

**TABLE 1**  
**FORMER THORNTON 12, 13-22 WELLHEADS**  
**SOIL ANALYTICAL RESULTS SUMMARY TABLE**

Sample ID	Date Sampled	Depth	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	1, 2, 4-TMB (mg/kg)	1, 3, 5-TMB (mg/kg)	Naphthalene (mg/kg)	TPH <sup>(4)</sup> (mg/kg)
<b>Residential SSL<sup>(1,2)</sup></b>			<b>1.2</b>	<b>490</b>	<b>5.8</b>	<b>58</b>	<b>30</b>	<b>27</b>	<b>2</b>	<b>500</b>
<b>Protection of Groundwater SSL<sup>(1,2,3)</sup></b>			<b>0.0026</b>	<b>0.69</b>	<b>0.78</b>	<b>9.9</b>	<b>0.0081</b>	<b>0.0087</b>	<b>0.0038</b>	<b>500</b>
WH01 @ 6'	7/27/2021	6 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
WH02 @ 6'	7/27/2021	6 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
FLR01 @ 4'	7/27/2021	4 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50
FLR02 @ 4'	7/27/2021	4 ft. bgs	<0.0020	<0.0050	<0.0050	<0.010	<0.0050	<0.0050	<0.0038	<50

**Notes:**

- Compounds referenced from the COGCC 2 CCR 404-1, Table 915-1, effective January 15, 2021.
- Soil Screening Levels (SSL) referenced from EPA Regional Screening Levels (EPA RSLs) for Chemical Contaminants at Superfund Sites, effective November 2020.
- SSLs are applicable if a pathway for communication with groundwater is present.
- Value calculated by adding TVPH-GRO, TEPH-DRO, and TEPH-ORO concentrations.

COGCC = Colorado Oil and Gas Conservation Commission

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

TVPH-GRO = Total volatile petroleum hydrocarbons - gasoline range organics

TEPH-DRO = Total extractable petroleum hydrocarbons - diesel range organics

TEPH-ORO = Total extractable petroleum hydrocarbons - oil range organics

mg/kg = Milligrams per kilogram

TMB = Trimethylbenzene

ft. = Feet

bgs = Below ground surface

**TABLE 2**  
**FORMER THORNTON 12, 13-22 WELLHEADS**  
**SOIL ANALYTICAL RESULTS SUMMARY TABLE**  
**INORGANIC COMPOUNDS**

Sample ID	Date Sampled	Depth	pH (units)	EC (mmhos/cm)	SAR (units)	Boron (mg/L)
<b>Soil Suitability for Reclamation Standard <sup>(1)</sup></b>			<b>6-8.3</b>	<b>&lt;4</b>	<b>&lt;6</b>	<b>2</b>
WH01 @ 6'	7/27/2021	6 ft. bgs	8.11	1.64	1.70	0.269
WH02 @ 6'	7/27/2021	6 ft. bgs	<b>8.55</b>	3.65	2.95	0.536
FLR01 @ 4'	7/27/2021	4 ft. bgs	7.98	3.83	1.68	0.465
FLR02 @ 4'	7/27/2021	4 ft. bgs	8.10	2.12	0.736	0.160
BKG01 @ 6'	7/27/2021	6 ft. bgs	8.19	NA	NA	NA

**Notes:**

1. Compounds referenced from the COGCC 2 CCR 404-1, Table 915-1, effective January 15, 2021.

COGCC = Colorado Oil and Gas Conservation Commission

EC = Electrical conductivity

SAR = Sodium adsorption ratio

mmhos/cm = millimhos per centimeter

mg/L = milligram per liter

ft. = Feet

bgs = Below ground surface

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

NA = Constituent not analyzed

TABLE 3  
FORMER THORNTON 12, 13-22 WELLHEADS  
SOIL ANALYTICAL RESULTS SUMMARY TABLE  
ORGANIC COMPOUNDS - PAHs

Sample ID	Date Sampled	Depth	Acenaphthene (mg/kg)	Anthracene (mg/kg)	Benz(a) (mg/kg)	Benzo(a) (mg/kg)	Benzo(b) (mg/kg)	Benzo(k) (mg/kg)	Chrysene (mg/kg)	A,H (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	1,2,3-CD (mg/kg)	Pyrene (mg/kg)	1-M (mg/kg)	2-M (mg/kg)
Residential SSL <sup>(1,2)</sup>			360	1,800	1.1	0.11	1.1	11	110	0.11	240	240	1.1	180	18	24
Protection of Groundwater SSL <sup>(1,2,3)</sup>			0.55	5.8	0.011	0.24	0.3	2.9	9	0.096	8.9	0.54	0.98	1.3	0.006	0.019
WH01 @ 6'	7/27/2021	6 ft. bgs	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
WH02 @ 6'	7/27/2021	6 ft. bgs	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
FLR01 @ 4'	7/27/2021	4 ft. bgs	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500
FLR02 @ 4'	7/27/2021	4 ft. bgs	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500

**Notes:**  
1. Compounds referenced from the COGCC 2 CCR 404-1, Table 915-1, effective January 15, 2021.  
2. Soil Screening Levels (SSL) referenced from EPA Regional Screening Levels (EPA RSLs) for Chemical Contaminants at Superfund Sites, effective November 2020.  
3. SSLs are applicable if a pathway for communication with  
COGCC = Colorado Oil and Gas Conservation Commission  
(<) = Analytical result is less than the indicated laboratory reporting limit.  
PAHs = Polycyclic aromatic hydrocarbons  
Benz(a) = Benzanthrane  
Benzo(a) = Benzopyrene  
Benzo(b) = Benzofluoranthene  
Benzo(k) = Benzofluoranthene  
A,H = Dibenzoanthracene  
1,2,3-CD = Indenopyrene  
M = Methylnaphthalene  
mg/kg = Milligrams per kilogram  
ft. = Feet  
bgs = Below ground surface

**TABLE 4**  
**FORMER THORNTON 12, 13-22 WELLHEADS**  
**GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE**  
**ORGANIC COMPOUNDS**

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Naphthalene (µg/L)	1,2,4-TMB (µg/L)	1,3,5-TMB (µg/L)	Depth to Water <sup>(2)</sup> (ft.)	Groundwater Elevation (ft. AMSL)
COGCC Table 915-1 Groundwater Standard (µg/L) <sup>(1)</sup>		5	560	700	1,400	140	67	67	-	-
GW01	7/27/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	6	NA
GW02	7/27/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	6	NA

**Notes:**

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

**TABLE 5**  
**FORMER THORNTON 12, 13-22 WELLHEADS**  
**FIELD DATA SUMMARY TABLE**

Sample ID	Date Sampled	Depth	GPS Data <sup>(1)</sup> Latitude / Longitude		PDOP Value	VOC Concentration <sup>(2)</sup> (ppm)
WH01 @ 6'	7/27/2021	6 ft. bgs	40.553909	-104.772029	1.2	0.0
FLR01 @ 4'	7/27/2021	4 ft. bgs	40.553893	-104.772002	1.1	0.3
WHS01-N @ 0-6"	7/27/2021	0-6 in. bgs	40.553926	-104.771998	1.1	0.0
WHS01-W @ 0-6"	7/27/2021	0-6 in. bgs	40.553922	-104.772065	1.1	0.0
WHS01-S @ 0-6"	7/27/2021	0-6 in. bgs	40.553871	-104.772038	1.2	0.2
WHS01-E @ 0-6"	7/27/2021	0-6 in. bgs	40.553888	-104.771992	1.2	0.0
WH02 @ 6'	7/27/2021	6 ft. bgs	40.553867	-104.771934	1.1	0.0
FLR02 @ 4'	7/27/2021	4 ft. bgs	40.553854	-104.771925	1.0	0.2
WHS02-N @ 0-6"	7/27/2021	0-6 in. bgs	40.553889	-104.771925	1.1	0.0
WHS02-W @ 0-6"	7/27/2021	0-6 in. bgs	40.553878	-104.771973	1.1	0.0
WHS02-S @ 0-6"	7/27/2021	0-6 in. bgs	40.553799	-104.771980	1.1	0.2
WHS02-E @ 0-6"	7/27/2021	0-6 in. bgs	40.553841	-104.771892	1.1	0.0
FL01-01 @ 4'	7/27/2021	4 ft. bgs	40.553670	-104.771748	0.9	0.0
FL01-02 @ 4'	7/27/2021	4 ft. bgs	40.553451	-104.771522	0.9	0.1
BKG01 @ 6'	7/27/2021	6 ft. bgs	40.553600	-104.771639	1.1	0.0
GW01 @ 6'	7/27/2021	6 ft. bgs	NC	NC	NC	NA
GW02 @ 6'	7/27/2021	6 ft. bgs	NC	NC	NC	NA

**Notes:**

1. Global Positioning System (GPS) data is provided in decimal degrees using World Geodetic System (WGS) 84 UTM Zone 13 North.

