

**PDC Energy, Inc.**  
**Second Quarter 2021 Groundwater Monitoring Summary**

May 27, 2021

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

This groundwater monitoring summary has been prepared by Tasman Geosciences, Inc. for the former Owl Creek 7, 7-5 Tank Battery. On March 31, 2021, twelve (12) monitoring wells (BH01 – BH12) were installed to confirm the absence of dissolved-phase hydrocarbon impacts following the completion of source mass removal activities. Lithologic descriptions and volatile organic compound (VOC) concentrations measured using a photoionization detector (PID) were recorded for each monitoring well. Due to farming activities, and landowner request, nine (9) monitoring wells (BH01-BH08 and BH11) were buried 18 inches below ground surface (bgs). Boring and well completion logs are provided in Attachment A.

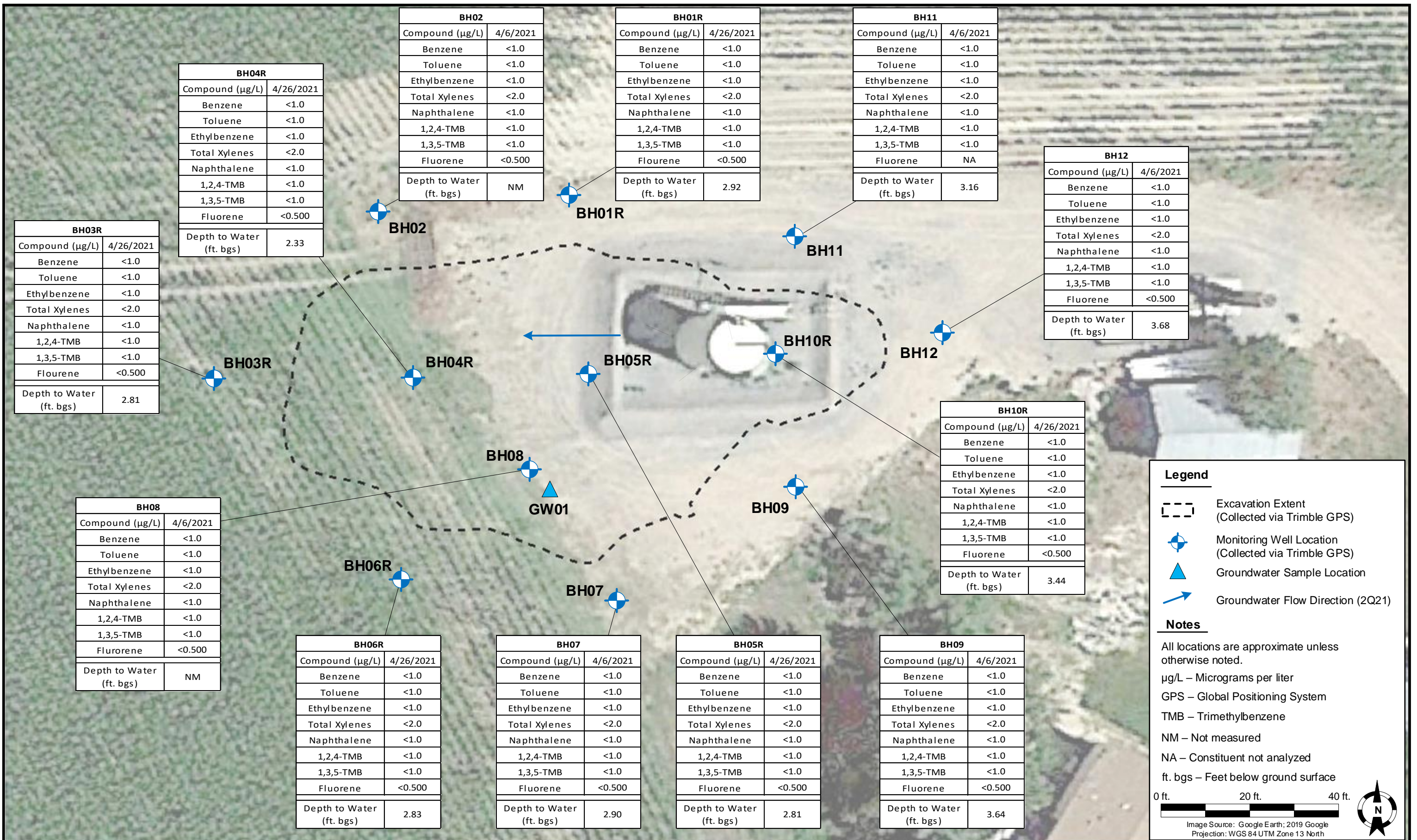
On April 6, 2021, groundwater monitoring was conducted at six monitoring wells (BH02, BH07-BH09, and BH11-BH12). During initial gauging activities, six monitoring wells were discovered to be destroyed from landowner agricultural operations. Consequently, on April 26, 2021, six temporary monitoring wells (BH01R, BH03R-BH06R, and BH10R) were installed using a hand auger. The wells were purged, sampled, and subsequently abandoned. A GPS point was collected from each temporary monitoring well location to ensure the groundwater sample locations remains consistent between quarters. Twelve groundwater samples were submitted to Summit for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, 1,2,4-trimethylbenzene (TMB), and 1,3,5-TMB by EPA Method 8260B and fluorene by EPA Method 8270D. Additionally, all samples were submitted to Summit for analysis of total dissolved solids (TDS) by Method SM 2540C, chloride, and sulfate anions by EPA Method 300.0.

Second quarter 2021 analytical results indicated that organic compound concentrations were below the applicable COGCC Table 915-1 groundwater standard in all twelve monitoring wells. Additionally, inorganic parameters were above the COGCC Table 915-1 groundwater standard or above 1.25x of the background concentrations collected from the up-gradient monitoring well (BH12) in nine monitoring wells. Sample locations and corresponding analytical results are illustrated on Figure 1. Groundwater elevation data is illustrated on Figure 2. Groundwater organic analytical results are summarized in Table 2. Groundwater inorganic analytical results are summarized in Table 3. The laboratory analytical report is included in Attachment B.

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 third quarter 2021.

Third quarter 2021 groundwater sampling will be conducted in July 2021.





