PDC Energy, Inc.

Second Quarter 2020 Groundwater Monitoring Summary

June 23, 2020

Former JR #1 Tank Battery
SESW Section 13 T6N R65W
Remediation # 12319

This groundwater monitoring summary has been prepared by Tasman Geosciences, Inc. for the former JR #1 tank battery. On May 14, 2020, groundwater monitoring was conducted at five monitoring well locations (BH01 – BH05). Five groundwater samples were submitted to Summit Scientific Laboratory for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8260B.

Second quarter 2020 analytical results indicated that the benzene concentration was above the applicable COGCC Table 910-1 groundwater standard in monitoring well BH05. BTEX concentrations were below regulatory standards in the four remaining monitoring well locations.

Based on historic quarterly monitoring results and the anomalous benzene concentrations recorded during the second quarter 2020, monitoring wells BH01 and BH05 were re-sampled on June 5, 2020, to confirm the benzene concentrations. Two groundwater samples were submitted for laboratory analysis of BTEX by EPA Method 8260B. Analytical results indicated that the benzene concentration was above the applicable COGCC Table 910-1 groundwater standard in BH01. BTEX concentrations were below laboratory detection methods in monitoring well BH05. Sample locations and corresponding analytical results are illustrated on Figure 1. Groundwater elevation data is illustrated in Figure 2. Analytical results are summarized in Table 1 and the laboratory reports are included as Attachment A.

Monitored natural attenuation (MNA) was selected as the remediation strategy for this site during the first quarter 2019 and will remain the selected remediation strategy for the third quarter 2020.

Third quarter 2020 groundwater sampling will be conducted during August 2020.

BH03		
Compound (µg/L)	2/14/2020	5/14/2020
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<2.0	<2.0
Depth to Water (ft. bgs)	14.49	14.60

BH01			
Compound (µg/L)	2/14/2020	5/14/2020	6/5/2020
Benzene	**200**	<1.0	**310**
Toluene	<1.0	<1.0	<1.0
Ethylbenzene	120	<1.0	190
Total Xylenes	320	<2.0	830
Depth to Water (ft. bgs)	14.26	14.63	14.68

BH02		
Compound (µg/L)	2/14/2020	5/14/2020
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<2.0	<2.0
Depth to Water (ft. bgs)	14.66	14.86

BH04		
Compound (µg/L)	2/14/2020	5/14/2020
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<2.0	<2.0
Depth to Water (ft. bgs)	15.54	14.80

BH05			
Compound (µg/L)	2/14/2020	5/14/2020	6/5/2020
Benzene	<1.0	**180**	<1.0
Toluene	<1.0	<1.0	<1.0
Ethylbenzene	<1.0	130	<1.0
Total Xylenes	<2.0	310	<2.0
Depth to Water (ft. bgs)	15.92	16.18	16.21

Legend

- Excavation Extent (Collected via Trimble GPS)
- Monitoring Well Location (Collected via Trimble GPS)
- Monitoring Well Location - Destroyed (Collected via Trimble GPS)
- Excavation Groundwater Sample Location
- X — Point of Release
- Groundwater Flow Direction (2Q20)

Notes

All locations are approximate unless otherwise noted.

Surface drainage direction is estimated based on topography and is not related to regional topography.

GPS – Global Positioning System

µg/L – Micrograms per liter

ft. bgs – Feet below ground surface

Red text denotes an exceedance of COGCC standards

COGCC – Colorado Oil and Gas Conservation Commission

0 ft. 15 ft. 30 ft.

N

Image Source: Google Earth; 2017 Google
Projection: WGS 84 UTM Zone 13 North

DATE:	June 23, 2020
DESIGNED BY:	C. Hamlin
DRAWN BY:	M. Dahlgren

TASMAN GEOSCIENCES

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

PDC Energy, Inc. – DJ Basin
Former JR #1 Tank Battery
SESW, Section 13, Township 6 North, Range 65 West
Weld County, Colorado

GROUNDWATER ANALYTICAL RESULTS MAP

FIGURE 1

DATE: May 20, 2020 DESIGNED BY: C. Hamlin DRAWN BY: L. Martin	TASMAN GEOSCIENCES **Tasman Geosciences, Inc.** 6855 W. 119th Ave Broomfield, CO 80020	**PDC Energy, Inc. – DJ Basin** **Former JR #1 Tank Battery** SESW, Section 13, Township 6 North, Range 65 West Weld County, Colorado	GROUNDWATER ELEVATION CONTOUR MAP (05/14/2020)	FIGURE 2

