



**PDC Energy, Inc.**  
**Third Quarter 2022 Groundwater Monitoring Summary**

September 28, 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.

### **Groundwater Monitoring Activities**

On August 3, 2022, groundwater monitoring was conducted all five monitoring wells (BH01 – BH05). Five (5) 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.

Third 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 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 A.

### Current Remediation Activities and Path Forward

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

Additionally, further site investigation activities are required to vertically delineate the pH and SAR exceedances identified in soil samples collected from the final excavation extent, as well as, assess arsenic concentrations in native soil.

Fourth quarter 2022 groundwater sampling will be conducted in November 2022.

BH02		
Compound (µg/L)	5/12/2022	8/3/2022
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)	1.94	3.39

BH02

BH05		
Compound (µg/L)	5/12/2022	8/3/2022
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)	2.21	3.50

BH05

BH03		
Compound (µg/L)	5/12/2022	8/3/2022
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)	2.03	3.30

BH03

BH01		
Compound (µg/L)	5/12/2022	8/3/2022
Benzene	Not Sampled*	<1.0
Toluene		<1.0
Ethylbenzene		<1.0
Total Xylenes		<2.0
Naphthalene		<1.0
1,2,4-TMB		<1.0
1,3,5-TMB		<1.0
Depth to Water (ft. bgs)	NA	3.35

BH04

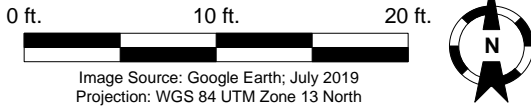
BH04		
Compound (µg/L)	5/12/2022	8/3/2022
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<2.0	<2.0
Naphthalene	<1.0	<1.0
1,2,4-TMB	<1.0	<1.0
1,3,5-TMB	<1.0	<1.0
Depth to Water (ft. bgs)	2.45	3.79

Legend

- Excavation Extent (Collected via Trimble GPS)
- Underground Flowline Location (Collected via Trimble GPS)
- Monitoring Well Location (Collected via Trimble GPS)
- Groundwater Flow Direction (3Q22)

Notes

All locations are approximate unless otherwise noted.  
TMB – Trimethylbenzene  
µg/L – Micrograms per liter  
ft. bgs – Feet below ground surface  
GPS – Global Positioning System  
NA – Not applicable  
\* – Well was not installed prior to the second quarter 2022 groundwater monitoring event, and consequently, was not sampled



