitted for analysis of pH, SAR, and arsenic.

Soil analytical results indicated that SAR concentrations were in compliance with the applicable regulatory standards in all sample locations. pH and arsenic concentrations were in exceedance of the applicable regulatory standards in all sampled boring locations.

In addition, two background soil borings (BKG04 and BKG05) were advanced in native material to the northwest of the former wellhead using the methods described above. Ten background soil samples were

collected from the soil borings at depths ranging from approximately 2.5 feet to 8 feet bgs. The background samples were submitted for laboratory analysis of pH, SAR, arsenic, and lead.

Background soil analytical results indicated that pH, SAR, and arsenic were in exceedance of the applicable COGCC Table 915-1 regulatory standards in native material on site. A statistical evaluation of arsenic concentrations recorded in confirmation soil samples and background borings were conducted. The graphs illustrating the data are included as Attachment A. The soil boring locations are illustrated on Figure 1. The soil analytical results are summarized on Table 1. GPS coordinates and field observed VOC concentrations are summarized on Table 2. The laboratory analytical reports are included in Attachment B. Boring and well completion logs are included as Attachment C.

Groundwater Monitoring Activities

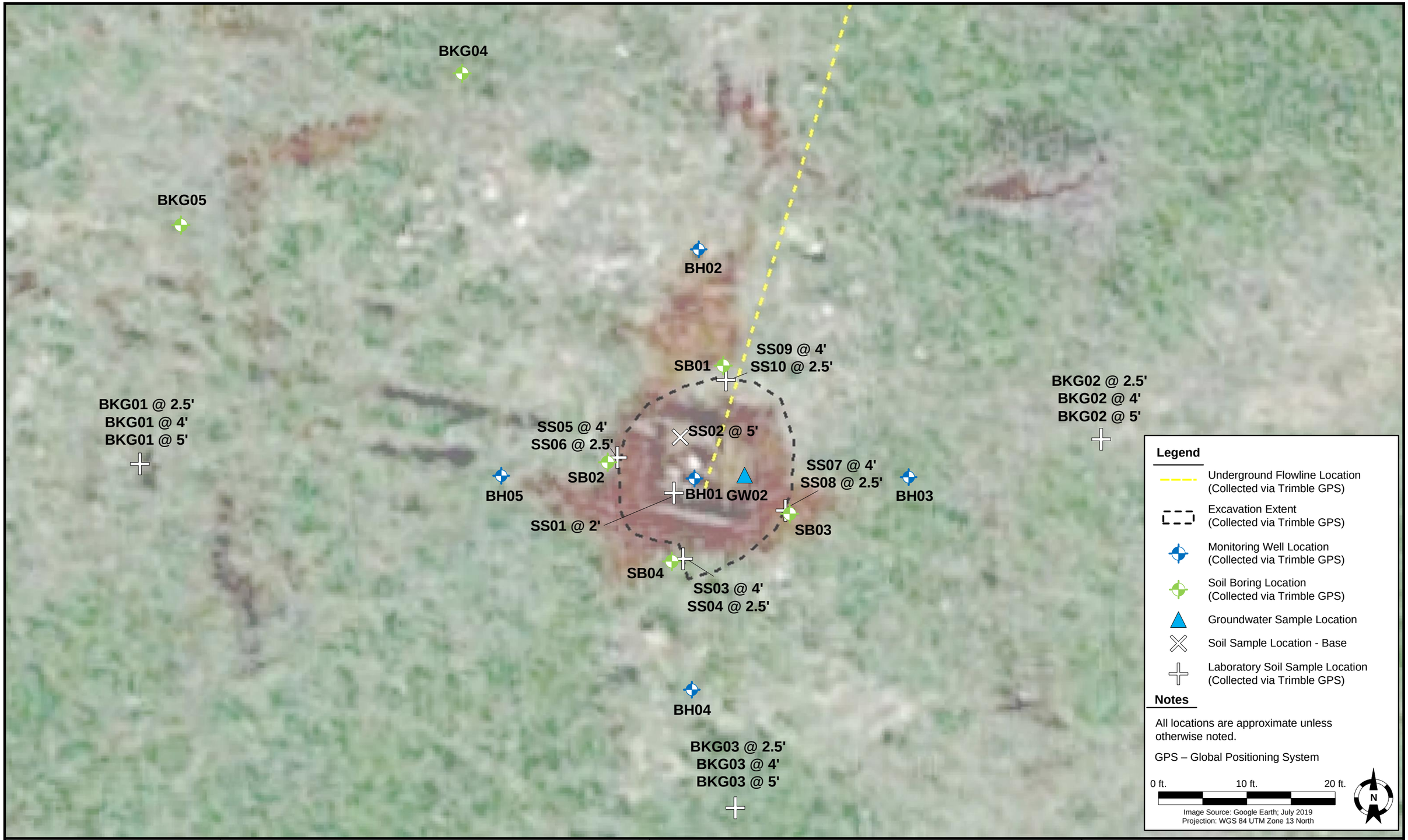
On November 2, 2022, groundwater monitoring was conducted at all five monitoring wells (BH01 – BH05). Five groundwater samples were submitted to Summit Scientific Laboratory for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, 1,2,4-trimethylbenzene (TMB), and 1,3,5-TMB by EPA Method 8260B, chloride and sulfate anions by EPA Method 300.0, and total dissolved solids (TDS) by Method SM 2540C.

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

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 first quarter 2023.

First quarter 2023 groundwater sampling will be conducted in February 2023.



DATE:	December 8, 2022
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Former Loloff 35-5 Wellhead
NENE, Section 35, Township 5 North, Range 64 West
Weld County, Colorado

SOIL BORING LOCATION MAP

FIGURE 1

BH02		
Compound (µg/L)	8/3/2022	11/2/2022
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<2.0	<2.0
Naphthalene	<1.0	<1.0
1,2,4-TMB	<1.0	<1.0
1,3,5-TMB	<1.0	<1.0
Depth to Water (ft. bgs)	3.39	1.10

BH02

BH05		
Compound (µg/L)	8/3/2022	11/2/2022
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<2.0	<2.0
Naphthalene	<1.0	<1.0
1,2,4-TMB	<1.0	<1.0
1,3,5-TMB	<1.0	<1.0
Depth to Water (ft. bgs)	3.50	1.16

BH05

BH03		
Compound (µg/L)	8/3/2022	11/2/2022
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<2.0	<2.0
Naphthalene	<1.0	<1.0
1,2,4-TMB	<1.0	<1.0
1,3,5-TMB	<1.0	<1.0
Depth to Water (ft. bgs)	3.30	0.98

BH03

BH01

BH01		
Compound (µg/L)	8/3/2022	11/2/2022
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<2.0	<2.0
Naphthalene	<1.0	<1.0
1,2,4-TMB	<1.0	<1.0
1,3,5-TMB	<1.0	<1.0
Depth to Water (ft. bgs)	3.35	1.06

BH04

BH04		
Compound (µg/L)	8/3/2022	11/2/2022
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<2.0	<2.0
Naphthalene	<1.0	<1.0
1,2,4-TMB	<1.0	<1.0
1,3,5-TMB	<1.0	<1.0
Depth to Water (ft. bgs)	3.79	1.38

Legend

- Excavation Extent (Collected via Trimble GPS)
- Underground Flowline Location (Collected via Trimble GPS)
- Monitoring Well Location (Collected via Trimble GPS)
- Groundwater Flow Direction (4Q22)

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

0 ft. 10 ft. 20 ft.