TABLE 1
FORMER JR #1 TANK BATTERY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water [2] (ft.)	Groundwater Elevation (ft. AMSL)
COGCC Table 910-1 Groundwater Standard (µg/L) [1]		**5**	**560**	**700**	**1,400**		
GW01	1/4/2019	**5.2**	<1.0	1.1	11	~ 16	NM
BH01	2/22/2019	**81**	7.7	88	1,300	15.12	4681.14
BH01	5/30/2019	**180**	1.0	<1.0	**2,400**	15.39	4680.45
BH01	8/16/2019	**42**	<1.0	13	160	11.04	4684.80
BH01	11/8/2019	**53**	<1.0	24	120	12.94	4682.90
BH01	2/14/2020	**200**	<1.0	120	320	14.26	4681.58
BH01	5/14/2020	<1.0	<1.0	<1.0	<2.0	14.63	4681.25
BH01	6/5/2020	**310**	<1.0	190	830	14.68	4681.20
BH02	2/22/2019	<1.0	<1.0	<1.0	<2.0	15.29	4681.30
BH02	5/30/2019	<1.0	<1.0	<1.0	<2.0	15.71	4680.65
BH02	8/16/2019	<1.0	<1.0	<1.0	<2.0	11.33	4685.03
BH02	11/8/2019	<1.0	<1.0	<1.0	<2.0	12.58	4683.78
BH02	2/14/2020	<1.0	<1.0	<1.0	<2.0	14.66	4681.70
BH02	5/14/2020	<1.0	<1.0	<1.0	<2.0	14.86	4681.44
BH03	2/22/2019	<1.0	<1.0	<1.0	<2.0	15.11	4681.50
BH03	5/30/2019	<1.0	<1.0	<1.0	<2.0	15.54	4680.85
BH03	8/16/2019	<1.0	<1.0	<1.0	<2.0	10.77	4685.62
BH03	11/8/2019	<1.0	<1.0	<1.0	<2.0	12.30	4684.09
BH03	2/14/2020	<1.0	<1.0	<1.0	<2.0	14.49	4681.90
BH03	5/14/2020	<1.0	<1.0	<1.0	<2.0	14.60	4681.79
BH04	2/22/2019	**8.5**	<1.0	<1.0	<2.0	15.12	4680.82
BH04	5/30/2019	<1.0	<1.0	<1.0	<2.0	16.67	4678.97
BH04	8/16/2019	<1.0	<1.0	<1.0	<2.0	12.60	4683.04
BH04	11/8/2019	<1.0	<1.0	<1.0	<2.0	13.54	4682.10
BH04	2/14/2020	<1.0	<1.0	<1.0	<2.0	15.54	4680.10
BH04	5/14/2020	<1.0	<1.0	<1.0	<2.0	14.80	4680.71
BH05	2/22/2019	<1.0	<1.0	<1.0	<2.0	15.43	4680.29
BH05	5/30/2019	<1.0	<1.0	<1.0	<2.0	16.06	4679.56
BH05	8/16/2019	<1.0	<1.0	<1.0	<2.0	12.19	4683.43
BH05	11/8/2019	<1.0	<1.0	<1.0	<2.0	12.02	4683.60
BH05	2/14/2020	<1.0	<1.0	<1.0	<2.0	15.92	4679.70
BH05	5/14/2020	**180**	<1.0	130	310	16.18	4679.28
BH05	6/5/2020	<1.0	<1.0	<1.0	<2.0	16.21	4679.25
BH06	2/22/2019	<1.0	<1.0	<1.0	<2.0	15.29	4680.56
BH06	5/30/2019	Destroyed					

TABLE 1
FORMER JR #1 TANK BATTERY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water [2] (ft.)	Groundwater Elevation (ft. AMSL)
COGCC Table 910-1 Groundwater Standard (µg/L) [1]		**5**	**560**	**700**	**1,400**		

Notes:

1. Groundwater standards referenced from 2 CCR 404-1, Table 910-1, effective May 1, 2018.
2. Depth to water measurements were measured from ground surface for excavation samples. Monitoring well measurements were collected from top of casing and adjusted using survey data to reflect depth of water from ground surface.

