

**PDC Energy, Inc.**  
**First Quarter 2023 Groundwater Monitoring Summary**

March 16, 2023

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.

### Groundwater Monitoring Activities

On February 10, 2023, groundwater monitoring was conducted at three of the five monitoring wells (BH03 – BH05). Due to frozen water columns in BH01 and BH02, a subsequent groundwater monitoring event was conducted on February 28, 2023, at the remaining two monitoring wells (BH01 and BH02). In total, 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.

First quarter 2023 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, sulfate ion concentrations were in exceedance of the applicable regulatory standards and above 1.25x the background concentrations of the up-gradient monitoring wells (BH04 and BH05) in monitoring well BH01. TDS and chloride concentrations were in compliance with the applicable regulatory standards or within 1.25x the background concentrations in all monitoring wells.

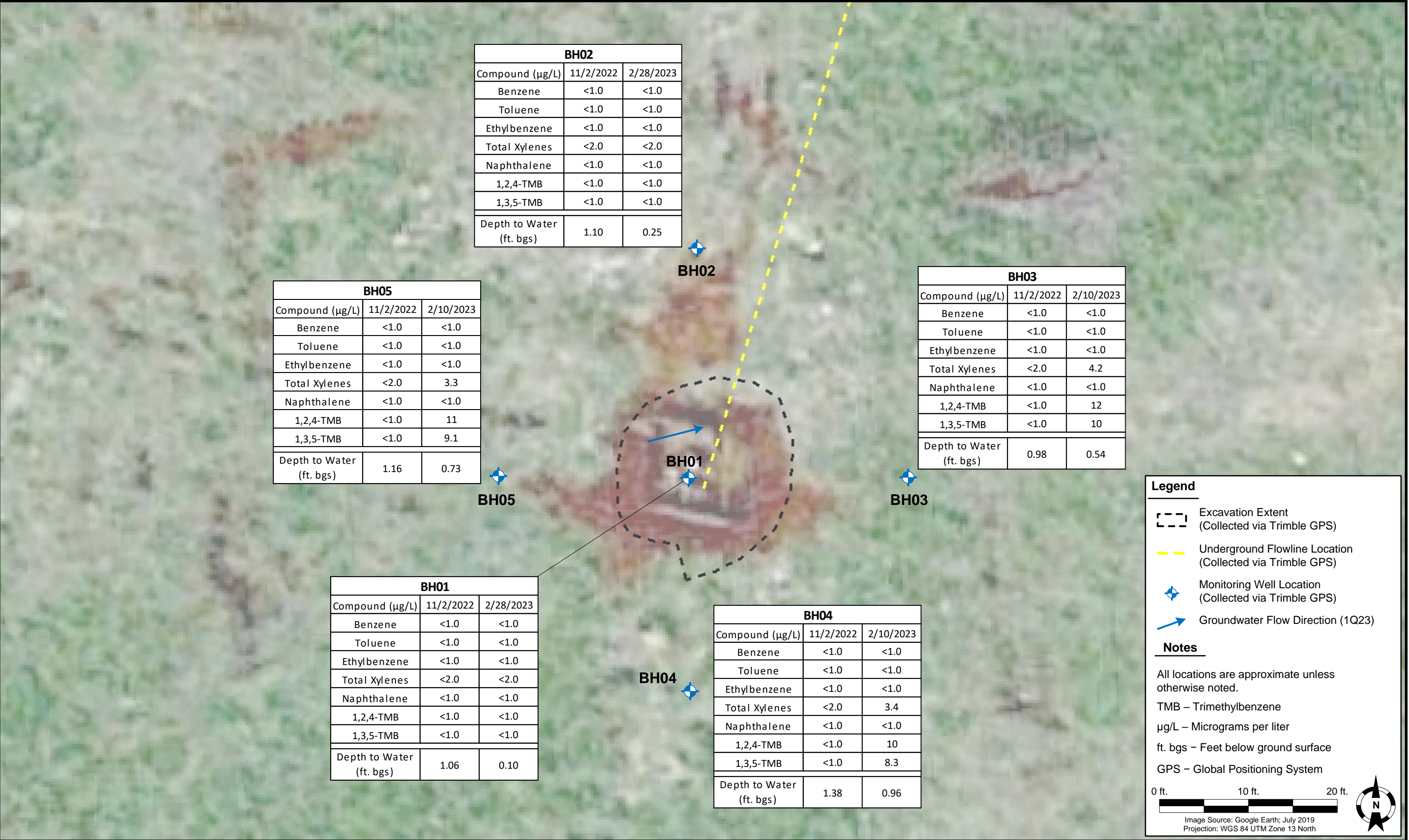
Sulfate anion concentration trends were examined over time and compared to historic background data. Based on the results, all wells were below 1.25x the historic maximum background concentration recorded in monitoring well BH04 during the first quarter 2023. Furthermore, the sulfate anion exceedances recorded in monitoring well BH04 during the second quarter 2022 and BH01 during the first quarter 2023 are within 1.25x the background concentrations recorded in monitoring well BH02 during the second quarter 2022. The graph illustrating this data is included as Attachment A. 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 1 and 2. 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 second quarter 2023.