2. Volatile organic compound (VOC) concentrations are measured in the field using a photoionization detector (PID).

PDOP = Position Dilution of Precision

ppm = Parts per million

ft. = Feet

in. = Inches

bgs = Below ground surface

NC = Data not collected

NA = Not applicable

# Summit Scientific

---

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

August 17, 2021

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

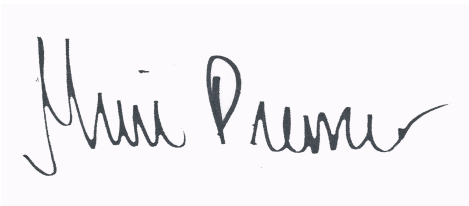
Denver, CO 80203

RE: Thornton 12-22 Wellhead

Work Order #2107368

Enclosed are the results of analyses for samples received by Summit Scientific on 07/27/21 15:45. 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: Thornton 12-22 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/17/21 16:11

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GW01@6'	2107368-01	Water	07/27/21 11:00	07/27/21 15:45

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.*

Summit Scientific  
S<sub>2</sub>

**303-277-9310**

Page 1 of 1

**Project Manager: Mark Longhurst**

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

one: 303-487-1228

Project Name: THORNTON 12-22 Well head

Sampler Name: AJ DALE

**Project Number:**[illegible]

linquished by: AD DALE Date/Time: 7/27/01 1430

Received by: John Br Date/Time: 7/27/21 1545

Turn Around Time		(Check)
Same Day	<del>X</del>	72 hours
24 hours	—	Standard
48 hours		

**Notes:**

linguished by: Date/Time:

Received by:	Date/Time:
--------------	------------

**Sample Integrity:** “

linguished by: Date/Time:

Received by: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Temperature Upon Receipt: 11

Samples Intact: ☒ Yes ☐ No



# Sample Receipt Checklist

S2 Work Order 2102368

Client: PDL / Tasman Client Project ID: Thornton 12-22 wellhead

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

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

Temp (°C)	//
-----------	----

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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Same day.
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

Josh Ben  
Signature of Custodian

7/27/21  
Date/Time



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

Project: Thornton 12-22 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/17/21 16:11

**GW01@6'**  
**2107368-01 (Water)**

**Summit Scientific**

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

Date Sampled: **07/27/21 11:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	BEG0483	07/27/21	07/27/21	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: **07/27/21 11:00**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		81.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		93.3 %	21-167		"	"	"	"	

Summit Scientific

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



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

Project: Thornton 12-22 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/17/21 16:11

## 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 BEG0483 - EPA 5030 Water MS

##### Blank (BEG0483-BLK1)

Prepared & Analyzed: 07/27/21

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	10.5		"	13.3		78.8	23-173			
Surrogate: Toluene-d8	12.9		"	13.3		96.5	20-170			
Surrogate: 4-Bromofluorobenzene	12.8		"	13.3		96.4	21-167			

##### LCS (BEG0483-BS1)

Prepared & Analyzed: 07/27/21

Benzene	36.9	1.0	ug/l	33.3		111	51-132			
Toluene	39.0	1.0	"	33.3		117	51-138			
Ethylbenzene	37.4	1.0	"	33.3		112	58-146			
m,p-Xylene	75.3	2.0	"	66.7		113	57-144			
o-Xylene	36.9	1.0	"	33.3		111	53-146			
Naphthalene	35.8	1.0	"	33.3		107	70-130			
1,2,4-Trimethylbenzene	31.6	1.0	"	33.3		94.7	70-130			
1,3,5-Trimethylbenzene	38.7	1.0	"	33.3		116	70-130			
Surrogate: 1,2-Dichloroethane-d4	10.8		"	13.3		80.6	23-173			
Surrogate: Toluene-d8	13.2		"	13.3		98.6	20-170			
Surrogate: 4-Bromofluorobenzene	12.2		"	13.3		91.7	21-167			

##### Matrix Spike (BEG0483-MS1)

Source: 2107370-01

Prepared & Analyzed: 07/27/21

Benzene	31.2	1.0	ug/l	33.3	ND	93.6	34-141			
Toluene	37.7	1.0	"	33.3	ND	113	27-151			
Ethylbenzene	34.2	1.0	"	33.3	ND	103	29-160			
m,p-Xylene	64.1	2.0	"	66.7	ND	96.1	20-166			
o-Xylene	36.9	1.0	"	33.3	ND	111	33-159			
Naphthalene	28.6	1.0	"	33.3	ND	85.8	70-130			
1,2,4-Trimethylbenzene	33.2	1.0	"	33.3	ND	99.7	70-130			
1,3,5-Trimethylbenzene	39.4	1.0	"	33.3	ND	118	70-130			
Surrogate: 1,2-Dichloroethane-d4	10.7		"	13.3		80.5	23-173			
Surrogate: Toluene-d8	13.2		"	13.3		99.1	20-170			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.1	21-167			

Summit Scientific

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

Project: Thornton 12-22 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/17/21 16:11

**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 BEG0483 - EPA 5030 Water MS**

Matrix Spike Dup (BEG0483-MSD1)	Source: 2107370-01			Prepared & Analyzed: 07/27/21						
Benzene	35.8	1.0	ug/l	33.3	ND	107	34-141	13.6	30	
Toluene	30.3	1.0	"	33.3	ND	91.0	27-151	21.6	30	
Ethylbenzene	29.1	1.0	"	33.3	ND	87.2	29-160	16.1	30	
m,p-Xylene	60.9	2.0	"	66.7	ND	91.4	20-166	4.99	30	
o-Xylene	29.7	1.0	"	33.3	ND	89.1	33-159	21.5	30	
Naphthalene	29.2	1.0	"	33.3	ND	87.6	70-130	2.08	30	
1,2,4-Trimethylbenzene	27.3	1.0	"	33.3	ND	81.9	70-130	19.6	30	
1,3,5-Trimethylbenzene	32.2	1.0	"	33.3	ND	96.6	70-130	20.2	30	
Surrogate: 1,2-Dichloroethane-d4	10.8		"	13.3		81.4	23-173			
Surrogate: Toluene-d8	12.8		"	13.3		96.0	20-170			
Surrogate: 4-Bromofluorobenzene	12.7		"	13.3		95.1	21-167			

Summit Scientific

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

Project: Thornton 12-22 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/17/21 16:11

### 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

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

August 05, 2021

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

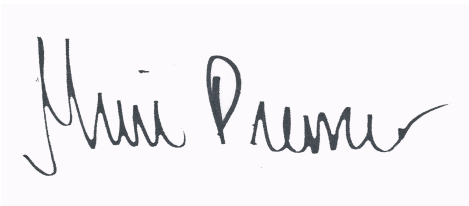
Denver, CO 80203

RE: Thornton 13-22 Wellhead

Work Order #2107369

Enclosed are the results of analyses for samples received by Summit Scientific on 07/27/21 15:45. 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: Thornton 13-22 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/05/21 11:40

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GW02@6'	2107369-01	Water	07/27/21 12:30	07/27/21 15:45

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.*

# Summit Scientific

S<sub>2</sub>

2107369

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

Page / of /

ent: PDC/Tasman Project Manager: Mark Longhurst  
dress: 6855 W 119th Ave. E-Mail: mark.longhurst@PDCE.com  
y/State/Zip: Broomfield, CO 80020  
one: 303-487-1228 Project Name: THORNTON 13-22 Well Leaks  
ampler Name: AJ DALE Project Number:

Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested							Special Instructions
				HCl	HNO <sub>3</sub>	None	Other	Water	Soil	Air-Canister #	Other	VOC - 915	TPH - 915	PAH - 915	SAR, EC, pH	Boron - HWS	Metals - 915		
G102 @ 6'	7/27/21	1230	3			X		X					X						SAR, EC, pH by saturated paste
linquished by: AJ DALE	Date/Time: 7/27/21 1430	Received by: John Brun	Date/Time: 7/27/21 1745	Turn Around Time (Check)										Notes:					
linquished by:	Date/Time:	Received by:	Date/Time:	Same Day <input checked="" type="checkbox"/> 72 hours															
linquished by:	Date/Time:	Received by:	Date/Time:	24 hours <input type="checkbox"/> Standard															
linquished by:	Date/Time:	Received by:	Date/Time:	48 hours <input type="checkbox"/>															
				Sample Integrity:															
				Temperature Upon Receipt: 11															
				Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No															



# Sample Receipt Checklist

S2 Work Order 2107369

Client: PDL / Tasman Client Project ID: Thornton 13-22 wellhead

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

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

Temp (°C) 11

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"/>	<u>On ice.</u>
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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>Same day.</u>
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 Ben  
Signature of Custodian

7/27/21  
Date/Time



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

Project: Thornton 13-22 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/05/21 11:40

**GW02@6'**  
**2107369-01 (Water)**

**Summit Scientific**

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

Date Sampled: **07/27/21 12:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	BEG0483	07/27/21	07/27/21	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: **07/27/21 12:30**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		83.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		93.7 %	21-167		"	"	"	"	

Summit Scientific

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



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

Project: Thornton 13-22 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/05/21 11:40

## 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 BEG0483 - EPA 5030 Water MS

##### Blank (BEG0483-BLK1)

Prepared & Analyzed: 07/27/21

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	10.5		"	13.3		78.8	23-173			
Surrogate: Toluene-d8	12.9		"	13.3		96.5	20-170			
Surrogate: 4-Bromofluorobenzene	12.8		"	13.3		96.4	21-167			

##### LCS (BEG0483-BS1)

Prepared & Analyzed: 07/27/21

Benzene	36.9	1.0	ug/l	33.3		111	51-132			
Toluene	39.0	1.0	"	33.3		117	51-138			
Ethylbenzene	37.4	1.0	"	33.3		112	58-146			
m,p-Xylene	75.3	2.0	"	66.7		113	57-144			
o-Xylene	36.9	1.0	"	33.3		111	53-146			
Naphthalene	35.8	1.0	"	33.3		107	70-130			
1,2,4-Trimethylbenzene	31.6	1.0	"	33.3		94.7	70-130			
1,3,5-Trimethylbenzene	38.7	1.0	"	33.3		116	70-130			
Surrogate: 1,2-Dichloroethane-d4	10.8		"	13.3		80.6	23-173			
Surrogate: Toluene-d8	13.2		"	13.3		98.6	20-170			
Surrogate: 4-Bromofluorobenzene	12.2		"	13.3		91.7	21-167			

##### Matrix Spike (BEG0483-MS1)

Source: 2107370-01

Prepared & Analyzed: 07/27/21

Benzene	31.2	1.0	ug/l	33.3	ND	93.6	34-141			
Toluene	37.7	1.0	"	33.3	ND	113	27-151			
Ethylbenzene	34.2	1.0	"	33.3	ND	103	29-160			
m,p-Xylene	64.1	2.0	"	66.7	ND	96.1	20-166			
o-Xylene	36.9	1.0	"	33.3	ND	111	33-159			
Naphthalene	28.6	1.0	"	33.3	ND	85.8	70-130			
1,2,4-Trimethylbenzene	33.2	1.0	"	33.3	ND	99.7	70-130			
1,3,5-Trimethylbenzene	39.4	1.0	"	33.3	ND	118	70-130			
Surrogate: 1,2-Dichloroethane-d4	10.7		"	13.3		80.5	23-173			
Surrogate: Toluene-d8	13.2		"	13.3		99.1	20-170			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.1	21-167			

Summit Scientific

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

Project: Thornton 13-22 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/05/21 11:40