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

BOLD = Analytical result is in exceedance of COGCC groundwater standards.

Attachment A

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

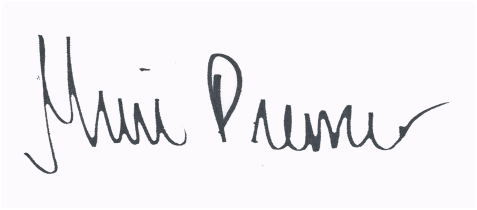
May 21, 2020

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

RE: JR #1
Work Order #2005157

Enclosed are the results of analyses for samples received by Summit Scientific on 05/14/20 17:20. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Muri Premer For Paul Shrewsbury
President

S2

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: JR #1 Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 05/21/20 09:38

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	2005157-01	Water	05/14/20 11:16	05/14/20 17:20
BH02	2005157-02	Water	05/14/20 11:19	05/14/20 17:20
BH03	2005157-03	Water	05/14/20 11:05	05/14/20 17:20
BH04	2005157-04	Water	05/14/20 10:51	05/14/20 17:20
BH05	2005157-05	Water	05/14/20 11:07	05/14/20 17:20

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.

Summit Scientific

2005157

741 Corporate Circle Suite I ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933 Fax

Page 1 of 1

Client: PDC / Tasman
Address: 6855 W 119th Ave.
City/State/Zip: ~~Broom~~ Broomfield, CO 80020
Phone: 303-487-1228 Fax: -
Sampler Name: Yianni Tsambis

Project Manager: Mark Longhurst
E-Mail: mark.longhurst@pdce.com
Project Name: JR #1
Project Number: ——

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative: HCl	Preservative: HNO_3	Preservative: None	Preservative: Other (Specify)	Matrix: Groundwater	Matrix: Soil	Matrix: Air - Canister Serial #	Matrix: Other (Specify)	Analyze For: BTEX	Special Instructions
BH01	5/14/20	1116	3			X		X				X	
BH02	5/14/20	1119	3	X				X				X	
BH03	5/14/20	1105	3	X				X				X	
BH04	5/14/20	1051	3	X				X				X	
BH05	5/14/20	1107	3	X				X				X	

Relinquished by:	Date/Time:	Received by:	Date/Time:
Yianni Tsambis	5/14/20 1410	Tasman's Lock Box	5/14/20 1410
Tasman Lock Box	05/14/2020 1720	[signature]	05/14/2020 1720
Relinquished by:	Date/Time:	Received in Lab by:	Date/Time:

Turn Around Time (Check)
Same Day ☐ 72 Hours ☐
24 Hours ☐ Standard ☒
48 Hours ☐

Sample Integrity:
Temperature Upon Receipt: 4.2
Intact: Yes ☒ No ☐

Notes:

2005157

Sample Receipt Checklist

S2 Work Order_____

Client: PDC/TASMAN Client Project ID: JR #1

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

☐ ☒ ☐ ☐ ☐

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

Temp (°C)	4.2

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.	X			
Were all samples received intact (1)?	X			
Was adequate sample volume provided (1)?	X			
If custody seals are present, are they intact (1)?			X	
Are samples with holding times due within 48 hours sample due within 48 hours present?		X		
Is a chain-of-custody (COC) form present and filled out completely (1)?	X			
Does the COC agree with the number and type of sample bottles received (1)?	X			
Do the sample IDs on the bottle labels match the COC (1)?	X			
Is the COC properly relinquished by the client w/ date and time recorded (1)?	X			
For volatiles in water – is there headspace present? **If yes, contact client and note in narrative.**		X		
Are samples preserved that require preservation **(excluding cooling)** (1)? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	X	X		(BOTH) HCl
If samples are acid preserved for metals, is the pH ≤ 2(1)? Record the pH in Comments.			X	
If dissolved metals are requested, were samples field filtered?			X	
Additional Comments (if any):				

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

Custodian Printed Name or Initials	Signature of Custodian	Date/Time
		05/14/2020

S2

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: JR #1 Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 05/21/20 09:38

BH01

2005157-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/14/20 11:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	2005199	05/15/20	05/16/20	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **05/14/20 11:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		*129 %*	*23-173*		"	"	"	"	
Surrogate: Toluene-d8		*89.9 %*	*20-170*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*108 %*	*21-167*		"	"	"	"	

