

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

February 15, 2023

Former Owl Creek 7, 7-5 Tank Battery  
NESE Section 5 T6N R64W  
Remediation # 16159

This groundwater monitoring summary has been prepared by Tasman, Inc. for the former Owl Creek 7, 7-5 Tank Battery.

### **Site History and Background**

On January 29, 2021, a historic hydrocarbon release was discovered beneath the produced water vessel during decommissioning activities. Following the discovery, mitigation activities were initiated, and between January 29, and February 22, 2021, approximately 2,154 cubic yards of impacted material were removed from the former excavation. During excavation activities, groundwater was encountered within the excavation at approximately 7 feet below ground surface (bgs). Groundwater vacuum recovery activities were conducted concurrent with excavation activities and approximately 220 barrels of groundwater were removed from location. On March 31, 2021, twelve (12) monitoring wells (BH01 – BH12) were installed to confirm the absence of dissolved phase hydrocarbon impacts within and adjacent to the former excavation extent. Per landowner request, monitoring wells BH01 – BH08, and BH10 – BH11 were buried approximately 24 inches bgs. Due to agricultural practices, buried monitoring wells BH01 – BH08 and BH10 – BH11 were destroyed and temporary monitoring wells BH01R, BH02, BH03R – BH06R, BH07 – BH08, BH10R, and BH11 were installed quarterly via hand auger following the second quarter 2021 groundwater monitoring event. First quarter 2022 analytical results indicated that organic compound concentrations were in compliance with the applicable COGCC Table 915-1 regulatory standards for four consecutive quarters and subsequently were removed from the quarterly sampling and analysis plan.

### **Groundwater Monitoring Activities**

On January 23, 2023, groundwater monitoring was conducted at all 12 monitoring wells (BH01R, BH02, BH03R – BH06R, BH07 – BH09, BH10R, BH11, and BH12). Temporary monitoring wells BH01R, BH02, BH03R – BH06R, BH07 – BH08, BH10R, and BH11 were installed using a hand auger in cultivated land. The wells were purged, sampled, and subsequently abandoned. Twelve groundwater samples were submitted for analysis of total dissolved solids (TDS) by Method SM 2540C, and chloride and sulfate anions by EPA Method 300.0.

First quarter 2023 analytical results indicated that TDS and sulfate anion concentrations were in exceedance of the applicable COGCC Table 915-1 groundwater standards and/or above 1.25x the background concentrations of the up- and cross-gradient monitoring wells (BH01R, BH06R, BH07, BH09, BH11, and BH12) in monitoring wells BH03R and BH04R. Chloride concentrations were in compliance with

the applicable regulatory standards in all 12 monitoring well locations. In addition, inorganic parameter concentration trends were examined over time and compared to historic background data and groundwater flow direction. Based on the data, there is an overall decreasing trend in inorganic concentrations over time. The graphs illustrating the data are included as Attachment A. Sample locations and corresponding analytical results are illustrated on Figure 1. Groundwater elevation data is illustrated on Figure 2. Groundwater analytical results are summarized in Table 1. The laboratory analytical report is included as Attachment B.