N

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

DATE: November 16, 2022

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GROUNDWATER ANALYTICAL RESLUTS MAP

FIGURE 2

BH02		
Compound (mg/L)	8/3/2022	11/2/2022
Chloride	322	246
Sulfate	1,300	1,050
TDS	2,460	2,120
Depth to Water (ft. bgs)	3.39	1.10

BH02

BH05		
Compound (mg/L)	8/3/2022	11/2/2022
Chloride	234	343
Sulfate	1,020	1,280
TDS	2,050	2,620
Depth to Water (ft. bgs)	3.50	1.16

BH05

BH03		
Compound (mg/L)	8/3/2022	11/2/2022
Chloride	158	220
Sulfate	**789**	**951**
TDS	1,740	1,960
Depth to Water (ft. bgs)	3.30	0.98

BH03

BH01

BH01		
Compound (mg/L)	8/3/2022	11/2/2022
Chloride	169	170
Sulfate	**895**	**1,060**
TDS	1,760	1,930
Depth to Water (ft. bgs)	3.35	1.06

BH04

BH04		
Compound (mg/L)	8/3/2022	11/2/2022
Chloride	160	**276**
Sulfate	**713**	**1,210**
TDS	1,740	2,360
Depth to Water (ft. bgs)	3.79	1.38

Legend

- Excavation Extent (Collected via Trimble GPS)
- Underground Flowline Location (Collected via Trimble GPS)
- Monitoring Well Location (Collected via Trimble GPS)
- Groundwater Flow Direction (4Q22)

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

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

0 ft. 10 ft. 20 ft.

N

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

DATE: November 16, 2022

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GROUNDWATER ANALYTICAL RESLUTS MAP (INORGANIC PARAMETERS)

FIGURE 3

DATE: November 18, 2022 DESIGNED BY: C. Hamlin DRAWN BY: J. Clonts	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 ELEVATION CONTOUR MAP (11/02/2022)	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
SB01 @ 6'	11/2/2022	6 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.46	NA	NA
SB01 @ 8'	11/2/2022	8 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.46	NA	NA
SB02 @ 6'	11/2/2022	6 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	**8.55**	NA	NA	NA
SB02 @ 8'	11/2/2022	8 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	**8.31**	NA	NA	NA
SB03 @ 6'	11/2/2022	6 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	**8.40**	4.09	**0.670**	NA
SB03 @ 8'	11/2/2022	8 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	8.25	4.73	**0.552**	NA
SB04 @ 6'	11/2/2022	6 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	**8.45**	NA	NA	NA
SB04 @ 8'	11/2/2022	8 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	**8.59**	NA	NA	NA
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
BKG04 @ 2.5'	11/2/2022	2.5 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	7.77	4.16	**1.03**	9.09
BKG04 @ 4'	11/2/2022	4 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	**8.33**	5.20	**1.23**	4.40
BKG04 @ 5'	11/2/2022	5 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	**8.64**	4.37	**0.446**	3.47
BKG04 @ 6'	11/2/2022	6 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	**8.55**	3.83	**0.692**	2.65
BKG04 @ 8'	11/2/2022	8 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	**8.58**	3.48	**0.597**	3.33
BKG05 @ 2.5'	11/2/2022	2.5 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	**8.34**	3.59	**0.916**	7.19
BKG05 @ 4'	11/2/2022	4 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	**8.47**	**6.36**	**0.679**	3.90
BKG05 @ 5'	11/2/2022	5 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	**8.57**	3.76	**0.691**	3.07
BKG05 @ 6'	11/2/2022	6 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	8.30	3.79	**0.774**	3.56
BKG05 @ 8'	11/2/2022	8 ft. bgs	NA	NA	NA	NA	NA	NA	NA	NA	**8.54**	3.10	**0.627**	3.03

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 recorded 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 below or 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
SB01 @ 6'	11/2/2022	6 ft. bgs	40.361175	-104.509720	NC	0.1
SB01 @ 8'	11/2/2022	8 ft. bgs	40.361175	-104.509720	NC	0.0
SB02 @ 6'	11/2/2022	6 ft. bgs	40.361149	-104.509766	NC	0.2
SB02 @ 8'	11/2/2022	8 ft. bgs	40.361149	-104.509766	NC	0.3
SB03 @ 6'	11/2/2022	6 ft. bgs	40.361130	-104.509690	NC	0.3
SB03 @ 8'	11/2/2022	8 ft. bgs	40.361130	-104.509690	NC	0.2
SB04 @ 6'	11/2/2022	6 ft. bgs	40.361113	-104.509740	NC	0.2
SB04 @ 8'	11/2/2022	8 ft. bgs	40.361113	-104.509740	NC	0.1
BKG04 @ 2.5'	11/2/2022	2.5 ft. bgs	40.361264	-104.509826	NC	0.1
BKG04 @ 4'	11/2/2022	4 ft. bgs	40.361264	-104.509826	NC	0.1
BKG04 @ 5'	11/2/2022	5 ft. bgs	40.361264	-104.509826	NC	0.1
BKG04 @ 6'	11/2/2022	6 ft. bgs	40.361264	-104.509826	NC	0.2
BKG04 @ 8'	11/2/2022	8 ft. bgs	40.361264	-104.509826	NC	0.1
BKG05 @ 2.5'	11/2/2022	2.5 ft. bgs	40.361223	-104.509938	NC	0.0

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)
BKG05 @ 4'	11/2/2022	4 ft. bgs	40.361223	-104.509938	NC	0.1
BKG05 @ 5'	11/2/2022	5 ft. bgs	40.361223	-104.509938	NC	0.1
BKG05 @ 6'	11/2/2022	6 ft. bgs	40.361223	-104.509938	NC	0.1
BKG05 @ 8'	11/2/2022	8 ft. bgs	40.361223	-104.509938	NC	0.1

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, transported off site for disposal.

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
BH01	8/3/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.35	4520.77
BH01	11/2/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	1.06	4523.06
BH02	5/12/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	1.06	4523.06
BH02	8/3/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.39	4520.70
BH02	11/2/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	1.10	4522.99
BH03	5/12/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	1.92	4521.86
BH03	8/3/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.30	4520.59
BH03	11/2/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	0.98	4522.91
BH04	5/12/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	2.31	4522.00
BH04	8/3/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	2.45	4520.66
BH04	11/2/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	1.38	4523.07
BH05	5/12/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.79	4520.66
BH05	8/3/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.50	4520.79
BH05	11/2/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	1.16	4523.13

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.