**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 BEG0483 - EPA 5030 Water MS**

Matrix Spike Dup (BEG0483-MSD1)	Source: 2107370-01			Prepared & Analyzed: 07/27/21						
Benzene	35.8	1.0	ug/l	33.3	ND	107	34-141	13.6	30	
Toluene	30.3	1.0	"	33.3	ND	91.0	27-151	21.6	30	
Ethylbenzene	29.1	1.0	"	33.3	ND	87.2	29-160	16.1	30	
m,p-Xylene	60.9	2.0	"	66.7	ND	91.4	20-166	4.99	30	
o-Xylene	29.7	1.0	"	33.3	ND	89.1	33-159	21.5	30	
Naphthalene	29.2	1.0	"	33.3	ND	87.6	70-130	2.08	30	
1,2,4-Trimethylbenzene	27.3	1.0	"	33.3	ND	81.9	70-130	19.6	30	
1,3,5-Trimethylbenzene	32.2	1.0	"	33.3	ND	96.6	70-130	20.2	30	
Surrogate: 1,2-Dichloroethane-d4	10.8		"	13.3		81.4	23-173			
Surrogate: Toluene-d8	12.8		"	13.3		96.0	20-170			
Surrogate: 4-Bromofluorobenzene	12.7		"	13.3		95.1	21-167			

Summit Scientific

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



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

Project: Thornton 13-22 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/05/21 11:40

### 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

August 04, 2021

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Thornton 12-22 Wellhead

Work Order #2107390

Enclosed are the results of analyses for samples received by Summit Scientific on 07/27/21 15:45. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Paul Shrewsbury

President



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

Project: Thornton 12-22 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:23

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WH01@6'	2107390-01	Soil	07/27/21 11:20	07/27/21 15:45
FLR01@4'	2107390-02	Soil	07/27/21 11:22	07/27/21 15:45

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.*

Summit Scientific  
S<sub>2</sub>

Page / of /

Project Manager: *Mark Longhurst*

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

Project Name: THORNTON 12-22 WH/Lead

**Project Number:**

					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 _____	VOC-915	TPH-915	PAH-915	SAR, EC <sub>n</sub> PH	Boron-HWS										
1	WH01 @ 6'	7/27/21	1120	3			X			X			X	X	X	X	X										
2	FLR01 @ 4'	7/27/21	1122	3			X			X			X	X	X	X	X										
3																											
4																											
5																											
6																											
7																											
8																											
9																											
10																											

Relinquished by: AJ DAVE Date/Time: 7/27/21 1430 Received by: [Signature] Date/Time: 7/27/21 1545 Turn Around Time (Check) Same Day \_\_\_ 72 hours \_\_\_ 24 hours \_\_\_ Standard X 48 hours \_\_\_ Sample Integrity: Temperature Upon Receipt: 8 Samples Intact: Yes No

Notes:



# Sample Receipt Checklist

S2 Work Order 2107390

Client: PDC / Thornton Client Project ID: Thornton 12-22 Wellhead

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

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

Temp (°C)	8
-----------	---

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"/>	
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 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, 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

Josh Bui  
Signature of Custodian

7/27/21  
Date/Time



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

Project: Thornton 12-22 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:23

**WH01@6'**  
**2107390-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/27/21 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEG0506	07/28/21	07/29/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **07/27/21 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		110 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		90.9 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/27/21 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEG0583	07/30/21	07/31/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **07/27/21 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		103 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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

Project: Thornton 12-22 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:23

**WH01@6'**  
**2107390-01 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **07/27/21 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BEG0490	07/28/21	07/29/21	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Naphthalene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **07/27/21 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		62.3 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		68.7 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **07/27/21 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.269</b>	0.0100	mg/L	1	BEG0493	07/28/21	07/29/21	EPA 6020B	

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

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: Thornton 12-22 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:23

**WH01@6'**  
**2107390-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/27/21 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	195	0.0629	mg/L dry	1	BEG0494	07/28/21	07/30/21	EPA 6020B	
Magnesium	76.8	0.0629	"	"	"	"	"	"	
Sodium	111	0.0629	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **07/27/21 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.70	0.00100	units	1	BEH0023	08/02/21	08/02/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **07/27/21 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	79.5		%	1	BEG0485	07/28/21	07/28/21	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **07/27/21 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.64	0.0100	mmhos/cm	1	BEG0523	07/29/21	07/29/21	EPA 120.1	

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

Date Sampled: **07/27/21 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.11		pH Units	1	BEG0522	07/29/21	07/29/21	EPA 9045D	

Summit Scientific

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

Project: Thornton 12-22 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:23

**FLR01@4'**  
**2107390-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/27/21 11:22**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BEG0506	07/28/21	07/29/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **07/27/21 11:22**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		104 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		91.6 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/27/21 11:22**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BEG0583	07/30/21	07/31/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **07/27/21 11:22**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		102 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

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

Project: Thornton 12-22 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:23

**FLR01@4'**  
**2107390-02 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **07/27/21 11:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BEG0490	07/28/21	07/29/21	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Naphthalene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **07/27/21 11:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		59.1 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		69.3 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **07/27/21 11:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.465</b>	0.0100	mg/L	1	BEG0493	07/28/21	07/29/21	EPA 6020B	

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

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

Project: Thornton 12-22 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:23

**FLR01@4'**  
**2107390-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/27/21 11:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	458	0.0624	mg/L dry	1	BEG0494	07/28/21	07/30/21	EPA 6020B	
Magnesium	366	0.0624	"	"	"	"	"	"	
Sodium	199	0.0624	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **07/27/21 11:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.68	0.00100	units	1	BEH0023	08/02/21	08/02/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **07/27/21 11:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	80.1		%	1	BEG0485	07/28/21	07/28/21	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **07/27/21 11:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	3.83	0.0100	mmhos/cm	1	BEG0523	07/29/21	07/29/21	EPA 120.1	

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

Date Sampled: **07/27/21 11:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	7.98		pH Units	1	BEG0522	07/29/21	07/29/21	EPA 9045D	

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

Project: Thornton 12-22 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:23

## 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 BEG0506 - EPA 5030 Soil MS

##### Blank (BEG0506-BLK1)

Prepared & Analyzed: 07/28/21

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0412		"	0.0400		103	23-173			
Surrogate: Toluene-d8	0.0384		"	0.0400		95.9	20-170			
Surrogate: 4-Bromofluorobenzene	0.0369		"	0.0400		92.2	21-167			

##### LCS (BEG0506-BS1)

Prepared & Analyzed: 07/28/21

Benzene	0.0707	0.0020	mg/kg	0.0750		94.3	70-130			
Toluene	0.0722	0.0050	"	0.0750		96.3	70-130			
Ethylbenzene	0.0973	0.0050	"	0.0750		130	70-130			
m,p-Xylene	0.187	0.010	"	0.150		125	70-130			
o-Xylene	0.0969	0.0050	"	0.0750		129	70-130			
1,2,4-Trimethylbenzene	0.0961	0.0050	"	0.0750		128	70-130			
1,3,5-Trimethylbenzene	0.0957	0.0050	"	0.0750		128	70-130			
Naphthalene	0.0910	0.0038	"	0.0750		121	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0411		"	0.0400		103	23-173			
Surrogate: Toluene-d8	0.0389		"	0.0400		97.3	20-170			
Surrogate: 4-Bromofluorobenzene	0.0353		"	0.0400		88.2	21-167			

##### Matrix Spike (BEG0506-MS1)

Source: 2107389-01

Prepared: 07/28/21 Analyzed: 07/29/21

Benzene	0.0523	0.0020	mg/kg	0.0750	ND	69.8	70-130			
Toluene	0.0443	0.0050	"	0.0750	ND	59.0	70-130			
Ethylbenzene	0.0449	0.0050	"	0.0750	ND	59.9	70-130			
m,p-Xylene	0.0854	0.010	"	0.150	ND	56.9	70-130			
o-Xylene	0.0455	0.0050	"	0.0750	ND	60.7	70-130			
1,2,4-Trimethylbenzene	0.0211	0.0050	"	0.0750	ND	28.2	70-130			
1,3,5-Trimethylbenzene	0.0254	0.0050	"	0.0750	ND	33.9	70-130			
Naphthalene	0.0296	0.0038	"	0.0750	ND	39.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0428		"	0.0400		107	23-173			
Surrogate: Toluene-d8	0.0376		"	0.0400		94.0	20-170			
Surrogate: 4-Bromofluorobenzene	0.0345		"	0.0400		86.2	21-167			

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

Project: Thornton 12-22 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:23

**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 BEG0506 - EPA 5030 Soil MS**

Matrix Spike Dup (BEG0506-MSD1)	Source: 2107389-01			Prepared: 07/28/21 Analyzed: 07/29/21						
Benzene	0.0510	0.0020	mg/kg	0.0750	ND	68.0	70-130	2.50	30	
Toluene	0.0423	0.0050	"	0.0750	ND	56.4	70-130	4.64	30	
Ethylbenzene	0.0414	0.0050	"	0.0750	ND	55.2	70-130	8.21	30	
m,p-Xylene	0.0747	0.010	"	0.150	ND	49.8	70-130	13.3	30	
o-Xylene	0.0401	0.0050	"	0.0750	ND	53.4	70-130	12.8	30	
1,2,4-Trimethylbenzene	0.0167	0.0050	"	0.0750	ND	22.2	70-130	23.5	30	
1,3,5-Trimethylbenzene	0.0202	0.0050	"	0.0750	ND	27.0	70-130	22.6	30	
Naphthalene	0.0202	0.0038	"	0.0750	ND	27.0	70-130	37.4	30	
Surrogate: 1,2-Dichloroethane-d4	0.0442		"	0.0400		110	23-173			
Surrogate: Toluene-d8	0.0383		"	0.0400		95.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0354		"	0.0400		88.4	21-167			

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

Project: Thornton 12-22 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:23

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

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

**Batch BEG0583 - EPA 3550A**

**Blank (BEG0583-BLK1)**

Prepared: 07/30/21 Analyzed: 07/31/21

C10-C28 (DRO)	ND	50	mg/kg
C28-C36 (ORO)	ND	50	"

**LCS (BEG0583-BS1)**

Prepared: 07/30/21 Analyzed: 07/31/21

C10-C28 (DRO)	547	50	mg/kg	500	109	70-130
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**Matrix Spike (BEG0583-MS1)**

