

PDC Energy, Inc.
Third Quarter 2021 Groundwater Monitoring Summary

September 10, 2021

Former LH Miller Unit 1 Tank Battery
NWNW Section 25 T4N R66W
Remediation # 16033

This groundwater monitoring summary has been prepared by Tasman Geosciences, Inc. for the former LH Miller Unit 1 Tank Battery. On August 26, 2021, groundwater monitoring was conducted at all five monitoring wells (BH01 – BH05). Five groundwater samples were submitted to Summit for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, 1,2,4-trimethylbenzene (TMB), 1,3,5-TMB by EPA Method 8260B, total dissolved solids (TDS) by Method SM 2540C, chloride, and sulfate anions by EPA Method 300.0.

Third quarter 2021 analytical results indicated that organic compound concentrations were below the applicable COGCC Table 915-1 groundwater standard in all five monitoring wells. Additionally, inorganic compound concentrations were in exceedance of the applicable regulatory standard and above 1.25x the background concentration of the up-gradient monitoring well (BH01) in monitoring well BH05. Inorganic parameters were below the regulatory standard or within 1.25x the background concentration of the upgradient monitoring well in the remaining four monitoring well locations. Sample locations and corresponding analytical results are illustrated on Figures 1 and 2. Groundwater elevation data is illustrated on Figure 3. Groundwater analytical results are summarized in Tables 1 and 2. The laboratory analytical report is included in Attachment A.

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

Fourth quarter 2021 groundwater sampling will be conducted in November 2021.

BH03		
Compound (µg/L)	5/27/2021	8/26/2021
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<2.0	<2.0
Naphthalene	<1.0	<1.0
1,2,4-TMB	<1.0	<1.0
1,3,5-TMB	<1.0	<1.0
Depth to Water (ft. bgs)	3.72	1.03

BH05		
Compound (µg/L)	5/27/2021	8/26/2021
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<2.0	<2.0
Naphthalene	<1.0	<1.0
1,2,4-TMB	<1.0	<1.0
1,3,5-TMB	<1.0	<1.0
Depth to Water (ft. bgs)	4.14	1.98

BH04		
Compound (µg/L)	5/27/2021	8/26/2021
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<2.0	<2.0
Naphthalene	<1.0	<1.0
1,2,4-TMB	<1.0	<1.0
1,3,5-TMB	<1.0	<1.0
Depth to Water (ft. bgs)	4.69	1.84

BH02		
Compound (µg/L)	5/27/2021	8/26/2021
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<2.0	<2.0
Naphthalene	<1.0	<1.0
1,2,4-TMB	<1.0	<1.0
1,3,5-TMB	<1.0	<1.0
Depth to Water (ft. bgs)	3.52	1.00

BH01		
Compound (µg/L)	5/27/2021	8/26/2021
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<2.0	<2.0
Naphthalene	<1.0	<1.0
1,2,4-TMB	<1.0	<1.0
1,3,5-TMB	<1.0	<1.0
Depth to Water (ft. bgs)	4.17	1.51

Legend

- Excavation Extent (Collected via Trimble GPS)
- Monitoring Well Location (Collected via Trimble GPS)
- Excavation Groundwater Sample Location
- Groundwater Flow Direction (3Q21)

Notes

All locations are approximate unless otherwise noted.

GPS – Global Positioning System
TMB - Trimethylbenzene
µg/L – Micrograms per liter
ft. bgs – Feet below ground surface

0 ft. 20 ft. 40 ft.

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

DATE: September 14, 2021

DESIGNED BY: C. Hamlin

DRAWN BY: C. Ambler



Tasman Geosciences, Inc.
6855 W. 119th Ave.
Broomfield, CO 80020

PDC Energy, Inc. – DJ Basin
Former LH Miller Unit 1 Tank Battery
NWNW, Section 25, Township 4 North, Range 66 West
Weld County, Colorado

GROUNDWATER ANALYTICAL RESULTS MAP

FIGURE 1

BH03		
Compound (mg/L)	5/27/2021	8/26/2021
Chloride	112	155
Sulfate	118	246
TDS	957	933

BH05		
Compound (mg/L)	5/27/2021	8/26/2021
Chloride	251	299
Sulfate	1,090	1,240
TDS	1,310	1,970