Second quarter 2023 groundwater sampling will be conducted in May 2023.







BH02		
Compound (mg/L)	11/2/2022	2/28/2023
Chloride	246	189
Sulfate	1,050	876
TDS	2,120	2,220
Depth to Water (ft. bgs)	1.10	0.25

BH02

BH05		
Compound (mg/L)	11/2/2022	2/10/2023
Chloride	343	190
Sulfate	1,280	644
TDS	2,620	2,610
Depth to Water (ft. bgs)	1.16	0.73

BH05

BH03		
Compound (mg/L)	11/2/2022	2/10/2023
Chloride	220	139
Sulfate	<b>951</b>	<b>566</b>
TDS	1,960	2,150
Depth to Water (ft. bgs)	0.98	0.54

BH03

BH01		
Compound (mg/L)	11/2/2022	2/28/2023
Chloride	170	168
Sulfate	<b>1,060</b>	<b>1,010</b>
TDS	1,930	2,070
Depth to Water (ft. bgs)	1.06	0.10

BH04

BH04		
Compound (mg/L)	11/2/2022	2/10/2023
Chloride	<b>276</b>	198
Sulfate	<b>1,210</b>	<b>711</b>
TDS	2,360	2,480
Depth to Water (ft. bgs)	1.38	0.96

#### Legend

- Excavation Extent (Collected via Trimble GPS)
- Underground Flowline Location (Collected via Trimble GPS)
- Monitoring Well Location (Collected via Trimble GPS)
- Groundwater Flow Direction (1Q23)

#### 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 historic BKG concentrations

COGCC – Colorado Oil and Gas Conservation Commission

BKG – Background

0 ft. 10 ft. 20 ft.

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



DATE: March 16, 2023

DESIGNED BY: C. Hamlin

DRAWN BY: S. Anderson



**TASMAN**

Tasman, Inc.  
6855 W. 119<sup>th</sup> 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 RESULTS  
MAP  
(INORGANIC PARAMETERS)

FIGURE  
2





DATE:	March 14, 2023
DESIGNED BY:	C. Hamlin
DRAWN BY:	L. Reed



**Tasman, Inc.**  
6855 W. 119<sup>th</sup> 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 (02/10/2023)**

**FIGURE  
3**

**TABLE 1**  
**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 <sup>(2)</sup> (ft.)	Groundwater Elevation (ft. AMSL)
<b>COGCC Table 915-1 Groundwater Standard (µg/L) <sup>(1)</sup></b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>	<b>140</b>	<b>67</b>	<b>67</b>	<b>-</b>	<b>-</b>
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
BH01	2/28/2023	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	0.10	4524.02
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
BH02	2/28/2023	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	0.25	4523.84
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
BH03	2/10/2023	<1.0	<1.0	<1.0	4.2	<1.0	12	10	0.54	4523.35
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
BH04	2/10/2023	<1.0	<1.0	<1.0	3.4	<1.0	10	8.3	0.96	4523.49
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
BH05	2/10/2023	<1.0	<1.0	<1.0	3.3	<1.0	11	9.1	0.73	4523.56