### **Current Remediation Activities and Path Forward**

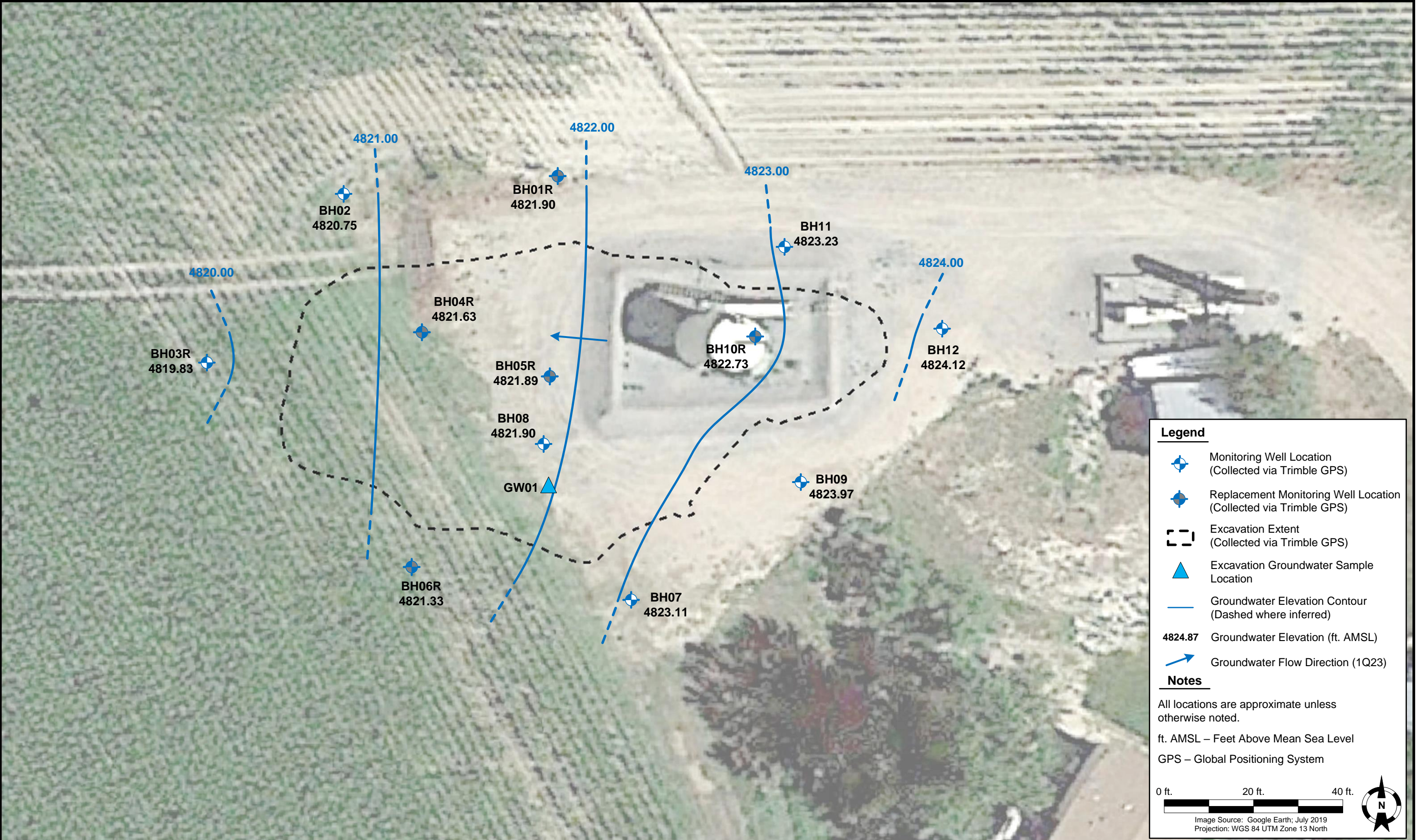
Monitored natural attenuation (MNA) was selected as the remediation strategy for this site during the second quarter 2021 and will remain the selected remediation strategy through the second quarter 2023.

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









DATE:	February 23, 2023
DESIGNED BY:	B. Nelson
DRAWN BY:	M. Kaczmarek

**TASMAN**

**Tasman, Inc.**  
6855 West 119<sup>th</sup> Avenue  
Broomfield, CO 80020

**PDC Energy, Inc. – DJ Basin**  
**Former Owl Creek 7, 7-5 Tank Battery**  
NESE, Section 5 Township 6 North, Range 64 West  
Weld County, Colorado

**GROUNDWATER  
ELEVATION CONTOUR  
MAP (01/23/2023)**

**FIGURE  
2**



**TABLE 1**  
**FORMER OWL CREEK 7, 7-5 TANK BATTERY**  
**GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE**  
**INORGANIC PARAMETERS**

Sample ID	Date Sampled	TDS (mg/L)	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>	-	-
BH01R	4/26/2021	1,140	157	254	2.92	4824.87
BH01R	7/13/2021	572	16.2	<b>263</b>	3.64	4825.40
BH01R	10/26/2021	550	11.6	241	4.50	4822.80
BH01R	1/27/2022	1,060	159	139	2.44	4825.16
BH01R	4/21/2022	497	52.4	157	4.61	4824.10
BH01R	7/27/2022	694	18.4	133	4.55	4820.83
BH01R	10/12/2022	489	22.2	56.6	4.68	4822.29
BH01R	1/23/2023	473	26.5	176	5.03	4821.90
BH02	4/6/2021	596	4.30	132	NM	NM
BH02	7/13/2021	530	14.4	<b>474</b>	3.88	4824.45
BH02	10/26/2021	590	12.2	<b>270</b>	2.66	4821.39
BH02	1/27/2022	1,130	159	156	2.43	4822.03
BH02	4/21/2022	471	40.4	141	2.81	4822.96
BH02	7/27/2022	516	1.40	94.2	3.05	4819.46
BH02	10/12/2022	544	15.8	2.20	2.73	4820.76
BH02	1/23/2023	503	23.6	214	5.19	4820.75
BH03R	4/26/2021	<b>1,550</b>	205	237	2.81	4822.99
BH03R	7/13/2021	<b>1,860</b>	<b>292</b>	<b>1,500</b>	3.27	4823.80
BH03R	10/26/2021	<b>1,740</b>	216	<b>1,410</b>	5.35	4820.16
BH03R	1/27/2022	<b>3,280</b>	194	<b>1,370</b>	4.90	4820.85
BH03R	4/21/2022	<b>1,720</b>	198	<b>1,110</b>	4.73	4822.10
BH03R	7/27/2022	<b>1,690</b>	123	<b>785</b>	4.42	4819.04
BH03R	10/12/2022	<b>2,000</b>	<b>321</b>	<b>606</b>	7.91	4817.22
BH03R	1/23/2023	<b>2,160</b>	182	<b>1,660</b>	5.23	4819.83
BH04R	4/26/2021	<b>4,590</b>	<b>740</b>	<b>2,530</b>	2.33	4824.69
BH04R	7/13/2021	<b>2,850</b>	<b>343</b>	<b>2,420</b>	2.48	4825.74
BH04R	10/26/2021	<b>3,690</b>	130	<b>3,420</b>	3.98	4822.51
BH04R	1/27/2022	<b>2,680</b>	<b>731</b>	<b>308</b>	6.71	4820.13
BH04R	4/21/2022	<b>856</b>	69.4	<b>413</b>	4.08	4823.78
BH04R	7/27/2022	694	8.20	133	4.45	4820.18
BH04R*	10/12/2022	577	22.6	57.4	4.98	4821.39
BH04R	1/23/2023	<b>1,710</b>	68.6	<b>1,300</b>	4.55	4821.63