Source: 2107340-10

Prepared: 07/30/21 Analyzed: 07/31/21

C10-C28 (DRO)	556	50	mg/kg	500	22.6	107	70-130
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**Matrix Spike Dup (BEG0583-MSD1)**

Source: 2107340-10

Prepared: 07/30/21 Analyzed: 07/31/21

C10-C28 (DRO)	545	50	mg/kg	500	22.6	105	70-130	1.95	20
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PDC Energy  
1775 Sherman St. STE. 3000  
Denver CO, 80203

Project: Thornton 12-22 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:23

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

### Summit Scientific

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

#### Batch BEG0490 - EPA 5030 Soil MS

##### Blank (BEG0490-BLK1)

Prepared: 07/28/21 Analyzed: 07/29/21

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Naphthalene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
Surrogate: 2-Methylnaphthalene-d10	0.0205		"	0.0333		61.5	40-150			
Surrogate: Fluoranthene-d10	0.0232		"	0.0333		69.7	40-150			

##### LCS (BEG0490-BS1)

Prepared: 07/28/21 Analyzed: 07/29/21

Acenaphthene	0.0280	0.00500	mg/kg	0.0333		83.9	31-137			
Anthracene	0.0291	0.00500	"	0.0333		87.3	30-120			
Benzo (a) anthracene	0.0301	0.00500	"	0.0333		90.3	30-120			
Benzo (a) pyrene	0.0306	0.00500	"	0.0333		91.8	30-120			
Benzo (b) fluoranthene	0.0261	0.00500	"	0.0333		78.4	30-120			
Benzo (k) fluoranthene	0.0277	0.00500	"	0.0333		83.0	30-120			
Chrysene	0.0299	0.00500	"	0.0333		89.8	30-120			
Dibenz (a,h) anthracene	0.0353	0.00500	"	0.0333		106	30-120			
Fluoranthene	0.0275	0.00500	"	0.0333		82.5	30-120			
Fluorene	0.0295	0.00500	"	0.0333		88.4	30-120			
Indeno (1,2,3-cd) pyrene	0.0291	0.00500	"	0.0333		87.4	30-120			
Naphthalene	0.0267	0.00500	"	0.0333		80.2	30-120			
Pyrene	0.0264	0.00500	"	0.0333		79.3	35-142			
1-Methylnaphthalene	0.0281	0.00500	"	0.0333		84.2	35-142			
2-Methylnaphthalene	0.0289	0.00500	"	0.0333		86.6	35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0288		"	0.0333		86.5	40-150			
Surrogate: Fluoranthene-d10	0.0303		"	0.0333		90.8	40-150			

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

Project: Thornton 12-22 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:23

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

### Summit Scientific

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

#### Batch BEG0490 - EPA 5030 Soil MS

##### Matrix Spike (BEG0490-MS1)

Source: 2107362-01

Prepared: 07/28/21 Analyzed: 07/29/21

Acenaphthene	0.0244	0.00500	mg/kg	0.0333	ND	73.2	31-137		
Anthracene	0.0257	0.00500	"	0.0333	ND	77.2	30-120		
Benzo (a) anthracene	0.0257	0.00500	"	0.0333	ND	77.1	30-120		
Benzo (a) pyrene	0.0262	0.00500	"	0.0333	0.00209	72.2	30-120		
Benzo (b) fluoranthene	0.0216	0.00500	"	0.0333	ND	64.9	30-120		
Benzo (k) fluoranthene	0.0237	0.00500	"	0.0333	ND	71.1	30-120		
Chrysene	0.0255	0.00500	"	0.0333	ND	76.6	30-120		
Dibenz (a,h) anthracene	0.0250	0.00500	"	0.0333	ND	74.9	30-120		
Fluoranthene	0.0248	0.00500	"	0.0333	0.00259	66.6	30-120		
Fluorene	0.0247	0.00500	"	0.0333	ND	74.1	30-120		
Indeno (1,2,3-cd) pyrene	0.0225	0.00500	"	0.0333	0.00273	59.3	30-120		
Naphthalene	0.0231	0.00500	"	0.0333	ND	69.4	30-120		
Pyrene	0.0253	0.00500	"	0.0333	0.00303	66.9	35-142		
1-Methylnaphthalene	0.0254	0.00500	"	0.0333	ND	76.2	15-130		
2-Methylnaphthalene	0.0260	0.00500	"	0.0333	ND	78.0	15-130		
Surrogate: 2-Methylnaphthalene-d10	0.0244		"	0.0333		73.3	40-150		
Surrogate: Fluoranthene-d10	0.0242		"	0.0333		72.5	40-150		

##### Matrix Spike Dup (BEG0490-MSD1)

Source: 2107362-01

Prepared: 07/28/21 Analyzed: 07/29/21

Acenaphthene	0.0235	0.00500	mg/kg	0.0333	ND	70.6	31-137	3.72	30
Anthracene	0.0253	0.00500	"	0.0333	ND	76.0	30-120	1.51	30
Benzo (a) anthracene	0.0250	0.00500	"	0.0333	ND	75.0	30-120	2.78	30
Benzo (a) pyrene	0.0258	0.00500	"	0.0333	0.00209	71.1	30-120	1.43	30
Benzo (b) fluoranthene	0.0272	0.00500	"	0.0333	ND	81.5	30-120	22.6	30
Benzo (k) fluoranthene	0.0237	0.00500	"	0.0333	ND	71.2	30-120	0.211	30
Chrysene	0.0248	0.00500	"	0.0333	ND	74.5	30-120	2.80	30
Dibenz (a,h) anthracene	0.0247	0.00500	"	0.0333	ND	74.1	30-120	1.15	30
Fluoranthene	0.0245	0.00500	"	0.0333	0.00259	65.8	30-120	1.15	30
Fluorene	0.0240	0.00500	"	0.0333	ND	71.9	30-120	3.01	30
Indeno (1,2,3-cd) pyrene	0.0214	0.00500	"	0.0333	0.00273	56.1	30-120	4.79	30
Naphthalene	0.0229	0.00500	"	0.0333	ND	68.8	30-120	0.903	30
Pyrene	0.0272	0.00500	"	0.0333	0.00303	72.6	35-142	7.17	30
1-Methylnaphthalene	0.0253	0.00500	"	0.0333	ND	75.9	15-130	0.497	50
2-Methylnaphthalene	0.0236	0.00500	"	0.0333	ND	70.7	15-130	9.83	50
Surrogate: 2-Methylnaphthalene-d10	0.0226		"	0.0333		67.8	40-150		
Surrogate: Fluoranthene-d10	0.0236		"	0.0333		70.8	40-150		

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

Project: Thornton 12-22 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:23

**Total Metals by EPA 6020B Hot Water Soluble Extraction - Quality Control**  
**Summit Scientific**

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

**Batch BEG0493 - EPA 3050B**

**Blank (BEG0493-BLK1)**

Prepared: 07/28/21 Analyzed: 07/29/21

Boron ND 0.0100 mg/L

**LCS (BEG0493-BS1)**

Prepared: 07/28/21 Analyzed: 07/29/21

Boron 4.72 0.0100 mg/L 5.00 94.5 80-120

**Duplicate (BEG0493-DUP1)**

**Source: 2107386-01**

Prepared: 07/28/21 Analyzed: 07/29/21

Boron 0.0679 0.0100 mg/L 0.0649 4.51 20

**Matrix Spike (BEG0493-MS1)**

**Source: 2107386-01**

Prepared: 07/28/21 Analyzed: 07/29/21

Boron 4.54 0.0100 mg/L 5.00 0.0649 89.5 75-125

**Matrix Spike Dup (BEG0493-MSD1)**

**Source: 2107386-01**

Prepared: 07/28/21 Analyzed: 07/29/21

Boron 4.60 0.0100 mg/L 5.00 0.0649 90.7 75-125 1.34 25

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

Project: Thornton 12-22 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:23

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

**Summit Scientific**

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

**Batch BEG0494 - General Preparation**

**Blank (BEG0494-BLK1)**

Prepared: 07/28/21 Analyzed: 07/30/21

Calcium	ND	0.0500	mg/L wet
Magnesium	ND	0.0500	"
Sodium	ND	0.0500	"

**LCS (BEG0494-BS1)**

Prepared: 07/28/21 Analyzed: 07/30/21

Calcium	5.21	0.0500	mg/L wet	5.00	104	70-130
Magnesium	4.73	0.0500	"	5.00	94.6	70-130
Sodium	4.80	0.0500	"	5.00	96.0	70-130

Summit Scientific

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

Project: Thornton 12-22 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:23

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

**Summit Scientific**

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

**Batch BEG0485 - General Preparation**

Duplicate (BEG0485-DUP1)		Source: 2107372-01		Prepared & Analyzed: 07/28/21	
% Solids	80.0		%	80.3	0.359 20

Summit Scientific

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

Project: Thornton 12-22 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:23

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction - Quality Control**

**Summit Scientific**

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

**Batch BEG0523 - General Preparation**

**Blank (BEG0523-BLK1)**

Prepared & Analyzed: 07/29/21

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BEG0523-BS1)**

Prepared & Analyzed: 07/29/21

Specific Conductance (EC) 0.146 0.0100 mmhos/cm 0.150 97.5 90-110

**Duplicate (BEG0523-DUP1)**

**Source: 2107386-01**

Prepared & Analyzed: 07/29/21

Specific Conductance (EC) 0.378 0.0100 mmhos/cm 0.378 0.106 20

Summit Scientific

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

Project: Thornton 12-22 Wellhead

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**

08/04/21 09:23

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

**Summit Scientific**

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

**Batch BEG0522 - General Preparation**

**LCS (BEG0522-BS1)**

Prepared & Analyzed: 07/29/21

pH	9.33	pH Units	9.21	101	95-105
----	------	----------	------	-----	--------

**Duplicate (BEG0522-DUP1)**

**Source: 2107386-01**

Prepared & Analyzed: 07/29/21

pH	8.50	pH Units	8.50	0.00	20
----	------	----------	------	------	----

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

Project: Thornton 12-22 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:23

### 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

August 04, 2021

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Thornton 13-22 Wellhead

Work Order #2107391

Enclosed are the results of analyses for samples received by Summit Scientific on 07/27/21 15:45. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Paul Shrewsbury