**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 2**  
**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 <sup>(2)</sup> (ft.)	Groundwater Elevation (ft. AMSL)
<b>COGCC Table 915-1 Groundwater Standard (mg/L) <sup>(1)</sup></b>		<b>&lt;1.25 x BCKG</b>	<b>250 or &lt;1.25 x BCKG</b>	<b>250 or &lt;1.25 x BCKG</b>	-	-
BH01	NA	Not Sampled - Installed 6/9/2022			NA	NA
BH01	8/3/2022	1,760	169	<b>895</b>	3.35	4520.77
BH01	11/2/2022	1,930	170	<b>1,060</b>	1.06	4523.06
BH01	2/28/2023	2,070	168	<b>1,010</b>	0.10	4524.02
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
BH02	2/28/2023	2,220	189	<b>876</b>	0.25	4523.84
BH03	5/12/2022	2,740	<b>308</b>	<b>1,300</b>	2.03	4521.86
BH03	8/3/2022	1,740	158	<b>789</b>	3.30	4520.59
BH03	11/2/2022	1,960	220	<b>951</b>	0.98	4522.91
BH03	2/10/2023	2,150	139	<b>566</b>	0.54	4523.35
BH04	5/12/2022	<b>3,200</b>	<b>370</b>	<b>1,540</b>	2.45	4522.00
BH04	8/3/2022	1,740	160	<b>713</b>	3.79	4520.66
BH04	11/2/2022	2,360	<b>276</b>	<b>1,210</b>	1.38	4523.07
BH04	2/10/2023	2,480	198	<b>711</b>	0.96	4523.49
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
BH05	2/10/2023	2,610	190	644	0.73	4523.56

**TABLE 2**  
**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 <sup>(2)</sup> (ft.)	Groundwater Elevation (ft. AMSL)
COGCC Table 915-1 Groundwater Standard (mg/L) <sup>(1)</sup>		<1.25 x BCKG	250 or <1.25 x BCKG	250 or <1.25 x BCKG	-	-

**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.

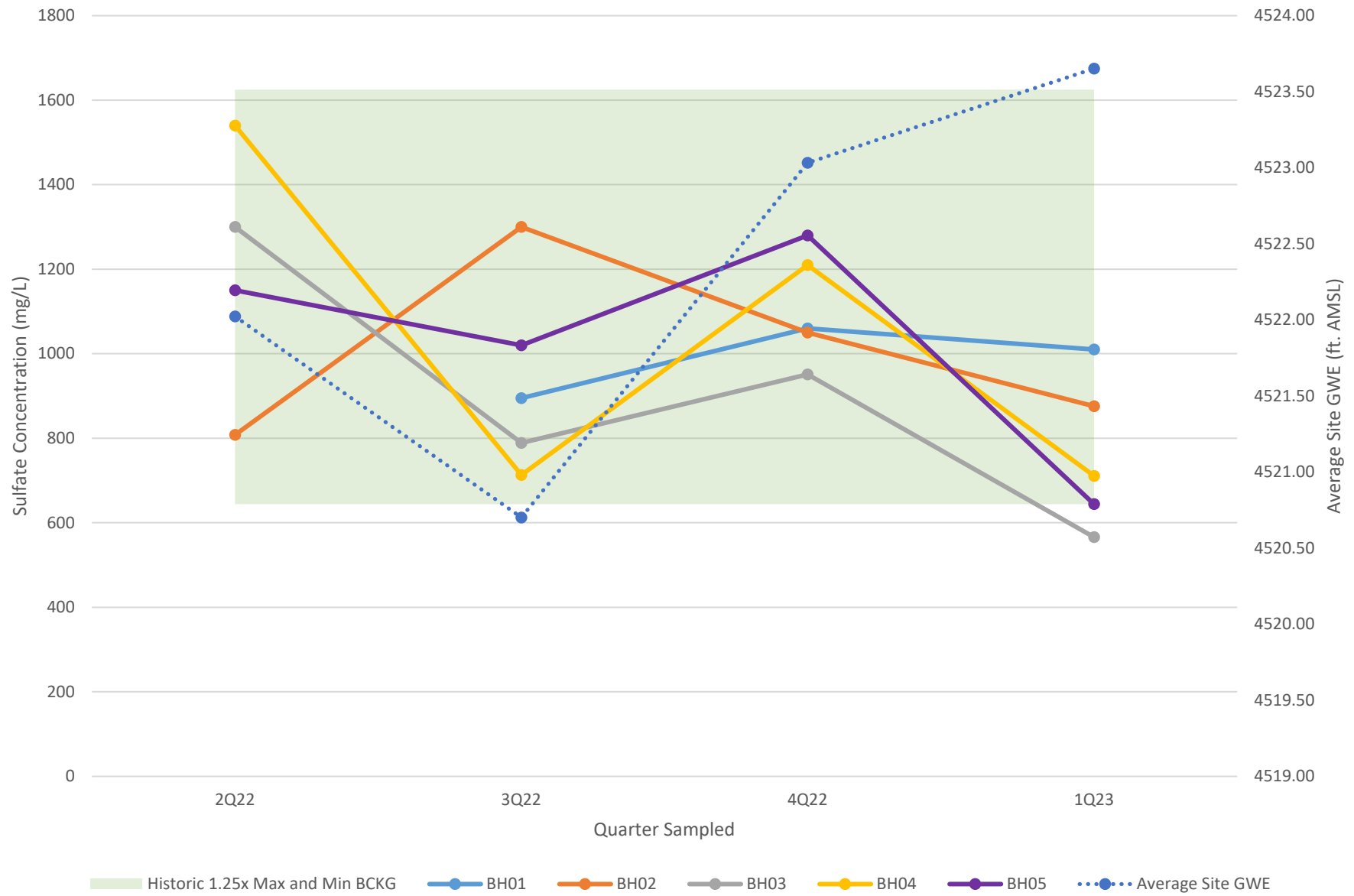
**BOLD** = Analytical result is in exceedance of applicable standard and below 1.25x historic background concentrations.



