

PDC Energy, Inc.
Fourth Quarter 2019 Groundwater Monitoring Summary

November 20, 2019

Bauer 5; 12, 21-4 Tank Battery
NWNW Section 4 T5N R64W
Remediation # 13570

This groundwater monitoring summary has been prepared by Tasman Geosciences, Inc. for the Bauer 5; 12, 21-4 tank battery. On September 25, 2019, five monitoring wells (BH01 – BH05) were installed to confirm the absence of dissolved-phase hydrocarbon impacts following excavation activities. Lithologic descriptions and volatile organic compound (VOC) concentrations measured using a photoionization detector (PID) were recorded for each monitoring well. Boring and well completion logs are provided in Attachment A.

On October 31, 2019, groundwater monitoring was conducted at all five monitoring wells (BH01 – BH05). Five groundwater samples were submitted to Summit Scientific Laboratory for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX) by USEPA Method 8260B.

Fourth quarter 2019 analytical results indicated that BTEX concentrations were below the applicable COGCC Table 910-1 standards in all five monitoring well locations. Sample locations and corresponding analytical results are illustrated on Figure 1. Groundwater elevation data is illustrated on Figure 2. Groundwater analytical results are summarized in Table 1. The laboratory analytical report is included in Attachment B.

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

First quarter 2020 groundwater sampling will be conducted in January 2020.



DATE: November 21, 2019

DESIGNED BY: B. Nelson

DRAWN BY: M. Dahlgren



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

PDC Energy, Inc. – DJ Basin
Bauer 5; 12, 21-4 Tank Battery
NWNW, Section 4, Township 5 North, Range 64 West
Weld County, Colorado

GROUNDWATER
ANALYTICAL RESULTS
MAP

FIGURE
1



DATE: November 12, 2019

DESIGNED BY: C. Hamlin

DRAWN BY: L. Martin



Tasman Geosciences, Inc.
6855 West 119th Avenue
Broomfield, CO 80020

PDC Energy, Inc. – DJ Basin
Bauer 5; 12, 21-4 Tank Battery
NWNW, Section 4, Township 5 North, Range 64 West
Weld County, Colorado

**GROUNDWATER
ELEVATION CONTOUR
MAP (10/31/2019)**

**FIGURE
2**

TABLE 1
BAUER 5; 12, 21-4 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	7/3/2019	3.5	<1.0	1.6	16	~16	NM
BH01	10/31/2019	<1.0	<1.0	<1.0	<2.0	15.52	4612.68
BH02	10/31/2019	<1.0	<1.0	<1.0	<2.0	16.00	4612.22
BH03	10/31/2019	<1.0	<1.0	<1.0	<2.0	14.21	4613.61
BH04	10/31/2019	<1.0	<1.0	<1.0	<2.0	13.94	4613.81
BH05	10/31/2019	<1.0	<1.0	<1.0	<2.0	13.70	4613.71

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

NM = Not measured

ATTACHMENT A



Borehole Logging Form

BOREHOLE ID: B1401	SITE NAME: Banner 5:12,21-4	CLIENT NAME: PDC ENERGY
Date Completed: 9/25/19	Location: W of former excavation	
Drilling Company: Tasman geosciences	Surface Completion: Flush mount DTW: 14' TD: 22'	
Type of Drill: Direct Push Probe	Geologist: J. McIner	Project Manager: Coltmanlin
Bit Size 2 3/4"	Logging Method: Continuous macro-core liner / hand auger	
Well Const. Material: Diameter: 1"	Screen: Sch 40 PVC Slotted .010	Riser: Sch 40 PVC Blank

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description	
1	[Well Completion Diagram]	hand auger	↑	0.1		SW	Tan sand, fine-coarse gr. well graded, dry, no odor, some gravel	
2				↓				
3				100%	1.5		SC	dk brn sandy clay, low plastic, dry, no odor
4								
5								
6					2.3		SM	Tan silty sand, fine-med gr. well graded, dry, no odor
7			Push Probe	↑	2.2			light gray, sandy clay, low plastic, fine gr. dry, no odor
8				90%				
9								
10					1.6		SM	Same as above, light brn / gray
11					0.6		SM	light brn silty sand, fine gr, poor grading, dry, no odor
12				80%				
13					106.1	B Hole 12-14 0939	SM	gray silty sand, fine gr, poor grading, moist, no odor
14								
15					150.7		SM	Same as above, saturated
16				90%				
17					9.2			
18								
19					3.4		SM	light brn / gray silty sand, fine-gr. poor grading saturated, no odor
20								
21					2.9	B Hole 20-22' 0953		
22								
23								
24								
25								