**TABLE 1**  
**FORMER OWL CREEK 7, 7-5 TANK BATTERY**  
**GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE**  
**INORGANIC PARAMETERS**

Sample ID	Date Sampled	TDS (mg/L)	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	-	-
BH05R	4/26/2021	4,290	561	2,610	2.81	4825.06
BH05R	7/13/2021	1,390	85.4	1,280	2.93	4826.23
BH05R	10/26/2021	899	32.8	383	5.28	4822.06
BH05R	1/27/2022	1,690	98.0	479	4.85	4822.86
BH05R	4/21/2022	807	117	285	4.87	4823.97
BH05R	7/27/2022	1,490	28.0	707	4.02	4821.39
BH05R	10/12/2022	1,210	182	137	7.78	4819.23
BH05R	1/23/2023	636	36.4	265	5.01	4821.89
BH06R	4/26/2021	1,270	172	303	2.83	4824.25
BH06R	7/13/2021	653	19.8	342	2.52	4825.89
BH06R	10/26/2021	616	15.8	266	4.55	4821.90
BH06R	1/27/2022	1,080	149	133	4.61	4822.36
BH06R	4/21/2022	506	20.2	182	5.18	4822.72
BH06R	7/27/2022	793	15.6	215	4.48	4820.29
BH06R	10/12/2022	696	41.0	40.6	7.43	4818.83
BH06R	1/23/2023	554	25.2	234	5.13	4821.33
BH07	4/6/2021	561	3.34	125	2.90	4825.78
BH07	7/13/2021	640	21.2	431	3.82	4826.53
BH07	10/26/2021	582	13.0	252	5.10	4823.59
BH07	1/27/2022	1,510	256	177	5.47	4824.11
BH07	4/21/2022	617	98.4	141	5.02	4824.90
BH07	7/27/2022	725	14.2	153	4.56	4821.87
BH07	10/12/2022	609	18.2	13.2	4.57	4823.48
BH07	1/23/2023	382	25.6	168	5.09	4823.11
BH08	4/6/2021	686	6.88	227	NM	NM
BH08	7/13/2021	1,340	47.2	1,100	2.75	4826.03
BH08	10/26/2021	Not Sampled - Dry			Dry	Dry
BH08	1/27/2022	1,180	108	160	4.68	4822.74
BH08	4/21/2022	738	135	264	5.57	4822.88
BH08	7/27/2022	1,020	19.6	353	3.77	4821.36
BH08	10/12/2022	844	57.6	89.4	4.88	4822.02
BH08	1/23/2023	668	29.6	218	5.09	4821.90

**TABLE 1**  
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**GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE**  
**INORGANIC PARAMETERS**