S2

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: JR #1 Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 05/21/20 09:38

BH02

2005157-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/14/20 11:19**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	2005199	05/15/20	05/16/20	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **05/14/20 11:19**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		*137 %*	*23-173*		"	"	"	"	
Surrogate: Toluene-d8		*90.6 %*	*20-170*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*109 %*	*21-167*		"	"	"	"	

S2

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: JR #1 Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 05/21/20 09:38

BH03

2005157-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/14/20 11:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	2005199	05/15/20	05/16/20	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **05/14/20 11:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		*138 %*	*23-173*		"	"	"	"	
Surrogate: Toluene-d8		*89.3 %*	*20-170*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*107 %*	*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.

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PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: JR #1 Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 05/21/20 09:38

BH04

2005157-04 (Water)

Summit Scientific

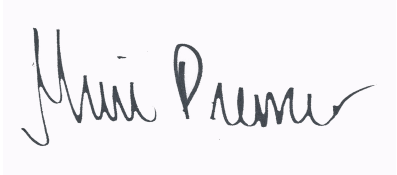
Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/14/20 10:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	2005199	05/15/20	05/16/20	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **05/14/20 10:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		*138 %*	*23-173*		"	"	"	"	
Surrogate: Toluene-d8		*88.7 %*	*20-170*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*108 %*	*21-167*		"	"	"	"	



S2

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: JR #1 Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 05/21/20 09:38

BH05

2005157-05 (Water)

Summit Scientific

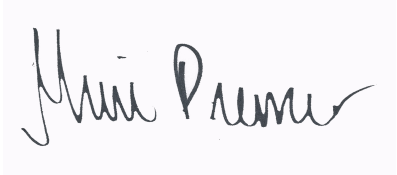
Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/14/20 11:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	**180**	1.0	ug/l	1	2005231	05/19/20	05/19/20	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	**130**	1.0	"	"	"	"	"	"	
Xylenes (total)	**310**	2.0	"	"	"	"	"	"	

Date Sampled: **05/14/20 11:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		*108 %*		*23-173*	"	"	"	"	
Surrogate: Toluene-d8		*88.4 %*		*20-170*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*106 %*		*21-167*	"	"	"	"	



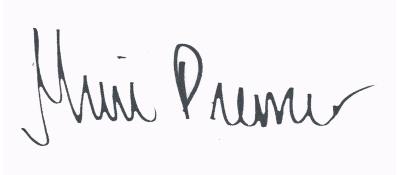
S2

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: JR #1 Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 05/21/20 09:38

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2005199 - EPA 5030 Water MS										
Blank (2005199-BLK1)				Prepared: 05/15/20 Analyzed: 05/16/20						
Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	*16.2*		*"*	*13.3*		*122*	*23-173*			
Surrogate: Toluene-d8	*12.2*		*"*	*13.3*		*91.9*	*20-170*			
Surrogate: 4-Bromofluorobenzene	*14.2*		*"*	*13.3*		*107*	*21-167*			
LCS (2005199-BS1)				Prepared: 05/15/20 Analyzed: 05/16/20						
Benzene	47.5	1.0	ug/l	50.0		95.0	51-132			
Toluene	42.8	1.0	"	50.0		85.6	51-138			
Ethylbenzene	48.9	1.0	"	50.0		97.7	58-146			
m,p-Xylene	87.6	2.0	"	100		87.6	57-144			
o-Xylene	44.3	1.0	"	50.0		88.6	53-146			
Surrogate: 1,2-Dichloroethane-d4	*13.9*		*"*	*13.3*		*104*	*23-173*			
Surrogate: Toluene-d8	*12.4*		*"*	*13.3*		*93.2*	*20-170*			
Surrogate: 4-Bromofluorobenzene	*13.5*		*"*	*13.3*		*101*	*21-167*			
Matrix Spike (2005199-MS1)	**Source: 2005155-01**			Prepared: 05/15/20 Analyzed: 05/16/20						
Benzene	42.1	1.0	ug/l	50.0	ND	84.3	34-141			
Toluene	39.7	1.0	"	50.0	ND	79.4	27-151			
Ethylbenzene	44.9	1.0	"	50.0	ND	89.8	29-160			
m,p-Xylene	79.2	2.0	"	100	ND	79.2	20-166			
o-Xylene	41.1	1.0	"	50.0	ND	82.1	33-159			
Surrogate: 1,2-Dichloroethane-d4	*15.1*		*"*	*13.3*		*113*	*23-173*			
Surrogate: Toluene-d8	*12.5*		*"*	*13.3*		*93.9*	*20-170*			
Surrogate: 4-Bromofluorobenzene	*13.9*		*"*	*13.3*		*104*	*21-167*			