DATE: September 28, 2022

DESIGNED BY: C. Hamlin

DRAWN BY: S. Anderson



**TASMAN**

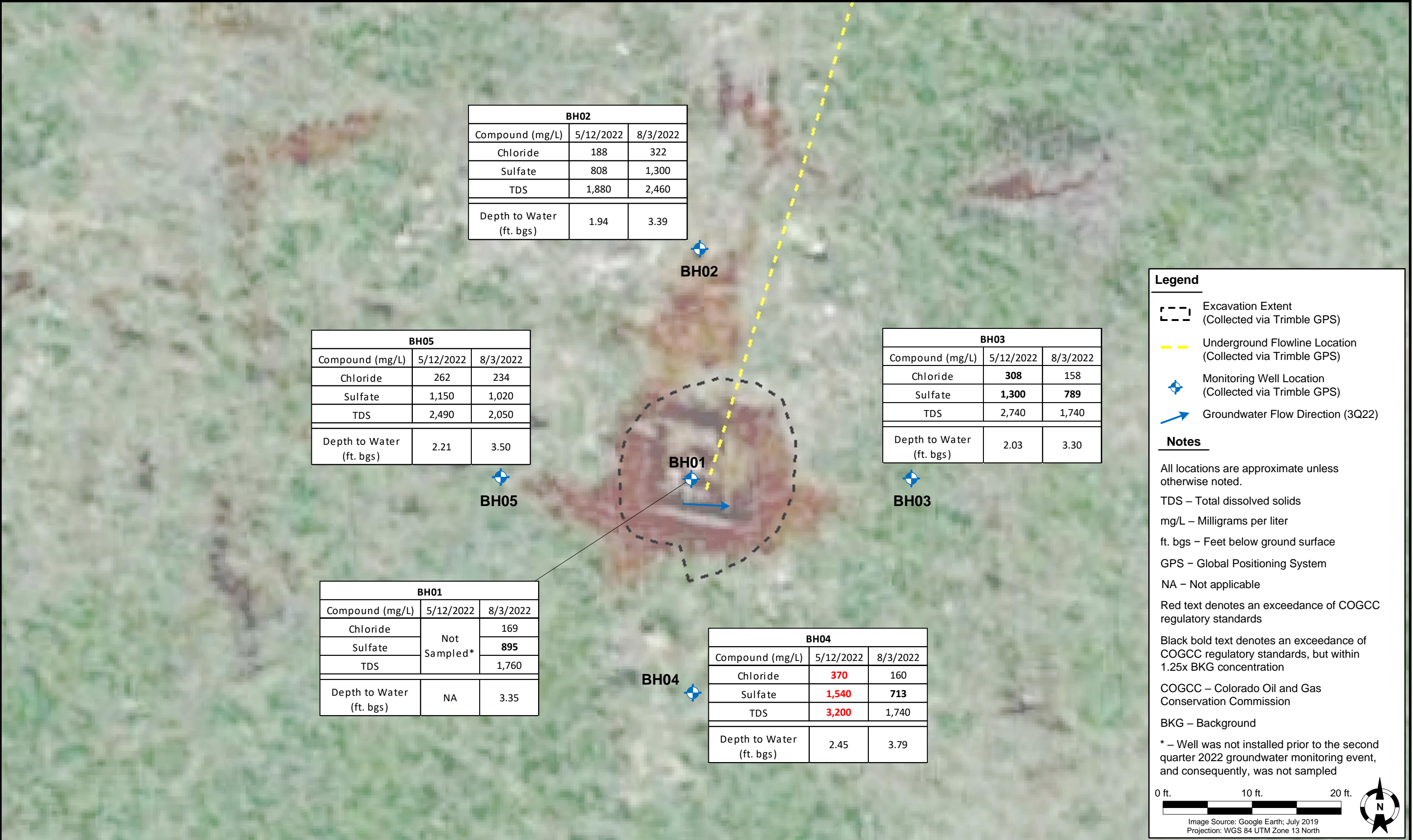
**Tasman, Inc.**  
6855 W. 119<sup>th</sup> Ave.  
Broomfield, CO 80020