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

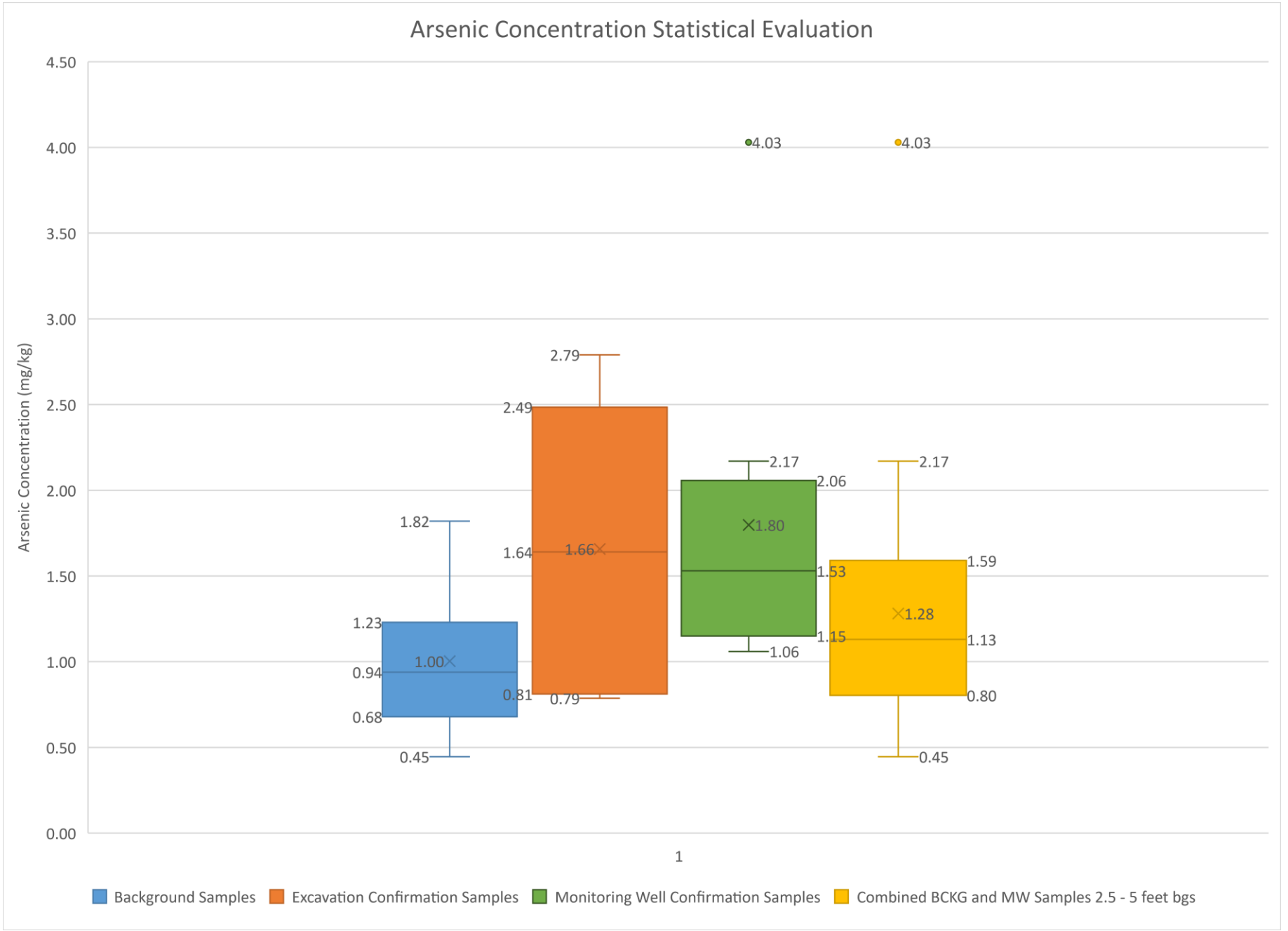
Sample ID	Date Sampled	TDS (unit)	Chloride Ion (mg/L)	Sulfate Ion (mg/L)	Depth to Water [2] (ft.)	Groundwater Elevation (ft. AMSL)
COGCC Table 915-1 Groundwater Standard (mg/L) [1]		**<1.25 x BCKG**	**250 or <1.25 x BCKG**	**250 or <1.25 x BCKG**	**-**	**-**
BH01	NA	Not Sampled - Installed 6/9/2022			NA	NA
BH01	8/3/2022	1,760	169	**895**	3.35	4520.77
BH01	11/2/2022	1,930	170	**1,060**	1.06	4523.06
BH02	5/12/2022	1,880	188	808	1.94	4522.15
BH02	8/3/2022	2,460	322	1,300	3.39	4520.70
BH02	11/2/2022	2,120	246	1,050	1.10	4522.99
BH03	5/12/2022	2,740	**308**	**1,300**	2.03	4521.86
BH03	8/3/2022	1,740	158	**789**	3.30	4520.59
BH03	11/2/2022	1,960	220	**951**	0.98	4522.91
BH04	5/12/2022	**3,200**	**370**	**1,540**	2.45	4522.00
BH04	8/3/2022	1,740	160	**713**	3.79	4520.66
BH04	11/2/2022	2,360	**276**	**1,210**	1.38	4523.07
BH05	5/12/2022	2,490	262	1,150	2.21	4522.08
BH05	8/3/2022	2,050	234	1,020	3.50	4520.79
BH05	11/2/2022	2,620	343	1,280	1.16	4523.13

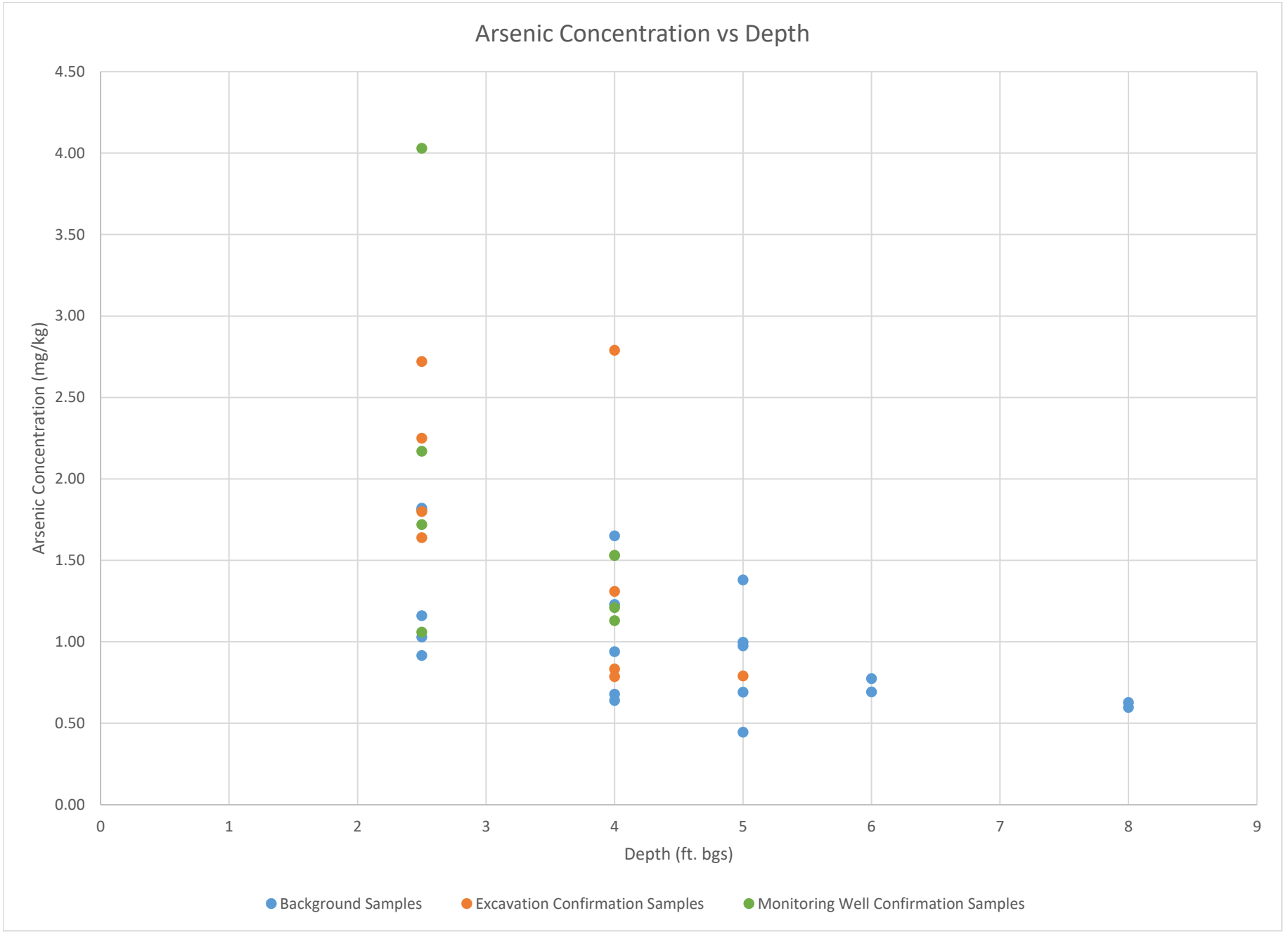
Notes:

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- and cross-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


Arsenic Concentration Statistical Evaluation
Arsenic Concentration (mg/kg)
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
4.03
4.03
2.79
2.49
1.64
1.66
0.81
0.79
2.17
2.06
1.80
1.53
1.15
1.06
2.17
1.59
1.28
1.13
0.80
0.45
1.82
1.23
1.00
0.94
0.68
0.45
1
Background Samples
Excavation Confirmation Samples
Monitoring Well Confirmation Samples
Combined BCKG and MW Samples 2.5 - 5 feet bgs


Arsenic Concentration vs Depth
Arsenic Concentration (mg/kg)
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
0
1
2
3
4
5
6
7
8
9
Depth (ft. bgs)
Background Samples
Excavation Confirmation Samples
Monitoring Well Confirmation Samples

Attachment B

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

November 10, 2022

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

RE: Loloff 35-5 Wellhead
Work Order #2211051

Enclosed are the results of analyses for samples received by Summit Scientific on 11/02/22 17:37. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Mikayla Axtell For Paul Shrewsbury
President

S2

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Loloff 35-5 Wellhead Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 11/10/22 10:08