BH04		
Compound (mg/L)	5/27/2021	8/26/2021
Chloride	134	182
Sulfate	147	316
TDS	1,090	1,060

BH02		
Compound (mg/L)	5/27/2021	8/26/2021
Chloride	NS	163
Sulfate	NS	241
TDS	NS	1,020

BH01		
Compound (mg/L)	5/27/2021	8/26/2021
Chloride	120	159
Sulfate	122	286
TDS	1,020	1,020

Legend

-  Excavation Extent (Collected via Trimble GPS)
-  Monitoring Well Location (Collected via Trimble GPS)
-  Excavation Groundwater Sample Location
-  Groundwater Flow Direction (3Q21)

Notes

All locations are approximate unless otherwise noted.

GPS – Global Positioning System

NS – Not sampled

mg/L – Milligrams per liter

TDS – Total dissolved solids

Red text – exceedances of COGCC Table 915-1 standards.

Bold text – exceedances of COGCC Table 915-1 standards but within 1.25x BCKG concentration

COGCC – Colorado Oil and Gas Conservation Commission

0 ft. 20 ft. 40 ft.

Image Source: Google Earth; 2019 Google

Projection: WGS 84 UTM Zone 13 North



DATE: September 14, 2021

DESIGNED BY: C. Hamlin

DRAWN BY: C. Ambler



Tasman Geosciences, Inc.
6855 W. 119th Ave.
Broomfield, CO 80020

PDC Energy, Inc. – DJ Basin
Former LH Miller Unit 1 Tank Battery
NWNW, Section 25, Township 4 North, Range 66 West
Weld County, Colorado

GROUNDWATER
ANALYTICAL RESULTS
MAP
(INORGANIC PARAMETERS)

FIGURE
2



- Legend**
- Monitoring Well Location (Collected via Trimble GPS)
 - Excavation Extent
 - Excavation Groundwater Sample Location
 - 4741.58** Groundwater Elevation (ft. AMSL)
 - Groundwater Flow Direction (3Q21)

Notes

All locations are approximate unless otherwise noted.

GPS – Global Positioning System

* Not used for contouring

0 ft. 20 ft. 40 ft.

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

DATE: August 30, 2021

DESIGNED BY: C. Hamlin

DRAWN BY: J. Clonts

TASMAN
GEOSCIENCES

Tasman Geosciences, Inc.
6855 W. 119th Ave.
Broomfield, CO 80020

PDC Energy, Inc. – DJ Basin
Former LH Miller Unit 1 Tank Battery
NWNW, Section 25, Township 4 North, Range 66 West
Weld County, Colorado

GROUNDWATER
ELEVATION CONTOUR
MAP (08/26/2021)

FIGURE
3

TABLE 1
FORMER LH MILLER UNIT 1 TANK BATTERY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE
ORGANIC COMPOUNDS

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Naphthalene (µg/L)	1,2,4-TMB (µg/L)	1,3,5-TMB (µg/L)	Depth to Water ⁽²⁾ (ft.)	Groundwater Elevation (ft. AMSL)
COGCC Table 915-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	140	67	67	-	-
GW01	1/14/2021	<1.0	<1.0	<1.0	6.6	NA	NA	NA	~ 6	NM
BH01	5/27/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	4.17	4742.29
BH01	8/26/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	1.51	4744.95
BH02	5/27/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.52	4741.99
BH02	8/26/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	1.00	4744.51
BH03	5/27/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	3.72	4741.58
BH03	8/26/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	1.03	4744.27
BH04	5/27/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	4.69	4741.90
BH04	8/26/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	1.84	4744.75
BH05	5/27/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	4.14	4741.74
BH05	8/26/2021	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	1.98	4743.90

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

TABLE 2
FORMER LH MILLER UNIT 1 TANK BATTERY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE
INORGANIC PARAMETERS

Sample ID	Date Sampled	TDS (unit)	Chloride Ion (mg/L)	Sulfate Ion (mg/L)
COGCC Table 915-1 Groundwater Standard (mg/L) ⁽¹⁾		<1.25 x BCKG	250 or <1.25 x BCKG	250 or <1.25 x BCKG
BH01	5/27/2021	1,020	120	122
BH01	8/26/2021	1,020	159	286
BH02	8/26/2021	1,020	163	241
BH03	5/27/2021	957	112	118
BH03	8/26/2021	933	155	246
BH04	5/27/2021	1,090	134	147
BH04	8/26/2021	1,060	182	316
BH05	5/27/2021	1,310	251	1,090
BH05	8/26/2021	1,970	299	1,240