DATE: May 31, 2021

DESIGNED BY: B. Nelson

DRAWN BY: J. Marcus



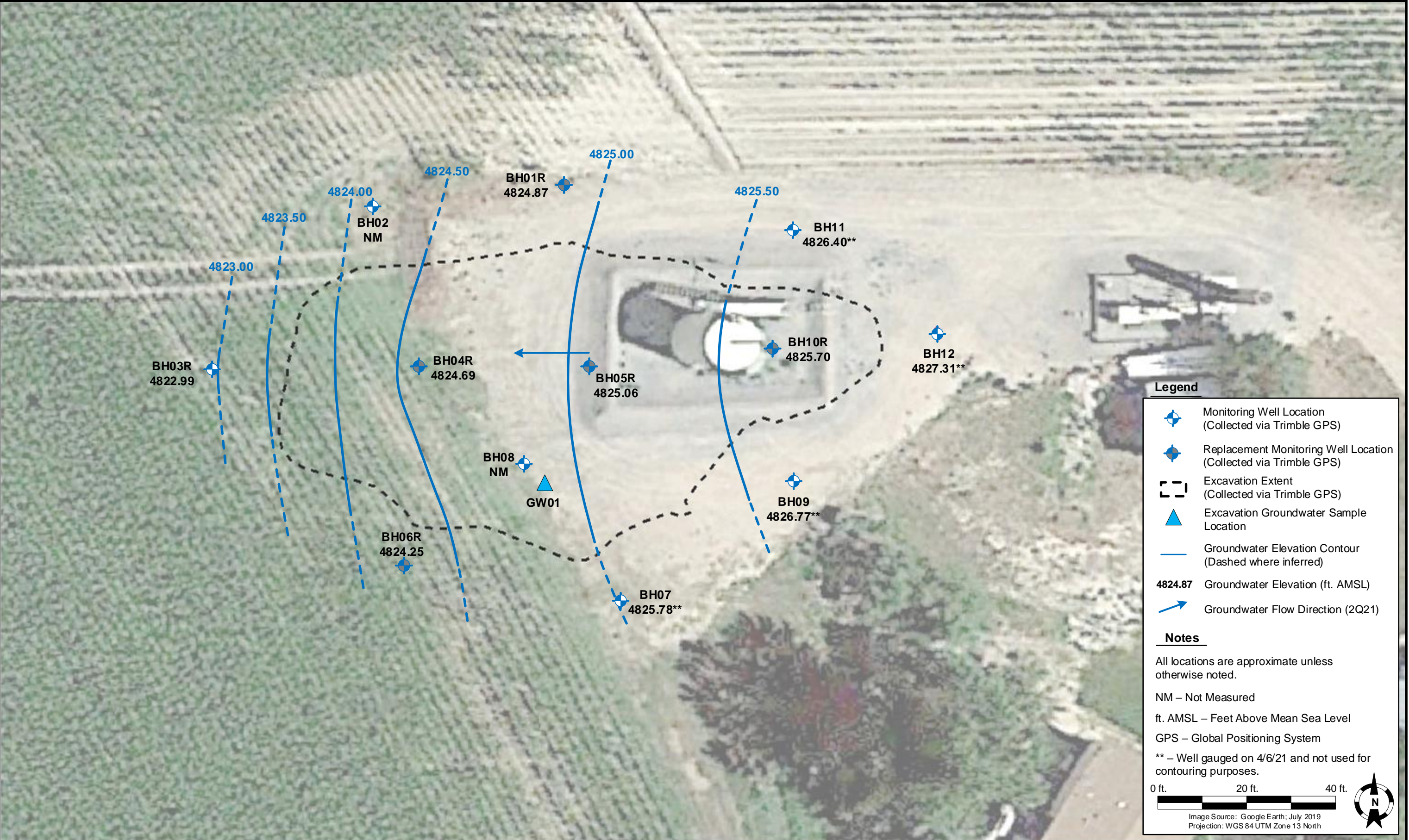
**Tasman Geosciences, Inc.**  
6855 W. 119<sup>th</sup> Ave.  
Broomfield, CO 80020

**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 ANALYTICAL RESULTS MAP

FIGURE  
1







**TABLE 1**  
**FORMER OWL CREEK 7, 7-5 TANK BATTERY**  
**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)	Fluorene (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>280</b>	<b>-</b>	<b>-</b>
GW01	2/22/2021	<1.0	<1.0	2.9	5.9	2.8	12	1.8	NA	6	-
BH01R	4/26/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.500	2.92	4824.87
BH02	4/6/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.500	NM	NM
BH03R	4/26/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.500	2.81	4822.99
BH04R	4/26/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.500	2.33	4824.69
BH05R	4/26/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.500	2.81	4825.06
BH06R	4/26/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.500	2.83	4824.25
BH07	4/6/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.500	2.90	4825.78
BH08	4/6/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.500	NM	NM
BH09	4/6/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.500	3.64	4826.77
BH10R	4/26/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.500	3.44	4825.70
BH11	4/6/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	NA	3.16	4826.40
BH12	4/6/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<0.500	3.68	4827.31

**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

NM = Not Measured

NA = Constituent Not Analyzed



**TABLE 2**  
**FORMER OWL CREEK 7, 7-5 TANK BATTERY**  
**GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE**  
**INORGANIC PARAMETERS**

Sample ID	Date Sampled	TDS (unit)	Chloride Ion (mg/L)	Sulfate Ion (mg/L)
<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	<b>1,140</b>	157	<b>254</b>
BH02	4/6/2021	596	4.30	132
BH03R	4/26/2021	<b>1,550</b>	205	237
BH04R	4/26/2021	<b>4,590</b>	<b>740</b>	<b>2,530</b>
BH05R	4/26/2021	<b>4,290</b>	<b>561</b>	<b>2,610</b>
BH06R	4/26/2021	<b>1,270</b>	172	<b>303</b>
BH07	4/6/2021	561	3.34	125
BH08	4/6/2021	<b>686</b>	6.88	227
BH09	4/6/2021	<b>647</b>	6.06	176
BH10R	4/26/2021	<b>1,540</b>	189	<b>410</b>
BH11	4/6/2021	<b>624</b>	9.80	235
BH12	4/6/2021	504	6.74	129

**Notes:**

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

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.

**BOLD** = Analytical result is in exceedance of applicable standard.





## Attachment A




# Borehole Logging Form

BOREHOLE ID: **BH01**      SITE NAME: **Owl Creek 7, 7-5**      CLIENT NAME: **PDC ENERGY**  
 Date Completed: **3/31/2021**      Location:  
 Drilling Company: **Tasman Geosciences**      Surface Completion: **Sub-surface vault** DTW: **-5'** TD: **10'**  
 Type of Drill: **Direct Push Drilling**      Geologist: **J. McCarver**      Project Manager: **B. Nelson**  
 Bit Size: **2 3/8"**      Logging Method: **Hand Auger/ Macro-Core liner**

Well Const. Material: Diameter: 1"      Screen: Sch 40 PVC Slotted 0.010      Riser: Sch 40 PVC Blank							
Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1			↑	↑		SM	Br, silty sand, fine-med gr, well graded, dry, no odor
2		Hand Auger	↑	0.0			
3			100%	↓		SM	Same as above
4			↓	0.4			
5			↓	↓		SM	Same as above - saturated
6			↓	↓		SC	Br, clayey sand, fine grain, poorly graded, saturated, no odor
7		Push Probe	↑	↑			
8			80%	0.8			
9			↓	↓			
10			↓	↓			
11							
12							
13							
14							
15							
16							
17							
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# Borehole Logging Form

<b>BOREHOLE ID:</b> BH02	<b>SITE NAME:</b> Owl Creek 7, 7-5	<b>CLIENT NAME:</b> PDC ENERGY
<b>Date Completed:</b> 3/31/2021	<b>Location:</b>	
<b>Drilling Company:</b> Tasman Geosciences	<b>Surface Completion:</b> sub-surface vault	
<b>Type of Drill:</b> Direct Push Drilling	<b>Geologist:</b> J. McCarver	<b>Project Manager:</b> B. Nelson
<b>Bit Size:</b> 2 3/8"	<b>Logging Method:</b> Hand Auger/ Macro-Core liner	

Well Const. Material: Diameter: 1"		Screen: Sch 40 PVC Slotted 0.010		Riser: Sch 40 PVC Blank			
Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1		Hand Auger	100%	0.2		SM	Br, silty sand, fine-med gr, well graded, dry, no odor
2							
3							
4						SC	Br, clayey sand, fine gr, poorly graded, moist, no odor
5							
6						SC	same as above
7		Push probe	50%	0.3			
8							
9							
10							
11							
12							
13							
14							
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22							
23							
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25							