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	2211051-01	Water	11/02/22 09:35	11/02/22 17:37
BH02	2211051-02	Water	11/02/22 09:40	11/02/22 17:37
BH03	2211051-03	Water	11/02/22 09:45	11/02/22 17:37
BH04	2211051-04	Water	11/02/22 09:50	11/02/22 17:37
BH05	2211051-05	Water	11/02/22 09:55	11/02/22 17:37

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

S_2

2211051

4653 Table Mountain Drive ♦ Golden, Colorado 80403
303-277-9310 ♦ 303-374-5933 (f)

Client: PDC/Tasman Geosciences
Address: 6855 W. 119 St.
City/State/Zip: Broomfield CO 80020
Phone: 303-487-1228
Sampler Name: Gabe Semenza

Project Manager: Mark Longhurst
E-Mail: mark.longhurst@pdce.com
Project Name: Loloff 35-5 Wellhead
Project Number:

					Preservative				Matrix				Analysis Requested								Special Instructions
ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO3	None	Other ___	Water	Soil	Air-Canister #	Other ___	8260 BTEX	Napthalene	1, 2, 4 TMB	1, 3, 5 TMB	TDS	Chloride	Sulfate		
1	BH01		9:35	4	3		1		X				X	X	X	X	X	X	X		
2	BH02		9:40	↓	↓		↓		↓				↓	↓	↓	↓	↓	↓	↓		
3	BH03		9:45	↓	↓		↓		↓				↓	↓	↓	↓	↓	↓	↓		
4	BH04		9:50	↓	↓		↓		↓				↓	↓	↓	↓	↓	↓	↓		
5	BH05		9:55	↓	↓		↓		↓				↓	↓	↓	↓	↓	↓	↓		
6																					
7																					
8																					
9																					
10																					

Relinquished by: D. Semenza	Date/Time: 11/2/22 13:00	Received by: ~~Tasman Lockbox~~ DA Robert Arnoff	Date/Time: 11/2/22 18:00
Relinquished by:	Date/Time: 11/2/22 14:20	Received by: Tasman lock Box	Date/Time: 11/2/22 14:20
Relinquished by: Tasman LockBox	Date/Time: 11222 1737	Received by:	Date/Time: 11222 1737

Turn Around Time (Check)
Same Day ___ 72 hours ___
24 hours ___ Standard X
48 hours ___

Sample Integrity:
Temperature Upon Receipt: 7.7
Samples Intact: (Yes) No

Notes:

S2

S2 Work Order# 2211051

Sample Receipt Checklist

Client: Poc/Tasman Client Project ID: Loloff 35-5 wellhead

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

	–			

Matrix (Check all that apply) Air [ ] Soil/Solid [ ] (Water) [ ] Other [ ]

Temp (°C) 7.7 Thermometer # 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.	~			w ICE
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)]?	–			
Is the COC properly relinquished by the client w/ date and time recorded [(1)]?	–			
Were all samples received intact [(1)]?	/			
Was adequate sample volume provided [(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)]?	/			
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

11-2-22 1737

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:** 11/10/22 10:08

BH01

2211051-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/02/22 09:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	BFK0145	11/04/22	11/06/22	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: **11/02/22 09:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*23-173*		"	"	"	"	
Surrogate: Toluene-d8		*101 %*	*20-170*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*91.8 %*	*21-167*		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **11/02/22 09:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**170**	12.0	mg/L	200	BFK0215	11/08/22	11/08/22	EPA 300.0	
Sulfate	**1060**	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **11/02/22 09:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	**1930**	10.0	mg/L	1	BFK0143	11/04/22	11/04/22	SM2540C	

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:** 11/10/22 10:08

BH02

2211051-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/02/22 09:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	BFK0145	11/04/22	11/06/22	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: **11/02/22 09:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		*112 %*	*23-173*		"	"	"	"	
Surrogate: Toluene-d8		*110 %*	*20-170*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*79.0 %*	*21-167*		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **11/02/22 09:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**246**	12.0	mg/L	200	BFK0215	11/08/22	11/08/22	EPA 300.0	
Sulfate	**1050**	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **11/02/22 09:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	**2120**	10.0	mg/L	1	BFK0143	11/04/22	11/04/22	SM2540C	

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.

S2

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Loloff 35-5 Wellhead Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 11/10/22 10:08

BH03

2211051-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/02/22 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	BFK0145	11/04/22	11/06/22	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: **11/02/22 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*23-173*		"	"	"	"	
Surrogate: Toluene-d8		*86.7 %*	*20-170*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*86.9 %*	*21-167*		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **11/02/22 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**220**	12.0	mg/L	200	BFK0215	11/08/22	11/08/22	EPA 300.0	
Sulfate	**951**	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **11/02/22 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	**1960**	10.0	mg/L	1	BFK0143	11/04/22	11/04/22	SM2540C	

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.

S2

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Loloff 35-5 Wellhead Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 11/10/22 10:08

BH04

2211051-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/02/22 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	BFK0145	11/04/22	11/06/22	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: **11/02/22 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		*94.1 %*	*23-173*		"	"	"	"	
Surrogate: Toluene-d8		*89.8 %*	*20-170*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*71.0 %*	*21-167*		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **11/02/22 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**276**	12.0	mg/L	200	BFK0215	11/08/22	11/08/22	EPA 300.0	
Sulfate	**1210**	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **11/02/22 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	**2360**	10.0	mg/L	1	BFK0143	11/04/22	11/04/22	SM2540C	

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.

S2

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Loloff 35-5 Wellhead Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 11/10/22 10:08

BH05

2211051-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/02/22 09:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	BFK0145	11/04/22	11/06/22	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: **11/02/22 09:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		*109 %*	*23-173*		"	"	"	"	
Surrogate: Toluene-d8		*101 %*	*20-170*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*85.0 %*	*21-167*		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **11/02/22 09:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	**343**	12.0	mg/L	200	BFK0215	11/08/22	11/09/22	EPA 300.0	
Sulfate	**1280**	60.0	"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **11/02/22 09:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	**2620**	10.0	mg/L	1	BFK0143	11/04/22	11/04/22	SM2540C	

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.

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BFK0145 - EPA 5030 Water MS										
Blank (BFK0145-BLK1)				Prepared: 11/04/22 Analyzed: 11/06/22						
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	*14.9*		"	*13.3*		*112*	*23-173*			
Surrogate: Toluene-d8	*15.4*		"	*13.3*		*115*	*20-170*			
Surrogate: 4-Bromofluorobenzene	*9.47*		"	*13.3*		*71.0*	*21-167*			
LCS (BFK0145-BS1)				Prepared: 11/04/22 Analyzed: 11/06/22						
Benzene	29.2	1.0	ug/l	33.3		87.6	51-132			
Toluene	34.7	1.0	"	33.3		104	51-138			
Ethylbenzene	40.3	1.0	"	33.3		121	58-146			
m,p-Xylene	83.2	2.0	"	66.7		125	57-144			
o-Xylene	41.6	1.0	"	33.3		125	53-146			
Naphthalene	35.2	1.0	"	33.3		105	70-130			
1,2,4-Trimethylbenzene	41.6	1.0	"	33.3		125	70-130			
1,3,5-Trimethylbenzene	40.2	1.0	"	33.3		120	70-130			
Surrogate: 1,2-Dichloroethane-d4	*14.1*		"	*13.3*		*106*	*23-173*			
Surrogate: Toluene-d8	*12.1*		"	*13.3*		*90.9*	*20-170*			
Surrogate: 4-Bromofluorobenzene	*12.4*		"	*13.3*		*92.6*	*21-167*			
Matrix Spike (BFK0145-MS1)	**Source: 2211051-01**			Prepared: 11/04/22 Analyzed: 11/06/22						
Benzene	28.3	1.0	ug/l	33.3	ND	84.9	34-141			
Toluene	40.7	1.0	"	33.3	ND	122	27-151			
Ethylbenzene	40.9	1.0	"	33.3	ND	123	29-160			
m,p-Xylene	84.7	2.0	"	66.7	ND	127	20-166			
o-Xylene	41.9	1.0	"	33.3	ND	126	33-159			
Naphthalene	39.2	1.0	"	33.3	ND	118	70-130			
1,2,4-Trimethylbenzene	41.0	1.0	"	33.3	ND	123	70-130			
1,3,5-Trimethylbenzene	40.4	1.0	"	33.3	ND	121	70-130			
Surrogate: 1,2-Dichloroethane-d4	*14.6*		"	*13.3*		*110*	*23-173*			
Surrogate: Toluene-d8	*13.9*		"	*13.3*		*104*	*20-170*			
Surrogate: 4-Bromofluorobenzene	*12.6*		"	*13.3*		*94.9*	*21-167*			

