

PDC Energy, Inc.
Second Quarter 2019 Groundwater Monitoring Summary

May 9, 2019

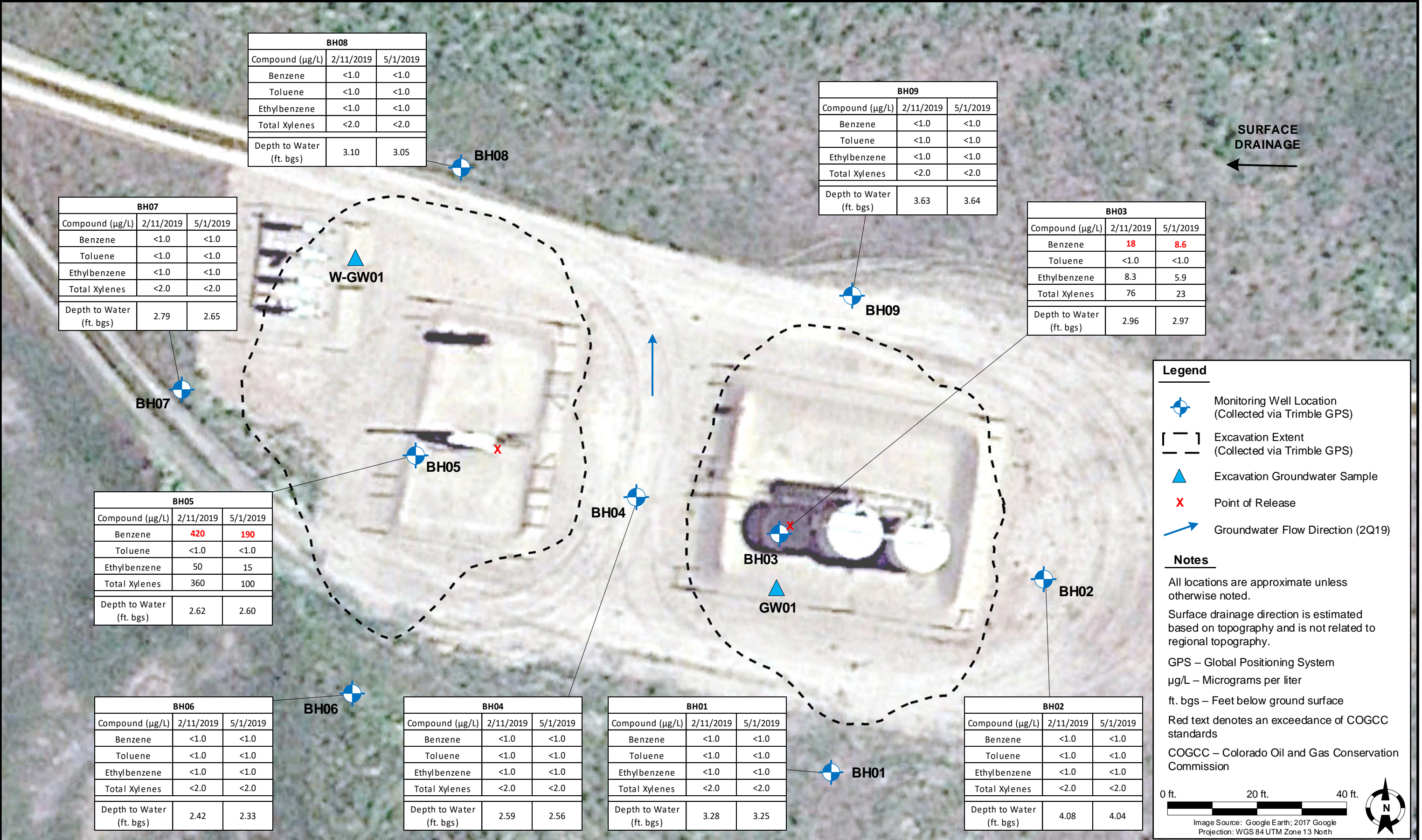
Former Mark 11, 12, 14-35 Tank Battery
NWSW Section 35 T4N R65W
Remediation # 12170

This groundwater monitoring summary has been prepared by Tasman Geosciences, Inc. for the former Mark 11, 12, 14-35 tank battery. On May 1, 2019, groundwater monitoring was conducted at all 9 monitoring well locations (BH01 – BH09). Nine groundwater samples were submitted to Summit Scientific Laboratory for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by USEPA Method 8260B.