Notes:

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

TDS = Total dissolved solids

COGCC = Colorado Oil and Gas Conservation Commission

BCKG = Background

mg/L = Milligrams per liter

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

Up-gradient well location used for background concentration.

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

BOLD = Analytical result is in exceedance of applicable standard.

Attachment A

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

September 03, 2021

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: LH Miller Unit 1

Work Order #2108412

Enclosed are the results of analyses for samples received by Summit Scientific on 08/26/21 17:45. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Muri Premer". The signature is written in a cursive style with a large, stylized initial 'M'.

Muri Premer For Paul Shrewsbury

President



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

Project: LH Miller Unit 1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
09/03/21 13:37

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	2108412-01	Water	08/26/21 14:25	08/26/21 17:45
BH02	2108412-02	Water	08/26/21 14:35	08/26/21 17:45
BH03	2108412-03	Water	08/26/21 14:22	08/26/21 17:45
BH04	2108412-04	Water	08/26/21 14:34	08/26/21 17:45
BH05	2108412-05	Water	08/26/21 14:44	08/26/21 17:45

Summit Scientific

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

Summit Scientific

S₂

2108412

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

Page 1 of 1

Client: PDC / Tasman

Project Manager: Mark Longhurst

Address: 6855 W 119th Ave.

E-Mail: mark.longhurst@pdce.com

City/State/Zip: Broomfield, CO 80020

Phone: 303-487-1228

Project Name: LH Miller Unit 1

Sampler Name: Yianni Tsambis

Project Number: n/a

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested							Special Instructions
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	BTEX	NAP	1,2,4 TMB	1,3,5 TMB	TDS	Chloride	Sulfate	
1	BH01	8/26/21	1425	4	X		1		X				X	X	X	X	X	X	X	915 Standards
2	BH02		1435		X		1		X				X	X	X	X	X	X	X	
3	BH03		1422				4		X				X	X	X	X	X	X	X	
4	BH04		1434		X		1		X				X	X	X	X	X	X	X	
5	BH05		1444		X		1		X				X	X	X	X	X	X	X	
6																				
7																				
8																				
9																				
10																				

Relinquished by: [Signature] Date/Time: 8/26/21 1645

Received by: Tasman's Lock Box Date/Time: 8/26/21 1645

Turn Around Time (Check)
Same Day 72 hours
24 hours Standard X
48 hours

Notes:

Relinquished by: Tasman Lockbox Date/Time: 8/26/21 1745

Received by: Will Salin Date/Time: 8/26/21 1745

Sample Integrity:
Temperature Upon Receipt: 10
Samples Intact: (Yes) No

Relinquished by:

Received by:

Sample Receipt Checklist

S2 Work Order 2108412

Client: PDC/TASMAN Client Project ID: LH Miller Unit

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

Matrix (check all that apply): Air Soil/Solid Water Other: _____
 (Describe)

Temp (°C) 10

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? 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"/>	<i>on ice</i>
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<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 ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<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) ⁽¹⁾ ? 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 ⁽¹⁾ ? 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):

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

WG
 Custodian Printed Name or Initials

Will Galin
 Signature of Custodian

8/26/21
 Date/Time



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

Project: LH Miller Unit 1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/03/21 13:37

BH01
2108412-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/26/21 14:25**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BEH0591	08/31/21	09/01/21	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: **08/26/21 14:25**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		89.4 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		95.0 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		92.3 %		21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **08/26/21 14:25**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	159	12.0		mg/L	200	BEI0021	09/01/21	09/02/21	EPA 300.0	
Sulfate	286	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **08/26/21 14:25**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	1020	10.0		mg/L	1	BEI0018	09/01/21	09/02/21	SM2540C	

Summit Scientific

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

Project: LH Miller Unit 1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/03/21 13:37