President



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

Project: Thornton 13-22 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:26

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WH02@6'	2107391-01	Soil	07/27/21 12:05	07/27/21 15:45
FLR02@4'	2107391-02	Soil	07/27/21 12:07	07/27/21 15:45

Summit Scientific

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# Summit Scientific

S<sub>2</sub>

2107391

4653 Table Mountain Drive ♦ Golden, Colorado 80403

303-277-9310

Page 1 of 1

Client: PDC/TASMAN

Project Manager: Mark Longhurst

Address: 6655 W 119th Ave

E-Mail: mark.longhurst@PDC.com

City/State/Zip: Broomfield / CO / 80020

Phone: 303-467-1228

Project Name: THORNTON 13-22 Wellhead

Sampler Name: AJ DALE

Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested								Special Instructions			
					HCl	HNO <sub>3</sub>	None	Other	Water	Soil	Air-Canister #	Other	VOC-915	TPH-915	PAH-915	SAR, EC, pH	Boron-HWS							
1	WHO <sub>2</sub> @ 6'	7/27/21	1205	3			X			X				X	X	X	X	X						SAR, EC, pH by saturated paste
2	FLUO <sub>2</sub> @ 4'	7/27/21	1207	3			X			X				X	X	X	X	X						
3																								
4																								
5																								
6																								
7																								
8																								
9																								
10																								

Relinquished by: AJ DALE	Date/Time: 7/27/21 1430	Received by: <i>John Br</i>	Date/Time: 7/27/21 1545	Turn Around Time (Check) Same Day _____ 72 hours _____ 24 hours _____ Standard <input checked="" type="checkbox"/> 48 hours _____	Notes:
Relinquished by:	Date/Time:	Received by:	Date/Time:	Sample Integrity: Temperature Upon Receipt: <u>8</u> Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	
Relinquished by:	Date/Time:	Received by:	Date/Time:		

# Sample Receipt Checklist

S2 Work Order 210739

Client: PDC / Tasman Client Project ID: Thornton 13-22 Wellhead

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

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

Temp (°C) 8

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> ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>On ice.</u>
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.				
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 type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Record the pH in Comments.				
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

Josh Ben  
Signature of Custodian

7/27/21  
Date/Time



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

Project: Thornton 13-22 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:26

**WH02@6'**  
**2107391-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/27/21 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	BEG0506	07/28/21	07/29/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **07/27/21 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		89.0 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/27/21 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	BEG0583	07/30/21	07/31/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **07/27/21 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		97.7 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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

Project: Thornton 13-22 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:26

**WH02@6'**  
**2107391-01 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **07/27/21 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BEG0490	07/28/21	07/29/21	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Naphthalene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **07/27/21 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		58.2 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		67.8 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **07/27/21 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.536</b>	0.0100	mg/L	1	BEG0493	07/28/21	07/29/21	EPA 6020B	

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

Summit Scientific

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

Project: Thornton 13-22 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:26

**WH02@6'**  
**2107391-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/27/21 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	456	0.0653	mg/L dry	1	BEG0494	07/28/21	07/30/21	EPA 6020B	
Magnesium	260	0.0653	"	"	"	"	"	"	
Sodium	319	0.0653	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **07/27/21 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	2.95	0.00100	units	1	BEH0023	08/02/21	08/02/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **07/27/21 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	76.6		%	1	BEG0485	07/28/21	07/28/21	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **07/27/21 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	3.65	0.0100	mmhos/cm	1	BEG0523	07/29/21	07/29/21	EPA 120.1	

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

Date Sampled: **07/27/21 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.55		pH Units	1	BEG0522	07/29/21	07/29/21	EPA 9045D	

Summit Scientific

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

Project: Thornton 13-22 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:26

**FLR02@4'**  
**2107391-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/27/21 12:07**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BEG0506	07/28/21	07/29/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **07/27/21 12:07**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		90.2 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/27/21 12:07**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BEG0583	07/30/21	07/31/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **07/27/21 12:07**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		104 %	30-150		"	"	"	"	

**PAH by EPA Method 8270D SIM**

Summit Scientific

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

Project: Thornton 13-22 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:26

**FLR02@4'**  
**2107391-02 (Soil)**

**Summit Scientific**

**PAH by EPA Method 8270D SIM**

Date Sampled: **07/27/21 12:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	BEG0490	07/28/21	07/29/21	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"	
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"	
Chrysene	ND	0.00500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"	
Fluoranthene	ND	0.00500	"	"	"	"	"	"	
Fluorene	ND	0.00500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"	
Naphthalene	ND	0.00500	"	"	"	"	"	"	
Pyrene	ND	0.00500	"	"	"	"	"	"	
1-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	
2-Methylnaphthalene	ND	0.00500	"	"	"	"	"	"	

Date Sampled: **07/27/21 12:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		59.8 %	40-150		"	"	"	"	
Surrogate: Fluoranthene-d10		65.7 %	40-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **07/27/21 12:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Boron</b>	<b>0.160</b>	0.0100	mg/L	1	BEG0493	07/28/21	07/29/21	EPA 6020B	

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

Summit Scientific

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

Project: Thornton 13-22 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:26

**FLR02@4'**  
**2107391-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/27/21 12:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	296	0.0578	mg/L dry	1	BEG0494	07/28/21	07/30/21	EPA 6020B	
Magnesium	116	0.0578	"	"	"	"	"	"	
Sodium	59.0	0.0578	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **07/27/21 12:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.736	0.00100	units	1	BEH0023	08/02/21	08/02/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **07/27/21 12:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	86.6		%	1	BEG0485	07/28/21	07/28/21	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **07/27/21 12:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	2.12	0.0100	mmhos/cm	1	BEG0523	07/29/21	07/29/21	EPA 120.1	

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

Date Sampled: **07/27/21 12:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.10		pH Units	1	BEG0522	07/29/21	07/29/21	EPA 9045D	

Summit Scientific

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

Project: Thornton 13-22 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:26

## Volatile Organic Compounds by EPA Method 8260B - Quality Control

### Summit Scientific

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

#### Batch BEG0506 - EPA 5030 Soil MS

##### Blank (BEG0506-BLK1)

Prepared & Analyzed: 07/28/21

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0412		"	0.0400		103	23-173			
Surrogate: Toluene-d8	0.0384		"	0.0400		95.9	20-170			
Surrogate: 4-Bromofluorobenzene	0.0369		"	0.0400		92.2	21-167			

##### LCS (BEG0506-BS1)

Prepared & Analyzed: 07/28/21

Benzene	0.0707	0.0020	mg/kg	0.0750		94.3	70-130			
Toluene	0.0722	0.0050	"	0.0750		96.3	70-130			
Ethylbenzene	0.0973	0.0050	"	0.0750		130	70-130			
m,p-Xylene	0.187	0.010	"	0.150		125	70-130			
o-Xylene	0.0969	0.0050	"	0.0750		129	70-130			
1,2,4-Trimethylbenzene	0.0961	0.0050	"	0.0750		128	70-130			
1,3,5-Trimethylbenzene	0.0957	0.0050	"	0.0750		128	70-130			
Naphthalene	0.0910	0.0038	"	0.0750		121	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0411		"	0.0400		103	23-173			
Surrogate: Toluene-d8	0.0389		"	0.0400		97.3	20-170			
Surrogate: 4-Bromofluorobenzene	0.0353		"	0.0400		88.2	21-167			

##### Matrix Spike (BEG0506-MS1)

Source: 2107389-01

Prepared: 07/28/21 Analyzed: 07/29/21

Benzene	0.0523	0.0020	mg/kg	0.0750	ND	69.8	70-130			
Toluene	0.0443	0.0050	"	0.0750	ND	59.0	70-130			
Ethylbenzene	0.0449	0.0050	"	0.0750	ND	59.9	70-130			
m,p-Xylene	0.0854	0.010	"	0.150	ND	56.9	70-130			
o-Xylene	0.0455	0.0050	"	0.0750	ND	60.7	70-130			
1,2,4-Trimethylbenzene	0.0211	0.0050	"	0.0750	ND	28.2	70-130			
1,3,5-Trimethylbenzene	0.0254	0.0050	"	0.0750	ND	33.9	70-130			
Naphthalene	0.0296	0.0038	"	0.0750	ND	39.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0428		"	0.0400		107	23-173			
Surrogate: Toluene-d8	0.0376		"	0.0400		94.0	20-170			
Surrogate: 4-Bromofluorobenzene	0.0345		"	0.0400		86.2	21-167			

Summit Scientific

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



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

Project: Thornton 13-22 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:26

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

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

**Batch BEG0506 - EPA 5030 Soil MS**

Matrix Spike Dup (BEG0506-MSD1)	Source: 2107389-01			Prepared: 07/28/21 Analyzed: 07/29/21						
Benzene	0.0510	0.0020	mg/kg	0.0750	ND	68.0	70-130	2.50	30	
Toluene	0.0423	0.0050	"	0.0750	ND	56.4	70-130	4.64	30	
Ethylbenzene	0.0414	0.0050	"	0.0750	ND	55.2	70-130	8.21	30	
m,p-Xylene	0.0747	0.010	"	0.150	ND	49.8	70-130	13.3	30	
o-Xylene	0.0401	0.0050	"	0.0750	ND	53.4	70-130	12.8	30	
1,2,4-Trimethylbenzene	0.0167	0.0050	"	0.0750	ND	22.2	70-130	23.5	30	
1,3,5-Trimethylbenzene	0.0202	0.0050	"	0.0750	ND	27.0	70-130	22.6	30	
Naphthalene	0.0202	0.0038	"	0.0750	ND	27.0	70-130	37.4	30	
Surrogate: 1,2-Dichloroethane-d4	0.0442		"	0.0400		110	23-173			
Surrogate: Toluene-d8	0.0383		"	0.0400		95.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0354		"	0.0400		88.4	21-167			

Summit Scientific

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

Project: Thornton 13-22 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:26

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

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

**Batch BEG0583 - EPA 3550A**

**Blank (BEG0583-BLK1)**

Prepared: 07/30/21 Analyzed: 07/31/21

C10-C28 (DRO)	ND	50	mg/kg
C28-C36 (ORO)	ND	50	"

**LCS (BEG0583-BS1)**

Prepared: 07/30/21 Analyzed: 07/31/21

C10-C28 (DRO)	547	50	mg/kg	500	109	70-130
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**Matrix Spike (BEG0583-MS1)**