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

**GROUNDWATER**  
**ANALYTICAL RESLUTS**  
**MAP**

**FIGURE**  
**1**





DATE:	September 28, 2022
DESIGNED BY:	C. Hamlin
DRAWN BY:	S. Anderson



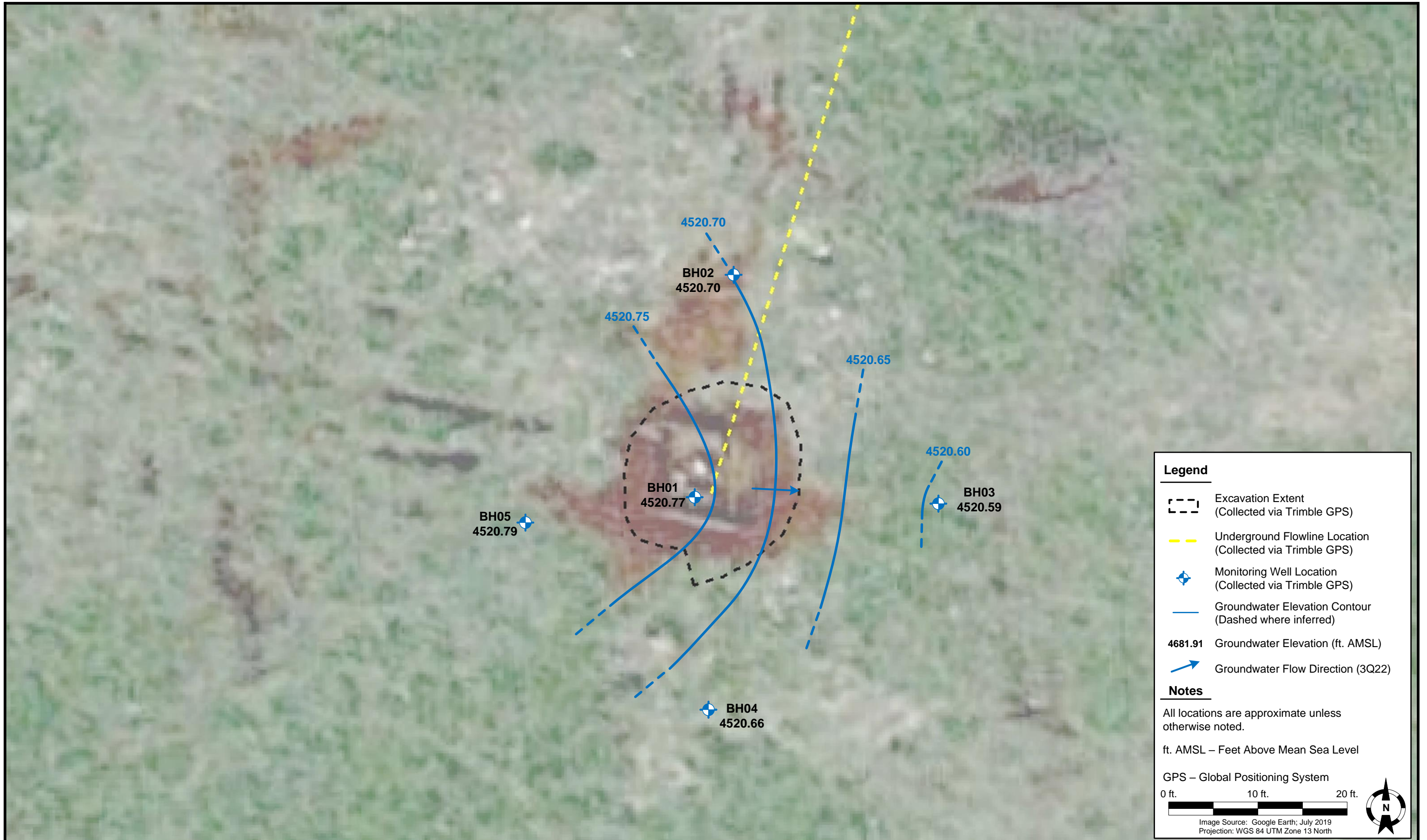
**Tasman, Inc.**  
6855 W. 119<sup>th</sup> Ave.  
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**PDC Energy, Inc. – DJ Basin**  
**Former Loloff 35-5 Wellhead**  
NENE, Section 35, Township 5 North, Range 64 West  
Weld County, Colorado

**GROUNDWATER  
ANALYTICAL RESULTS  
MAP  
(INORGANIC PARAMETERS)**

**FIGURE  
2**





**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
BH02	5/12/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	1.94	4522.15
BH02	8/3/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.39	4520.70
BH03	5/12/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	2.03	4521.86
BH03	8/3/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.30	4520.59
BH04	5/12/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	2.45	4522.00
BH04	8/3/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.79	4520.66
BH05	5/12/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	2.21	4522.08
BH05	8/3/2022	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.50	4520.79

**Notes:**

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

**TABLE 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
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
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
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
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

**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- / 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**



# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

September 29, 2022

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Loloff 35-5 Wellhead

Work Order #2208047

Enclosed are the results of analyses for samples received by Summit Scientific on 08/03/22 17:14. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Paul Shrewsbury