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Loloff 35-5 Wellhead Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 11/10/22 10:08

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BFK0145 - EPA 5030 Water MS										
Matrix Spike Dup (BFK0145-MSD1)	**Source: 2211051-01**			Prepared: 11/04/22 Analyzed: 11/06/22						
Benzene	30.4	1.0	ug/l	33.3	ND	91.3	34-141	7.29	30	
Toluene	39.6	1.0	"	33.3	ND	119	27-151	2.69	30	
Ethylbenzene	39.9	1.0	"	33.3	ND	120	29-160	2.30	30	
m,p-Xylene	82.3	2.0	"	66.7	ND	124	20-166	2.81	30	
o-Xylene	41.6	1.0	"	33.3	ND	125	33-159	0.694	30	
Naphthalene	41.1	1.0	"	33.3	ND	123	70-130	4.68	30	
1,2,4-Trimethylbenzene	40.1	1.0	"	33.3	ND	120	70-130	2.29	30	
1,3,5-Trimethylbenzene	39.7	1.0	"	33.3	ND	119	70-130	1.52	30	
Surrogate: 1,2-Dichloroethane-d4	*15.2*		*"*	*13.3*		*114*	*23-173*			
Surrogate: Toluene-d8	*13.4*		*"*	*13.3*		*100*	*20-170*			
Surrogate: 4-Bromofluorobenzene	*11.7*		*"*	*13.3*		*88.0*	*21-167*			

PDC Energy	Project: Loloff 35-5 Wellhead	
1775 Sherman St. STE. 3000	Project Number: [none]	**Reported:**
Denver CO, 80203	Project Manager: Mark Longhurst	11/10/22 10:08

Anions by EPA Method 300.0 - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BFK0215 - General Preparation										
Blank (BFK0215-BLK1)				Prepared & Analyzed: 11/08/22						
Chloride	ND	0.0600	mg/L							
Sulfate	ND	0.300	"							
LCS (BFK0215-BS1)				Prepared & Analyzed: 11/08/22						
Chloride	3.22	0.0600	mg/L	3.00		107	90-110			
Sulfate	15.1	0.300	"	15.0		100	90-110			
Duplicate (BFK0215-DUP1)	**Source: 2211051-01**			Prepared & Analyzed: 11/08/22						
Chloride	179	12.0	mg/L		170			4.70	20	
Sulfate	1030	60.0	"		1060			2.35	20	
Matrix Spike (BFK0215-MS1)	**Source: 2211051-01**			Prepared & Analyzed: 11/08/22						
Chloride	812	12.0	mg/L	600	170	107	80-120			
Sulfate	4190	60.0	"	3000	1060	104	80-120			

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Loloff 35-5 Wellhead Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 11/10/22 10:08

Total Dissolved Solids by SM2540C - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BFK0143 - General Preparation										
Blank (BFK0143-BLK1)				Prepared & Analyzed: 11/04/22						
Total Dissolved Solids	ND	10.0	mg/L							
Duplicate (BFK0143-DUP1)		**Source: 2211048-01**		Prepared & Analyzed: 11/04/22						
Total Dissolved Solids	898	10.0	mg/L		879			2.14	20	

S2

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Loloff 35-5 Wellhead Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 11/10/22 10:08

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

November 08, 2022

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

RE: Loloff 35-5 Wellhead
Work Order #2211053

Enclosed are the results of analyses for samples received by Summit Scientific on 11/02/22 17:37. 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:** 11/08/22 09:49

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB01@6'	2211053-01	Soil	11/02/22 11:30	11/02/22 17:37
SB01@8'	2211053-02	Soil	11/02/22 11:31	11/02/22 17:37
SB02@6'	2211053-03	Soil	11/02/22 11:15	11/02/22 17:37
SB02@8'	2211053-04	Soil	11/02/22 11:17	11/02/22 17:37
SB03@6'	2211053-05	Soil	11/02/22 10:40	11/02/22 17:37
SB03@8'	2211053-06	Soil	11/02/22 10:44	11/02/22 17:37
SB04@6'	2211053-07	Soil	11/02/22 11:01	11/02/22 17:37
SB04@8'	2211053-08	Soil	11/02/22 11:03	11/02/22 17:37
BKG04@2.5'	2211053-09	Soil	11/02/22 11:40	11/02/22 17:37
BKG04@4'	2211053-10	Soil	11/02/22 11:44	11/02/22 17:37
BKG04@5'	2211053-11	Soil	11/02/22 11:46	11/02/22 17:37
BKG04@6'	2211053-12	Soil	11/02/22 11:55	11/02/22 17:37
BKG04@8'	2211053-13	Soil	11/02/22 11:57	11/02/22 17:37
BKG05@2.5'	2211053-14	Soil	11/02/22 12:02	11/02/22 17:37
BKG05@4'	2211053-15	Soil	11/02/22 12:04	11/02/22 17:37
BKG05@5'	2211053-16	Soil	11/02/22 12:05	11/02/22 17:37
BKG05@6'	2211053-17	Soil	11/02/22 12:10	11/02/22 17:37
BKG05@8'	2211053-18	Soil	11/02/22 12:12	11/02/22 17:37

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

S_2

2211053.1

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

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:	

					Preservative				Matrix				Analysis Requested								Special Instructions
ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO3	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	SAR	Arsenic	pH, EC, SAR by saturated paste
1	SB01@6'	11/2/22	1130	1			X			X									X		
2	SB01@8'		1131																X		
3	SB02@6'		1115															X			
4	SB02@8'		1117															X			
5	SB03@6'		1040															X	X	X	
6	SB03@8'		1044															X	X	X	
7	SB04@6'		1101															X			
8	SB04@8'		1103															X			
9																					
10																					

Relinquished by:	Date/Time: 1508 11/2/22	Received by: Tasman's Lock Box	Date/Time: 1508 11/2/22
Relinquished by: Tasman's Lock Box	Date/Time: 11222 1737	Received by:	Date/Time: 11222 1737
Relinquished by:	Date/Time:	Received by:	Date/Time:

Turn Around Time (Check)

Same Day ___ 72 hours ___

24 hours ___ Standard ✓

48 hours ___

Sample Integrity:

Temperature Upon Receipt: 8.7

Samples Intact: (Yes) No

Notes:

Summit Scientific

S_2

2211053.2

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

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:	

					Preservative				Matrix				Analysis Requested							Special Instructions
ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO3	None	Other ___	Water	Soil	Air-Canister #	Other ___	BTEXN - 8260B	TPH - (C6 - C36)	1,2,4 & 1,3,5-TMB	Boron - HWS	pH, EC, SAR *	PAHs	Metals *	pH, EC, SAR by saturated paste
1	BK604 e 2.5'	11/2/22	1140	1			X			X							X		X	
2	BK604 e 4'		1144																	
3	BK604 e 5'		1146																	
4	BK604 e 6'		1155																	
5	BK604 e 8'		1157																	
6	BK605e 2.5'		1202																	
7	BK605e 4'		1204																	
8	BK605e 5'		1205																	
9	BK605e 6'		1210																	
10	BK605e 8'	↓	1212	↓			↓			↓							↓		↓	

Relinquished by:	Date/Time: 11/2/22 1508	Received by: Tasman's Lock Box	Date/Time: 11/2/22 1508	**Turn Around Time** (Check): Same Day ___ 24 hours ___ 48 hours ___ 72 hours ___ Standard X
Relinquished by: Tasman's Lock Box	Date/Time: 11222 1737	Received by:	Date/Time: 11222 1737	**Sample Integrity:** Temperature Upon Receipt: 8.7 Samples Intact: (Yes) No
Relinquished by:	Date/Time:	Received by:	Date/Time:	