Source: 2107340-10

Prepared: 07/30/21 Analyzed: 07/31/21

C10-C28 (DRO)	556	50	mg/kg	500	22.6	107	70-130
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**Matrix Spike Dup (BEG0583-MSD1)**

Source: 2107340-10

Prepared: 07/30/21 Analyzed: 07/31/21

C10-C28 (DRO)	545	50	mg/kg	500	22.6	105	70-130	1.95	20
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Summit Scientific

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

Project: Thornton 13-22 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:26

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

### Summit Scientific

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

#### Batch BEG0490 - EPA 5030 Soil MS

##### Blank (BEG0490-BLK1)

Prepared: 07/28/21 Analyzed: 07/29/21

Acenaphthene	ND	0.00500	mg/kg							
Anthracene	ND	0.00500	"							
Benzo (a) anthracene	ND	0.00500	"							
Benzo (a) pyrene	ND	0.00500	"							
Benzo (b) fluoranthene	ND	0.00500	"							
Benzo (k) fluoranthene	ND	0.00500	"							
Chrysene	ND	0.00500	"							
Dibenz (a,h) anthracene	ND	0.00500	"							
Fluoranthene	ND	0.00500	"							
Fluorene	ND	0.00500	"							
Indeno (1,2,3-cd) pyrene	ND	0.00500	"							
Naphthalene	ND	0.00500	"							
Pyrene	ND	0.00500	"							
1-Methylnaphthalene	ND	0.00500	"							
2-Methylnaphthalene	ND	0.00500	"							
Surrogate: 2-Methylnaphthalene-d10	0.0205		"	0.0333		61.5	40-150			
Surrogate: Fluoranthene-d10	0.0232		"	0.0333		69.7	40-150			

##### LCS (BEG0490-BS1)

Prepared: 07/28/21 Analyzed: 07/29/21

Acenaphthene	0.0280	0.00500	mg/kg	0.0333		83.9	31-137			
Anthracene	0.0291	0.00500	"	0.0333		87.3	30-120			
Benzo (a) anthracene	0.0301	0.00500	"	0.0333		90.3	30-120			
Benzo (a) pyrene	0.0306	0.00500	"	0.0333		91.8	30-120			
Benzo (b) fluoranthene	0.0261	0.00500	"	0.0333		78.4	30-120			
Benzo (k) fluoranthene	0.0277	0.00500	"	0.0333		83.0	30-120			
Chrysene	0.0299	0.00500	"	0.0333		89.8	30-120			
Dibenz (a,h) anthracene	0.0353	0.00500	"	0.0333		106	30-120			
Fluoranthene	0.0275	0.00500	"	0.0333		82.5	30-120			
Fluorene	0.0295	0.00500	"	0.0333		88.4	30-120			
Indeno (1,2,3-cd) pyrene	0.0291	0.00500	"	0.0333		87.4	30-120			
Naphthalene	0.0267	0.00500	"	0.0333		80.2	30-120			
Pyrene	0.0264	0.00500	"	0.0333		79.3	35-142			
1-Methylnaphthalene	0.0281	0.00500	"	0.0333		84.2	35-142			
2-Methylnaphthalene	0.0289	0.00500	"	0.0333		86.6	35-142			
Surrogate: 2-Methylnaphthalene-d10	0.0288		"	0.0333		86.5	40-150			
Surrogate: Fluoranthene-d10	0.0303		"	0.0333		90.8	40-150			

Summit Scientific

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

Project: Thornton 13-22 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:26

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

### Summit Scientific

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

#### Batch BEG0490 - EPA 5030 Soil MS

##### Matrix Spike (BEG0490-MS1)

Source: 2107362-01

Prepared: 07/28/21 Analyzed: 07/29/21

Acenaphthene	0.0244	0.00500	mg/kg	0.0333	ND	73.2	31-137		
Anthracene	0.0257	0.00500	"	0.0333	ND	77.2	30-120		
Benzo (a) anthracene	0.0257	0.00500	"	0.0333	ND	77.1	30-120		
Benzo (a) pyrene	0.0262	0.00500	"	0.0333	0.00209	72.2	30-120		
Benzo (b) fluoranthene	0.0216	0.00500	"	0.0333	ND	64.9	30-120		
Benzo (k) fluoranthene	0.0237	0.00500	"	0.0333	ND	71.1	30-120		
Chrysene	0.0255	0.00500	"	0.0333	ND	76.6	30-120		
Dibenz (a,h) anthracene	0.0250	0.00500	"	0.0333	ND	74.9	30-120		
Fluoranthene	0.0248	0.00500	"	0.0333	0.00259	66.6	30-120		
Fluorene	0.0247	0.00500	"	0.0333	ND	74.1	30-120		
Indeno (1,2,3-cd) pyrene	0.0225	0.00500	"	0.0333	0.00273	59.3	30-120		
Naphthalene	0.0231	0.00500	"	0.0333	ND	69.4	30-120		
Pyrene	0.0253	0.00500	"	0.0333	0.00303	66.9	35-142		
1-Methylnaphthalene	0.0254	0.00500	"	0.0333	ND	76.2	15-130		
2-Methylnaphthalene	0.0260	0.00500	"	0.0333	ND	78.0	15-130		
Surrogate: 2-Methylnaphthalene-d10	0.0244		"	0.0333		73.3	40-150		
Surrogate: Fluoranthene-d10	0.0242		"	0.0333		72.5	40-150		

##### Matrix Spike Dup (BEG0490-MSD1)

Source: 2107362-01

Prepared: 07/28/21 Analyzed: 07/29/21

Acenaphthene	0.0235	0.00500	mg/kg	0.0333	ND	70.6	31-137	3.72	30
Anthracene	0.0253	0.00500	"	0.0333	ND	76.0	30-120	1.51	30
Benzo (a) anthracene	0.0250	0.00500	"	0.0333	ND	75.0	30-120	2.78	30
Benzo (a) pyrene	0.0258	0.00500	"	0.0333	0.00209	71.1	30-120	1.43	30
Benzo (b) fluoranthene	0.0272	0.00500	"	0.0333	ND	81.5	30-120	22.6	30
Benzo (k) fluoranthene	0.0237	0.00500	"	0.0333	ND	71.2	30-120	0.211	30
Chrysene	0.0248	0.00500	"	0.0333	ND	74.5	30-120	2.80	30
Dibenz (a,h) anthracene	0.0247	0.00500	"	0.0333	ND	74.1	30-120	1.15	30
Fluoranthene	0.0245	0.00500	"	0.0333	0.00259	65.8	30-120	1.15	30
Fluorene	0.0240	0.00500	"	0.0333	ND	71.9	30-120	3.01	30
Indeno (1,2,3-cd) pyrene	0.0214	0.00500	"	0.0333	0.00273	56.1	30-120	4.79	30
Naphthalene	0.0229	0.00500	"	0.0333	ND	68.8	30-120	0.903	30
Pyrene	0.0272	0.00500	"	0.0333	0.00303	72.6	35-142	7.17	30
1-Methylnaphthalene	0.0253	0.00500	"	0.0333	ND	75.9	15-130	0.497	50
2-Methylnaphthalene	0.0236	0.00500	"	0.0333	ND	70.7	15-130	9.83	50
Surrogate: 2-Methylnaphthalene-d10	0.0226		"	0.0333		67.8	40-150		
Surrogate: Fluoranthene-d10	0.0236		"	0.0333		70.8	40-150		

Summit Scientific

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

Project: Thornton 13-22 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:26

**Total Metals by EPA 6020B Hot Water Soluble Extraction - Quality Control**  
**Summit Scientific**

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

**Batch BEG0493 - EPA 3050B**

**Blank (BEG0493-BLK1)**

Prepared: 07/28/21 Analyzed: 07/29/21

Boron ND 0.0100 mg/L

**LCS (BEG0493-BS1)**

Prepared: 07/28/21 Analyzed: 07/29/21

Boron 4.72 0.0100 mg/L 5.00 94.5 80-120

**Duplicate (BEG0493-DUP1)**

**Source: 2107386-01**

Prepared: 07/28/21 Analyzed: 07/29/21

Boron 0.0679 0.0100 mg/L 0.0649 4.51 20

**Matrix Spike (BEG0493-MS1)**

**Source: 2107386-01**

Prepared: 07/28/21 Analyzed: 07/29/21

Boron 4.54 0.0100 mg/L 5.00 0.0649 89.5 75-125

**Matrix Spike Dup (BEG0493-MSD1)**

**Source: 2107386-01**

Prepared: 07/28/21 Analyzed: 07/29/21

Boron 4.60 0.0100 mg/L 5.00 0.0649 90.7 75-125 1.34 25

Summit Scientific

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

Project: Thornton 13-22 Wellhead  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:26

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

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

**Batch BEG0494 - General Preparation**

**Blank (BEG0494-BLK1)**

Prepared: 07/28/21 Analyzed: 07/30/21

Calcium	ND	0.0500	mg/L wet
Magnesium	ND	0.0500	"
Sodium	ND	0.0500	"

**LCS (BEG0494-BS1)**

Prepared: 07/28/21 Analyzed: 07/30/21

Calcium	5.21	0.0500	mg/L wet	5.00	104	70-130
Magnesium	4.73	0.0500	"	5.00	94.6	70-130
Sodium	4.80	0.0500	"	5.00	96.0	70-130

Summit Scientific

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

Project: Thornton 13-22 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:26

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

#### Summit Scientific

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

#### Batch BEG0485 - General Preparation

Duplicate (BEG0485-DUP1)		Source: 2107372-01		Prepared & Analyzed: 07/28/21						
% Solids	80.0		%		80.3			0.359	20	

Summit Scientific

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

Project: Thornton 13-22 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:26

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction - Quality Control**  
**Summit Scientific**

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

**Batch BEG0523 - General Preparation**

**Blank (BEG0523-BLK1)**

Prepared & Analyzed: 07/29/21

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BEG0523-BS1)**

Prepared & Analyzed: 07/29/21

Specific Conductance (EC) 0.146 0.0100 mmhos/cm 0.150 97.5 90-110

**Duplicate (BEG0523-DUP1)**

**Source: 2107386-01**

Prepared & Analyzed: 07/29/21

Specific Conductance (EC) 0.378 0.0100 mmhos/cm 0.378 0.106 20

Summit Scientific

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

Project: Thornton 13-22 Wellhead

Project Number: [none]