President



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

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

**Reported:**  
09/29/22 08:16

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	2208047-01	Water	08/03/22 12:55	08/03/22 17:14
BH02	2208047-02	Water	08/03/22 13:01	08/03/22 17:14
BH03	2208047-03	Water	08/03/22 13:10	08/03/22 17:14
BH04	2208047-04	Water	08/03/22 13:22	08/03/22 17:14
BH05	2208047-05	Water	08/03/22 13:15	08/03/22 17:14

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<sub>2</sub>

2208047

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

Page 1 of 1

Client: PDC / Tasman Project Manager: Mark Longhurst  
Address: 6855 W 119th Ave E-Mail: mark.longhurst@PDCE.com  
City/State/Zip: Broomfield/ CO/ 80020  
Phone: 303-487-1228 Project Name: Wolff 35-5 wellhead  
Sampler Name: Sam Anderson Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested								Special Instructions	
					HCl	HNO <sub>3</sub>	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			
1	BH01	8/3/00	1255	4	X				X					X		X					X	pH, EC, SAR by saturated paste  CL, SO <sub>4</sub> , TDS
2	BH02		1301																			
3	BH03		1310																			
4	BH04		1322																			
5	BH05		1315																			
6																						
7																						
8																						
9																						
10																						

Relinquished by: <u>[Signature]</u>	Date/Time: <u>8/3/00</u>	Received by: <u>Tasman's Lock Box</u>	Date/Time: <u>8/3/00 1426</u>	<b>Turn Around Time</b> (Check) Same Day <input type="checkbox"/> 72 hours 24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 hours <input type="checkbox"/> <b>Sample Integrity:</b> Temperature Upon Receipt: <u>6.1</u> Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	<b>Notes:</b>
Relinquished by: <u>Tasman's Lock Box</u>	Date/Time: <u>8322 1714</u>	Received by: <u>[Signature]</u>	Date/Time: <u>8322 1714</u>		
Relinquished by:	Date/Time:	Received by:	Date/Time:		



S<sub>2</sub>

## Sample Receipt Checklist

S2 Work Order# 2208047

Client: Pbc/asmcm Client Project ID: LOLOST 35-S wellheadShipped Via: H.D./P.U./FedEx/UPS/USPS/Other Airbill #: \_\_\_\_\_

	-			
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Matrix (Check all that apply) Air ☐ Soil/Solid ☐ ~~Water~~ ☒ Other ☐Temp (°C) 6.1Thermometer # 1

	Yes	No	N/A	Comments (if any)
If samples require cooling, is the temperature < 6 °C <sup>(1)</sup> ? NOTE: If samples are delivered the same day of sampling, this requirement is met if there is evidence that cooling has begun.	-			ON ICE
Were all samples received intact <sup>(1)</sup> ?	-			
Was adequate sample volume provided <sup>(1)</sup> ?	-			
If custody seals are present, are they intact <sup>(1)</sup> ?	-			
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 <sup>2+</sup> ), Hexavalent Chromium (Cr <sup>6+</sup> , 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 <sup>(1)</sup> ?	-			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	-			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	-			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	-			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		-		
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.	-			HCl
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.			-	
If dissolved metals are requested, were samples field filtered?			-	
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

8322

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:**  
09/29/22 08:16

**BH01**  
**2208047-01 (Water)**

**Summit Scientific**

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

Date Sampled: **08/03/22 12:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	BFH0135	08/05/22	08/06/22	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: **08/03/22 12:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4	14.7	110 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	13.4	101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	14.3	107 %	21-167		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **08/03/22 12:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chloride	<b>169</b>	12.0	mg/L	200	BFH0194	08/09/22	08/09/22	EPA 300.0	
Sulfate	<b>895</b>	60.0	"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **08/03/22 12:55**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Total Dissolved Solids	<b>1760</b>	10.0	mg/L	1	BFH0129	08/04/22	08/05/22	SM2540C	