# Borehole Logging Form

BOREHOLE ID: <b>BH03</b>	SITE NAME: <b>Owl Creek 7, 7-5</b>	CLIENT NAME: <b>PDC ENERGY</b>
Date Completed: <b>3/31/2021</b>	Location:	
Drilling Company: <b>Tasman Geosciences</b>	Surface Completion: <b>Sub surface vault</b> DTW: <b>~6'</b> TD: <b>10'</b>	
Type of Drill: <b>Direct Push Drilling</b>	Geologist: <b>J. McCarver</b>	Project Manager: <b>B. Nelson</b>
Bit Size: <b>2 3/8"</b>	Logging Method: <b>Hand Auger/ Macro-Core liner</b>	

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

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1		Hand Auger	↑	↑		SM	Br, Silty Sand fine-medium gr well-graded, dry, no odor
2				0.1			
3			100%				
4				*		SC	Br, clayey sand, fine gr, poorly graded, moist, no odor
5				0.2			
6						SC	Same as above, saturated
7	Direct push		↑	↑			
8			60%	0.4			
9							
10							
11							
12							
13							
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25							

# Borehole Logging Form

BOREHOLE ID: **BH04** SITE NAME: **Owl Creek 7, 7-5** CLIENT NAME: **PDC ENERGY**


Date Completed: **3/31/2021** Location:

Drilling Company: **Tasman Geosciences** Surface Completion: **Subsurface vault** DTW: **-5'** TD: **-10'**

Type of Drill: **Direct Push Drilling** Geologist: **J. McCarver** Project Manager: **B. Nelson**

Bit Size: **2 3/8"** Logging Method: **Hand Auger/ Macro-Core liner**

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

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description	
1		Hand Auger	↑	↑		SM	Br, silty sand, fine coarse gr, well graded, dry, no odor	
2				0.2				
3			100%					
4					↓			
5					0.3			
6					↓	SM	Saturated - Same as above	
7		Direct Push	↑	↓	↓			
8				75%	0.3			Br, clayey sand, fine grain, poorly graded, saturated, no odor
9				↓	↓			↓
10				↓	↓			↓
11								
12								
13								
14								
15								
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23								
24								
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# Borehole Logging Form

BOREHOLE ID: **BH05** SITE NAME: **Owl Creek 7, 7-5** CLIENT NAME: **PDC ENERGY**

Date Completed: **3/31/2021** Location:

Drilling Company: **Tasman Geosciences** Surface Completion: **Sub surface Van 16TW: -5' TD: 10'**

Type of Drill: **Direct Push Drilling** Geologist: **J. McCarver** Project Manager: **B. Nelson**

Bit Size: **2 3/8"** Logging Method: **Hand Auger/ Macro-Core liner**

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

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1		Hand Auger	↑	↑		SM	Br, silty sand, fine-med grain well graded, dry, no odor
2			↑	0.2			
3			100%				
4							
5							
6						SM	Same as above, saturated
7		Direct Push	↑	↑			
8			80%	0.3		SC	Br, clayey sand, fine grain, poorly graded, saturated, no odor
9				0.4			
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							



# Borehole Logging Form

BOREHOLE ID: **B1406** SITE NAME: **Owl Creek 7, 7-5** CLIENT NAME: **PDC ENERGY**


Date Completed: **3/31/2021** Location:

Drilling Company: **Tasman Geosciences** Surface Completion: **Sub-surface well** BTW: **-5** TD: **10'**

Type of Drill: **Direct Push Drilling** Geologist: **J. McCarver** Project Manager: **B. Nelson**

Bit Size: **2 3/8"** Logging Method: **Hand Auger/ Macro-Core liner**

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

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1		Hand Auger	↑	↑		SM	Br, Silty sand, fine-medium gr, well graded, dry, no odor
2				0.3			
3			100%				
4					0.3		
5					0.3		
6					0.3	SC	Br, clayey sand, fine gr, poorly graded, saturated, no odor
7		Direct push	↑	↑	↑		
8			80%				
9							
10							
11							
12							
13							
14							
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# Borehole Logging Form

BOREHOLE ID: BH07 SITE NAME: Owl Creek 7, 7-5 CLIENT NAME: PDC ENERGY


Date Completed: 3/31/2021 Location: \_\_\_\_\_

Drilling Company: Tasman Geosciences Surface Completion: Subsurface vault DTW: -5' TD: 10'

Type of Drill: Direct Push Drilling Geologist: J. McCarver Project Manager: B. Nelson

Bit Size: 2 3/8" Logging Method: Hand Auger/ Macro-Core liner

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

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description	
1		Hand Auger	↑ 100%	↑ 0.4		SM	Br, silty sand, fine-med grain well graded, clay, no odor	
2								
3								
4					*			
5					0.3		SC	Br, clayey sand, fine gr, poorly graded moist, no odor
6							SL	same as above, subrounded
7		Direct Probe	↑	↑				
8					10			
9				80%				
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								



# Borehole Logging Form

BOREHOLE ID: BH08 SITE NAME: Owl Creek 7, 7-5 CLIENT NAME: PDC ENERGY


Date Completed: 3/31/2021 Location: \_\_\_\_\_

Drilling Company: Tasman Geosciences Surface Completion: Subsurface vault DTW: -5' TD: 10'

Type of Drill: Direct Push Drilling Geologist: J. McCarver Project Manager: B. Nelson

Bit Size: 2 3/8" Logging Method: Hand Auger/ Macro-Core liner

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

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1		Hand Auger	↑ 100%	↑ 0.3		SM	Br. silty sand, fine-med grain, well graded, dry, no odor
2							
3							
4							
5							
6					↓ 0.3	SM	Same as above, saturated
7		Direct Push	↑	↑	↑		
8				70%	0.6	SC	Br. clayey sand, fine grain, poorly graded, saturated, no odor
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
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21							
22							
23							
24							
25							



# Borehole Logging Form

BOREHOLE ID: **BH09** SITE NAME: **Owl Creek 7, 7-5** CLIENT NAME: **PDC ENERGY**

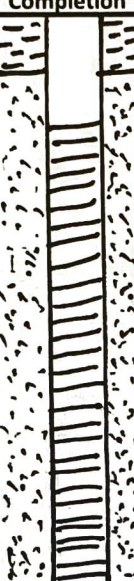
Date Completed: **3/31/2021** Location:

Drilling Company: **Tasman Geosciences** Surface Completion: **Flush mount** DTW: **-5'** TD: **10'**

Type of Drill: **Direct Push Drilling** Geologist: **J. McCarver** Project Manager: **B. Nelson**

Bit Size: **2 3/8"** Logging Method: **Hand Auger/ Macro-Core liner**

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

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description	
1		Hand Auger	↑	0.4		SM	Br, silty sand, fine-med gr, well graded, dry, no odor	
2			100%	↓				
3								
4								
5								
6					0.5		SC	Br, clayey sand, fine green, poorly graded, saturated, no odor
7		Direct Push	↑		0.5			
8				60%	↓			
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

# Borehole Logging Form

BOREHOLE ID: **BH10** SITE NAME: **Owl Creek 7, 7-5** CLIENT NAME: **PDC ENERGY**

Date Completed: **3/31/2021** Location:

Drilling Company: **Tasman Geosciences** Surface Completion: **Flush mount** DTW: **-5** TD: **10**

Type of Drill: **Direct Push Drilling** Geologist: **J. McCarver** Project Manager: **B. Nelson**

Bit Size : **2 3/8"** Logging Method: **Hand Auger/ Macro-Core liner**

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

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1		↑	↑	↑		SM	Br. silty sand, fine-med, well
2		↑	100%	0.3			graded, clay, no odor
3		Hand Auger					
4							
5							
6				↓		SM	Same as above, get rock
7		Direct Push	↑	0.2			
8			70%	0.2		SL	Br. clayey sand, fine grain, poorly graded
9							Si-vent, no odor
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
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22							
23							
24							
25							



# Borehole Logging Form

BOREHOLE ID: **BH11** SITE NAME: **Owl Creek 7, 7-5** CLIENT NAME: **PDC ENERGY**


Date Completed: **3/31/2021** Location:

Drilling Company: **Tasman Geosciences** Surface Completion: **subsurface vault** DTW: **~5** TD: **10**

Type of Drill: **Direct Push Drilling** Geologist: **J. McCarver** Project Manager: **B. Nelson**

Bit Size: **2 3/8"** Logging Method: **Hand Auger/ Macro-Core liner**

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

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description	
1		Hand Auger	↑	↑ 0.3		SM	Br, silty sand, fine med gr, well graded, dry, no odor	
2								
3			100%					
4								
5					↓ 0.6		SC	Br, clayey sand, fine grain, poorly graded, saturated, no odor
6			Direct Push	↑	↑			
7				60%	0.7			
8								
9								
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# Borehole Logging Form

BOREHOLE ID: **BH12** SITE NAME: **Owl Creek 7, 7-5** CLIENT NAME: **PDC ENERGY**

Date Completed: **3/31/2021** Location:

Drilling Company: **Tasman Geosciences** Surface Completion: **Flush Mount** DTW: **5** TD: **10**

Type of Drill: **Direct Push Drilling** Geologist: **J. McCarver** Project Manager: **B. Nelson**

Bit Size: **2 3/8"** Logging Method: **Hand Auger/ Macro-Core liner**

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

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1		Hand Auger	↑	↑		SM	Br silty sand, fine med gr, well graded, no silt
2			100%				
3							
4							
5							
6		Direct Push	*	0.0		SC	Br clayey sand, fine-med gr, well graded, somewhat, no silt
7			90%	0.6			
8							
9							
10							
11							
12							
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## Attachment B



# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

May 10, 2021

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Owl Creek 7,7-5

Work Order # 2104413

Enclosed are the results of analyses for samples received by Summit Scientific on 04/27/21 17:45. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink on a light blue background. The signature is written in a cursive style and reads "Muri Premier".

Muri Premier For Paul Shrewsbury

President



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

Project: Owl Creek 7,7-5

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**  
05/10/21 11:48

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01R	2104413-01	Water	04/26/21 13:40	04/27/21 17:45
BH03R	2104413-02	Water	04/26/21 13:15	04/27/21 17:45
BH04R	2104413-03	Water	04/26/21 13:30	04/27/21 17:45
BH05R	2104413-04	Water	04/26/21 13:15	04/27/21 17:45
BH06R	2104413-05	Water	04/26/21 14:00	04/27/21 17:45
BH10R	2104413-06	Water	04/26/21 13:01	04/27/21 17:45

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.*



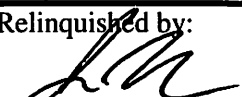
2104413

**303-277-9310**

Page 1 of 1

Project Number: 119

					Preservative				Matrix				Analysis Requested								Special Instructions		
ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO <sub>3</sub>	None	Other _____	Water	Soil	Air-Canister #	Other _____	BTEXN - 8260B	TPH - (C6 - C36)	1,2,4 & 1,3,5-TMB	TDS	Chloride, Sulfate	Fluorene				pH, EC, SAR by saturated paste	
1	BH01R	4/26/21	1340	6			X		X				X		X	X	X	X	X				
2	BH03R		1315	6			X		X				X		X	X	X	X	X				
3	BH04R		1330	6			X		X				X		X	X	X	X	X				
4	BH05R		1315	6			X		X				X		X	X	X	X	X				
5	BH06R		1400	6			X		X				X		X	X	X	X	X				
6	BH10R	↓	1301	5			X		X				X		X	X	X	X	X				
7																							
8																							
9																							
10																							

Relinquished by:  Date/Time: 4/26/21 1800

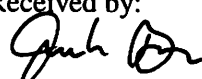
Received by: Tasman's Lock Box Date/Time: 4/26/21 1800

Turn Around Time (Check)  
 Same Day \_\_\_\_\_ 72 hours \_\_\_\_\_  
 24 hours \_\_\_\_\_ Standard ☒  
 48 hours \_\_\_\_\_

Sample Integrity:  
 Temperature Upon Receipt: 4  
 Samples Intact: ☒ Yes No

Notes:

Relinquished by: Tasman's Lock Box Date/Time: 4/27/21 1745

Received by:  Date/Time: 4/27/21 1745

Relinquished by: Date/Time:

Received by: Date/Time:

# Sample Receipt Checklist

S2 Work Order 2104413

Client: PDC / Tasman

Client Project ID: Owl Creek 7, 7-5

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

☐ ☒ ☐ ☐ ☐

Matrix (check all that apply): ☐ Air ☐ Soil/Solid ☒ Water ☐ Other: \_\_\_\_\_  
(Describe)

Temp (°C)	4
-----------	---

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C <sup>(1)</sup> ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	On ice
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"/>	
If custody seals are present, are they intact <sup>(1)</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<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"/>	
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"/>	
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"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<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, H2SO4, NaOH, HNO3, ect	<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.

JB  
Custodian Printed Name or Initials

John Bar  
Signature of Custodian

4/27/21 1850  
Date/Time





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

Project: Owl Creek 7,7-5

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
05/10/21 11:48

**BH01R**  
**2104413-01 (Water)**

**Summit Scientific**

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

Date Sampled: **04/26/21 13:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BED0494	04/30/21	05/02/21	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: **04/26/21 13:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		105 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		74.0 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		87.8 %		21-167		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Date Sampled: **04/26/21 13:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Fluorene	ND	0.500		ug/l	1	BEE0085	05/05/21	05/06/21	EPA 8270D SIM	

Date Sampled: **04/26/21 13:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: Fluoranthene-d10		96.9 %		40-150		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **04/26/21 13:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								

Summit Scientific

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

Project: Owl Creek 7,7-5

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**  
05/10/21 11:48

**BH01R**  
**2104413-01 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

Chloride	157	12.0	mg/L	200	BED0507	04/29/21	04/30/21	EPA 300.0
Sulfate	254	60.0	"	"	"	"	"	"

**Total Dissolved Solids by SM2540C**

Date Sampled: **04/26/21 13:40**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	1140	10.0		mg/L	1	BED0472	04/28/21	04/28/21	SM2540C	