## **ATTACHMENT A**

# Loloff 35-5 Wellhead

## Sulfate Concentration vs Historic Background





## **ATTACHMENT B**

# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

March 06, 2023

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Loloff 35-5 Wellhead

Work Order #2303023

Enclosed are the results of analyses for samples received by Summit Scientific on 02/28/23 17:46. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Scott Sheely".

Scott Sheely 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:**  
03/06/23 15:26

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	2303023-01	Water	02/28/23 13:00	02/28/23 17:46
BH02	2303023-02	Water	02/28/23 14:00	02/28/23 17:46

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.*

Client: PDC / Tasman		Send Data To: Project Manager: Mark Longhurst		Send Invoice To: Company: PDC Energy	
Address: 6855 W 119th Ave		E-Mail: mark.longhurst@PDCE.com		Project Name/Location:	
City/State/Zip: Broomfield / CO / 80220				AFE#:	
Phone: 303-487-1228		Project Name: Loloff 35-5 Wellhead		PO/Billing Codes:	
Sampler Name: Aaron Otillar		Project Number:		Contact: Mark Longhurst	

				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	TDS, Cl, SO4	
1	BH01	2/28/23	1300	4	3		1		x				x		x			x	
2	BH02	L	1400	4	L		L		L				x		x			x	
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			

Relinquished by: Aaron Otillar	Date/Time: 2/28/23 1650	Received by: Tasman Lockbox	Date/Time: 2/28/23 1650	TAT Business Days	Field DO	Notes:
				Same Day	Field EC	
Relinquished by: Tasman Lockbox	Date/Time: 2/28/23 1740	Received by: [Signature]	Date/Time: 2/28/23 1740	1 Day	Field ORP	
				2 Days	Field pH	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
				Standard	Field Turb.	
Temperature Upon Receipt: 6.5	Corrected Temperature: [Signature]	IR gun #: 1	HNO3 lot #:			



S<sub>2</sub>

## Sample Receipt Checklist

S2 Work Order# 2303023Client: PdC/Tasman Client Project ID: Loloff 35-S wellheadShipped Via: H.D./P.U./FedEx/UPS/USPS/Other ☐ Airbill #:                     

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	-------------------------------------	--------------------------	--------------------------	--------------------------

Matrix (Check all that apply) Air ☐ Soil/Solid ☐ Water ☒ Other ☐Temp (°C) 6.5 Thermometer # 1

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6°C? <sup>(1)</sup> <b>NOTE:</b> 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"/>	<u>on ICE</u>
If custody seals are present, are they intact? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are samples due within 48 hours present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are water samples with short hold times present? Note the short hold analysis in the comments column - pH, Nitrate/Nitrite, Ferrous Iron (Fe <sup>2+</sup> ), Hexavalent Chromium (Cr <sup>6+</sup> , Cr VI), COD/BOD, Total Coliform, E. Coli, Total Residual Chlorine (TRC), Dissolved Oxygen	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out Completely? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC? <sup>(1)</sup>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling)? <sup>(1)</sup> Note the type of preservative in the comments column – HCl, H <sub>2</sub> SO <sub>4</sub> , NaOH, HNO <sub>3</sub> , etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2? <sup>(1)</sup> 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):   				
<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.				