Sample ID	Date Sampled	TDS (mg/L)	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>	-	-
BH09	4/6/2021	647	6.06	176	3.64	4826.77
BH09	7/13/2021	633	23.8	495	3.88	4826.53
BH09	10/26/2021	577	8.20	274	4.89	4824.93
BH09	1/27/2022	696	8.23	126	5.10	4825.14
BH09	4/21/2022	448	6.50	173	5.34	4825.99
BH09	7/27/2022	613	10.8	150	4.90	4822.94
BH09	10/12/2022	501	56.4	156	4.83	4823.01
BH09	1/23/2023	513	23.0	223	5.75	4823.97
BH10R	4/26/2021	1,540	189	410	3.44	4825.70
BH10R	7/13/2021	578	8.60	376	3.41	4827.03
BH10R	10/26/2021	721	11.8	401	5.12	4823.50
BH10R	1/27/2022	1,490	224	175	5.27	4823.64
BH10R	4/21/2022	561	36.8	247	5.76	4824.31
BH10R	7/27/2022	1,250	29.6	376	4.79	4822.09
BH10R	10/12/2022	633	8.20	97.6	5.41	4822.98
BH10R	1/23/2023	644	26.8	338	5.67	4822.73
BH11	4/6/2021	624	9.80	235	3.16	4826.40
BH11	7/13/2021	505	10.0	266	4.06	4826.94
BH11	10/26/2021	512	13.2	198	4.98	4824.00
BH11	1/27/2022	1,200	200	146	4.85	4824.57
BH11	4/21/2022	530	82.8	145	4.91	4825.29
BH11	7/27/2022	642	14.4	153	4.69	4822.32
BH11	10/12/2022	510	38.6	29.4	4.59	4824.00
BH11	1/23/2023	514	24.8	159	5.49	4823.23
BH12	4/6/2021	504	6.74	129	3.68	4827.31
BH12	7/13/2021	528	24.8	439	4.14	4826.85
BH12	10/26/2021	489	7.80	204	5.34	4825.65
BH12	1/27/2022	624	11.8	107	5.47	4825.42
BH12	4/21/2022	459	7.90	279	5.74	4826.19
BH12	7/27/2022	546	5.20	122	5.00	4823.58
BH12	10/12/2022	428	33.0	9.60	5.01	4823.57
BH12	1/23/2023	494	23.0	207	6.20	4824.12

**TABLE 1**  
**FORMER OWL CREEK 7, 7-5 TANK BATTERY**  
**GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE**  
**INORGANIC PARAMETERS**

Sample ID	Date Sampled	TDS (mg/L)	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.

\* = Due to a GPS error, the location of BH04R is represented outside of the excavation extent. A new GPS point will be used during the first quarter 2023 to assure the location of BH04R remains consistent.

TDS = Total dissolved solids

COGCC = Colorado Oil and Gas Conservation Commission

BCKG = Background


mg/L = Milligrams per liter

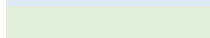
(<) = Analytical result is less than the indicated laboratory reporting limit.

NM = Not measured

**BOLD** = Analytical result is in exceedance of applicable standard but within 1.25x background concentration.

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

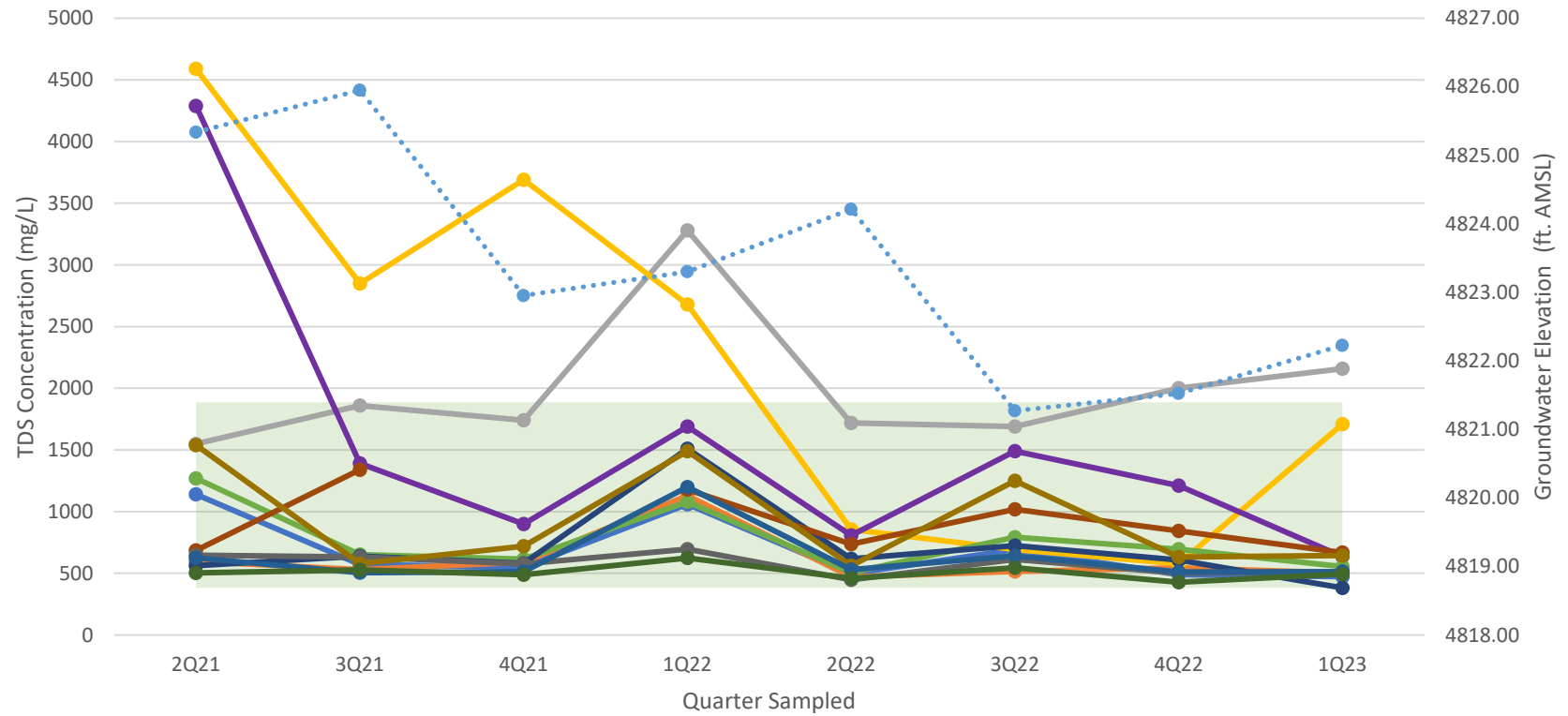
 = Up- / cross-gradient well used for background concentration.