S2

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: JR #1 Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 05/21/20 09:38

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2005199 - EPA 5030 Water MS										
Matrix Spike Dup (2005199-MSD1)	**Source: 2005155-01**			Prepared: 05/15/20 Analyzed: 05/16/20						
Benzene	48.5	1.0	ug/l	50.0	ND	97.0	34-141	14.0	30	
Toluene	46.3	1.0	"	50.0	ND	92.6	27-151	15.3	30	
Ethylbenzene	51.0	1.0	"	50.0	ND	102	29-160	12.6	30	
m,p-Xylene	89.5	2.0	"	100	ND	89.5	20-166	12.2	30	
o-Xylene	45.5	1.0	"	50.0	ND	91.1	33-159	10.3	30	
Surrogate: 1,2-Dichloroethane-d4	*15.8*		*"*	*13.3*		*119*	*23-173*			
Surrogate: Toluene-d8	*13.2*		*"*	*13.3*		*98.7*	*20-170*			
Surrogate: 4-Bromofluorobenzene	*14.2*		*"*	*13.3*		*107*	*21-167*			
Batch 2005231 - EPA 5030 Water MS										
Blank (2005231-BLK1)				Prepared & Analyzed: 05/19/20						
Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	*16.4*		*"*	*13.3*		*123*	*23-173*			
Surrogate: Toluene-d8	*12.5*		*"*	*13.3*		*93.6*	*20-170*			
Surrogate: 4-Bromofluorobenzene	*14.0*		*"*	*13.3*		*105*	*21-167*			
LCS (2005231-BS1)				Prepared & Analyzed: 05/19/20						
Benzene	41.1	1.0	ug/l	33.3		123	51-132			
Toluene	37.9	1.0	"	33.3		114	51-138			
Ethylbenzene	43.2	1.0	"	33.3		130	58-146			
m,p-Xylene	76.2	2.0	"	66.7		114	57-144			
o-Xylene	38.9	1.0	"	33.3		117	53-146			
Surrogate: 1,2-Dichloroethane-d4	*14.8*		*"*	*13.3*		*111*	*23-173*			
Surrogate: Toluene-d8	*12.9*		*"*	*13.3*		*97.0*	*20-170*			
Surrogate: 4-Bromofluorobenzene	*13.3*		*"*	*13.3*		*99.9*	*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.

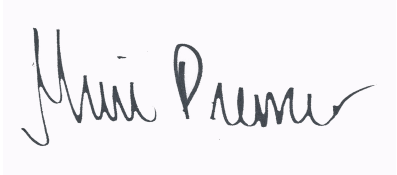
S2

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: JR #1 Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 05/21/20 09:38

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2005231 - EPA 5030 Water MS										
Matrix Spike (2005231-MS1)	**Source: 2005157-05**			Prepared & Analyzed: 05/19/20						
Benzene	315	1.0	ug/l	33.3	181	404	34-141			QM-07
Toluene	43.2	1.0	"	33.3	ND	130	27-151			
Ethylbenzene	106	1.0	"	33.3	130	NR	29-160			QM-07
m,p-Xylene	434	2.0	"	66.7	249	277	20-166			QM-07
o-Xylene	149	1.0	"	33.3	58.9	270	33-159			QM-07
Surrogate: 1,2-Dichloroethane-d4	*13.1*		*"*	*13.3*		*98.3*	*23-173*			
Surrogate: Toluene-d8	*11.9*		*"*	*13.3*		*89.0*	*20-170*			
Surrogate: 4-Bromofluorobenzene	*14.6*		*"*	*13.3*		*110*	*21-167*			
Matrix Spike Dup (2005231-MSD1)	**Source: 2005157-05**			Prepared & Analyzed: 05/19/20						
Benzene	321	1.0	ug/l	33.3	181	423	34-141	1.94	30	QM-07
Toluene	45.2	1.0	"	33.3	ND	136	27-151	4.52	30	
Ethylbenzene	104	1.0	"	33.3	130	NR	29-160	1.97	30	QM-07
m,p-Xylene	430	2.0	"	66.7	249	271	20-166	0.819	30	QM-07
o-Xylene	147	1.0	"	33.3	58.9	263	33-159	1.60	30	QM-07
Surrogate: 1,2-Dichloroethane-d4	*13.2*		*"*	*13.3*		*99.2*	*23-173*			
Surrogate: Toluene-d8	*12.3*		*"*	*13.3*		*92.0*	*20-170*			
Surrogate: 4-Bromofluorobenzene	*14.7*		*"*	*13.3*		*110*	*21-167*			



PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: JR #1 Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 05/21/20 09:38

Notes and Definitions

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
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

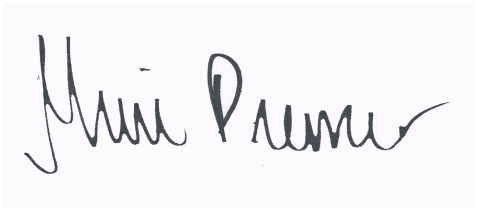
June 15, 2020

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

RE: JR #1
Work Order #2006067

Enclosed are the results of analyses for samples received by Summit Scientific on 06/05/20 16:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Muri Premer For Paul Shrewsbury
President

S2

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: JR #1 Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 06/15/20 09:22

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	2006067-01	Water	06/05/20 11:35	06/05/20 16:00
BH05	2006067-02	Water	06/05/20 11:30	06/05/20 16:00

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.

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S_2

2006067

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

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:	JR 1
Sampler Name:	Max Dahlgren	Project Number:	

					Preservative				Matrix				Analysis Requested								Special Instructions
ID	Sample Description	Date Sampled	Time Sampled	# of containers	HCl	HNO3	None	Other ___	Water	Soil	Air-Canister #	Other ___	8260 BTEX	8260B GBTEXN	8015 DRO	pH / EC					
1	BH01	6/5/20	1135	3			X		X				X								
2	BH05	6/5/20	1130	3	X				X				X								
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

Relinquished by:	Date/Time: 6/5/20 1600	Received by: ~~Tasman's Lock Box~~	Date/Time: 6/5/20 1600
Relinquished by: ~~Tasman's Lock Box~~	Date/Time:	Received by:	Date/Time:
Relinquished by:	Date/Time:	Received by:	Date/Time:

Turn Around Time (Check)

Same Day	___	72 hours	___
24 hours	___	Standard	X
48 hours	___		

Sample Integrity:

Temperature Upon Receipt: 4°C

Samples Intact: (Yes) No

Notes:

Sample Receipt Checklist

S2 Work Order 2006063

Client: PDC/TASMAN Client Project ID: JR4

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

[X] [ ] [ ] [ ] [ ]

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

Temp (°C)	4.8

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.	X			
Were all samples received intact (1)?	X			
Was adequate sample volume provided (1)?	X			
If custody seals are present, are they intact (1)?			X	
Are samples with holding times due within 48 hours sample due within 48 hours present?		X		
Is a chain-of-custody (COC) form present and filled out completely (1)?	X			
Does the COC agree with the number and type of sample bottles received (1)?	X			
Do the sample IDs on the bottle labels match the COC (1)?	X			
Is the COC properly relinquished by the client w/ date and time recorded (1)?	X			
For volatiles in water – is there headspace present? **If yes, contact client and note in narrative.**		X		
Are samples preserved that require preservation **(excluding cooling)** (1)? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	X			HCL
If samples are acid preserved for metals, is the pH ≤ 2(1)? Record the pH in Comments.			X	
If dissolved metals are requested, were samples field filtered?			X	
Additional Comments (if any):				

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

Custodian Printed Name or Initials **Signature of Custodian** 06/05/2020 **Date/Time**

S2

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: JR #1 Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 06/15/20 09:22

BH01

2006067-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/05/20 11:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	**310**	10	ug/l	10	2006122	06/09/20	06/10/20	EPA 8260B	
Toluene	ND	1.0	"	1	"	"	"	"	
Ethylbenzene	**190**	10	"	10	"	"	"	"	
Xylenes (total)	**830**	20	"	"	"	"	"	"	