AS  
Custodian Printed Name

2/28/23 1746  
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:**  
03/06/23 15:26

**BH01**  
**2303023-01 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **02/28/23 13:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	BGC0052	03/02/23	03/03/23	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: **02/28/23 13:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4	15.0	112 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	14.6	109 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	15.9	119 %	21-167		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **02/28/23 13:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chloride	168	12.0	mg/L	200	BGC0056	03/02/23	03/02/23	EPA 300.0	
Sulfate	1010	60.0	"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **02/28/23 13:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Total Dissolved Solids	2070	10.0	mg/L	1	BGC0030	03/01/23	03/01/23	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:**  
03/06/23 15:26

**BH02**  
**2303023-02 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **02/28/23 14:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BGC0052	03/02/23	03/03/23	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: **02/28/23 14:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	15.7	118 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	14.6	110 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	15.8	119 %	21-167		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **02/28/23 14:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Chloride	<b>189</b>	12.0	mg/L	200	BGC0056	03/02/23	03/02/23	EPA 300.0	
Sulfate	<b>876</b>	60.0	"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **02/28/23 14:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	<b>2220</b>	10.0	mg/L	1	BGC0030	03/01/23	03/01/23	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:**  
03/06/23 15:26

## 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 BGC0052 - EPA 5030 Water MS

##### Blank (BGC0052-BLK1)

Prepared & Analyzed: 03/02/23

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	15.4		"	13.3		116	23-173			
Surrogate: Toluene-d8	14.3		"	13.3		107	20-170			
Surrogate: 4-Bromofluorobenzene	15.9		"	13.3		119	21-167			

##### LCS (BGC0052-BS1)

Prepared & Analyzed: 03/02/23

Benzene	34.7	1.0	ug/l	41.7		83.2	51-132			
Toluene	46.0	1.0	"	41.7		111	51-138			
Ethylbenzene	40.6	1.0	"	41.7		97.4	58-146			
m,p-Xylene	78.9	2.0	"	83.3		94.7	57-144			
o-Xylene	37.3	1.0	"	41.7		89.6	53-146			
Naphthalene	35.8	1.0	"	41.7		85.8	70-130			
1,2,4-Trimethylbenzene	44.0	1.0	"	41.7		106	70-130			
1,3,5-Trimethylbenzene	44.0	1.0	"	41.7		106	70-130			
Surrogate: 1,2-Dichloroethane-d4	15.0		"	13.3		113	23-173			
Surrogate: Toluene-d8	13.9		"	13.3		104	20-170			
Surrogate: 4-Bromofluorobenzene	15.4		"	13.3		115	21-167			

##### Matrix Spike (BGC0052-MS1)

Source: 2303017-01

Prepared & Analyzed: 03/02/23

Benzene	34.0	1.0	ug/l	41.7	ND	81.7	34-141			
Toluene	44.8	1.0	"	41.7	ND	108	27-151			
Ethylbenzene	39.1	1.0	"	41.7	ND	93.8	29-160			
m,p-Xylene	76.8	2.0	"	83.3	ND	92.1	20-166			
o-Xylene	36.4	1.0	"	41.7	ND	87.3	33-159			
Naphthalene	36.3	1.0	"	41.7	ND	87.2	70-130			
1,2,4-Trimethylbenzene	43.0	1.0	"	41.7	ND	103	70-130			
1,3,5-Trimethylbenzene	42.7	1.0	"	41.7	ND	103	70-130			
Surrogate: 1,2-Dichloroethane-d4	15.2		"	13.3		114	23-173			
Surrogate: Toluene-d8	14.2		"	13.3		106	20-170			
Surrogate: 4-Bromofluorobenzene	15.3		"	13.3		115	21-167			

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:**  
03/06/23 15:26

**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 BGC0052 - EPA 5030 Water MS**

Matrix Spike Dup (BGC0052-MSD1)	Source: 2303017-01			Prepared & Analyzed: 03/02/23						
Benzene	34.4	1.0	ug/l	41.7	ND	82.6	34-141	1.05	30	
Toluene	45.5	1.0	"	41.7	ND	109	27-151	1.53	30	
Ethylbenzene	39.5	1.0	"	41.7	ND	94.7	29-160	0.916	30	
m,p-Xylene	77.7	2.0	"	83.3	ND	93.3	20-166	1.23	30	
o-Xylene	36.7	1.0	"	41.7	ND	88.0	33-159	0.849	30	
Naphthalene	30.1	1.0	"	41.7	ND	72.3	70-130	18.7	30	
1,2,4-Trimethylbenzene	43.3	1.0	"	41.7	ND	104	70-130	0.695	30	
1,3,5-Trimethylbenzene	43.2	1.0	"	41.7	ND	104	70-130	1.09	30	
Surrogate: 1,2-Dichloroethane-d4	17.0		"	13.3		128	23-173			
Surrogate: Toluene-d8	14.3		"	13.3		107	20-170			
Surrogate: 4-Bromofluorobenzene	15.1		"	13.3		113	21-167			