Summit Scientific

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

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

**Reported:**  
09/29/22 08:16

**BH02**  
**2208047-02 (Water)**

**Summit Scientific**

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

Date Sampled: **08/03/22 13:01**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFH0135	08/05/22	08/06/22	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: **08/03/22 13:01**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	14.6	110 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	13.2	99.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	14.2	107 %	21-167		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **08/03/22 13:01**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Chloride	322	12.0	mg/L	200	BFH0194	08/09/22	08/09/22	EPA 300.0	
Sulfate	1300	60.0	"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **08/03/22 13:01**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	2460	10.0	mg/L	1	BFH0129	08/04/22	08/05/22	SM2540C	

Summit Scientific

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

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

**Reported:**  
09/29/22 08:16

**BH03**  
**2208047-03 (Water)**

**Summit Scientific**

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

Date Sampled: **08/03/22 13:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFH0135	08/05/22	08/06/22	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: **08/03/22 13:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	14.3	107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	13.3	99.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	14.0	105 %	21-167		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **08/03/22 13:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Chloride	<b>158</b>	12.0	mg/L	200	BFH0194	08/09/22	08/09/22	EPA 300.0	
Sulfate	<b>789</b>	60.0	"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **08/03/22 13:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	<b>1740</b>	10.0	mg/L	1	BFH0129	08/04/22	08/05/22	SM2540C	

Summit Scientific

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

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

**Reported:**  
09/29/22 08:16

**BH04**  
**2208047-04 (Water)**

**Summit Scientific**

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

Date Sampled: **08/03/22 13:22**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFH0135	08/05/22	08/06/22	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: **08/03/22 13:22**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	14.5	109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	13.2	98.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	14.4	108 %	21-167		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **08/03/22 13:22**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Chloride	<b>160</b>	12.0	mg/L	200	BFH0194	08/09/22	08/09/22	EPA 300.0	
Sulfate	<b>713</b>	60.0	"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **08/03/22 13:22**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	<b>1740</b>	10.0	mg/L	1	BFH0129	08/04/22	08/05/22	SM2540C	

Summit Scientific

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

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

**Reported:**  
09/29/22 08:16

**BH05**  
**2208047-05 (Water)**

**Summit Scientific**

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

Date Sampled: **08/03/22 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BFH0135	08/05/22	08/06/22	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: **08/03/22 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4	14.0	105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8	13.2	99.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene	14.2	107 %	21-167		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **08/03/22 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Chloride	<b>234</b>	12.0	mg/L	200	BFH0194	08/09/22	08/09/22	EPA 300.0	
Sulfate	<b>1020</b>	60.0	"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **08/03/22 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Total Dissolved Solids	<b>2050</b>	10.0	mg/L	1	BFH0129	08/04/22	08/05/22	SM2540C	

Summit Scientific

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

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

**Reported:**  
09/29/22 08:16

## 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 BFH0135 - EPA 5030 Water MS

##### Blank (BFH0135-BLK1)

Prepared & Analyzed: 08/05/22

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	13.3		"	13.3		99.6	23-173			
Surrogate: Toluene-d8	13.1		"	13.3		98.6	20-170			
Surrogate: 4-Bromofluorobenzene	13.7		"	13.3		103	21-167			

##### LCS (BFH0135-BS1)

Prepared & Analyzed: 08/05/22

Benzene	52.0	1.0	ug/l	50.0		104	51-132			
Toluene	52.7	1.0	"	50.0		105	51-138			
Ethylbenzene	54.2	1.0	"	50.0		108	58-146			
m,p-Xylene	104	2.0	"	100		104	57-144			
o-Xylene	51.3	1.0	"	50.0		103	53-146			
Naphthalene	48.5	1.0	"	50.0		97.0	70-130			
1,2,4-Trimethylbenzene	53.2	1.0	"	50.0		106	70-130			
1,3,5-Trimethylbenzene	53.3	1.0	"	50.0		107	70-130			
Surrogate: 1,2-Dichloroethane-d4	12.6		"	13.3		94.6	23-173			
Surrogate: Toluene-d8	13.3		"	13.3		99.5	20-170			
Surrogate: 4-Bromofluorobenzene	13.1		"	13.3		98.3	21-167			