BH02
2108412-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/26/21 14:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BEH0591	08/31/21	09/01/21	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: **08/26/21 14:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		92.5 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		92.5 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.8 %		21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **08/26/21 14:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	163	12.0		mg/L	200	BEI0021	09/01/21	09/02/21	EPA 300.0	
Sulfate	241	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **08/26/21 14:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	1020	10.0		mg/L	1	BEI0018	09/01/21	09/02/21	SM2540C	

Summit Scientific

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

Project: LH Miller Unit 1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/03/21 13:37

BH03
2108412-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/26/21 14:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BEH0591	08/31/21	09/01/21	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: **08/26/21 14:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		91.3 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		91.1 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.6 %		21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **08/26/21 14:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	155	12.0		mg/L	200	BEI0021	09/01/21	09/02/21	EPA 300.0	
Sulfate	246	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **08/26/21 14:22**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	933	10.0		mg/L	1	BEI0018	09/01/21	09/02/21	SM2540C	

Summit Scientific

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

Project: LH Miller Unit 1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/03/21 13:37

BH04
2108412-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/26/21 14:34**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BEH0591	08/31/21	09/01/21	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: **08/26/21 14:34**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		92.9 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		94.0 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		90.2 %		21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **08/26/21 14:34**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	182	12.0		mg/L	200	BEI0021	09/01/21	09/02/21	EPA 300.0	
Sulfate	316	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **08/26/21 14:34**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	1060	10.0		mg/L	1	BEI0018	09/01/21	09/02/21	SM2540C	

Summit Scientific

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

Project: LH Miller Unit 1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/03/21 13:37

BH05
2108412-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/26/21 14:44**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	BEH0591	08/31/21	09/01/21	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: **08/26/21 14:44**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		89.9 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		92.8 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		89.0 %		21-167		"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **08/26/21 14:44**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Chloride	299	12.0		mg/L	200	BEI0021	09/01/21	09/02/21	EPA 300.0	
Sulfate	1240	60.0		"	"	"	"	"	"	

Total Dissolved Solids by SM2540C

Date Sampled: **08/26/21 14:44**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Total Dissolved Solids	1970	10.0		mg/L	1	BEI0018	09/01/21	09/02/21	SM2540C	

Summit Scientific

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

Project: LH Miller Unit 1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/03/21 13:37

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BEH0591 - EPA 5030 Water MS

Blank (BEH0591-BLK1)

Prepared: 08/31/21 Analyzed: 09/01/21

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Naphthalene	ND	1.0	"							
1,2,4-Trimethylbenzene	ND	1.0	"							
1,3,5-Trimethylbenzene	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	11.5		"	13.3		86.6	23-173			
Surrogate: Toluene-d8	13.2		"	13.3		98.9	20-170			
Surrogate: 4-Bromofluorobenzene	11.9		"	13.3		89.3	21-167			

LCS (BEH0591-BS1)

Prepared: 08/31/21 Analyzed: 09/01/21

Benzene	26.8	1.0	ug/l	33.3		80.5	51-132			
Toluene	29.0	1.0	"	33.3		87.2	51-138			
Ethylbenzene	35.6	1.0	"	33.3		107	58-146			
m,p-Xylene	68.2	2.0	"	66.7		102	57-144			
o-Xylene	33.9	1.0	"	33.3		102	53-146			
Naphthalene	33.1	1.0	"	33.3		99.3	70-130			
1,2,4-Trimethylbenzene	28.4	1.0	"	33.3		85.2	70-130			
1,3,5-Trimethylbenzene	34.6	1.0	"	33.3		104	70-130			
Surrogate: 1,2-Dichloroethane-d4	11.3		"	13.3		84.7	23-173			
Surrogate: Toluene-d8	11.8		"	13.3		88.5	20-170			
Surrogate: 4-Bromofluorobenzene	12.2		"	13.3		91.1	21-167			

Matrix Spike (BEH0591-MS1)