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:**  
03/06/23 15:26

**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 BGC0056 - General Preparation**

**Blank (BGC0056-BLK1)**

Prepared: 03/02/23 Analyzed: 03/03/23

Chloride	ND	0.0600	mg/L
Sulfate	ND	0.300	"

**LCS (BGC0056-BS1)**

Prepared: 03/02/23 Analyzed: 03/03/23

Chloride	3.13	0.0600	mg/L	3.00	104	90-110
Sulfate	14.2	0.300	"	15.0	94.4	90-110

**Duplicate (BGC0056-DUP1)**

Source: 2303017-01

Prepared: 03/02/23 Analyzed: 03/03/23

Chloride	6.30	3.00	mg/L	6.15	2.41	20
Sulfate	116	15.0	"	131	12.7	20

**Matrix Spike (BGC0056-MS1)**

Source: 2303017-01

Prepared: 03/02/23 Analyzed: 03/03/23

Chloride	291	3.00	mg/L	300	6.15	94.9	80-120
Sulfate	1470	15.0	"	1500	131	89.5	80-120

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:**  
03/06/23 15:26

**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 BGC0030 - General Preparation**

**Blank (BGC0030-BLK1)**

Prepared & Analyzed: 03/01/23

Total Dissolved Solids ND 10.0 mg/L

**Duplicate (BGC0030-DUP1)**

Source: 2303017-01

Prepared & Analyzed: 03/01/23

Total Dissolved Solids 404 10.0 mg/L 403 0.322 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:**  
03/06/23 15:26

### 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

February 20, 2023

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Loloff 35-5 Wellhead

Work Order #2302238

Enclosed are the results of analyses for samples received by Summit Scientific on 02/10/23 17:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Scott Sheely".

Scott Sheely 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:**  
02/20/23 10:38

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH03	2302238-01	Water	02/10/23 13:20	02/10/23 17:30
BH04	2302238-02	Water	02/10/23 13:14	02/10/23 17:30
BH05	2302238-03	Water	02/10/23 13:10	02/10/23 17:30

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.*

<b>Client:</b> PDC / Tasman		<b>Send Data To:</b>		<b>Send Invoice To:</b>	
<b>Address:</b> 6855 W 119th Ave		<b>Project Manager:</b> Mark Longhurst		<b>Company:</b> PDC Energy	
<b>City/State/Zip:</b> Broomfield / CO / 80220		<b>E-Mail:</b> mark.longhurst@PDCE.com		<b>Project Name/Location:</b>	
<b>Phone:</b> 303-487-1228		<b>Project Name:</b> Loloff 35-5 wellhead		<b>AFE#:</b>	
<b>Sampler Name:</b> Chase Jonjak		<b>Project Number:</b>		<b>PO/Billing Codes:</b>	
				<b>Contact:</b> Mark Longhurst	

					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			
1	BH03	2/10/23	1320	4	3		1		X				X		X			X		
2	BH04	1	1314	1	1		1		1				1		1			1		
3	BH05	1	1310	1	1		1		1				1		1			1		
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				
13																				
14																				
15																				

Relinquished by: <u>Chase</u>	Date/Time: <u>2/10/23 1523</u>	Received by: <u>Tasman Lockbox</u>	Date/Time: <u>2/10/23 1523</u>	TAT Business Days	Field DO	Notes:
				Same Day	Field EC	
Relinquished by: <u>Tasman Lockbox</u>	Date/Time: <u>2/10/23 1730</u>	Received by: <u>[Signature]</u>	Date/Time: <u>2/10/23 1730</u>	1 Day	Field ORP	
				2 Days	Field pH	
Relinquished by:	Date/Time:	Received by:	Date/Time:	3 Days	Field Temp.	
				Standard	X Field Turb.	
Temperature Upon Receipt: <u>8.6</u>	Corrected Temperature: <u>8</u>	IR gun #: <u>1</u>	HNO3 lot #:			