 = Historic up- / cross-gradient well used for background concentration.



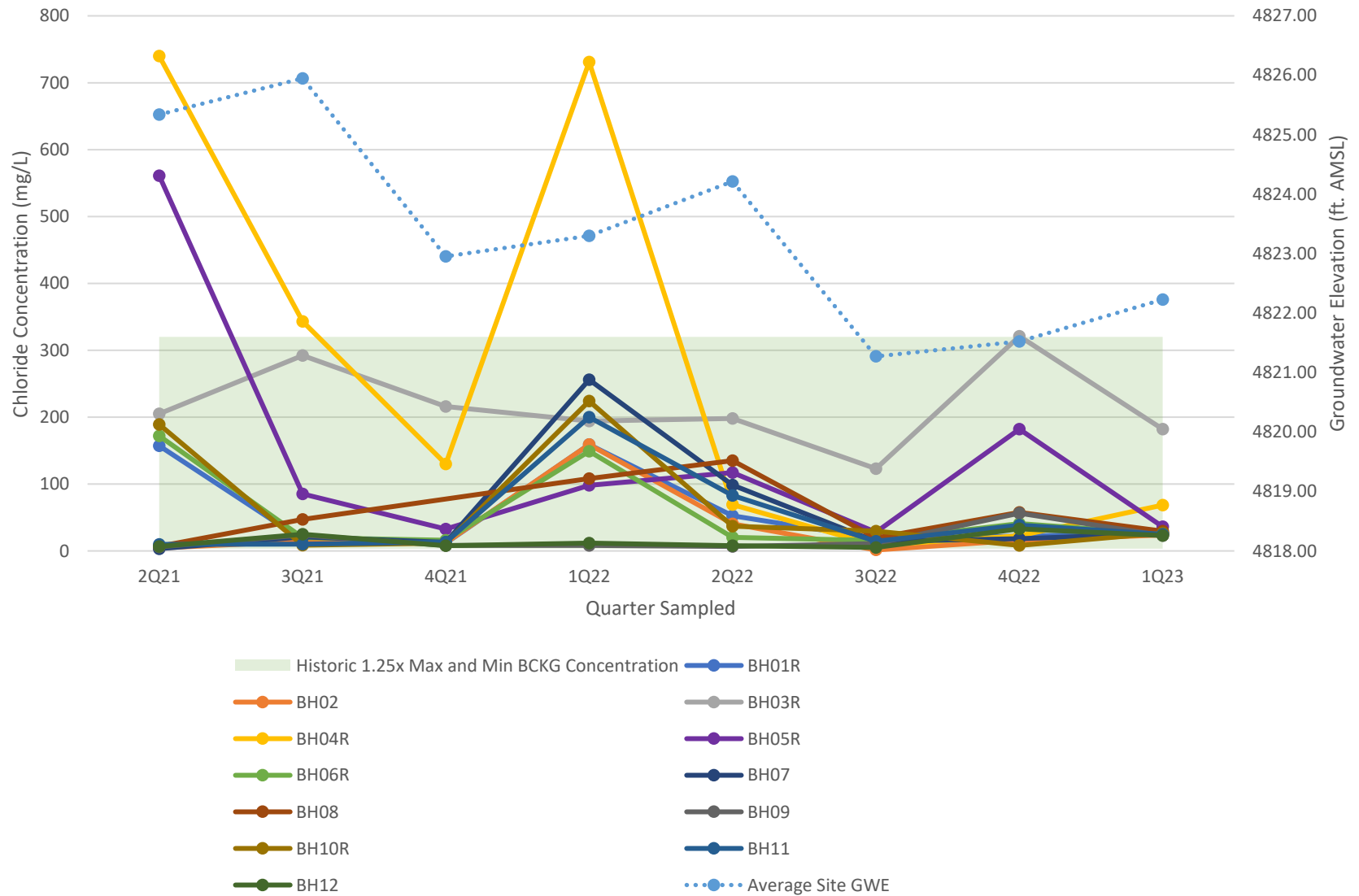
## Attachment A

# Former Owl Creek 7, 7-5 Tank Battery TDS Concentrations vs Historic Background

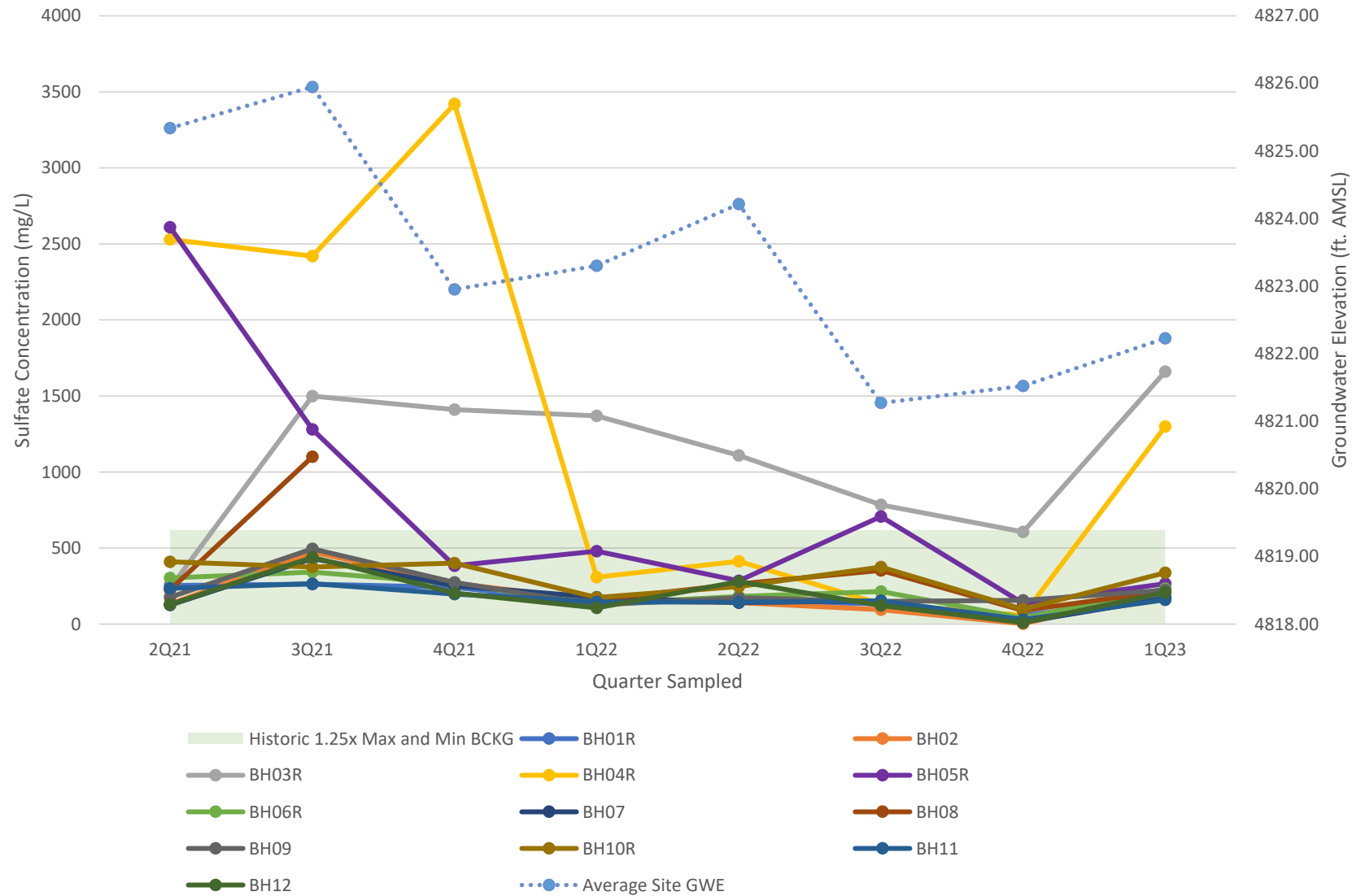




# Former Owl Creek 7, 7-5 Tank Battery Chloride Concentrations vs Historic Background



# Former Owl Creek 7, 7-5 Tank Battery Sulfate Concentrations vs Historic Background





## Attachment B

# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

January 25, 2023

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Owl Creek 7,7-5 Tank Battery

Work Order #2301390

Enclosed are the results of analyses for samples received by Summit Scientific on 01/23/23 18:18. 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", is displayed within a light gray rectangular box.