Source: 2108381-01

Prepared: 08/31/21 Analyzed: 09/01/21

Benzene	25.7	1.0	ug/l	33.3	ND	77.1	34-141			
Toluene	28.4	1.0	"	33.3	ND	85.1	27-151			
Ethylbenzene	34.5	1.0	"	33.3	ND	104	29-160			
m,p-Xylene	66.8	2.0	"	66.7	ND	100	20-166			
o-Xylene	33.0	1.0	"	33.3	ND	99.1	33-159			
Naphthalene	39.7	1.0	"	33.3	ND	119	70-130			
1,2,4-Trimethylbenzene	28.4	1.0	"	33.3	ND	85.1	70-130			
1,3,5-Trimethylbenzene	33.8	1.0	"	33.3	ND	101	70-130			
Surrogate: 1,2-Dichloroethane-d4	10.7		"	13.3		80.2	23-173			
Surrogate: Toluene-d8	12.3		"	13.3		92.0	20-170			
Surrogate: 4-Bromofluorobenzene	12.1		"	13.3		90.7	21-167			

Summit Scientific

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

Project: LH Miller Unit 1

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 09/03/21 13:37

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

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

Batch BEH0591 - EPA 5030 Water MS

Matrix Spike Dup (BEH0591-MSD1)	Source: 2108381-01			Prepared: 08/31/21 Analyzed: 09/01/21					
Benzene	27.4	1.0	ug/l	33.3	ND	82.4	34-141	6.55	30
Toluene	29.3	1.0	"	33.3	ND	87.9	27-151	3.29	30
Ethylbenzene	33.8	1.0	"	33.3	ND	101	29-160	2.14	30
m,p-Xylene	65.8	2.0	"	66.7	ND	98.8	20-166	1.37	30
o-Xylene	33.3	1.0	"	33.3	ND	99.8	33-159	0.664	30
Naphthalene	41.6	1.0	"	33.3	ND	125	70-130	4.72	30
1,2,4-Trimethylbenzene	27.9	1.0	"	33.3	ND	83.7	70-130	1.71	30
1,3,5-Trimethylbenzene	33.4	1.0	"	33.3	ND	100	70-130	1.07	30
Surrogate: 1,2-Dichloroethane-d4	12.6		"	13.3		94.4	23-173		
Surrogate: Toluene-d8	12.1		"	13.3		91.0	20-170		
Surrogate: 4-Bromofluorobenzene	12.5		"	13.3		93.5	21-167		

Summit Scientific



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

Project: LH Miller Unit 1

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 09/03/21 13:37

Anions by EPA Method 300.0 - Quality Control
Summit Scientific

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

Batch BEI0021 - General Preparation

Blank (BEI0021-BLK1)

Prepared & Analyzed: 09/01/21

Chloride	ND	0.0600	mg/L							
Sulfate	ND	0.300	"							

LCS (BEI0021-BS1)

Prepared & Analyzed: 09/01/21

Chloride	2.98	0.0600	mg/L	3.00	99.4	90-110				
Sulfate	15.3	0.300	"	15.0	102	90-110				

Duplicate (BEI0021-DUP1)

Source: 2108391-01

Prepared & Analyzed: 09/01/21

Chloride	30.8	12.0	mg/L		29.8			3.30	20	
Sulfate	121	60.0	"		118			2.17	20	

Matrix Spike (BEI0021-MS1)

Source: 2108391-01

Prepared & Analyzed: 09/01/21

Chloride	30.6	12.0	mg/L	600	29.8	0.133	80-120			QM-02
Sulfate	117	60.0	"	3000	118	NR	80-120			QM-02

Summit Scientific

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

Project: LH Miller Unit 1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 09/03/21 13:37

Total Dissolved Solids by SM2540C - Quality Control

Summit Scientific

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

Batch BEI0018 - General Preparation

Blank (BEI0018-BLK1)

Prepared: 09/01/21 Analyzed: 09/02/21

Total Dissolved Solids ND 10.0 mg/L

Duplicate (BEI0018-DUP1)

Source: 2108412-01

Prepared: 09/01/21 Analyzed: 09/02/21

Total Dissolved Solids 1020 10.0 mg/L 1020 0.0978 20

Summit Scientific

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

Project: LH Miller Unit 1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
09/03/21 13:37

Notes and Definitions

- QM-02 The RPD and/or percent recovery for this QC sample cannot be accurately calculated due to the high concentration of analyte inherent in the sample.
- 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