Second quarter 2019 analytical results indicated that benzene concentrations were above the applicable COGCC Table 910-1 groundwater standard in monitoring wells BH03 and BH05. BTEX concentrations were below regulatory standards in the remaining 7 monitoring well locations.

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 2019.

Third quarter 2019 groundwater sampling will be conducted during August 2019. Analytical results are summarized in Table 1 and the laboratory report is included as Attachment A. Sample locations and corresponding analytical results are illustrated on Figure 1. Groundwater elevation data is illustrated in Figure 2.





DATE: May 2, 2019

DESIGNED BY: C. Hamlin

DRAWN BY: C. Olson



TASMAN
GEOSCIENCES

Tasman Geosciences, Inc.
6899 Pecos Street – Unit C
Denver, CO 80221

PDC Energy, Inc. – DJ Basin
Former Mark 11, 12, 14-35 Tank Battery
NWSW, Section 35, Township 4 North, Range 65 West
Weld County, Colorado

**GROUNDWATER
ELEVATION CONTOUR
MAP (05/01/2019)**

**FIGURE
2**

TABLE 1
FORMER MARK 11, 12, 14-35 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⁾ (feet)	Groundwater Elevation (ft AMSL)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400		
GW01	11/19/2018	21	4.5	3.6	710	~ 7	NM
W-GW01	11/27/2018	2.9	<1.0	<1.0	22	~ 7	NM
BH01	2/11/2019	<1.0	<1.0	<1.0	<2.0	3.28	4740.33
BH01	5/1/2019	<1.0	<1.0	<1.0	<2.0	3.25	4740.36
BH02	2/11/2019	<1.0	<1.0	<1.0	<2.0	4.08	4740.07
BH02	5/1/2019	<1.0	<1.0	<1.0	<2.0	4.04	4740.11
BH03	2/11/2019	18	<1.0	8.3	76	2.96	4740.19
BH03	5/1/2019	8.6	<1.0	5.9	23	2.97	4740.18
BH04	2/11/2019	<1.0	<1.0	<1.0	<2.0	2.59	4740.18
BH04	5/1/2019	<1.0	<1.0	<1.0	<2.0	2.56	4740.21
BH05	2/11/2019	420	<1.0	50	360	2.62	4740.07
BH05	5/1/2019	190	<1.0	15	100	2.60	4740.09
BH06	2/11/2019	<1.0	<1.0	<1.0	<2.0	2.42	4740.50
BH06	5/1/2019	<1.0	<1.0	<1.0	<2.0	2.33	4740.59
BH07	2/11/2019	<1.0	<1.0	<1.0	<2.0	2.79	4739.98
BH07	5/1/2019	<1.0	<1.0	<1.0	<2.0	2.65	4740.12
BH08	2/11/2019	<1.0	<1.0	<1.0	<2.0	3.10	4739.75
BH08	5/1/2019	<1.0	<1.0	<1.0	<2.0	3.05	4739.80
BH09	2/11/2019	<1.0	<1.0	<1.0	<2.0	3.63	4739.89
BH09	5/1/2019	<1.0	<1.0	<1.0	<2.0	3.64	4739.88

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 AMSL = Feet Above Mean Sea Level

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

NM = Not measured

Attachment A

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

May 07, 2019

Mark Longhurst

PDC Energy

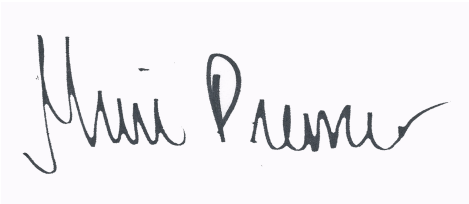
1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Mark 11,12,14-35

Enclosed are the results of analyses for samples received by Summit Scientific on 05/01/19 17:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Muri Premier For Paul Shrewsbury