Borehole Logging Form

BOREHOLE ID: BH02 **SITE NAME:** Bauer S3/2,21-4 **CLIENT NAME:** PDC ENERGY
Date Completed: 9/25/19 **Location:** S of former excavation
Drilling Company: Tasman Geosciences **Surface Completion:** Flush mount DTW: 16' TD: 22'
Type of Drill: Direct Push Probe **Geologist:** J. McIner **Project Manager:** C. Hamlin
Bit Size: 2 3/8" **Logging Method:** Continuous macro-core liner / hand auger
Well Const. Material: Diameter: 1" **Screen:** Sch 40 PVC Slotted 0.010" **Riser:** Sch 40 PVC Blank

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description	
1		Hand Auger	↑	0.3		SW	Tan sand, fine - coarse gr., well graded, dry, no odor, some gravel	
2								
3			100%					
4					0.8		CL	DK brn clay, low plastic, dry, no odor
5								
6					1.1		SM	Tan silty sand, fine gr., poor grading, dry, no odor
7		Push Probe			4.8		ML	light brn/gray clayey silt, low plastic, dry, no odor
8				90%				
9					4.5			
10								
11					4.5		ML	Same as above
12				80%				
13					7.3		SM	Gray silty sand, fine gr., poor grading, moist, no odor, black stains
14								
15					4.2		SM	Same as above
16				90%				Saturated
17					5.1			
18								
19				90%	4.1		SM	light brn/gray silty sand, fine gr., poor grading, saturated, no odor
20								
21					5.4			
22								
23								
24								
25								

fm



Borehole Logging Form

BOREHOLE ID: B1403 **SITE NAME:** Bancr S12,21-4 **CLIENT NAME:** PDC ENERGY
Date Completed: 9/25/19 **Location:** Source Boring
Drilling Company: Tasman Geoscience **Surface Completion:** Flush mount **DTW:** 14' **TD:** 20'
Type of Drill: Direct Push Probe **Geologist:** J. McGover **Project Manager:** C. Hamlin
Bit Size: 2 3/8" **Logging Method:** continuous macro-core liner/hand auger

Well Const. Material: Diameter: 1" **Screen:** **Riser:**

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description	
1		Hand auger	↑	0.3		SW	Tan sand, fine-course gr., well graded, dry, no odor, some gravel	
2				↓				
3				100% ↓	1.8		CL	DK brn sandy clay, low plastic, fine-med gr., dry, no odor
4				↓				
5				↓				
6				↓				
7			Push Probe	↑	4.5		SM	Brn silty sand, fine-course gr., well graded, dry, no odor, some gravel
8				90% ↓				
9				↓				
10				↓				
11				↑			SM	Brn silty sand, fine-course gr., well graded, moist, no odor
12				50% ↓	0.6			
13				↓				
14				X				
15				↑			SM	same as above, saturated
16				10% ↓	0.8			
17				↓				
18				↓				
19				↑				No recovery
20				↓				
21								
22								
23								
24								
25								



Borehole Logging Form

BOREHOLE ID: BH04	SITE NAME: Bauer Sijz 21-4	CLIENT NAME: PDC ENERGY
Date Completed: 9/25/19	Location: Not former excavation	
Drilling Company: Tasman geosciences	Surface Completion: Flush mount	DTW: 13' TD: 22'
Type of Drill: Direct Push Probe	Geologist: S. McLaren	Project Manager: C. Hamlin
Bit Size 2 3/4"	Logging Method: Continuous macro-core liner / hand auger	
Well Const. Material: Diameter: 1"	Screen Sch 40 PVC slotted .010	Riser Sch 40 PVC Blank

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description	
1	[Well Completion Diagram]	Hand Auger	↑	0.9		SW	Tan sand, fine-med gr., well sorted, dry, no odor	
2				↓		SM	some gravel	
3				100%	1.1			Brn silty sand, fine-med gr., well sorted, dry, no odor
4								
5								
6								
7			Push Probe	↑			SM	light brn silty sand, fine gr., poor grading, dry, no odor
8				80%	2.3			
9								
10				*	3.9		SM	Same as above, moist
11								
12				90%	5.1			
13								Saturated, same as above
14								
15				60%	3.2		SM	light brn silty sand, fine gr., poor grading, saturated, no odor
16								
17								
18								
19							SM	Same as above
20				60%	4.4			
21								
22								
23								
24								
25								