Summit Scientific

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

Project: Owl Creek 7,7-5

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
05/10/21 11:48

**BH03R**  
**2104413-02 (Water)**

**Summit Scientific**

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

Date Sampled: **04/26/21 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BED0494	04/30/21	05/02/21	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: **04/26/21 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		95.6 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		85.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		88.7 %	21-167		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Date Sampled: **04/26/21 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Fluorene	ND	0.500	ug/l	1	BEE0085	05/05/21	05/06/21	EPA 8270D SIM	

Date Sampled: **04/26/21 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10		79.7 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		93.8 %	40-150		"	"	"	"	

**Anions by EPA Method 300.0**

Summit Scientific

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

Project: Owl Creek 7,7-5

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**  
05/10/21 11:48

**BH03R**  
**2104413-02 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

Date Sampled: **04/26/21 13:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Chloride</b>	<b>205</b>	12.0		mg/L	200	BED0507	04/29/21	04/30/21	EPA 300.0	
<b>Sulfate</b>	<b>237</b>	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **04/26/21 13:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Total Dissolved Solids</b>	<b>1550</b>	10.0		mg/L	1	BED0472	04/28/21	04/28/21	SM2540C	

Summit Scientific

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

Project: Owl Creek 7,7-5

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
05/10/21 11:48

**BH04R**  
**2104413-03 (Water)**

**Summit Scientific**

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

Date Sampled: **04/26/21 13:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BED0494	04/30/21	05/02/21	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: **04/26/21 13:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		110 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		86.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		89.2 %	21-167		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Date Sampled: **04/26/21 13:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Fluorene	ND	0.500	ug/l	1	BEE0085	05/05/21	05/06/21	EPA 8270D SIM	

Date Sampled: **04/26/21 13:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10		87.4 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		99.6 %	40-150		"	"	"	"	

**Anions by EPA Method 300.0**

Summit Scientific

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

Project: Owl Creek 7,7-5

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**  
05/10/21 11:48

**BH04R**  
**2104413-03 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

Date Sampled: **04/26/21 13:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Sulfate</b>	<b>2530</b>	60.0		mg/L	200	BED0507	04/29/21	04/30/21	EPA 300.0	
<b>Chloride</b>	<b>740</b>	12.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **04/26/21 13:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Total Dissolved Solids</b>	<b>4590</b>	10.0		mg/L	1	BED0472	04/28/21	04/28/21	SM2540C	

Summit Scientific

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

Project: Owl Creek 7,7-5

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
05/10/21 11:48

**BH05R**  
**2104413-04 (Water)**

**Summit Scientific**

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

Date Sampled: **04/26/21 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BED0494	04/30/21	05/02/21	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: **04/26/21 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		97.1 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		78.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		87.9 %	21-167		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Date Sampled: **04/26/21 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Fluorene	ND	0.500	ug/l	1	BEE0085	05/05/21	05/06/21	EPA 8270D SIM	

Date Sampled: **04/26/21 13:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10		76.1 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		90.7 %	40-150		"	"	"	"	

**Anions by EPA Method 300.0**

Summit Scientific

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

Project: Owl Creek 7,7-5

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**  
05/10/21 11:48

**BH05R**  
**2104413-04 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

Date Sampled: **04/26/21 13:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Chloride</b>	<b>561</b>	12.0		mg/L	200	BED0507	04/29/21	04/30/21	EPA 300.0	
<b>Sulfate</b>	<b>2610</b>	60.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **04/26/21 13:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Total Dissolved Solids</b>	<b>4290</b>	10.0		mg/L	1	BED0472	04/28/21	04/28/21	SM2540C	

Summit Scientific

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

Project: Owl Creek 7,7-5

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
05/10/21 11:48

**BH06R**  
**2104413-05 (Water)**

**Summit Scientific**

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

Date Sampled: **04/26/21 14:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BED0494	04/30/21	05/02/21	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: **04/26/21 14:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		101 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		77.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		90.4 %	21-167		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Date Sampled: **04/26/21 14:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Fluorene	ND	0.500	ug/l	1	BEE0085	05/05/21	05/06/21	EPA 8270D SIM	

Date Sampled: **04/26/21 14:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10		78.6 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		93.1 %	40-150		"	"	"	"	

**Anions by EPA Method 300.0**

Summit Scientific

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

Project: Owl Creek 7,7-5

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**  
05/10/21 11:48

**BH06R**  
**2104413-05 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

Date Sampled: **04/26/21 14:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Sulfate</b>	<b>303</b>	60.0		mg/L	200	BED0507	04/29/21	04/30/21	EPA 300.0	
<b>Chloride</b>	<b>172</b>	12.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **04/26/21 14:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Total Dissolved Solids</b>	<b>1270</b>	10.0		mg/L	1	BED0472	04/28/21	04/28/21	SM2540C	

Summit Scientific

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

Project: Owl Creek 7,7-5

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
05/10/21 11:48

**BH10R**  
**2104413-06 (Water)**

**Summit Scientific**

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

Date Sampled: **04/26/21 13:01**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BED0494	04/30/21	05/02/21	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: **04/26/21 13:01**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		99.5 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		88.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		72.3 %	21-167		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Date Sampled: **04/26/21 13:01**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Fluorene	ND	0.500	ug/l	1	BEE0085	05/05/21	05/06/21	EPA 8270D SIM	

Date Sampled: **04/26/21 13:01**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 2-Methylnaphthalene-d10		42.3 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		47.2 %	40-150		"	"	"	"	

**Anions by EPA Method 300.0**

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

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**  
05/10/21 11:48

**BH10R**  
**2104413-06 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

Date Sampled: **04/26/21 13:01**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Sulfate</b>	<b>410</b>	60.0		mg/L	200	BED0507	04/29/21	04/30/21	EPA 300.0	
<b>Chloride</b>	<b>189</b>	12.0		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **04/26/21 13:01**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>Total Dissolved Solids</b>	<b>1540</b>	10.0		mg/L	1	BED0472	04/28/21	04/28/21	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

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
05/10/21 11:48

## 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 BED0494 - EPA 5030 Water MS

##### Blank (BED0494-BLK1)

Prepared: 04/30/21 Analyzed: 05/01/21

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	12.0		"	13.3		90.2	23-173			
Surrogate: Toluene-d8	10.4		"	13.3		77.9	20-170			
Surrogate: 4-Bromofluorobenzene	11.9		"	13.3		89.1	21-167			

##### LCS (BED0494-BS1)

Prepared: 04/30/21 Analyzed: 05/01/21

Benzene	27.6	1.0	ug/l	33.3		82.9	51-132			
Toluene	32.5	1.0	"	33.3		97.5	51-138			
Ethylbenzene	39.1	1.0	"	33.3		117	58-146			
m,p-Xylene	73.8	2.0	"	66.7		111	57-144			
o-Xylene	38.1	1.0	"	33.3		114	53-146			
Naphthalene	32.0	1.0	"	33.3		96.0	70-130			
1,2,4-Trimethylbenzene	29.7	1.0	"	33.3		89.1	70-130			
1,3,5-Trimethylbenzene	40.7	1.0	"	33.3		122	70-130			
Surrogate: 1,2-Dichloroethane-d4	12.2		"	13.3		91.8	23-173			
Surrogate: Toluene-d8	11.6		"	13.3		86.9	20-170			
Surrogate: 4-Bromofluorobenzene	11.2		"	13.3		84.3	21-167			