S<sub>2</sub>

## Sample Receipt Checklist

S2 Work Order# 2302238Client: Pocitosman Client Project ID: 101off 35-S wellheadShipped Via: H.D./P.U./FedEx/UPS/USPS/Other ☐ Airbill #:                     

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	-------------------------------------	--------------------------	--------------------------	--------------------------

Matrix (Check all that apply) Air ☐ Soil/Solid ☐ Water ☒ Other ☐Temp (°C) 8.6 Thermometer # 1

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

                      
Custodian Printed Name

2/10/23  
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:**  
02/20/23 10:38

**BH03**  
**2302238-01 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **02/10/23 13:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BGB0372	02/13/23	02/16/23	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>4.2</b>	2.0		"	"	"	"	"	"	
Naphthalene	ND	1.0		"	"	"	"	"	"	
<b>1,2,4-Trimethylbenzene</b>	<b>12</b>	1.0		"	"	"	"	"	"	
<b>1,3,5-Trimethylbenzene</b>	<b>10</b>	1.0		"	"	"	"	"	"	

Date Sampled: **02/10/23 13:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4	20.4	153 %		23-173		"	"	"	"	
Surrogate: Toluene-d8	13.8	104 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	15.2	114 %		21-167		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **02/10/23 13:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Chloride</b>	<b>139</b>	12.0		mg/L	200	BGB0431	02/14/23	02/14/23	EPA 300.0	
<b>Sulfate</b>	<b>566</b>	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **02/10/23 13:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Total Dissolved Solids</b>	<b>2150</b>	10.0		mg/L	1	BGB0459	02/15/23	02/15/23	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:**  
02/20/23 10:38

**BH04**  
**2302238-02 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **02/10/23 13:14**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BGB0372	02/13/23	02/16/23	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>3.4</b>	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
<b>1,2,4-Trimethylbenzene</b>	<b>10</b>	1.0	"	"	"	"	"	"	
<b>1,3,5-Trimethylbenzene</b>	<b>8.3</b>	1.0	"	"	"	"	"	"	

Date Sampled: **02/10/23 13:14**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	21.2	159 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	13.8	104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	15.0	113 %	21-167		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **02/10/23 13:14**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
<b>Chloride</b>	<b>198</b>	12.0	mg/L	200	BGB0431	02/14/23	02/14/23	EPA 300.0	
<b>Sulfate</b>	<b>711</b>	60.0	"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **02/10/23 13:14**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
<b>Total Dissolved Solids</b>	<b>2480</b>	10.0	mg/L	1	BGB0459	02/15/23	02/15/23	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:**  
02/20/23 10:38

**BH05**  
**2302238-03 (Water)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **02/10/23 13:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BGB0372	02/13/23	02/16/23	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>3.3</b>	2.0	"	"	"	"	"	"	
Naphthalene	ND	1.0	"	"	"	"	"	"	
<b>1,2,4-Trimethylbenzene</b>	<b>11</b>	1.0	"	"	"	"	"	"	
<b>1,3,5-Trimethylbenzene</b>	<b>9.1</b>	1.0	"	"	"	"	"	"	

Date Sampled: **02/10/23 13:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	22.4	168 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	13.6	102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	15.4	116 %	21-167		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **02/10/23 13:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
<b>Chloride</b>	<b>190</b>	12.0	mg/L	200	BGB0431	02/14/23	02/14/23	EPA 300.0	
<b>Sulfate</b>	<b>644</b>	60.0	"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **02/10/23 13:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
<b>Total Dissolved Solids</b>	<b>2610</b>	10.0	mg/L	1	BGB0459	02/15/23	02/15/23	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:**  
02/20/23 10:38

## 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 BGB0372 - EPA 5030 Water MS

##### Blank (BGB0372-BLK1)

Prepared: 02/13/23 Analyzed: 02/16/23

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	19.8		"	13.3		148	23-173			
Surrogate: Toluene-d8	13.9		"	13.3		104	20-170			
Surrogate: 4-Bromofluorobenzene	15.2		"	13.3		114	21-167			