Borehole Logging Form

BOREHOLE ID: BH05	SITE NAME: Bauer 5; 12, 21-4	CLIENT NAME: PDC ENERGY
Date Completed: 9/25/19	Location: E of former excavation	
Drilling Company: Tasman Geosciences	Surface Completion: Stick up	DTW: 14' TD: 22'
Type of Drill: Direct Push probe	Geologist: J. McInerney	Project Manager: C. Hamlin
Bit Size: 2 3/4"	Logging Method: Continuous Macro-core liner / hand auger	
Well Const. Material: Diameter: 1" Screen: Sch 40 PVC Slotted .010 Riser: Sch 40 PVC Blank		

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description	
1		Hand auger	↑	↑		SC	DK Brn clayey sand, fine gr, poor grading, dry, no odor	
2								
3				100%	0.2			
4								
5								
6								
7			Push Probe	↑	↑		SM	light brn silty sand, fine-med gr, well graded, dry, no odor
8				90%	4.8			
9								
10								
11				↑	3.9		SM	Brn silty sand, fine gr, poor grading, moist, no odor
12				90%	4.4			
13								
14				↓	↓			
15				↑	↑		SM	same as above, saturated
16				90%	4.6			
17								
18				↓	↓			
19				↑	↑			No recovery
20				0%	↓			
21								
22								
23								
24								
25								

ATTACHMENT B

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

November 07, 2019

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

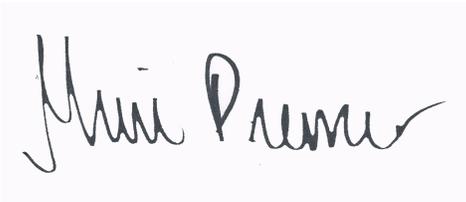
Denver, CO 80203

RE: Bauer 5; 12, 21-4

Work Order # 1910378

Enclosed are the results of analyses for samples received by Summit Scientific on 10/31/19 17:30. 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 initial "M" and a long, sweeping underline.

Muri Premer For Paul Shrewsbury

President



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

Project: Bauer 5; 12, 21-4

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/07/19 17:04

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	1910378-01	Water	10/31/19 14:00	10/31/19 17:30
BH02	1910378-02	Water	10/31/19 13:53	10/31/19 17:30
BH03	1910378-03	Water	10/31/19 13:52	10/31/19 17:30
BH04	1910378-04	Water	10/31/19 13:55	10/31/19 17:30
BH05	1910378-05	Water	10/31/19 13:58	10/31/19 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.

1910378

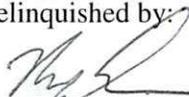
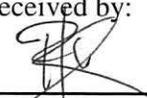
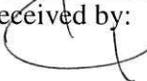
Summit Scientific

S₂

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: <u>Baver 5; 12, 21-4</u>
Sampler Name: <u>Max Dahlgren</u>	Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested				Special Instructions
					HCl	HNO3	None	Other	Water	Soil	Air-Canister #	Other	8260 BTEX	8260B GBTEXN	8015 DRO	pH / EC	
1	BH01	10/31/19	1400	3	X				X				X				
2	BH02		1353	3	X												
3	BH03		1352	1			X										
4	BH04		1355	3	X												
5	BH05		1354	3	X												
6																	
7																	
8																	
9																	
10																	

Relinquished by: 	Date/Time: 10/31/19 1715	Received by: Tasman's Lock Box	Date/Time: 10/31/19 1715	Turn Around Time (Check) Same Day <input type="checkbox"/> 72 hours 24 hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 hours <input type="checkbox"/> Sample Integrity: Temperature Upon Receipt: 4.5 Samples Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Notes:
Relinquished by: Tasman's Lock Box	Date/Time: 10/31/19 1730	Received by: 	Date/Time: 10/31/19 1730		
Relinquished by:	Date/Time:	Received by: 	Date/Time:		

Sample Receipt Checklist

S2 Work Order 1910378

Client: POC/TASMAN Client Project ID: Bauer 5; 12, 21-4

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

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

Temp (°C)	4.5
-----------	-----

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.