##### Matrix Spike (BFH0135-MS1)

Source: 2207313-01

Prepared & Analyzed: 08/05/22

Benzene	51.9	1.0	ug/l	50.0	ND	104	34-141			
Toluene	52.2	1.0	"	50.0	ND	104	27-151			
Ethylbenzene	53.4	1.0	"	50.0	ND	107	29-160			
m,p-Xylene	103	2.0	"	100	ND	103	20-166			
o-Xylene	50.5	1.0	"	50.0	ND	101	33-159			
Naphthalene	48.4	1.0	"	50.0	ND	96.9	70-130			
1,2,4-Trimethylbenzene	53.1	1.0	"	50.0	ND	106	70-130			
1,3,5-Trimethylbenzene	52.9	1.0	"	50.0	ND	106	70-130			
Surrogate: 1,2-Dichloroethane-d4	12.6		"	13.3		94.1	23-173			
Surrogate: Toluene-d8	13.3		"	13.3		99.5	20-170			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		98.9	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:**  
09/29/22 08:16

**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 BFH0135 - EPA 5030 Water MS**

Matrix Spike Dup (BFH0135-MSD1)	Source: 2207313-01			Prepared & Analyzed: 08/05/22						
Benzene	53.6	1.0	ug/l	50.0	ND	107	34-141	3.26	30	
Toluene	54.3	1.0	"	50.0	ND	109	27-151	3.91	30	
Ethylbenzene	55.6	1.0	"	50.0	ND	111	29-160	3.89	30	
m,p-Xylene	109	2.0	"	100	ND	109	20-166	5.01	30	
o-Xylene	52.6	1.0	"	50.0	ND	105	33-159	4.03	30	
Naphthalene	51.2	1.0	"	50.0	ND	102	70-130	5.54	30	
1,2,4-Trimethylbenzene	54.2	1.0	"	50.0	ND	108	70-130	2.13	30	
1,3,5-Trimethylbenzene	54.2	1.0	"	50.0	ND	108	70-130	2.46	30	
Surrogate: 1,2-Dichloroethane-d4	12.6		"	13.3		94.4	23-173			
Surrogate: Toluene-d8	13.3		"	13.3		99.6	20-170			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		99.1	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:**  
09/29/22 08:16

**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 BFH0194 - General Preparation**

**Blank (BFH0194-BLK1)**

Prepared: 08/02/22 Analyzed: 08/09/22

Chloride	ND	0.0600	mg/L
Sulfate	ND	0.300	"

**LCS (BFH0194-BS1)**

Prepared: 08/02/22 Analyzed: 08/09/22

Chloride	3.10	0.0600	mg/L	3.00	103	90-110
Sulfate	14.6	0.300	"	15.0	97.1	90-110

**Duplicate (BFH0194-DUP1)**

Source: 2208046-01

Prepared: 08/02/22 Analyzed: 08/09/22

Chloride	193	12.0	mg/L	205	6.13	20
Sulfate	8400	60.0	"	8530	1.61	20

**Matrix Spike (BFH0194-MS1)**

Source: 2208046-01

Prepared: 08/02/22 Analyzed: 08/09/22

Chloride	720	12.0	mg/L	600	205	85.8	80-120
Sulfate	11800	60.0	"	3000	8530	109	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:**  
09/29/22 08:16

**Total Dissolved Solids by SM2540C - Quality Control**  
**Summit Scientific**

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

**Batch BFH0129 - General Preparation**

**Blank (BFH0129-BLK1)**

Prepared: 08/04/22 Analyzed: 08/05/22

Total Dissolved Solids ND 10.0 mg/L

**Duplicate (BFH0129-DUP1)**

Source: 2208047-01

Prepared: 08/04/22 Analyzed: 08/05/22

Total Dissolved Solids 1760 10.0 mg/L 1760 0.284 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:**  
09/29/22 08:16

### 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