

**PDC Energy, Inc.**  
**First Quarter 2016 Groundwater Monitoring Summary**

April 8, 2016

Becker 5-1, 2, 14, 15 Tank Battery  
SWSE Section 5 T3N R64W  
Weld County, API # 05-123-12297  
Spill Tracking # 2231641  
Remediation # 7693

This groundwater summary has been prepared by Tasman Geosciences, Inc. for the Becker 5-1, 2, 14, 15 tank battery. On March 14, 2016 groundwater sampling was conducted at eight monitoring well locations. Groundwater samples were submitted for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by USEPA Method 8260B. Analytical results are summarized in Table 1 and the laboratory analytical report is included as Attachment A. Sample locations and corresponding analytical results are illustrated on Figure 1. First quarter 2016 analytical results indicate that benzene concentrations are above applicable COGCC Table 910-1 groundwater standards in monitoring well BH04. BTEX concentrations are below COGCC regulatory standards at the remaining seven sample locations.

Tasman initiated enhanced fluid recovery (EFR) and air sparge (AS) events on site during the first quarter 2013. Tasman temporarily discontinued EFR/AS events after the fourth quarter 2013, until additional remediation wells could be installed. EFR/AS activities were resumed during the second quarter 2014, and continued through the first quarter 2016. A summary of the EFR/AS operational data is provided in Table 2. EFR/AS events will remain the selected remediation strategy during the second quarter 2016.

Second quarter 2016 groundwater sampling will be conducted in June 2016.

**TABLE 1**  
**BECKER 5-1, 2, 14, 15 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 <sup>(2)</sup> (feet)
COGCC Table 910-1 Groundwater Standard (µg/L) <sup>(1)</sup>		5	560	700	1,400	
GW01	11/29/2012	3,100	610	320	3,700	~ 16
BH01	12/20/2012	97	<1.0	180	1,200	13.24
BH01	3/19/2013	1.7	<1.0	4.9	48	13.27
BH01	6/21/2013	<1.0	<1.0	8.0	49	13.01
BH01	9/23/2013	<1.0	<1.0	<1.0	<1.0	12.52
BH01	12/18/2013	1.5	<1.0	<1.0	<1.0	12.80
BH01	3/28/2014	<1.0	<1.0	1.9	2.2	12.81
BH01	6/25/2014	<1.0	<1.0	15	8.9	11.44
BH01	9/17/2014	<1.0	<1.0	11	2.1	10.93
BH01	12/16/2014	7.4	<1.0	11	<1.0	11.45
BH01	3/27/2015	1.4	4.2	2.2	24	11.59
BH01	6/29/2015	<1.0	<1.0	<1.0	<1.0	8.67
BH01	9/25/2015	<1.0	<1.0	<1.0	<1.0	9.88*
BH01	12/14/2015	<1.0	<1.0	<1.0	<1.0	9.61
BH01	3/14/2016	<1.0	<1.0	<1.0	<1.0	6.95
BH02	12/20/2012	170	1.6	490	1,700	10.20
BH02	3/19/2013	<1.0	<1.0	<1.0	2.8	10.44
BH02	6/21/2013	82	<1.0	66	410	9.85
BH02	9/23/2013	35	<1.0	39	39	9.31
BH02	12/18/2013	550	<1.0	1.4	110	9.74
BH02	3/28/2014	660	1.0	150	280	9.78
BH02	6/25/2014	<1.0	<1.0	<1.0	<1.0	8.12
BH02	9/17/2014	110	<1.0	120	24	7.78
BH02	12/16/2014	<1.0	<1.0	<1.0	<1.0	8.41
BH02	3/27/2015	<1.0	1.8	<1.0	6.5	8.76
BH02	6/29/2015	<1.0	<1.0	<1.0	<1.0	5.51
BH02	9/25/2015	<1.0	<1.0	<1.0	<1.0	6.59*
BH02	12/14/2015	<1.0	<1.0	<1.0	<1.0	6.49
BH02	3/14/2016	<1.0	<1.0	<1.0	<1.0	4.05
BH03	12/20/2012	<1.0	<1.0	<1.0	<1.0	12.78
BH03	3/19/2013	<1.0	<1.0	<1.0	<1.0	12.60
BH03	6/21/2013	<1.0	<1.0	<1.0	<1.0	12.39