President



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

Project: Mark 11,12,14-35

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
05/07/19 13:37

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	1905015-01	Water	05/01/19 13:00	05/01/19 17:30
BH02	1905015-02	Water	05/01/19 12:45	05/01/19 17:30
BH03	1905015-03	Water	05/01/19 12:30	05/01/19 17:30
BH04	1905015-04	Water	05/01/19 12:15	05/01/19 17:30
BH05	1905015-05	Water	05/01/19 12:00	05/01/19 17:30
BH06	1905015-06	Water	05/01/19 11:45	05/01/19 17:30
BH07	1905015-07	Water	05/01/19 11:36	05/01/19 17:30
BH08	1905015-08	Water	05/01/19 11:11	05/01/19 17:30
BH09	1905015-09	Water	05/01/19 11:25	05/01/19 17:30

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

1905015

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

Page 1 of 1

Client: PDC / Tasman
Address: 6899 Pecos Street
City/State/Zip: Denver / CO / 80221
Phone: _____ Fax: _____
Sampler Name: Alison Dahl

Project Manager: Mark Longhurst
E-Mail: Mark.Longhurst@pdce.com
Project Name: Mark 11, 12, 14-35
Project Number: _____

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:								Special Instructions	
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	8260 BTEX	8260B GBTEXN	8015 DRO	pH, EC, SAR					
BH01	5/1/19	1300	3	X				X				X								
BH02	I	1245	I	I								I								
BH03	I	1230	I	I								I								
BH04	I	1215	I	I								I								
BH05	I	1200	I	I								I								
BH06	I	1145	I	I								I								
BH07	I	1136	I	I								I								
BH08	I	1111	I	I								I								
BH09	I	1125	I	I								I								

Relinquished by: <u>Alison Dahl</u>	Date/Time: <u>5/1/2019 1430</u>	Received by: <u>Tasman Lock Box</u>	Date/Time: <u>5/1/2019 1430</u>	Turn Around Time (Check) Same Day <input type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 Hours <input type="checkbox"/>	Notes:
Relinquished by: <u>Tasman Lock Box</u>	Date/Time: <u>5.1.19 1730</u>	Received by: <u>[Signature]</u>	Date/Time: <u>5.1.19 1730</u>	Sample Integrity: Temperature Upon Receipt: <u>2.7</u>	
Relinquished by: _____	Date/Time: _____	Received in Lab by: _____	Date/Time: _____	Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

Sample Receipt Checklist

S2 Work Order 1905015
 Client: DOC/Tasman Client Project ID: Mark 11, 12, 14-35
 Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other P.U. Airbill #: _____

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

Temp (°C)	2.7
-----------	-----

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"/>	
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 checked="" type="checkbox"/>	<input 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 checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	HCl
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.

Custodian Printed Name or Initials

Signature of Custodian

Date/Time

5.1.19 1800



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

Project: Mark 11,12,14-35

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/07/19 13:37

BH01
1905015-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/19 13:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1905050	05/04/19	05/04/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **05/01/19 13:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		110 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		86.0 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %		21-167		"	"	"	"	

Summit Scientific

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

Project: Mark 11,12,14-35

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/07/19 13:37

BH02
1905015-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/19 12:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1905050	05/04/19	05/04/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **05/01/19 12:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		83.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

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

Project: Mark 11,12,14-35

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/07/19 13:37

BH03
1905015-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/19 12:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	8.6	1.0		ug/l	1	1905050	05/04/19	05/04/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	5.9	1.0		"	"	"	"	"	"	
Xylenes (total)	23	2.0		"	"	"	"	"	"	

Date Sampled: **05/01/19 12:30**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		116 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		83.0 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %		21-167		"	"	"	"	

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

Project: Mark 11,12,14-35

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/07/19 13:37

BH04
1905015-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/19 12:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1905050	05/04/19	05/04/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **05/01/19 12:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		83.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

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

Project: Mark 11,12,14-35

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/07/19 13:37

BH05
1905015-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/19 12:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	190	1.0	ug/l	1	1905050	05/04/19	05/04/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	15	1.0	"	"	"	"	"	"	
Xylenes (total)	100	2.0	"	"	"	"	"	"	