##### Matrix Spike (BED0494-MS1)

Source: 2104434-01

Prepared: 04/30/21 Analyzed: 05/02/21

Benzene	28.6	1.0	ug/l	33.3	ND	85.7	34-141			
Toluene	31.1	1.0	"	33.3	ND	93.2	27-151			
Ethylbenzene	40.6	1.0	"	33.3	ND	122	29-160			
m,p-Xylene	75.6	2.0	"	66.7	ND	113	20-166			
o-Xylene	39.9	1.0	"	33.3	ND	120	33-159			
Naphthalene	36.3	1.0	"	33.3	3.55	98.4	70-130			
1,2,4-Trimethylbenzene	30.8	1.0	"	33.3	ND	92.6	70-130			
1,3,5-Trimethylbenzene	42.7	1.0	"	33.3	ND	128	70-130			
Surrogate: 1,2-Dichloroethane-d4	13.4		"	13.3		100	23-173			
Surrogate: Toluene-d8	10.9		"	13.3		81.8	20-170			
Surrogate: 4-Bromofluorobenzene	11.6		"	13.3		87.4	21-167			

Summit Scientific

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

Project: Owl Creek 7,7-5

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**  
05/10/21 11:48

## 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 BED0494 - EPA 5030 Water MS

##### Matrix Spike Dup (BED0494-MSD1)

Source: 2104434-01

Prepared: 04/30/21 Analyzed: 05/02/21

Benzene	30.4	1.0	ug/l	33.3	ND	91.1	34-141	6.18	30	
Toluene	30.2	1.0	"	33.3	ND	90.5	27-151	2.94	30	
Ethylbenzene	40.4	1.0	"	33.3	ND	121	29-160	0.444	30	
m,p-Xylene	76.6	2.0	"	66.7	ND	115	20-166	1.31	30	
o-Xylene	39.9	1.0	"	33.3	ND	120	33-159	0.0251	30	
Naphthalene	39.3	1.0	"	33.3	3.55	107	70-130	7.90	30	
1,2,4-Trimethylbenzene	31.0	1.0	"	33.3	ND	93.1	70-130	0.582	30	
1,3,5-Trimethylbenzene	42.6	1.0	"	33.3	ND	128	70-130	0.352	30	
Surrogate: 1,2-Dichloroethane-d4	13.6		"	13.3		102	23-173			
Surrogate: Toluene-d8	10.6		"	13.3		79.5	20-170			
Surrogate: 4-Bromofluorobenzene	11.6		"	13.3		87.2	21-167			

Summit Scientific

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

Project: Owl Creek 7,7-5

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
05/10/21 11:48

### PAH by EPA Method 8270D SIM - Quality Control

#### Summit Scientific

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

#### Batch BEE0085 - EPA 5030 Water MS

##### Blank (BEE0085-BLK1)

Prepared: 05/05/21 Analyzed: 05/06/21

Fluorene	ND	0.500	ug/l						
2-Methylnaphthalene	ND	0.500	"						
1-Methylphenanthrene	ND	0.500	"						
Surrogate: 2-Methylnaphthalene-d10	1.61		"	2.00		80.5	40-150		
Surrogate: Fluoranthene-d10	1.95		"	2.00		97.4	40-150		

##### LCS (BEE0085-BS1)

Prepared: 05/05/21 Analyzed: 05/06/21

Fluorene	1.81	0.500	ug/l	2.00		90.6	30-120		
2-Methylnaphthalene	1.80	0.500	"	2.00		89.9	35-142		
1-Methylphenanthrene	ND	0.500	"				35-142		
Surrogate: 2-Methylnaphthalene-d10	1.70		"	2.00		85.1	40-150		
Surrogate: Fluoranthene-d10	2.14		"	2.00		107	40-150		

##### Matrix Spike (BEE0085-MS1)

Source: 2104413-01

Prepared: 05/05/21 Analyzed: 05/06/21

Fluorene	1.90	0.500	ug/l	2.00	ND	95.2	30-120		
2-Methylnaphthalene	1.95	0.500	"	2.00	ND	97.7	15-130		
1-Methylphenanthrene	ND	0.500	"		ND		15-130		
Surrogate: 2-Methylnaphthalene-d10	1.66		"	2.00		83.1	40-150		
Surrogate: Fluoranthene-d10	1.93		"	2.00		96.4	40-150		

##### Matrix Spike Dup (BEE0085-MSD1)

Source: 2104413-01

Prepared: 05/05/21 Analyzed: 05/06/21

Fluorene	1.76	0.500	ug/l	2.00	ND	88.2	30-120	7.72	30
2-Methylnaphthalene	1.94	0.500	"	2.00	ND	97.2	15-130	0.502	50
1-Methylphenanthrene	ND	0.500	"		ND		15-130		50
Surrogate: 2-Methylnaphthalene-d10	1.73		"	2.00		86.3	40-150		
Surrogate: Fluoranthene-d10	2.15		"	2.00		107	40-150		

Summit Scientific

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

Project: Owl Creek 7,7-5

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
05/10/21 11:48

**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 BED0507 - General Preparation**

**Blank (BED0507-BLK1)**

Prepared & Analyzed: 04/29/21

Sulfate	ND	0.300	mg/L
Chloride	ND	0.0600	"

**LCS (BED0507-BS1)**

Prepared & Analyzed: 04/29/21

Sulfate	13.9	0.300	mg/L	15.0	92.5	90-110
Chloride	3.05	0.0600	"	3.00	102	90-110

**Duplicate (BED0507-DUP1)**

Source: 2104381-01

Prepared & Analyzed: 04/29/21

Chloride	141	12.0	mg/L	141	0.142	20
Sulfate	229	60.0	"	243	5.85	20

**Matrix Spike (BED0507-MS1)**

Source: 2104381-01

Prepared & Analyzed: 04/29/21

Chloride	759	12.0	mg/L	600	141	103	80-120
Sulfate	3660	60.0	"	3000	243	114	80-120

Summit Scientific

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

Project: Owl Creek 7,7-5

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
05/10/21 11:48

**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 BED0472 - General Preparation**

**Blank (BED0472-BLK1)**

Prepared & Analyzed: 04/28/21

Total Dissolved Solids ND 10.0 mg/L

**Duplicate (BED0472-DUP1)**

**Source: 2104372-01**

Prepared & Analyzed: 04/28/21

Total Dissolved Solids 991 10.0 mg/L 992 0.131 20

Summit Scientific

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

Project: Owl Creek 7,7-5

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
05/10/21 11:48

### Notes and Definitions

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

# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

May 04, 2021

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

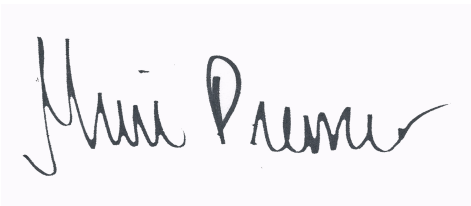
Denver, CO 80203

RE: Owl Creek 7,7-5

Work Order #2104118

Enclosed are the results of analyses for samples received by Summit Scientific on 04/07/21 11:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Muri Premier", is displayed on a light purple rectangular background.

Muri Premier For Paul Shrewsbury  
President



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

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

**Reported:**  
05/04/21 15:06

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH02	2104118-01	Water	04/06/21 15:52	04/07/21 11:00
BH07	2104118-02	Water	04/06/21 16:00	04/07/21 11:00
BH08	2104118-03	Water	04/06/21 16:14	04/07/21 11:00
BH09	2104118-04	Water	04/06/21 16:27	04/07/21 11:00
BH11	2104118-05	Water	04/06/21 16:21	04/07/21 11:00
BH12	2104118-06	Water	04/06/21 16:08	04/07/21 11:00

Summit Scientific

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# Summit Scientific

Page / of /

Sampler Name: Brandon N.