**TABLE 1**  
**BECKER 5-1, 2, 14, 15 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 <sup>(2)</sup> (feet)
<b>COGCC Table 910-1 Groundwater Standard (µg/L) <sup>(1)</sup></b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>	
BH03	9/23/2013	<1.0	<1.0	<1.0	<1.0	12.18
BH03	12/18/2013	1.2	<1.0	<1.0	<1.0	12.09
BH03	3/28/2014	<1.0	<1.0	<1.0	<1.0	12.06
BH03	6/25/2014	<1.0	<1.0	<1.0	<1.0	10.92
BH03	9/17/2014	<1.0	<1.0	<1.0	<1.0	10.44
BH03	12/16/2014	<1.0	<1.0	<1.0	<1.0	10.79
BH03	3/27/2015	<1.0	<1.0	<1.0	<1.0	11.05
BH03	6/29/2015	<1.0	<1.0	<1.0	<1.0	8.19
BH03	9/25/2015	<1.0	<1.0	<1.0	<1.0	9.54*
BH03	12/14/2015	<1.0	<1.0	<1.0	<1.0	8.79
BH03	3/14/2016	<1.0	<1.0	<1.0	<1.0	6.25
BH04	6/25/2014	<b>18</b>	<1.0	53	130	8.72
BH04	9/17/2014	1.1	<1.0	<1.0	<1.0	8.13
BH04	12/16/2014	3.3	<1.0	6.0	21	8.73
BH04	3/27/2015	<1.0	<1.0	<1.0	20	8.88
BH04	6/29/2015	<1.0	<1.0	<1.0	2.2	5.73
BH04	9/25/2015	4.5	<1.0	1.2	4.6	7.15*
BH04	12/14/2015	<b>5.4</b>	<1.0	7.7	23	6.63
BH04	3/14/2016	<b>31</b>	<1.0	39	120	4.21
BH05	6/25/2014	<1.0	<1.0	<1.0	<1.0	10.55
BH05	9/17/2014	<1.0	<1.0	<1.0	<1.0	10.70
BH05	12/16/2014	<1.0	<1.0	<1.0	<1.0	10.78
BH05	3/27/2015	<1.0	<1.0	<1.0	<1.0	10.92
BH05	6/29/2015	<1.0	<1.0	<1.0	<1.0	6.64
BH05	9/25/2015	<1.0	<1.0	<1.0	<1.0	8.89*
BH05	12/14/2015	<1.0	<1.0	<1.0	<1.0	8.86
BH05	3/14/2016	<1.0	<1.0	<1.0	<1.0	6.21
BH06	6/25/2014	<1.0	<1.0	<1.0	<1.0	8.67
BH06	9/17/2014	<1.0	<1.0	<1.0	<1.0	8.12
BH06	12/16/2014	<1.0	<1.0	<1.0	<1.0	8.77
BH06	3/27/2015	<1.0	<1.0	<1.0	<1.0	9.14
BH06	6/29/2015	<1.0	<1.0	<1.0	<1.0	5.83