Project Manager: Mark Longhurst

**Reported:**

08/04/21 09:26

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

**Summit Scientific**

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

**Batch BEG0522 - General Preparation**

**LCS (BEG0522-BS1)**

Prepared & Analyzed: 07/29/21

pH	9.33	pH Units	9.21	101	95-105
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**Duplicate (BEG0522-DUP1)**

**Source: 2107386-01**

Prepared & Analyzed: 07/29/21

pH	8.50	pH Units	8.50	0.00	20
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Summit Scientific

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

Project: Thornton 13-22 Wellhead

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/04/21 09:26

### Notes and Definitions

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

# Summit Scientific

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4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

August 13, 2021

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

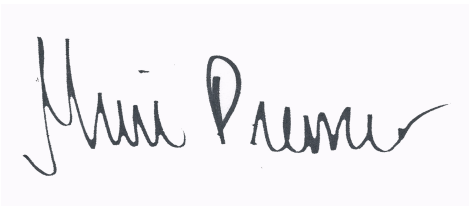
Denver, CO 80203

RE: Thornton 12,13-22 Tank Battery

Work Order #2107387

Enclosed are the results of analyses for samples received by Summit Scientific on 07/27/21 16:20. 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: Thornton 12,13-22 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/13/21 11:39

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
PWV01-B@6'	2107387-01	Soil	07/27/21 10:10	07/27/21 16:20
PWV01-N@2.5'	2107387-02	Soil	07/27/21 10:12	07/27/21 16:20
AST01@0-6"	2107387-06	Soil	07/27/21 11:40	07/27/21 16:20
AST02@0-6"	2107387-07	Soil	07/27/21 11:45	07/27/21 16:20
SEP01-FL@4'	2107387-08	Soil	07/27/21 11:50	07/27/21 16:20
SEP01-DL@4'	2107387-09	Soil	07/27/21 11:55	07/27/21 16:20
BKG01@6'	2107387-12	Soil	07/27/21 11:30	07/27/21 16:20

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.*

2107387.1

# Summit Scientific

S<sub>2</sub>

4653 Table Mountain Drive ♦ Golden, Colorado 80403

303-277-9310

Page 1 of 2

Client: PDC/Tasman

Project Manager: Mark Longhurst

Address: 6855 W 119th Ave.

E-Mail: mark.longhurst@PDCE.com

City/State/Zip: Broomfield, CO 80020

Phone: 303-487-1228

Project Name: Thornton 12,13-22 Tank BatterySampler Name: Max Dahlgren

Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested								Special Instructions	
					HCl	HNO <sub>3</sub>	None	Other	Water	Soil	Air-Canister #	Other	VOC - 915	TPH - 915	PAH - 915	SAR, EC, pH	Boron - HWS	Metals - 915	HOLD			
1	PWVol-B @ 6"	7/27/21	1010	3			X			X				X	X		X	X				
2	PWVol-N @ 2.5'		1012	3										X	X		X	X				
3	PWVol-W @ 2.5'		1014	3																X		
4	PWVol-S @ 2.5'		1016	3																X		
5	PWVol-E @ 2.5'		1018	3																X		
6	ASTOL @ 0-6"		1140	2										X	X							
7	ASTO2 @ 0-6"		1145	2										X	X							
8	SEPOL-FL @ 4'		1150	2										X	X							
9	SEPOL-DL @ 4'		1155	2										X	X							
10	BKGO1 @ 2.5'		1120	1																X		

Relinquished by: <u>[Signature]</u>	Date/Time: <u>7/27/21</u> 1600	Received by: <u>[Signature]</u>	Date/Time: <u>7/27/21</u> 1620	Turn Around Time (Check) Same Day <u>    </u> 72 hours 24 hours <u>    </u> Standard <u>X</u> 48 hours <u>    </u>	Notes:
Relinquished by:	Date/Time:	Received by:	Date/Time:	Sample Integrity: Temperature Upon Receipt: <u>26</u> Samples Intact: <u>(Yes)</u> No	
Relinquished by:	Date/Time:	Received by:	Date/Time:		

2107387.2

# Summit Scientific

S<sub>2</sub>

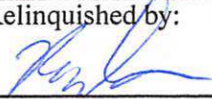
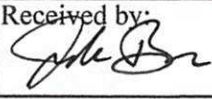
4653 Table Mountain Drive ♦ Golden, Colorado 80403

303-277-9310

Page 2 of 2

Client: PDC/Tasman Project Manager: Mark Longhurst  
 Address: 6855 W 119th Ave. E-Mail: mark.longhurst@PDCE.com  
 City/State/Zip: Broomfield, CO 80020  
 Phone: 303-487-1228 Project Name: Thornton 12, 13-22 Tank Battery  
 Sampler Name: Max Dahlgren Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested								Special Instructions
					HCl	HNO <sub>3</sub>	None	Other	Water	Soil	Air-Canister #	Other	VOC - 915	TPH - 915	PAH - 915	SAR, EC, pH	Boron - HWS	Metals - 915		Hold	
1	BKGol @ 4'	7/27/21	1125	1			X			X										X	
2	BKGol @ 6'	7/27/21	1130	1			X			X										X	
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

Relinquished by: 	Date/Time: 7/27/21 1600	Received by: 	Date/Time: 7/27/21 1620	Turn Around Time (Check) Same Day _____ 72 hours _____ 24 hours _____ Standard <input checked="" type="checkbox"/> 48 hours _____	Notes:
Relinquished by:	Date/Time:	Received by:	Date/Time:	Sample Integrity: Temperature Upon Receipt: 26 Samples Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Relinquished by:	Date/Time:	Received by:	Date/Time:		



# Sample Receipt Checklist

S2 Work Order 2107387

Client: PDC / Tasman Client Project ID: Thorn ton 12, 13-22 Tank Battay

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

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

Temp (°C)	<u>26</u>
-----------	-----------

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"/>	<u>On ice.</u>
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 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, 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.

TB  
Custodian Printed Name or Initials

John Br  
Signature of Custodian

7/27/21  
Date/Time



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

Project: Thornton 12,13-22 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/13/21 11:39

**PWV01-B@6'**  
**2107387-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/27/21 10:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BEG0507	07/28/21	07/29/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **07/27/21 10:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		112 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.7 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/27/21 10:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BEG0508	07/28/21	07/29/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **07/27/21 10:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		82.3 %	30-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Summit Scientific

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

Project: Thornton 12,13-22 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/13/21 11:39

**PWV01-B@6'**  
**2107387-01 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **07/27/21 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.354	0.0100	mg/L	1	BEG0493	07/28/21	07/29/21	EPA 6020B	

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

Date Sampled: **07/27/21 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	429	0.0659	mg/L dry	1	BEG0494	07/28/21	07/30/21	EPA 6020B	
Magnesium	205	0.0659	"	"	"	"	"	"	
Sodium	161	0.0659	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **07/27/21 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	1.60	0.00100	units	1	BEH0023	08/02/21	08/02/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **07/27/21 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	75.9		%	1	BEG0485	07/28/21	07/28/21	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **07/27/21 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	2.88	0.0100	mmhos/cm	1	BEG0523	07/29/21	07/29/21	EPA 120.1	

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

Summit Scientific

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

Project: Thornton 12,13-22 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/13/21 11:39

**PWV01-B@6'**  
**2107387-01 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/27/21 10:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>pH</b>	<b>7.92</b>			pH Units	1	BEG0522	07/29/21	07/29/21	EPA 9045D	

Summit Scientific

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

Project: Thornton 12,13-22 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/13/21 11:39

**PWV01-N@2.5'**  
**2107387-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/27/21 10:12**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BEG0507	07/28/21	07/29/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **07/27/21 10:12**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		90.7 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/27/21 10:12**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BEG0508	07/28/21	07/29/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **07/27/21 10:12**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		83.5 %	30-150		"	"	"	"	

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Summit Scientific

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

Project: Thornton 12,13-22 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/13/21 11:39

**PWV01-N@2.5'**  
**2107387-02 (Soil)**

**Summit Scientific**

**Total Metals by EPA 6020B Hot Water Soluble Extraction**

Date Sampled: **07/27/21 10:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Boron	0.112	0.0100	mg/L	1	BEG0493	07/28/21	07/29/21	EPA 6020B	

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

Date Sampled: **07/27/21 10:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	78.2	0.0583	mg/L dry	1	BEG0494	07/28/21	07/30/21	EPA 6020B	
Magnesium	33.6	0.0583	"	"	"	"	"	"	
Sodium	23.0	0.0583	"	"	"	"	"	"	

**Calculated Analysis**

Date Sampled: **07/27/21 10:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.548	0.00100	units	1	BEH0023	08/02/21	08/02/21	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **07/27/21 10:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	85.8		%	1	BEG0485	07/28/21	07/28/21	Calculation	

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction**

Date Sampled: **07/27/21 10:12**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.724	0.0100	mmhos/cm	1	BEG0523	07/29/21	07/29/21	EPA 120.1	

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

Summit Scientific

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

Project: Thornton 12,13-22 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/13/21 11:39

**PWV01-N@2.5'**  
**2107387-02 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/27/21 10:12**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>pH</b>	<b>8.26</b>			pH Units	1	BEG0522	07/29/21	07/29/21	EPA 9045D	

Summit Scientific

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

Project: Thornton 12,13-22 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/13/21 11:39

**AST01@0-6"**  
**2107387-06 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/27/21 11:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BEG0507	07/28/21	07/29/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **07/27/21 11:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		91.6 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/27/21 11:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BEG0508	07/28/21	07/29/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **07/27/21 11:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		82.8 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Thornton 12,13-22 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/13/21 11:39

**AST02@0-6"**  
**2107387-07 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/27/21 11:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BEG0507	07/28/21	07/29/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **07/27/21 11:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		90.5 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/27/21 11:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BEG0508	07/28/21	07/29/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **07/27/21 11:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		82.1 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Thornton 12,13-22 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/13/21 11:39