Scott Sheely For Paul Shrewsbury  
President





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

Project: Owl Creek 7,7-5 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/25/23 15:24

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01R	2301390-01	Water	01/23/23 12:03	01/23/23 18:18
BH02	2301390-02	Water	01/23/23 12:41	01/23/23 18:18
BH03R	2301390-03	Water	01/23/23 13:28	01/23/23 18:18
BH04R	2301390-04	Water	01/23/23 14:42	01/23/23 18:18
BH05R	2301390-05	Water	01/23/23 14:50	01/23/23 18:18
BH06R	2301390-06	Water	01/23/23 13:52	01/23/23 18:18
BH07	2301390-07	Water	01/23/23 16:01	01/23/23 18:18
BH08	2301390-08	Water	01/23/23 14:35	01/23/23 18:18
BH09	2301390-09	Water	01/23/23 16:05	01/23/23 18:18
BH10R	2301390-10	Water	01/23/23 14:59	01/23/23 18:18
BH11	2301390-11	Water	01/23/23 15:44	01/23/23 18:18
BH12	2301390-12	Water	01/23/23 15:24	01/23/23 18:18

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.*

2301390.1

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

Page 1 of 2

Client: PDC/Tasman Geosciences

Project Manager: Mark Longhurst

Address: 6855 W. 119 St.

E-Mail: [mark.longhurst@pdce.com](mailto:mark.longhurst@pdce.com)

City/State/Zip: Broomfield CO 80020

Phone: 303-487-1228

Project Name: Owl Creek 7, 7-5 Tank Battery

**Sampler Name:** Gabe Semenza

Project Number:

www.s2scientific.com

2301390.2

Page 2 of 2

Project Number:

www.s2scientific.com

S<sub>2</sub>

## Sample Receipt Checklist

S2 Work Order# 2301390'Client: PDC/Tasman Client Project ID: Owl Creek 7, 7-5 Tank BatteryShipped Via: H.D./P.U./FedEx/UPS/USPS/Other ☐ Airbill #: ☐
☐ ☒ ☐ ☐ ☐
Matrix (Check all that apply) Air ☐ Soil/Solid ☒ Water ☐ Other ☐Temp (°C) 3.1 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"/>	<i>On ice.</i>
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 checked="" type="checkbox"/>	<input 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 type="checkbox"/>	<input checked="" 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

1/23/23  
Date/Time





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

Project: Owl Creek 7,7-5 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/25/23 15:24

**BH01R**  
**2301390-01 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

Date Sampled: **01/23/23 12:03**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Chloride	<b>25.6</b>	12.0	mg/L	200	BGA0594	01/24/23	01/24/23	EPA 300.0	
Sulfate	<b>176</b>	60.0	"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **01/23/23 12:03**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Total Dissolved Solids	<b>473</b>	10.0	mg/L	1	BGA0584	01/24/23	01/24/23	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: Owl Creek 7,7-5 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/25/23 15:24

**BH02**  
**2301390-02 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

Date Sampled: **01/23/23 12:41**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	23.6	12.0		mg/L	200	BGA0594	01/24/23	01/24/23	EPA 300.0	
Sulfate	214	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **01/23/23 12:41**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	503	10.0		mg/L	1	BGA0584	01/24/23	01/24/23	SM2540C	

Summit Scientific

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

Project: Owl Creek 7,7-5 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/25/23 15:24

**BH03R**  
**2301390-03 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

Date Sampled: **01/23/23 13:28**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	<b>182</b>	12.0		mg/L	200	BGA0594	01/24/23	01/24/23	EPA 300.0	
Sulfate	<b>1660</b>	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **01/23/23 13:28**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	<b>2160</b>	10.0		mg/L	1	BGA0584	01/24/23	01/24/23	SM2540C	

Summit Scientific

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

Project: Owl Creek 7,7-5 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/25/23 15:24

**BH04R**  
**2301390-04 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

Date Sampled: **01/23/23 14:42**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	<b>68.6</b>	12.0		mg/L	200	BGA0594	01/24/23	01/24/23	EPA 300.0	
Sulfate	<b>1300</b>	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **01/23/23 14:42**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	<b>1710</b>	10.0		mg/L	1	BGA0584	01/24/23	01/24/23	SM2540C	

Summit Scientific

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

Project: Owl Creek 7,7-5 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/25/23 15:24

**BH05R**  
**2301390-05 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

Date Sampled: **01/23/23 14:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	36.4	12.0		mg/L	200	BGA0594	01/24/23	01/24/23	EPA 300.0	
Sulfate	265	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **01/23/23 14:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	636	10.0		mg/L	1	BGA0584	01/24/23	01/24/23	SM2540C	