**TABLE 1**  
**BECKER 5-1, 2, 14, 15 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 <sup>(2)</sup> (feet)
<b>COGCC Table 910-1 Groundwater Standard (µg/L) <sup>(1)</sup></b>		<b>5</b>	<b>560</b>	<b>700</b>	<b>1,400</b>	
BH06	9/25/2015	<1.0	<1.0	<1.0	<1.0	7.10*
BH06	12/14/2015	<1.0	<1.0	<1.0	<1.0	6.84
BH06	3/14/2016	<1.0	<1.0	<1.0	<1.0	4.40
BH07	6/25/2014	<1.0	<1.0	<1.0	<1.0	8.94
BH07	9/17/2014	<1.0	<1.0	<1.0	<1.0	8.40
BH07	12/16/2014	<1.0	<1.0	<1.0	<1.0	8.17
BH07	3/27/2015	<1.0	<1.0	<1.0	<1.0	9.42
BH07	6/29/2015	<1.0	<1.0	<1.0	<1.0	6.14
BH07	9/25/2015	<1.0	<1.0	<1.0	<1.0	6.62*
BH07	12/14/2015	<1.0	<1.0	<1.0	<1.0	6.84
BH07	3/14/2016	<1.0	<1.0	<1.0	<1.0	4.40
BH08	6/25/2014	<1.0	<1.0	<1.0	<1.0	8.92
BH08	9/17/2014	<1.0	<1.0	<1.0	<1.0	8.40
BH08	12/16/2014	<1.0	<1.0	<1.0	<1.0	9.02
BH08	3/27/2015	<1.0	<1.0	<1.0	<1.0	9.39
BH08	6/29/2015	<1.0	<1.0	<1.0	<1.0	6.09
BH08	9/25/2015	<1.0	<1.0	<1.0	<1.0	7.41*
BH08	12/14/2015	<1.0	<1.0	<1.0	<1.0	7.10
BH08	3/14/2016	<1.0	<1.0	<1.0	<1.0	4.63

**Notes:**

1. Groundwater standards referenced from 2 CCR 404-1, Table 910-1, effective January 30, 2015.

COGCC = Colorado Oil and Gas Conservation Commission

2. Depth to water measured from top of well casing or ground surface for monitoring well samples and excavation samples, respectively.

\* Well repairs completed during 3rd Quarter 2015 resulted in a few inches of casing being cut off of each well.

µg/L = Micrograms per liter

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

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

**TABLE 2**  
**BECKER 5-1, 2, 14, 15 TANK BATTERY**  
**EFR / AS OPERATIONAL SUMMARY TABLE**

Date	EFR Wells	Total EFR/AS Duration (hours)	Approximate Gallons Extracted	AS Wells	Air Injection Pressure (psi)
First Quarter 2013					
1/28/2013	BH01, BH02	6	4.5	BH01, BH02	10
2/16/2013		5.5	16		10
3/3/2013		6	0		10
3/18/2013		6	7		10
Quarterly Totals		23.5	27.5		-
Second Quarter 2013					
4/15/2013	BH01, BH02	6	9	BH01, BH02	10
5/3/2013		4	0		10
5/20/2013		6	2		10
Quarterly Totals		16	11		-
Third Quarter 2013					
7/8/2013	BH01, BH02	6	7	BH01, BH02	10
7/23/2013		6.25	0		10
8/9/2013		6.25	2		15
8/22/2013		6	0		NR
9/9/2013		6	13		10
9/17/2013		6	NR		13.5
9/24/2013		6	15		15
Quarterly Totals		42.5	37		
Fourth Quarter 2013					
10/7/2013	BH01, BH02	6	1	BH01, BH02	10
10/15/2013		6.25	5		10
10/29/2013		6	0		10
11/13/2013		6	NR		10
11/25/2013		5	0.5		10
12/19/2013		None	6		0
Quarterly Totals		35.25	6.5		-
Second Quarter 2014					
4/16/2014	BH02	6	0	BH02, BH04, BH05, BH06, BH07	10
5/1/2014		6	0		20
5/7/2014		6	0		10
5/21/2014		4.5	0		10
6/6/2014		6	0		10
6/19/2014		6	0		20
Quarterly Totals		34.5	0		
Third Quarter 2014					
7/9/2014	BH02	6	0	BH02, BH04, BH05, BH06, BH07	20
7/14/2014		6	0		20
8/5/2014		6	42		20
8/22/2014		6	0		20
9/11/2014		6	20	BH04, BH05, BH06	20
Quarterly Totals		30	62		