**SEP01-FL@4'**  
**2107387-08 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/27/21 11:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BEG0507	07/28/21	07/29/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **07/27/21 11:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		91.7 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/27/21 11:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BEG0508	07/28/21	07/29/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **07/27/21 11:50**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		86.8 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Thornton 12,13-22 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/13/21 11:39

**SEP01-DL@4'**  
**2107387-09 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/27/21 11:55**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	BEG0507	07/28/21	07/29/21	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
1,2,4-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
1,3,5-Trimethylbenzene	ND	0.0050	"	"	"	"	"	"	
Naphthalene	ND	0.0038	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **07/27/21 11:55**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		91.2 %	21-167		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **07/27/21 11:55**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	BEG0508	07/28/21	07/29/21	EPA 8015M	
C28-C36 (ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **07/27/21 11:55**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		80.8 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Thornton 12,13-22 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/13/21 11:39

**BKG01@6'**  
**2107387-12 (Soil)**

**Summit Scientific**

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

Date Sampled: **07/27/21 11:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
<b>pH</b>	<b>8.19</b>			pH Units	1	BEH0098	08/06/21	08/06/21	EPA 9045D	

Summit Scientific

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

Project: Thornton 12,13-22 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/13/21 11:39

## 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 BEG0507 - EPA 5030 Soil MS

##### Blank (BEG0507-BLK1)

Prepared: 07/28/21 Analyzed: 07/29/21

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
1,2,4-Trimethylbenzene	ND	0.0050	"							
1,3,5-Trimethylbenzene	ND	0.0050	"							
Naphthalene	ND	0.0038	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0277		"	0.0400		69.2	23-173			
Surrogate: Toluene-d8	0.0504		"	0.0400		126	20-170			
Surrogate: 4-Bromofluorobenzene	0.0392		"	0.0400		98.1	21-167			

##### LCS (BEG0507-BS1)

Prepared: 07/28/21 Analyzed: 07/29/21

Benzene	0.0620	0.0020	mg/kg	0.0750		82.6	70-130			
Toluene	0.0731	0.0050	"	0.0750		97.5	70-130			
Ethylbenzene	0.0793	0.0050	"	0.0750		106	70-130			
m,p-Xylene	0.160	0.010	"	0.150		107	70-130			
o-Xylene	0.0793	0.0050	"	0.0750		106	70-130			
1,2,4-Trimethylbenzene	0.0817	0.0050	"	0.0750		109	70-130			
1,3,5-Trimethylbenzene	0.0806	0.0050	"	0.0750		108	70-130			
Naphthalene	0.0781	0.0038	"	0.0750		104	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0192		"	0.0400		48.0	23-173			
Surrogate: Toluene-d8	0.0449		"	0.0400		112	20-170			
Surrogate: 4-Bromofluorobenzene	0.0379		"	0.0400		94.6	21-167			

##### Matrix Spike (BEG0507-MS1)

Source: 2107386-01

Prepared: 07/28/21 Analyzed: 07/29/21

Benzene	0.0637	0.0020	mg/kg	0.0750	ND	84.9	70-130			
Toluene	0.0714	0.0050	"	0.0750	ND	95.2	70-130			
Ethylbenzene	0.0787	0.0050	"	0.0750	ND	105	70-130			
m,p-Xylene	0.157	0.010	"	0.150	ND	105	70-130			
o-Xylene	0.0787	0.0050	"	0.0750	ND	105	70-130			
1,2,4-Trimethylbenzene	0.0804	0.0050	"	0.0750	ND	107	70-130			
1,3,5-Trimethylbenzene	0.0787	0.0050	"	0.0750	ND	105	70-130			
Naphthalene	0.0861	0.0038	"	0.0750	ND	115	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0244		"	0.0400		61.0	23-173			
Surrogate: Toluene-d8	0.0430		"	0.0400		107	20-170			
Surrogate: 4-Bromofluorobenzene	0.0379		"	0.0400		94.7	21-167			

Summit Scientific

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

Project: Thornton 12,13-22 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/13/21 11:39

**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 BEG0507 - EPA 5030 Soil MS**

Matrix Spike Dup (BEG0507-MSD1)	Source: 2107386-01			Prepared: 07/28/21 Analyzed: 07/29/21						
Benzene	0.0631	0.0020	mg/kg	0.0750	ND	84.1	70-130	0.947	30	
Toluene	0.0712	0.0050	"	0.0750	ND	94.9	70-130	0.295	30	
Ethylbenzene	0.0792	0.0050	"	0.0750	ND	106	70-130	0.646	30	
m,p-Xylene	0.158	0.010	"	0.150	ND	106	70-130	0.608	30	
o-Xylene	0.0794	0.0050	"	0.0750	ND	106	70-130	0.873	30	
1,2,4-Trimethylbenzene	0.0812	0.0050	"	0.0750	ND	108	70-130	1.00	30	
1,3,5-Trimethylbenzene	0.0798	0.0050	"	0.0750	ND	106	70-130	1.36	30	
Naphthalene	0.0872	0.0038	"	0.0750	ND	116	70-130	1.32	30	
Surrogate: 1,2-Dichloroethane-d4	0.0217		"	0.0400		54.2	23-173			
Surrogate: Toluene-d8	0.0423		"	0.0400		106	20-170			
Surrogate: 4-Bromofluorobenzene	0.0371		"	0.0400		92.8	21-167			

Summit Scientific

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

Project: Thornton 12,13-22 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/13/21 11:39

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

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

**Batch BEG0508 - EPA 3550A**

**Blank (BEG0508-BLK1)**

Prepared & Analyzed: 07/28/21

C10-C28 (DRO)	ND	50	mg/kg
C28-C36 (ORO)	ND	50	"

**LCS (BEG0508-BS1)**

Prepared & Analyzed: 07/28/21

C10-C28 (DRO)	510	50	mg/kg	500	102	70-130
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**Matrix Spike (BEG0508-MS1)**

Source: 2107372-01

Prepared & Analyzed: 07/28/21

C10-C28 (DRO)	396	50	mg/kg	500	18.1	75.6	70-130
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**Matrix Spike Dup (BEG0508-MSD1)**

Source: 2107372-01

Prepared & Analyzed: 07/28/21

C10-C28 (DRO)	420	50	mg/kg	500	18.1	80.4	70-130	5.81	20
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Summit Scientific

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

Project: Thornton 12,13-22 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/13/21 11:39

**Total Metals by EPA 6020B Hot Water Soluble Extraction - Quality Control**  
**Summit Scientific**

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

**Batch BEG0493 - EPA 3050B**

**Blank (BEG0493-BLK1)**

Prepared: 07/28/21 Analyzed: 07/29/21

Boron ND 0.0100 mg/L

**LCS (BEG0493-BS1)**

Prepared: 07/28/21 Analyzed: 07/29/21

Boron 4.72 0.0100 mg/L 5.00 94.5 80-120

**Duplicate (BEG0493-DUP1)**

**Source: 2107386-01**

Prepared: 07/28/21 Analyzed: 07/29/21

Boron 0.0679 0.0100 mg/L 0.0649 4.51 20

**Matrix Spike (BEG0493-MS1)**

**Source: 2107386-01**

Prepared: 07/28/21 Analyzed: 07/29/21

Boron 4.54 0.0100 mg/L 5.00 0.0649 89.5 75-125

**Matrix Spike Dup (BEG0493-MSD1)**

**Source: 2107386-01**

Prepared: 07/28/21 Analyzed: 07/29/21

Boron 4.60 0.0100 mg/L 5.00 0.0649 90.7 75-125 1.34 25

Summit Scientific

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

Project: Thornton 12,13-22 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/13/21 11:39

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

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

**Batch BEG0494 - General Preparation**

**Blank (BEG0494-BLK1)**

Prepared: 07/28/21 Analyzed: 07/30/21

Calcium	ND	0.0500	mg/L wet
Magnesium	ND	0.0500	"
Sodium	ND	0.0500	"

**LCS (BEG0494-BS1)**

Prepared: 07/28/21 Analyzed: 07/30/21

Calcium	5.21	0.0500	mg/L wet	5.00	104	70-130
Magnesium	4.73	0.0500	"	5.00	94.6	70-130
Sodium	4.80	0.0500	"	5.00	96.0	70-130

Summit Scientific

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

Project: Thornton 12,13-22 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/13/21 11:39

**Physical Parameters by APHA/ASTM/EPA Methods - Quality Control**  
**Summit Scientific**

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

**Batch BEG0485 - General Preparation**

Duplicate (BEG0485-DUP1)			Source: 2107372-01			Prepared & Analyzed: 07/28/21				
% Solids	80.0		%			80.3		0.359	20	

Summit Scientific

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

Project: Thornton 12,13-22 Tank Battery  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/13/21 11:39

**Specific Conductance by EPA Method 120.1, Saturated Paste Extraction - Quality Control**  
**Summit Scientific**

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

**Batch BEG0523 - General Preparation**

**Blank (BEG0523-BLK1)**

Prepared & Analyzed: 07/29/21

Specific Conductance (EC) ND 0.0100 mmhos/cm

**LCS (BEG0523-BS1)**

Prepared & Analyzed: 07/29/21

Specific Conductance (EC) 0.146 0.0100 mmhos/cm 0.150 97.5 90-110

**Duplicate (BEG0523-DUP1)**

**Source: 2107386-01**

Prepared & Analyzed: 07/29/21

Specific Conductance (EC) 0.378 0.0100 mmhos/cm 0.378 0.106 20

Summit Scientific

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

Project: Thornton 12,13-22 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/13/21 11:39

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

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

**Batch BEG0522 - General Preparation**

**LCS (BEG0522-BS1)**

Prepared & Analyzed: 07/29/21

pH	9.33		pH Units	9.21	101	95-105
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**Duplicate (BEG0522-DUP1)**

**Source: 2107386-01**

Prepared & Analyzed: 07/29/21

pH	8.50		pH Units	8.50		0.00	20
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**Batch BEH0098 - General Preparation**

**LCS (BEH0098-BS1)**

Prepared & Analyzed: 08/06/21

pH	9.30		pH Units	9.21	101	95-105
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**Duplicate (BEH0098-DUP1)**

**Source: 2107386-04**

Prepared & Analyzed: 08/06/21

pH	6.60		pH Units	6.62		0.303	20
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Summit Scientific

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

Project: Thornton 12,13-22 Tank Battery

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
08/13/21 11:39

### 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