Project Number:

[www.s2scientific.com](http://www.s2scientific.com)

# Sample Receipt Checklist

S2 Work Order 2104118

Client: PDL / Tasman Client Project ID: Owl Creek 7, 7-5

Shipped Via: ☐ H.D./P.U./FedEx/UPS/USPS/Other ☒ Airbill #: \_\_\_\_\_

Matrix (check all that apply): ☐ Air ☐ Soil/Solid ☒ Water ☐ Other: \_\_\_\_\_  
(Describe)

Temp (°C) 4

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C <sup>(1)</sup> ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	on ice
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"/>	
If custody seals are present, are they intact <sup>(1)</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<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"/>	
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"/>	
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"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<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, H2SO4, NaOH, HNO3, ect	<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.

JB  
Custodian Printed Name or Initials

Jim B  
Signature of Custodian

4/7/21 14:20  
Date/Time



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

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

**Reported:**  
05/04/21 15:06

**BH02**  
**2104118-01 (Water)**

**Summit Scientific**

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

Date Sampled: **04/06/21 15:52**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	BED0170	04/09/21	04/10/21	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: **04/06/21 15:52**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.7 %	21-167		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Date Sampled: **04/06/21 15:52**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Fluorene	ND	0.500	ug/l	1	BED0290	04/15/21	04/18/21	EPA 8270D SIM	

Date Sampled: **04/06/21 15:52**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: Fluoranthene-d10		56.7 %	40-150		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **04/06/21 15:52**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						

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  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
05/04/21 15:06

**BH02**  
**2104118-01 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

Chloride	4.30	1.20	mg/L	20	BED0147	04/08/21	04/09/21	EPA 300.0
Sulfate	132	6.00	"	"	"	"	"	"

**Total Dissolved Solids by SM2540C**

Date Sampled: **04/06/21 15:52**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	596	10.0		mg/L	1	BED0126	04/08/21	04/08/21	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

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
05/04/21 15:06

**BH07**  
**2104118-02 (Water)**

**Summit Scientific**

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

Date Sampled: **04/06/21 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	BED0170	04/09/21	04/10/21	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: **04/06/21 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.2 %	21-167		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Date Sampled: **04/06/21 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Fluorene	ND	0.500	ug/l	1	BED0290	04/15/21	04/18/21	EPA 8270D SIM	

Date Sampled: **04/06/21 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: Fluoranthene-d10		57.1 %	40-150		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **04/06/21 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chloride	3.34	1.20	mg/L	20	BED0147	04/08/21	04/09/21	EPA 300.0	

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  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
05/04/21 15:06

**BH07**  
**2104118-02 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

<b>Sulfate</b>	<b>125</b>	6.00	mg/L	20	BED0147	04/08/21	04/09/21	EPA 300.0
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**Total Dissolved Solids by SM2540C**

Date Sampled: **04/06/21 16:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Total Dissolved Solids</b>	<b>561</b>	10.0	mg/L	1	BED0126	04/08/21	04/08/21	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

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
05/04/21 15:06

**BH08**  
**2104118-03 (Water)**

**Summit Scientific**

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

Date Sampled: **04/06/21 16:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	BED0170	04/09/21	04/10/21	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: **04/06/21 16:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		103 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.1 %	21-167		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Date Sampled: **04/06/21 16:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Fluorene	ND	0.500	ug/l	1	BED0290	04/15/21	04/18/21	EPA 8270D SIM	

Date Sampled: **04/06/21 16:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: Fluoranthene-d10		51.7 %	40-150		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **04/06/21 16:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sulfate	227	6.00	mg/L	20	BED0147	04/08/21	04/09/21	EPA 300.0	

Summit Scientific

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

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

**Reported:**  
05/04/21 15:06

**BH08**  
**2104118-03 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

Chloride	6.88	1.20	mg/L	20	BED0147	04/08/21	04/09/21	EPA 300.0
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**Total Dissolved Solids by SM2540C**

Date Sampled: **04/06/21 16:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	686	10.0	mg/L	1	BED0126	04/08/21	04/08/21	SM2540C	

Summit Scientific

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

Project: Owl Creek 7,7-5

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
05/04/21 15:06

**BH09**  
**2104118-04 (Water)**

**Summit Scientific**

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

Date Sampled: **04/06/21 16:27**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	BED0170	04/09/21	04/10/21	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: **04/06/21 16:27**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		101 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.1 %	21-167		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Date Sampled: **04/06/21 16:27**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Fluorene	ND	0.500	ug/l	1	BED0290	04/15/21	04/18/21	EPA 8270D SIM	

Date Sampled: **04/06/21 16:27**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: Fluoranthene-d10		61.7 %	40-150		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **04/06/21 16:27**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sulfate	176	6.00	mg/L	20	BED0147	04/08/21	04/09/21	EPA 300.0	

Summit Scientific

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

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

**Reported:**  
05/04/21 15:06

**BH09**  
**2104118-04 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

Chloride	6.06	1.20	mg/L	20	BED0147	04/08/21	04/09/21	EPA 300.0
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**Total Dissolved Solids by SM2540C**

Date Sampled: **04/06/21 16:27**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	647	10.0	mg/L	1	BED0126	04/08/21	04/08/21	SM2540C	

Summit Scientific

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

Project: Owl Creek 7,7-5

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
05/04/21 15:06

**BH11**  
**2104118-05 (Water)**

**Summit Scientific**

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

Date Sampled: **04/06/21 16:21**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BED0170	04/09/21	04/10/21	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: **04/06/21 16:21**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		100 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		97.1 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.2 %		21-167		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **04/06/21 16:21**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Sulfate	<b>235</b>	6.00		mg/L	20	BED0147	04/08/21	04/09/21	EPA 300.0	
Chloride	<b>9.80</b>	1.20		"	"	"	"	"	"	

**Total Dissolved Solids by SM2540C**

Date Sampled: **04/06/21 16:21**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	<b>624</b>	10.0		mg/L	1	BED0126	04/08/21	04/08/21	SM2540C	

Summit Scientific

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

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

**Reported:**  
05/04/21 15:06

**BH12**  
**2104118-06 (Water)**

**Summit Scientific**

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

Date Sampled: **04/06/21 16:08**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	BED0170	04/09/21	04/10/21	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: **04/06/21 16:08**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		103 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.4 %	21-167		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Date Sampled: **04/06/21 16:08**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Fluorene	ND	0.500	ug/l	1	BED0290	04/15/21	04/18/21	EPA 8270D SIM	

Date Sampled: **04/06/21 16:08**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: Fluoranthene-d10		63.3 %	40-150		"	"	"	"	

**Anions by EPA Method 300.0**

Date Sampled: **04/06/21 16:08**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sulfate	129	6.00	mg/L	20	BED0147	04/08/21	04/09/21	EPA 300.0	

Summit Scientific

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

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

**Reported:**  
05/04/21 15:06

**BH12**  
**2104118-06 (Water)**

**Summit Scientific**

**Anions by EPA Method 300.0**

Chloride	6.74	1.20	mg/L	20	BED0147	04/08/21	04/09/21	EPA 300.0
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**Total Dissolved Solids by SM2540C**