**TABLE 2**  
**BECKER 5-1, 2, 14, 15 TANK BATTERY**  
**EFR / AS OPERATIONAL SUMMARY TABLE**

Date	EFR Wells	Total EFR/AS Duration (hours)	Approximate Gallons Extracted	AS Wells	Air Injection Pressure (psi)
Fourth Quarter 2014					
10/1/2014	BH02	6	0	BH02, BH03, BH04, BH06, BH07	20
10/20/2014	BH04, BH05, BH06, BH07	6	50	BH02, BH04, BH05, BH06, BH07	20
11/3/2014		6	18		20
11/20/2014	BH02, BH04, BH05, BH06, BH07	6	10	BH04, BH05, BH06, BH07	20
12/8/2014	BH04, BH05, BH06, BH07	6	0	BH02, BH04, BH05, BH06, BH07	30
12/19/2014		6	10		30
Quarterly Totals		36	88		
First Quarter 2015					
1/8/2015	BH01, BH02, BH04, BH06	6	0	BH01, BH02, BH04, BH06	20
1/21/2015		6	0		20
2/6/2015		6	0		20
2/19/2015		6	5		20
3/10/2015		6	0		20
3/23/2015		6	25		20
3/31/2015		6	25		20
Quarterly Totals		42	55		
Second Quarter 2015					
4/10/2015	BH01, BH02, BH04, BH06	6	27	BH01, BH02, BH04, BH06	20
4/17/2015		6	18		20
4/28/2015		6	20		30
5/11/2015		6	50		20
5/26/2015		6	35		20
6/9/2015		6	20		25
6/25/2015	BH04, BH06	3	10	BH01, BH02	20
Quarterly Totals		39	180		
Third Quarter 2015					
7/7/2015	BH01, BH02, BH04, BH06	6	0	BH01, BH02, BH04, BH06	20
7/21/2015		6	0		20
8/4/2015		6	10		20
9/1/2015		6	80		20
9/14/2015		6	0		20
9/29/2015		6	60		20
Quarterly Totals		36	150		
Fourth Quarter 2015					
10/12/2015	BH01, BH02, BH04, BH06	6	20	BH01, BH02, BH04, BH06	20
10/26/2015		6	0		14
11/9/2015		6	70		20
12/8/2015	BH01, BH02, BH07	6	70	BH01, BH02, BH04	20
12/18/2015		6	20		20
Quarterly Totals		30	180		

**TABLE 2**  
**BECKER 5-1, 2, 14, 15 TANK BATTERY**  
**EFR / AS OPERATIONAL SUMMARY TABLE**

Date	EFR Wells	Total EFR/AS Duration (hours)	Approximate Gallons Extracted	AS Wells	Air Injection Pressure (psi)
First Quarter 2016					
1/6/2016	BH01, BH02, BH07	6	50	BH01, BH04	20
1/21/2016		6	30		20
2/3/2016		6	30		20
2/18/2016		6	122		20
3/3/2016		6	30		20
Quarterly Totals		30	262		

**Notes:**

EFR = Enhanced fluid recovery

AS = Air sparge

psi = Pounds per square inch

NR = Not recorded



Surface  
Drainage

BH03		
Compound (µg/L)	12/14/2015	3/14/2016
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

BH03

BH01		
Compound (µg/L)	12/14/2015	3/14/2016
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

BH01

BH05		
Compound (µg/L)	12/14/2015	3/14/2016
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

BH05

BH02		
Compound (µg/L)	12/14/2015	3/14/2016
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

BH02

BH04		
Compound (µg/L)	12/14/2015	3/14/2016
Benzene	5.4	31
Toluene	<1.0	<1.0
Ethylbenzene	7.7	39
Total Xylenes	23	120

BH04

BH06

BH07

BH08

BH06		
Compound (µg/L)	12/14/2015	3/14/2016
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

BH07		
Compound (µg/L)	12/14/2015	3/14/2016
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

BH08		
Compound (µg/L)	12/14/2015	3/14/2016
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

County Road 36

0 ft 30 ft 60 ft

**Note:** Surface drainage direction is estimated based on site topography and is not related to regional topography.

DRAWN BY: ESS

DATE: 3/23/2016

**Facility Diagram**  
PDC Energy – DJ Basin  
Becker 5-1, 2, 14, 15 Tank Battery  
SWSE S5 T3N R64W  
Weld County, CO



6899 Pecos Street  
Unit C  
Denver, CO 80221

**LEGEND**

- Excavation Area
- Monitoring Well Location
- Excavation Groundwater Sample Location
- Point of Release