##### LCS (BGB0372-BS1)

Prepared: 02/13/23 Analyzed: 02/16/23

Benzene	41.2	1.0	ug/l	41.7		98.8	51-132			
Toluene	41.3	1.0	"	41.7		99.1	51-138			
Ethylbenzene	38.2	1.0	"	41.7		91.6	58-146			
m,p-Xylene	89.2	2.0	"	83.3		107	57-144			
o-Xylene	39.5	1.0	"	41.7		94.7	53-146			
Naphthalene	34.9	1.0	"	41.7		83.8	70-130			
1,2,4-Trimethylbenzene	51.7	1.0	"	41.7		124	70-130			
1,3,5-Trimethylbenzene	51.1	1.0	"	41.7		123	70-130			
Surrogate: 1,2-Dichloroethane-d4	20.2		"	13.3		152	23-173			
Surrogate: Toluene-d8	13.6		"	13.3		102	20-170			
Surrogate: 4-Bromofluorobenzene	14.8		"	13.3		111	21-167			

##### Matrix Spike (BGB0372-MS1)

Source: 2302238-01

Prepared: 02/13/23 Analyzed: 02/16/23

Benzene	42.8	1.0	ug/l	41.7	ND	103	34-141			
Toluene	42.5	1.0	"	41.7	ND	102	27-151			
Ethylbenzene	38.4	1.0	"	41.7	ND	92.2	29-160			
m,p-Xylene	90.6	2.0	"	83.3	4.16	104	20-166			
o-Xylene	40.4	1.0	"	41.7	ND	96.9	33-159			
Naphthalene	39.4	1.0	"	41.7	ND	94.5	70-130			
1,2,4-Trimethylbenzene	62.8	1.0	"	41.7	12.4	121	70-130			
1,3,5-Trimethylbenzene	60.8	1.0	"	41.7	10.2	121	70-130			
Surrogate: 1,2-Dichloroethane-d4	21.0		"	13.3		158	23-173			
Surrogate: Toluene-d8	13.7		"	13.3		103	20-170			
Surrogate: 4-Bromofluorobenzene	15.3		"	13.3		115	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:**  
02/20/23 10:38

**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 BGB0372 - EPA 5030 Water MS**

Matrix Spike Dup (BGB0372-MSD1)	Source: 2302238-01			Prepared: 02/13/23 Analyzed: 02/16/23						
Benzene	42.9	1.0	ug/l	41.7	ND	103	34-141	0.233	30	
Toluene	42.6	1.0	"	41.7	ND	102	27-151	0.399	30	
Ethylbenzene	39.4	1.0	"	41.7	ND	94.6	29-160	2.54	30	
m,p-Xylene	89.7	2.0	"	83.3	4.16	103	20-166	0.976	30	
o-Xylene	40.7	1.0	"	41.7	ND	97.7	33-159	0.740	30	
Naphthalene	37.8	1.0	"	41.7	ND	90.8	70-130	3.91	30	
1,2,4-Trimethylbenzene	63.0	1.0	"	41.7	12.4	121	70-130	0.238	30	
1,3,5-Trimethylbenzene	56.9	1.0	"	41.7	10.2	112	70-130	6.51	30	
Surrogate: 1,2-Dichloroethane-d4	21.0		"	13.3		158	23-173			
Surrogate: Toluene-d8	13.8		"	13.3		103	20-170			
Surrogate: 4-Bromofluorobenzene	15.5		"	13.3		116	21-167			

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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:**  
02/20/23 10:38

**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 BGB0431 - General Preparation**

**Blank (BGB0431-BLK1)**

Prepared & Analyzed: 02/14/23

Chloride	ND	0.0600	mg/L
Sulfate	ND	0.300	"

**LCS (BGB0431-BS1)**

Prepared & Analyzed: 02/14/23

Chloride	2.82	0.0600	mg/L	3.00	94.0	90-110
Sulfate	15.2	0.300	"	15.0	101	90-110

**Duplicate (BGB0431-DUP1)**

Source: 2302222-01

Prepared & Analyzed: 02/14/23

Chloride	55.4	12.0	mg/L	64.8	15.6	20
Sulfate	66.4	60.0	"	66.8	0.601	20

**Matrix Spike (BGB0431-MS1)**

Source: 2302222-01

Prepared & Analyzed: 02/14/23

Chloride	569	12.0	mg/L	600	64.8	84.0	80-120
Sulfate	3280	60.0	"	3000	66.8	107	80-120

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:**  
02/20/23 10:38

**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 BGB0459 - General Preparation**

**Blank (BGB0459-BLK1)**

Prepared & Analyzed: 02/15/23

Total Dissolved Solids ND 10.0 mg/L

**Duplicate (BGB0459-DUP1)**

Source: 2302226-01

Prepared & Analyzed: 02/15/23

Total Dissolved Solids 3980 10.0 mg/L 4240 6.30 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:**  
02/20/23 10:38

### 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