Notes:
* = just Arsenic + Lead
** = just pH + SAR

S2

2/2

S2 Work Order# 2211053

Sample Receipt Checklist

Client: Ramtasman Client Project ID: Loloff 35-5 wellhead

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

	-			

Matrix (Check all that apply) Air [ ] Soil/Solid [ ] Water [ ] Other [ ]

Temp (°C) 8.7 Thermometer # 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
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)]?	–			
Is the COC properly relinquished by the client w/ date and time recorded [(1)]?	–			
Were all samples received intact [(1)]?	–			
Was adequate sample volume provided [(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)]?	–			
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.			–	
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

11-2-22 1737

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:** 11/08/22 09:49

SB01@6'

2211053-01 (Soil)

Summit Scientific

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

Date Sampled: **11/02/22 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	**185**	0.0593	mg/L dry	1	BFK0134	11/04/22	11/05/22	EPA 6020B	
Magnesium	**114**	0.0593	"	"	"	"	"	"	
Sodium	**383**	0.0593	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **11/02/22 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	**5.46**	0.00100	units	1	BFK0181	11/07/22	11/07/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **11/02/22 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	**84.4**		%	1	BFK0156	11/06/22	11/07/22	Calculation	

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Loloff 35-5 Wellhead Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 11/08/22 09:49

SB01@8'

2211053-02 (Soil)

Summit Scientific

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

Date Sampled: **11/02/22 11:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	**93.1**	0.0590	mg/L dry	1	BFK0134	11/04/22	11/05/22	EPA 6020B	
Magnesium	**45.4**	0.0590	"	"	"	"	"	"	
Sodium	**163**	0.0590	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **11/02/22 11:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	**3.46**	0.00100	units	1	BFK0181	11/07/22	11/07/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **11/02/22 11:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	**84.7**		%	1	BFK0156	11/06/22	11/07/22	Calculation	

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Loloff 35-5 Wellhead Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 11/08/22 09:49

SB02@6'

2211053-03 (Soil)

Summit Scientific

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

Date Sampled: **11/02/22 11:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	**8.55**		pH Units	1	BFK0128	11/04/22	11/04/22	EPA 9045D	

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Loloff 35-5 Wellhead Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 11/08/22 09:49

SB02@8'

2211053-04 (Soil)

Summit Scientific

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

Date Sampled: **11/02/22 11:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	**8.31**		pH Units	1	BFK0128	11/04/22	11/04/22	EPA 9045D	

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Loloff 35-5 Wellhead Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 11/08/22 09:49

SB03@6'

2211053-05 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **11/02/22 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	**0.670**	0.200	mg/kg dry	1	BFK0117	11/03/22	11/04/22	EPA 6020B	

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

Date Sampled: **11/02/22 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	**143**	0.0603	mg/L dry	1	BFK0134	11/04/22	11/05/22	EPA 6020B	
Magnesium	**75.4**	0.0603	"	"	"	"	"	"	
Sodium	**243**	0.0603	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **11/02/22 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	**4.09**	0.00100	units	1	BFK0181	11/07/22	11/07/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **11/02/22 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	**82.9**		%	1	BFK0156	11/06/22	11/07/22	Calculation	

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

Date Sampled: **11/02/22 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	**8.40**		pH Units	1	BFK0128	11/04/22	11/04/22	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:** 11/08/22 09:49

SB03@8'

2211053-06 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **11/02/22 10:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	**0.552**	0.200	mg/kg dry	1	BFK0117	11/03/22	11/04/22	EPA 6020B	

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

Date Sampled: **11/02/22 10:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	**166**	0.0622	mg/L dry	1	BFK0134	11/04/22	11/05/22	EPA 6020B	
Magnesium	**89.0**	0.0622	"	"	"	"	"	"	
Sodium	**304**	0.0622	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **11/02/22 10:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	**4.73**	0.00100	units	1	BFK0181	11/07/22	11/07/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **11/02/22 10:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	**80.4**		%	1	BFK0156	11/06/22	11/07/22	Calculation	

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

Date Sampled: **11/02/22 10:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	**8.25**		pH Units	1	BFK0128	11/04/22	11/04/22	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.

S2

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Loloff 35-5 Wellhead Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 11/08/22 09:49

SB04@6'

2211053-07 (Soil)

Summit Scientific

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

Date Sampled: **11/02/22 11:01**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	**8.45**		pH Units	1	BFK0128	11/04/22	11/04/22	EPA 9045D	

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Loloff 35-5 Wellhead Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 11/08/22 09:49

SB04@8'

2211053-08 (Soil)

Summit Scientific

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

Date Sampled: **11/02/22 11:03**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	**8.59**		pH Units	1	BFK0128	11/04/22	11/04/22	EPA 9045D	

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Loloff 35-5 Wellhead Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 11/08/22 09:49

BKG04@2.5'

2211053-09 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **11/02/22 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	**1.03**	0.200	mg/kg dry	1	BFK0117	11/03/22	11/04/22	EPA 6020B	
Lead	**9.09**	0.200	"	"	"	"	"	"	

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

Date Sampled: **11/02/22 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	**597**	0.0595	mg/L dry	1	BFK0134	11/04/22	11/05/22	EPA 6020B	
Magnesium	**186**	0.0595	"	"	"	"	"	"	
Sodium	**454**	0.0595	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **11/02/22 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	**4.16**	0.00100	units	1	BFK0181	11/07/22	11/07/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **11/02/22 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	**84.1**		%	1	BFK0156	11/06/22	11/07/22	Calculation	

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

Date Sampled: **11/02/22 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	**7.77**		pH Units	1	BFK0128	11/04/22	11/04/22	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:** 11/08/22 09:49

BKG04@4'

2211053-10 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **11/02/22 11:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	**1.23**	0.200	mg/kg dry	1	BFK0117	11/03/22	11/04/22	EPA 6020B	
Lead	**4.40**	0.200	"	"	"	"	"	"	

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

Date Sampled: **11/02/22 11:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	**95.9**	0.0599	mg/L dry	1	BFK0134	11/04/22	11/05/22	EPA 6020B	
Magnesium	**57.8**	0.0599	"	"	"	"	"	"	
Sodium	**261**	0.0599	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **11/02/22 11:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	**5.20**	0.00100	units	1	BFK0181	11/07/22	11/07/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **11/02/22 11:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	**83.5**		%	1	BFK0156	11/06/22	11/07/22	Calculation	

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

Date Sampled: **11/02/22 11:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	**8.33**		pH Units	1	BFK0128	11/04/22	11/04/22	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:** 11/08/22 09:49

BKG04@5'

2211053-11 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **11/02/22 11:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	**0.446**	0.200	mg/kg dry	1	BFK0117	11/03/22	11/04/22	EPA 6020B	
Lead	**3.47**	0.200	"	"	"	"	"	"	

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

Date Sampled: **11/02/22 11:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	**167**	0.0580	mg/L dry	1	BFK0134	11/04/22	11/05/22	EPA 6020B	
Magnesium	**113**	0.0580	"	"	"	"	"	"	
Sodium	**298**	0.0580	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **11/02/22 11:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	**4.37**	0.00100	units	1	BFK0181	11/07/22	11/07/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **11/02/22 11:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	**86.2**		%	1	BFK0156	11/06/22	11/07/22	Calculation	

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

Date Sampled: **11/02/22 11:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	**8.64**		pH Units	1	BFK0128	11/04/22	11/04/22	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:** 11/08/22 09:49

BKG04@6'

2211053-12 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **11/02/22 11:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	**0.692**	0.200	mg/kg dry	1	BFK0117	11/03/22	11/04/22	EPA 6020B	
Lead	**2.65**	0.200	"	"	"	"	"	"	

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

Date Sampled: **11/02/22 11:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	**95.3**	0.0597	mg/L dry	1	BFK0134	11/04/22	11/05/22	EPA 6020B	
Magnesium	**67.3**	0.0597	"	"	"	"	"	"	
Sodium	**200**	0.0597	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **11/02/22 11:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	**3.83**	0.00100	units	1	BFK0181	11/07/22	11/07/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **11/02/22 11:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	**83.7**		%	1	BFK0156	11/06/22	11/07/22	Calculation	