All locations are approximate unless otherwise noted

**FIGURE 1**  
GROUNDWATER ANALYTICAL RESULTS MAP



## **ATTACHMENT A**

# Summit Scientific

---

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

March 21, 2016

Mark Longhurst  
PDC Energy  
1775 Sherman St. STE. 3000  
Denver, CO 80203  
RE: Becker 5-1,2,14,15

Enclosed are the results of analyses for samples received by Summit Scientific on 03/14/16 16:50. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Paul Shrewsbury  
President



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

Project: Becker 5-1,2,14,15

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
03/21/16 13:53

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	1603102-01	Water	03/14/16 15:40	03/14/16 16:50
BH02	1603102-02	Water	03/14/16 15:56	03/14/16 16:50
BH03	1603102-03	Water	03/14/16 15:37	03/14/16 16:50
BH04	1603102-04	Water	03/14/16 15:57	03/14/16 16:50
BH05	1603102-05	Water	03/14/16 15:40	03/14/16 16:50
BH06	1603102-06	Water	03/14/16 15:50	03/14/16 16:50
BH07	1603102-07	Water	03/14/16 15:45	03/14/16 16:50
BH08	1603102-08	Water	03/14/16 15:49	03/14/16 16:50

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: Becker 5-1,2,14,15

Project Number: [none]  
Project Manager: Mark Longhurst

Reported:  
03/21/16 13:53

## Summit Scientific



1603102

741 Corporate Circle Suite 1 • Golden, Colorado 80401  
303-277-9310 • 303-374-5933 Fax

Page 1 of 1

Client: PDC Energy  
Address: \_\_\_\_\_  
City/State/Zip: \_\_\_\_\_  
Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
Sampler Name: MTH P  
Project Manager: Mark Longhurst  
E-Mail: Mark.longhurst@pdcecom  
Project Name: Becker 5-1,2,14,15  
Project Number: \_\_\_\_\_

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative			Matrix			Analyze For:				Special Instructions	
				HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	BTEX 8260			
BHo1	3/14/16	15:40	3	X											
BHo2		15:56				X									
BHo3		15:32		X											
BHo4		15:57		X											
BHo5		15:40		X											
BHo6		15:50		X											
BHo7		15:45		X											
BHo8		15:49		X											

Relinquished by: 	Date/Time: 3/14/16 16:50	Received by: 	Date/Time: 3-14-16 16:50	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:	Date/Time:	Received by:	Date/Time:	Sample Integrity: Temperature Upon Receipt: 10.2 Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Relinquished by:	Date/Time:	Received in Lab by:	Date/Time:		

www.s2scientific.com

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: Becker 5-1,2,14,15  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
03/21/16 13:53

**BH01**  
**1603102-01 (Water)**

**Summit Scientific**

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

Date Sampled: **03/14/16 15:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1603147	03/16/16	03/16/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **03/14/16 15:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		103 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		101 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	45-146		"	"	"	"	

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: Becker 5-1,2,14,15  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
03/21/16 13:53

**BH02**  
**1603102-02 (Water)**

**Summit Scientific**

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

Date Sampled: **03/14/16 15:56**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1603147	03/16/16	03/16/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **03/14/16 15:56**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		99.4 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		97.3 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	45-146		"	"	"	"	

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: Becker 5-1,2,14,15  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
03/21/16 13:53

**BH03**  
**1603102-03 (Water)**

**Summit Scientific**

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

Date Sampled: **03/14/16 15:37**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1603147	03/16/16	03/16/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **03/14/16 15:37**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		101 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		99.7 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	45-146		"	"	"	"	

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: Becker 5-1,2,14,15  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
03/21/16 13:53

**BH04**  
**1603102-04 (Water)**

**Summit Scientific**

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

Date Sampled: **03/14/16 15:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>31</b>	1.0	ug/l	1	1603147	03/16/16	03/16/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>39</b>	1.0	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>120</b>	1.0	"	"	"	"	"	"	

Date Sampled: **03/14/16 15:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		104 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		101 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		98.7 %	45-146		"	"	"	"	

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: Becker 5-1,2,14,15  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
03/21/16 13:53