PC
Custodian Printed Name or Initials

[Signature]
Signature of Custodian

10/31/19 1805
Date/Time



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

Project: Bauer 5; 12, 21-4

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 11/07/19 17:04

BH01
1910378-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/31/19 14:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1911054	11/06/19	11/07/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **10/31/19 14:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		115 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		79.1 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.1 %		21-167		"	"	"	"	

Summit Scientific



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

Project: Bauer 5; 12, 21-4

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 11/07/19 17:04

BH02
1910378-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/31/19 13:53**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1911054	11/06/19	11/07/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **10/31/19 13:53**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		104 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		77.2 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.5 %		21-167		"	"	"	"	

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

Project: Bauer 5; 12, 21-4

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 11/07/19 17:04

BH03
1910378-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/31/19 13:52**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1911054	11/06/19	11/07/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **10/31/19 13:52**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		104 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		125 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.0 %		21-167		"	"	"	"	

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

Project: Bauer 5; 12, 21-4

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 11/07/19 17:04

BH04
1910378-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/31/19 13:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1911054	11/06/19	11/07/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **10/31/19 13:55**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		117 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		79.6 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.3 %		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: Bauer 5; 12, 21-4

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 11/07/19 17:04

BH05
1910378-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/31/19 13:58**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1911054	11/06/19	11/07/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	2.0		"	"	"	"	"	"	

Date Sampled: **10/31/19 13:58**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		118 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		78.6 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.5 %		21-167		"	"	"	"	

Summit Scientific



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

Project: Bauer 5; 12, 21-4

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/07/19 17:04

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1911054 - EPA 5030 Water MS

Blank (1911054-BLK1)

Prepared: 11/06/19 Analyzed: 11/07/19

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	11.3		"	13.3		84.9		23-173		
Surrogate: Toluene-d8	10.5		"	13.3		78.6		20-170		
Surrogate: 4-Bromofluorobenzene	12.8		"	13.3		96.4		21-167		

LCS (1911054-BS1)

Prepared: 11/06/19 Analyzed: 11/07/19

Benzene	32.8	1.0	ug/l	33.3		98.4		51-132		
Toluene	29.9	1.0	"	33.3		89.7		51-138		
Ethylbenzene	35.6	1.0	"	33.3		107		58-146		
m,p-Xylene	68.9	2.0	"	66.7		103		57-144		
o-Xylene	35.4	1.0	"	33.3		106		53-146		
Surrogate: 1,2-Dichloroethane-d4	13.3		"	13.3		99.5		23-173		
Surrogate: Toluene-d8	11.0		"	13.3		82.7		20-170		
Surrogate: 4-Bromofluorobenzene	14.1		"	13.3		106		21-167		

Matrix Spike (1911054-MS1)

Source: 1910378-01

Prepared: 11/06/19 Analyzed: 11/07/19

Benzene	35.6	1.0	ug/l	33.3	ND	107		34-141		
Toluene	38.5	1.0	"	33.3	ND	116		27-151		
Ethylbenzene	36.4	1.0	"	33.3	ND	109		29-160		
m,p-Xylene	69.1	2.0	"	66.7	ND	104		20-166		
o-Xylene	35.3	1.0	"	33.3	ND	106		33-159		
Surrogate: 1,2-Dichloroethane-d4	13.4		"	13.3		100		23-173		
Surrogate: Toluene-d8	14.0		"	13.3		105		20-170		
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.6		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: Bauer 5; 12, 21-4

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 11/07/19 17:04

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

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

Batch 1911054 - EPA 5030 Water MS

Matrix Spike Dup (1911054-MSD1)	Source: 1910378-01			Prepared: 11/06/19 Analyzed: 11/07/19					
Benzene	34.1	1.0	ug/l	33.3	ND	102	34-141	4.50	30
Toluene	37.0	1.0	"	33.3	ND	111	27-151	4.16	30
Ethylbenzene	36.4	1.0	"	33.3	ND	109	29-160	0.0275	30
m,p-Xylene	69.5	2.0	"	66.7	ND	104	20-166	0.592	30
o-Xylene	35.1	1.0	"	33.3	ND	105	33-159	0.596	30
Surrogate: 1,2-Dichloroethane-d4	13.0		"	13.3		97.3	23-173		
Surrogate: Toluene-d8	13.6		"	13.3		102	20-170		
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.4	21-167		

Summit Scientific



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

Project: Bauer 5; 12, 21-4

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/07/19 17:04

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