Summit Scientific

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

Project: Owl Creek 7,7-5 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/25/23 15:24

**BH06R**  
**2301390-06 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

Date Sampled: **01/23/23 13:52**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	25.2	12.0		mg/L	200	BGA0594	01/24/23	01/24/23	EPA 300.0	
Sulfate	234	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **01/23/23 13:52**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	554	10.0		mg/L	1	BGA0584	01/24/23	01/24/23	SM2540C	

Summit Scientific

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

Project: Owl Creek 7,7-5 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/25/23 15:24

**BH07**  
**2301390-07 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

Date Sampled: **01/23/23 16:01**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	25.6	12.0		mg/L	200	BGA0594	01/24/23	01/24/23	EPA 300.0	
Sulfate	168	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **01/23/23 16:01**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	382	10.0		mg/L	1	BGA0584	01/24/23	01/24/23	SM2540C	

Summit Scientific

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

Project: Owl Creek 7,7-5 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/25/23 15:24

**BH08**  
**2301390-08 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

Date Sampled: **01/23/23 14:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	29.6	12.0		mg/L	200	BGA0594	01/24/23	01/24/23	EPA 300.0	
Sulfate	218	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **01/23/23 14:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	668	10.0		mg/L	1	BGA0584	01/24/23	01/24/23	SM2540C	

Summit Scientific

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

Project: Owl Creek 7,7-5 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/25/23 15:24

**BH09**  
**2301390-09 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

Date Sampled: **01/23/23 16:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	23.0	12.0		mg/L	200	BGA0594	01/24/23	01/24/23	EPA 300.0	
Sulfate	223	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **01/23/23 16:05**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	513	10.0		mg/L	1	BGA0584	01/24/23	01/24/23	SM2540C	

Summit Scientific

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

Project: Owl Creek 7,7-5 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/25/23 15:24

**BH10R**  
**2301390-10 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

Date Sampled: **01/23/23 14:59**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	26.8	12.0		mg/L	200	BGA0594	01/24/23	01/24/23	EPA 300.0	
Sulfate	338	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **01/23/23 14:59**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	644	10.0		mg/L	1	BGA0584	01/24/23	01/24/23	SM2540C	

Summit Scientific

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

Project: Owl Creek 7,7-5 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/25/23 15:24

**BH11**  
**2301390-11 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

Date Sampled: **01/23/23 15:44**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	24.8	12.0		mg/L	200	BGA0594	01/24/23	01/24/23	EPA 300.0	
Sulfate	159	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **01/23/23 15:44**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	514	10.0		mg/L	1	BGA0584	01/24/23	01/24/23	SM2540C	

Summit Scientific

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

Project: Owl Creek 7,7-5 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/25/23 15:24

**BH12**  
**2301390-12 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

Date Sampled: **01/23/23 15:24**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	23.0	12.0		mg/L	200	BGA0594	01/24/23	01/24/23	EPA 300.0	
Sulfate	207	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **01/23/23 15:24**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	494	10.0		mg/L	1	BGA0584	01/24/23	01/24/23	SM2540C	

Summit Scientific

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

Project: Owl Creek 7,7-5 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/25/23 15:24

### 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 BGA0594 - General Preparation

##### Blank (BGA0594-BLK1)

Prepared & Analyzed: 01/24/23

Chloride	ND	0.0600	mg/L
Sulfate	ND	0.300	"

##### LCS (BGA0594-BS1)

Prepared & Analyzed: 01/24/23

Chloride	3.27	0.0600	mg/L	3.00	109	90-110
Sulfate	15.7	0.300	"	15.0	105	90-110

##### Duplicate (BGA0594-DUP1)

Source: 2212553-01

Prepared & Analyzed: 01/24/23

Chloride	220	12.0	mg/L	216	1.74	20
Sulfate	344	60.0	"	412	18.0	20

##### Matrix Spike (BGA0594-MS1)

Source: 2212553-01

Prepared & Analyzed: 01/24/23

Chloride	746	12.0	mg/L	600	216	88.3	80-120
Sulfate	3250	60.0	"	3000	412	94.7	80-120

Summit Scientific

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

Project: Owl Creek 7,7-5 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/25/23 15:24

**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 BGA0584 - General Preparation**

**Blank (BGA0584-BLK1)**

Prepared & Analyzed: 01/24/23

Total Dissolved Solids ND 10.0 mg/L

**Duplicate (BGA0584-DUP1)**

Source: 2212553-01

Prepared & Analyzed: 01/24/23

Total Dissolved Solids 1050 10.0 mg/L 1050 0.00 20

Summit Scientific

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

Project: Owl Creek 7,7-5 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
01/25/23 15:24

### 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