Date Sampled: **05/01/19 12:00**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		110 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		84.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

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

Project: Mark 11,12,14-35

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/07/19 13:37

BH06
1905015-06 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/19 11:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1905050	05/04/19	05/04/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **05/01/19 11:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		82.7 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

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

Project: Mark 11,12,14-35

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/07/19 13:37

BH07
1905015-07 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/19 11:36**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1905050	05/04/19	05/04/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **05/01/19 11:36**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		83.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.3 %	21-167		"	"	"	"	

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

Project: Mark 11,12,14-35

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/07/19 13:37

BH08
1905015-08 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/19 11:11**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1905050	05/04/19	05/04/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **05/01/19 11:11**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		83.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.5 %	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: Mark 11,12,14-35

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/07/19 13:37

BH09
1905015-09 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/01/19 11:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	1905050	05/04/19	05/04/19	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **05/01/19 11:25**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		99.5 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		82.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.1 %	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: Mark 11,12,14-35

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/07/19 13:37

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 1905050 - EPA 5030 Water MS

Blank (1905050-BLK1)

Prepared: 05/02/19 Analyzed: 05/05/19

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	12.9		"	13.3		97.0	23-173			
Surrogate: Toluene-d8	11.6		"	13.3		87.0	20-170			
Surrogate: 4-Bromofluorobenzene	13.6		"	13.3		102	21-167			

LCS (1905050-BS1)

Prepared: 05/02/19 Analyzed: 05/05/19

Benzene	28.0	1.0	ug/l	33.3		84.1	70-130			
Toluene	23.7	1.0	"	33.3		71.0	70-130			
Ethylbenzene	28.7	1.0	"	33.3		86.2	70-130			
m,p-Xylene	54.8	2.0	"	66.7		82.2	70-130			
o-Xylene	29.3	1.0	"	33.3		87.9	70-130			
Surrogate: 1,2-Dichloroethane-d4	12.6		"	13.3		94.4	23-173			
Surrogate: Toluene-d8	11.2		"	13.3		83.8	20-170			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		98.7	21-167			

Matrix Spike (1905050-MS1)

Source: 1905015-01

Prepared: 05/02/19 Analyzed: 05/05/19

Benzene	24.0	1.0	ug/l	33.3	ND	72.1	70-130			
Toluene	30.5	1.0	"	33.3	ND	91.6	70-130			
Ethylbenzene	23.7	1.0	"	33.3	ND	71.2	70-130			
m,p-Xylene	66.6	2.0	"	66.7	ND	99.9	70-130			
o-Xylene	25.0	1.0	"	33.3	ND	74.9	70-130			
Surrogate: 1,2-Dichloroethane-d4	13.6		"	13.3		102	23-173			
Surrogate: Toluene-d8	11.5		"	13.3		86.1	20-170			
Surrogate: 4-Bromofluorobenzene	13.7		"	13.3		103	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: Mark 11,12,14-35

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/07/19 13:37

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 1905050 - EPA 5030 Water MS

Matrix Spike Dup (1905050-MSD1)	Source: 1905015-01			Prepared: 05/02/19 Analyzed: 05/05/19						
Benzene	23.4	1.0	ug/l	33.3	ND	70.1	70-130	2.78	30	
Toluene	29.7	1.0	"	33.3	ND	89.2	70-130	2.66	30	
Ethylbenzene	31.6	1.0	"	33.3	ND	94.7	70-130	28.3	30	
m,p-Xylene	63.6	2.0	"	66.7	ND	95.5	70-130	4.51	30	
o-Xylene	24.2	1.0	"	33.3	ND	72.5	70-130	3.30	30	
Surrogate: 1,2-Dichloroethane-d4	13.3		"	13.3		99.8	23-173			
Surrogate: Toluene-d8	11.4		"	13.3		85.9	20-170			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		100	21-167			

Summit Scientific

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PDC Energy

1775 Sherman St. STE. 3000

Denver CO, 80203

Project: Mark 11,12,14-35

Project Number: [none]

Project Manager: Mark Longhurst

Reported:

05/07/19 13:37

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