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

Date Sampled: **11/02/22 11:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	**8.55**		pH Units	1	BFK0128	11/04/22	11/04/22	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:** 11/08/22 09:49

BKG04@8'

2211053-13 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **11/02/22 11:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	**0.597**	0.200	mg/kg dry	1	BFK0117	11/03/22	11/04/22	EPA 6020B	
Lead	**3.33**	0.200	"	"	"	"	"	"	

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

Date Sampled: **11/02/22 11:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	**113**	0.0593	mg/L dry	1	BFK0134	11/04/22	11/05/22	EPA 6020B	
Magnesium	**61.5**	0.0593	"	"	"	"	"	"	
Sodium	**185**	0.0593	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **11/02/22 11:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	**3.48**	0.00100	units	1	BFK0181	11/07/22	11/07/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **11/02/22 11:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	**84.4**		%	1	BFK0156	11/06/22	11/07/22	Calculation	

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

Date Sampled: **11/02/22 11:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	**8.58**		pH Units	1	BFK0128	11/04/22	11/04/22	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:** 11/08/22 09:49

BKG05@2.5'

2211053-14 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **11/02/22 12:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	**0.916**	0.200	mg/kg dry	1	BFK0117	11/03/22	11/04/22	EPA 6020B	
Lead	**7.19**	0.200	"	"	"	"	"	"	

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

Date Sampled: **11/02/22 12:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	**57.5**	0.0593	mg/L dry	1	BFK0134	11/04/22	11/05/22	EPA 6020B	
Magnesium	**38.3**	0.0593	"	"	"	"	"	"	
Sodium	**143**	0.0593	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **11/02/22 12:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	**3.59**	0.00100	units	1	BFK0181	11/07/22	11/07/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **11/02/22 12:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	**84.3**		%	1	BFK0156	11/06/22	11/07/22	Calculation	

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

Date Sampled: **11/02/22 12:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	**8.34**		pH Units	1	BFK0128	11/04/22	11/04/22	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:** 11/08/22 09:49

BKG05@4'

2211053-15 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **11/02/22 12:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	**0.679**	0.200	mg/kg dry	1	BFK0117	11/03/22	11/04/22	EPA 6020B	
Lead	**3.90**	0.200	"	"	"	"	"	"	

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

Date Sampled: **11/02/22 12:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	**102**	0.0612	mg/L dry	1	BFK0134	11/04/22	11/05/22	EPA 6020B	
Magnesium	**64.8**	0.0612	"	"	"	"	"	"	
Sodium	**334**	0.0612	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **11/02/22 12:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	**6.36**	0.00100	units	1	BFK0181	11/07/22	11/07/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **11/02/22 12:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	**81.6**		%	1	BFK0156	11/06/22	11/07/22	Calculation	

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

Date Sampled: **11/02/22 12:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	**8.47**		pH Units	1	BFK0128	11/04/22	11/04/22	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:** 11/08/22 09:49

BKG05@5'

2211053-16 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **11/02/22 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	**0.691**	0.200	mg/kg dry	1	BFK0117	11/03/22	11/04/22	EPA 6020B	
Lead	**3.07**	0.200	"	"	"	"	"	"	

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

Date Sampled: **11/02/22 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	**74.5**	0.0584	mg/L dry	1	BFK0134	11/04/22	11/05/22	EPA 6020B	
Magnesium	**53.2**	0.0584	"	"	"	"	"	"	
Sodium	**174**	0.0584	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **11/02/22 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	**3.76**	0.00100	units	1	BFK0181	11/07/22	11/07/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **11/02/22 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	**85.7**		%	1	BFK0156	11/06/22	11/07/22	Calculation	

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

Date Sampled: **11/02/22 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	**8.57**		pH Units	1	BFK0128	11/04/22	11/04/22	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:** 11/08/22 09:49

BKG05@6'

2211053-17 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **11/02/22 12:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	**0.774**	0.200	mg/kg dry	1	BFK0117	11/03/22	11/04/22	EPA 6020B	
Lead	**3.56**	0.200	"	"	"	"	"	"	

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

Date Sampled: **11/02/22 12:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	**121**	0.0602	mg/L dry	1	BFK0134	11/04/22	11/05/22	EPA 6020B	
Magnesium	**86.1**	0.0602	"	"	"	"	"	"	
Sodium	**223**	0.0602	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **11/02/22 12:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	**3.79**	0.00100	units	1	BFK0181	11/07/22	11/07/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **11/02/22 12:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	**83.1**		%	1	BFK0156	11/06/22	11/07/22	Calculation	

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

Date Sampled: **11/02/22 12:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	**8.30**		pH Units	1	BFK0128	11/04/22	11/04/22	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:** 11/08/22 09:49

BKG05@8'

2211053-18 (Soil)

Summit Scientific

Total Metals by EPA 6020B

Date Sampled: **11/02/22 12:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	**0.627**	0.200	mg/kg dry	1	BFK0117	11/03/22	11/04/22	EPA 6020B	
Lead	**3.03**	0.200	"	"	"	"	"	"	

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

Date Sampled: **11/02/22 12:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	**67.8**	0.0586	mg/L dry	1	BFK0134	11/04/22	11/05/22	EPA 6020B	
Magnesium	**39.5**	0.0586	"	"	"	"	"	"	
Sodium	**130**	0.0586	"	"	"	"	"	"	

Calculated Analysis

Date Sampled: **11/02/22 12:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	**3.10**	0.00100	units	1	BFK0181	11/07/22	11/07/22	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **11/02/22 12:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	**85.3**		%	1	BFK0156	11/06/22	11/07/22	Calculation	

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

Date Sampled: **11/02/22 12:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	**8.54**		pH Units	1	BFK0128	11/04/22	11/04/22	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:** 11/08/22 09:49

Total Metals by EPA 6020B - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BFK0117 - EPA 3050B										
Blank (BFK0117-BLK1)				Prepared: 11/03/22 Analyzed: 11/04/22						
Arsenic	ND	0.200	mg/kg wet							
Lead	ND	0.200	"							
LCS (BFK0117-BS1)				Prepared: 11/03/22 Analyzed: 11/04/22						
Arsenic	40.9	0.200	mg/kg wet	40.0		102	80-120			
Lead	20.0	0.200	"	20.0		100	80-120			
Duplicate (BFK0117-DUP1)	**Source: 2211053-05**			Prepared: 11/03/22 Analyzed: 11/04/22						
Arsenic	0.676	0.200	mg/kg dry		0.670			0.861	20	
Lead	3.76	0.200	"		3.92			4.18	20	
Matrix Spike (BFK0117-MS1)	**Source: 2211053-05**			Prepared: 11/03/22 Analyzed: 11/04/22						
Arsenic	22.4	0.200	mg/kg dry	48.3	0.670	45.1	75-125			QM-05
Lead	24.6	0.200	"	24.1	3.92	85.7	75-125			
Matrix Spike Dup (BFK0117-MSD1)	**Source: 2211053-05**			Prepared: 11/03/22 Analyzed: 11/04/22						
Arsenic	22.6	0.200	mg/kg dry	48.3	0.670	45.4	75-125	0.637	25	QM-05
Lead	27.9	0.200	"	24.1	3.92	99.4	75-125	12.6	25	

PDC Energy	Project: Loloff 35-5 Wellhead	
1775 Sherman St. STE. 3000	Project Number: [none]	**Reported:**
Denver CO, 80203	Project Manager: Mark Longhurst	11/08/22 09:49

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

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BFK0134 - General Preparation										
Blank (BFK0134-BLK1)				Prepared: 11/04/22 Analyzed: 11/05/22						
Calcium	ND	0.0500	mg/L wet							
Magnesium	ND	0.0500	"							
Sodium	ND	0.0500	"							
LCS (BFK0134-BS1)				Prepared: 11/04/22 Analyzed: 11/05/22						
Calcium	4.88	0.0500	mg/L wet	5.00		97.7	70-130			
Magnesium	5.03	0.0500	"	5.00		101	70-130			
Sodium	5.07	0.0500	"	5.00		101	70-130			