Date Sampled: **04/06/21 16:08**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	504	10.0	mg/L	1	BED0126	04/08/21	04/08/21	SM2540C	

Summit Scientific

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

Project: Owl Creek 7,7-5

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
05/04/21 15:06

## 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 BED0170 - EPA 5030 Water MS

##### Blank (BED0170-BLK1)

Prepared: 04/09/21 Analyzed: 04/12/21

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	13.1		"	13.3		98.0	23-173			
Surrogate: Toluene-d8	12.2		"	13.3		91.8	20-170			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		99.2	21-167			

##### LCS (BED0170-BS1)

Prepared: 04/09/21 Analyzed: 04/12/21

Benzene	29.2	1.0	ug/l	33.3		87.7	51-132			
Toluene	34.2	1.0	"	33.3		103	51-138			
Ethylbenzene	39.8	1.0	"	33.3		120	58-146			
m,p-Xylene	74.7	2.0	"	66.7		112	57-144			
o-Xylene	39.3	1.0	"	33.3		118	53-146			
Naphthalene	35.9	1.0	"	33.3		108	70-130			
1,2,4-Trimethylbenzene	29.4	1.0	"	33.3		88.4	70-130			
1,3,5-Trimethylbenzene	40.7	1.0	"	33.3		122	70-130			
Surrogate: 1,2-Dichloroethane-d4	11.8		"	13.3		88.4	23-173			
Surrogate: Toluene-d8	12.1		"	13.3		90.6	20-170			
Surrogate: 4-Bromofluorobenzene	12.7		"	13.3		95.0	21-167			

##### Matrix Spike (BED0170-MS1)

Source: 2104118-01

Prepared: 04/09/21 Analyzed: 04/12/21

Benzene	29.8	1.0	ug/l	33.3	ND	89.6	34-141			
Toluene	34.6	1.0	"	33.3	ND	104	27-151			
Ethylbenzene	40.8	1.0	"	33.3	ND	123	29-160			
m,p-Xylene	76.6	2.0	"	66.7	ND	115	20-166			
o-Xylene	39.5	1.0	"	33.3	ND	119	33-159			
Naphthalene	39.0	1.0	"	33.3	ND	117	70-130			
1,2,4-Trimethylbenzene	30.0	1.0	"	33.3	ND	89.9	70-130			
1,3,5-Trimethylbenzene	41.8	1.0	"	33.3	ND	125	70-130			
Surrogate: 1,2-Dichloroethane-d4	12.1		"	13.3		90.5	23-173			
Surrogate: Toluene-d8	12.2		"	13.3		91.7	20-170			
Surrogate: 4-Bromofluorobenzene	12.6		"	13.3		94.8	21-167			

Summit Scientific

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

Project: Owl Creek 7,7-5

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
05/04/21 15:06

**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 BED0170 - EPA 5030 Water MS**

Matrix Spike Dup (BED0170-MSD1)	Source: 2104118-01			Prepared: 04/09/21 Analyzed: 04/12/21						
Benzene	31.9	1.0	ug/l	33.3	ND	95.8	34-141	6.76	30	
Toluene	35.5	1.0	"	33.3	ND	106	27-151	2.40	30	
Ethylbenzene	41.2	1.0	"	33.3	ND	124	29-160	0.853	30	
m,p-Xylene	77.4	2.0	"	66.7	ND	116	20-166	1.10	30	
o-Xylene	40.4	1.0	"	33.3	ND	121	33-159	2.25	30	
Naphthalene	38.8	1.0	"	33.3	ND	116	70-130	0.463	30	
1,2,4-Trimethylbenzene	30.0	1.0	"	33.3	ND	90.1	70-130	0.233	30	
1,3,5-Trimethylbenzene	42.2	1.0	"	33.3	ND	126	70-130	0.977	30	
Surrogate: 1,2-Dichloroethane-d4	12.4		"	13.3		92.7	23-173			
Surrogate: Toluene-d8	12.4		"	13.3		92.9	20-170			
Surrogate: 4-Bromofluorobenzene	12.6		"	13.3		94.4	21-167			

Summit Scientific

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

Project: Owl Creek 7,7-5

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
05/04/21 15:06

**PAH by EPA Method 8270D SIM - Quality Control**

**Summit Scientific**

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

**Batch BED0290 - EPA 5030 Water MS**

**Blank (BED0290-BLK1)**

Prepared: 04/15/21 Analyzed: 04/17/21

Fluorene	ND	0.500	ug/l							
Surrogate: Fluoranthene-d10	1.34		"	1.00		134	40-150			

**LCS (BED0290-BS1)**

Prepared: 04/15/21 Analyzed: 04/18/21

Fluorene	1.66	0.500	ug/l	2.00		83.2	30-120			
Surrogate: Fluoranthene-d10	1.46		"	1.00		146	40-150			

**Matrix Spike (BED0290-MS1)**

Source: 2104118-01

Prepared: 04/15/21 Analyzed: 04/18/21

Fluorene	1.76	0.500	ug/l	2.00	ND	87.9	30-120			
1-Methylphenanthrene	ND	0.500	"		ND		15-130			
Surrogate: 2-Methylnaphthalene-d10	1.33		"	1.00		133	40-150			
Surrogate: Fluoranthene-d10	1.14		"	1.00		114	40-150			

**Matrix Spike Dup (BED0290-MSD1)**

Source: 2104118-01

Prepared: 04/15/21 Analyzed: 04/18/21

Fluorene	1.62	0.500	ug/l	2.00	ND	81.0	30-120	8.16	30	
Surrogate: Fluoranthene-d10	1.14		"	1.00		114	40-150			

Summit Scientific

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

Project: Owl Creek 7,7-5

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
05/04/21 15:06

**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 BED0147 - General Preparation**

**Blank (BED0147-BLK1)**

Prepared & Analyzed: 04/08/21

Chloride	ND	0.0600	mg/L
Sulfate	ND	0.300	"

**LCS (BED0147-BS1)**

Prepared & Analyzed: 04/08/21

Chloride	2.95	0.0600	mg/L	3.00	98.4	90-110
Sulfate	15.2	0.300	"	15.0	101	90-110

**Duplicate (BED0147-DUP1)**

Source: 2104073-01

Prepared & Analyzed: 04/08/21

Chloride	174	12.0	mg/L	173	0.461	20
Sulfate	61.8	60.0	"	68.2	9.85	20

**Matrix Spike (BED0147-MS1)**

Source: 2104073-01

Prepared & Analyzed: 04/08/21

Chloride	879	12.0	mg/L	600	173	118	80-120
Sulfate	3300	60.0	"	3000	68.2	108	80-120

Summit Scientific

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

Project: Owl Creek 7,7-5

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**  
05/04/21 15:06

**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 BED0126 - General Preparation**

**Blank (BED0126-BLK1)**

Prepared & Analyzed: 04/08/21

Total Dissolved Solids ND 10.0 mg/L

**Duplicate (BED0126-DUP1)**

**Source: 2104118-01**

Prepared & Analyzed: 04/08/21

Total Dissolved Solids 596 10.0 mg/L 596 0.00 20

Summit Scientific

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



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

Project: Owl Creek 7,7-5

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**  
05/04/21 15:06

### Notes and Definitions

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