Date Sampled: **06/05/20 11:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		*96.2 %*	*23-173*		"	"	"	"	
Surrogate: Toluene-d8		*95.1 %*	*20-170*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*104 %*	*21-167*		"	"	"	"	

S2

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: JR #1 Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 06/15/20 09:22

BH05

2006067-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/05/20 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	2006122	06/09/20	06/10/20	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **06/05/20 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		*99.3 %*	*23-173*		"	"	"	"	
Surrogate: Toluene-d8		*106 %*	*20-170*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*94.1 %*	*21-167*		"	"	"	"	

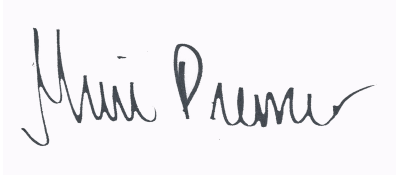
S2

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: JR #1 Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 06/15/20 09:22

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2006122 - EPA 5030 Water MS										
Blank (2006122-BLK1)				Prepared: 06/09/20 Analyzed: 06/10/20						
Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	*12.6*		"	*13.3*		*94.9*	*23-173*			
Surrogate: Toluene-d8	*12.1*		"	*13.3*		*90.7*	*20-170*			
Surrogate: 4-Bromofluorobenzene	*13.3*		"	*13.3*		*99.6*	*21-167*			
LCS (2006122-BS1)				Prepared: 06/09/20 Analyzed: 06/10/20						
Benzene	75.2	1.0	ug/l	83.3		90.2	51-132			
Toluene	79.8	1.0	"	83.3		95.7	51-138			
Ethylbenzene	86.1	1.0	"	83.3		103	58-146			
m,p-Xylene	163	2.0	"	167		97.6	57-144			
o-Xylene	84.4	1.0	"	83.3		101	53-146			
Surrogate: 1,2-Dichloroethane-d4	*10.4*		"	*13.3*		*77.6*	*23-173*			
Surrogate: Toluene-d8	*13.2*		"	*13.3*		*98.8*	*20-170*			
Surrogate: 4-Bromofluorobenzene	*12.7*		"	*13.3*		*95.3*	*21-167*			
Matrix Spike (2006122-MS1)	**Source: 2006066-01**			Prepared: 06/09/20 Analyzed: 06/10/20						
Benzene	88.7	1.0	ug/l	83.3	ND	106	34-141			
Toluene	90.1	1.0	"	83.3	ND	108	27-151			
Ethylbenzene	104	1.0	"	83.3	ND	124	29-160			
m,p-Xylene	193	2.0	"	167	1.39	115	20-166			
o-Xylene	98.6	1.0	"	83.3	ND	118	33-159			
Surrogate: 1,2-Dichloroethane-d4	*11.2*		"	*13.3*		*84.1*	*23-173*			
Surrogate: Toluene-d8	*11.7*		"	*13.3*		*87.6*	*20-170*			
Surrogate: 4-Bromofluorobenzene	*12.9*		"	*13.3*		*97.0*	*21-167*			



S2

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: JR #1 Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 06/15/20 09:22

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 2006122 - EPA 5030 Water MS										
Matrix Spike Dup (2006122-MSD1)	**Source: 2006066-01**			Prepared: 06/09/20 Analyzed: 06/10/20						
Benzene	77.0	1.0	ug/l	83.3	ND	92.5	34-141	14.0	30	
Toluene	81.2	1.0	"	83.3	ND	97.4	27-151	10.4	30	
Ethylbenzene	91.6	1.0	"	83.3	ND	110	29-160	12.2	30	
m,p-Xylene	172	2.0	"	167	1.39	102	20-166	11.9	30	
o-Xylene	86.7	1.0	"	83.3	ND	104	33-159	12.9	30	
Surrogate: 1,2-Dichloroethane-d4	*11.1*		*"*	*13.3*		*83.5*	*23-173*			
Surrogate: Toluene-d8	*11.5*		*"*	*13.3*		*86.4*	*20-170*			
Surrogate: 4-Bromofluorobenzene	*12.9*		*"*	*13.3*		*96.9*	*21-167*			

Summit Scientific

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S2

PDC Energy 1775 Sherman St. STE. 3000 Denver CO, 80203	Project: JR #1 Project Number: [none] Project Manager: Mark Longhurst	**Reported:** 06/15/20 09:22

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