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Loloff 35-5 Wellhead Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 11/08/22 09:49

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

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BFK0156 - General Preparation										
Duplicate (BFK0156-DUP1)	**Source: 2211053-01**			Prepared: 11/06/22 Analyzed: 11/07/22						
% Solids	85.4		%		84.4			1.20	20	

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Loloff 35-5 Wellhead Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 11/08/22 09:49

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

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch BFK0128 - General Preparation										
LCS (BFK0128-BS1)				Prepared & Analyzed: 11/04/22						
pH	8.99		pH Units	9.18		97.9	95-105			
Duplicate (BFK0128-DUP1)		**Source: 2211053-03**		Prepared & Analyzed: 11/04/22						
pH	8.50		pH Units		8.55			0.587	20	

S2

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: Loloff 35-5 Wellhead Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 11/08/22 09:49

Notes and Definitions

QM-05	The spike recovery was outside acceptance limits for the MS and/or MSD due to matrix interference. The associated LCS and/or LCSD were within acceptance limits, therefore the data are considered valid.
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 C

TASMAN — Borehole Logging Form

BOREHOLE ID: SB01	SITE NAME: Loloff 35-5 WH	CLIENT NAME: PDC ENERGY
Date Completed: 11/2/22	Location: Source	
Drilling Company: Tasman	Surface Completion: NA	DTW: 3' TD: 8'
Type of Drill: Soggy Bottom Sander / Hand Auger = HA	Geologist: Sam Anderson	Project Manager: B.Nelson
Bit Size : 2 3/8"	Logging Method:	

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		↑	↑			SM	0-1= Tan, Silty Sand, Fine to med. grained, moderately sorted, dry, organic odor.
				0.1			
2				0.2		CL	1-3'= Brown, Clay, moderate plasticity, moist no staining or odor.
3 ▽		HA	100%	0.0			
4				0.1		SW	3-8'= Tan, Sand, poorly sorted, Fine to course grain, saturated, no odor/staining
5		↓	↓	0.1			
6		↑		0.1	SB01C 6' 1130		
7		SB5	100%	0.1			
8		↓	↓	0.0	SB01E 8' 1131		
9	X						
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

TASMAN — Borehole Logging Form

BOREHOLE ID: SB02	SITE NAME: Loloff 35-5 WH	CLIENT NAME: PDC ENERGY
Date Completed: 11/2/22	Location: western most boring.	
Drilling Company: Tasman	Surface Completion: NA	DTW: 3' TD: 8'
Type of Drill: HA= Hand Auger SBS=Soggy Bottom Sonic	Geologist: Sam A.	Project Manager: B.Nelson
Bit Size : 2 3/8"	Logging Method:	

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		1.1		SC	0-2= Brown, clayey sand, poorly sorted, fine to med. grain, moist, organic odor/staining.
2				0.3			
3			100%	0.2		SW	2-8'= Tan, sand, poorly sorted, fine to coarse, saturated @ 3', no odor/staining.
4				0.2			
5				0.2			
6				0.2	SB02e 6'		
7		SBS	100%	0.2	1115		
8				0.3	SB02e 8' 1117		
9	x						
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

TASMAN — Borehole Logging Form

BOREHOLE ID: SB03	SITE NAME: Loloff 35-5 WH	CLIENT NAME: PDC ENERGY
Date Completed: 11/2/22	Location: East of Sunset	
Drilling Company: Tasman	Surface Completion: NA	DTW: ~3 TD: 8'
Type of Drill: Hand Auger = HA Sprint Bottom Sample = SBS	Geologist: Bob Ambrose	Project Manager: B.Nelson
Bit Size : 2 3/8"	Logging Method:	

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		↑	↑	0.1			~~Brown~~ 0-1 = Brown, Silty Sand, well graded fine-coarse grained, moist, No odor/stain
2				0.2			1-2 = Brown/Tan, Sand, well graded, fine-coarse grained, moist, no odor/stain
3 ▽		HA	100%	0.2		SW	2-3 = Same as above, Tan, Saturated at 3'
4				0.2			3-4 = Same as above
5		↓	↓	0.3			4-5 = Same as above
6		↑	↑	0.3	SB03 @ 6' 1040	SW	5-8' = Tan/brown sand, poorly sorted, fine to coarse grain, saturated, no odor/stain
7		SBS	90%	0.2			
8		↓	↓	0.2	SB03 @ 8' 1044		
9	X						
10							
11							
12							
13							
14							
15							
16							
17							- Eastern most Soil bring
18							
19							
20							
21							
22							
23							
24							
25							

TASMAN

Borehole Logging Form

BOREHOLE ID: SB04	SITE NAME: Loloff 35-5 WH	CLIENT NAME: PDC ENERGY
Date Completed: 11/2/22	Location: South of house	
Drilling Company: Tasman	Surface Completion:	DTW: ~3 TD: 8'
Type of Drill: HA = Hand Auger SBS = Soggy Bottom	Geologist: Sam	Project Manager: B.Nelson
Bit Size: 2 3/8"	Logging Method:	
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		↑	↑	0.3		SC	0-1 = Brown, Blayey Sand, Fine-Coarse grained, well graded, moist, no odor or stain
2		HA	100%	0.3		SW	1-4 = Tan, Sand, well graded, Fine-Coarse grained, Saturated at 3', no staining/odor.
3 ▽		↓	↓	0.3		SW	
4				0.3			
5		↑	↑	0.2		SW	4-8 = Brown/tan, Sand, poorly sorted, Fine to coarse grain, Saturated, no odor/stain.
6				0.2	SB04 @ 6' 1101		
7		SBS	100%	0.1			
8		↓	↓	0.1	SB04 @ 8' 1103		
9	X						
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

TASMAN

Borehole Logging Form

BOREHOLE ID: BK604	SITE NAME: Loloff 35-5 WH	CLIENT NAME: PDC ENERGY
Date Completed: 11/2/22	Location: NW of excavation	
Drilling Company: Tasman	Surface Completion: NA	DTW: 3' TD: 8'
Type of Drill: Hand Auger / SBS	Geologist: Sam Anderson	Project Manager: B.Nelson
Bit Size : 2 3/8"	Logging Method:	
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	0-1'= Brown, silty sand, fine-medium grained, moderate sorting, dry, organic odor/stain.
2		HA		0.1	BK604e2.5' 1140	CL	1-3'= Brown, clay, moderate plasticity, saturated at 3', no staining/odor.
3 ▽			100%	0.0			
4				0.1	BK604e4' 1144	SW	3-5'= Tan/brown, sand, well graded, fine-coarse grain, saturated, no odor/staining
5		↓	↓	0.1	BK604e5' 1146		
6		↑	↑	0.2	BK604e6' 1155	SW	5-8'= Tan, sand, poor sorting, fine to coarse saturated, no odor or staining
7		SBS	100%	0.1			
8		↓	↓	0.1	BK604e8' 1157		
9	X						
10							
11							
12							
13							
14							
15							
16							
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22							
23							
24							
25							

TASMAN

Borehole Logging Form

BOREHOLE ID: BK605	**SITE NAME:** Ldoff 35-5 wH	**CLIENT NAME:** PDC ENERGY
Date Completed: 11/2/22	Location: Far west of source	
Drilling Company: Tasman	Surface Completion: NA	DTW: 3' TD: 8'
Type of Drill: HA=Hand Auger SBS= Sonny Bottom Sampler	Geologist: Sam Anderson	Project Manager: B.Nelson
Bit Size: 2 3/8"	Logging Method:	

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		CL	0-2'= Brown, clay, moderate plasticity, moist, organic odor, structure
2				0.0	BK605@2.5' 1207	SW	2-5'= Brown/tan, sand, poorly sorted. Fine to coarse grain, saturated at 3', organic odor/ staining.
3 ▽				0.1			
4				0.1	BK605@4' 1204		
5				0.1	BK605@5' 1205		
6				0.1	BK605@6' 1210	SW	5-8'= Tan/Brown, sand, poorly sorted, fine to coarse with trace gravels, saturated, organic odor, no structure
7		SBS	100%	0.0			
8				0.1	BK605@8' 1212		
9	X						
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							