**BH05**  
**1603102-05 (Water)**

**Summit Scientific**

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

Date Sampled: **03/14/16 15:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1603147	03/16/16	03/16/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **03/14/16 15:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		105 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		99.2 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	45-146		"	"	"	"	

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: Becker 5-1,2,14,15  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
03/21/16 13:53

**BH06**  
**1603102-06 (Water)**

**Summit Scientific**

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

Date Sampled: **03/14/16 15:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1603147	03/16/16	03/16/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **03/14/16 15:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		99.6 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		97.7 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	45-146		"	"	"	"	

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: Becker 5-1,2,14,15  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
03/21/16 13:53

**BH07**  
**1603102-07 (Water)**

**Summit Scientific**

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

Date Sampled: **03/14/16 15:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1603147	03/16/16	03/16/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **03/14/16 15:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		98.7 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	45-146		"	"	"	"	

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: Becker 5-1,2,14,15  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
03/21/16 13:53

**BH08**  
**1603102-08 (Water)**

**Summit Scientific**

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

Date Sampled: **03/14/16 15:49**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1603147	03/16/16	03/16/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **03/14/16 15:49**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		101 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		98.4 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	45-146		"	"	"	"	

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: Becker 5-1,2,14,15  
Project Number: [none]  
Project Manager: Mark Longhurst

Reported:  
03/21/16 13:53

**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 1603147 - EPA 5030 Water MS**

**Blank (1603147-BLK1)**

Prepared & Analyzed: 03/16/16

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	9.13		"	13.3		68.5	37-154			
Surrogate: Toluene-d8	13.1		"	13.3		98.5	45-149			
Surrogate: 4-Bromofluorobenzene	13.1		"	13.3		98.1	45-146			

**LCS (1603147-BS1)**

Prepared & Analyzed: 03/16/16

Benzene	33.6	1.0	ug/l	33.3		101	51-132			
Toluene	32.4	1.0	"	33.3		97.4	51-138			
Ethylbenzene	34.4	1.0	"	33.1		104	58-146			
m,p-Xylene	62.4	2.0	"	66.5		93.7	57-144			
o-Xylene	31.4	1.0	"	32.7		96.2	53-146			
Surrogate: 1,2-Dichloroethane-d4	14.8		"	13.3		111	37-154			
Surrogate: Toluene-d8	13.8		"	13.3		103	45-149			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		99.1	45-146			

**Matrix Spike (1603147-MS1)**

Source: 1603101-01

Prepared & Analyzed: 03/16/16

Benzene	35.1	1.0	ug/l	33.3	ND	105	34-141			
Toluene	34.5	1.0	"	33.3	ND	104	27-151			
Ethylbenzene	38.4	1.0	"	33.1	ND	116	29-160			
m,p-Xylene	70.1	2.0	"	66.5	ND	105	20-166			
o-Xylene	34.7	1.0	"	32.7	ND	106	33-159			
Surrogate: 1,2-Dichloroethane-d4	13.1		"	13.3		98.3	37-154			
Surrogate: Toluene-d8	13.6		"	13.3		102	45-149			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.9	45-146			

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: Becker 5-1,2,14,15  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
03/21/16 13:53

**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 1603147 - EPA 5030 Water MS**

Matrix Spike Dup (1603147-MSD1)	Source: 1603101-01			Prepared & Analyzed: 03/16/16						
Benzene	35.0	1.0	ug/l	33.3	ND	105	34-141	0.114	32	
Toluene	34.5	1.0	"	33.3	ND	104	27-151	0.0869	25	
Ethylbenzene	37.4	1.0	"	33.1	ND	113	29-160	2.61	50	
m,p-Xylene	68.5	2.0	"	66.5	ND	103	20-166	2.28	36	
o-Xylene	34.0	1.0	"	32.7	ND	104	33-159	1.95	26	
Surrogate: 1,2-Dichloroethane-d4	14.0		"	13.3		105	37-154			
Surrogate: Toluene-d8	13.6		"	13.3		102	45-149			
Surrogate: 4-Bromofluorobenzene	13.1		"	13.3		98.0	45-146			

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.*