



PDC Energy, Inc.
First Quarter 2013 Groundwater Monitoring Summary

May 8, 2013

Becker 5-1, 2, 14, 15 Tank Battery
SE 1/4 Section 5 T3N R64W
Weld County, API # 05-123-12297

This groundwater summary has been prepared by Tasman Geosciences, LLC for the Becker 5-1, 2, 14, 15 tank battery (site). On March 19, 2013 groundwater sampling was conducted at three 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 below and a complete lab report is included as Attachment A. Sample locations and corresponding analytical results are illustrated on Figure 2. First quarter 2013 analytical results indicate that BTEX concentrations are below regulatory standards at all three sample locations for the first time.

Tasman performed enhanced fluid recovery (EFR) and air sparge (AS) events at the site during the first quarter 2013. A summary of the EFR/AS operational data is provided in Table 2. AS and EFR events continue to address residual petroleum hydrocarbon impacts at the site, as evidenced by the declining BTEX concentrations observed since the fourth quarter 2012 sampling event. EFR/AS events will continue during the second quarter of 2013.

The second quarter 2013 groundwater sampling event will be conducted in June 2013.

TABLE 1
BECKER 5-1, 2, 14, 15
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Depth to Water (feet)
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
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
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
COGCC standards for Groundwater (ug/L) ⁽¹⁾		5	560	700	1,400	

Notes:

1). The environmental cleanup standards for groundwater that are applicable to this site are the Colorado Oil and Gas Conservation Commission (COGCC) standards for contaminants in groundwater according to Table 910-1 of the COGCC 900 Series Rule for E&P Waste Management.

Bold red values indicate an exceedance of the COGCC groundwater standards for the Site.

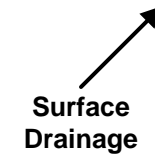
ug/L= Micrograms per liter.

TABLE 2
BECKER 5-1, 2, 14, 15
AIR SPARGE / EFR OPERATIONAL SUMMARY TABLE

Date	EFR Wells	Total EFR/AS Duration (hours)	Approximate Gallons Extracted	AS Wells	Injection Pressure (psi)
FIRST QUARTER 2013					
1/28/2013	BH01, BH02	6	4.5	BH01, BH02	10
2/16/2013	BH01, BH02	5.5	16	BH01, BH02	10
3/3/2013	BH01, BH02	6	0	BH01, BH02	10
3/18/2013	BH01, BH02	6	7	BH01, BH02	10
TOTALS		23.5	27.5		

Notes:

psi = pounds per square inch



DCP / PDC Tank Battery

Property Fence

BH03



BH03		
Compound (ug/L)	12/20/2012	3/19/2013
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0



BH01

BH01		
Compound (ug/L)	12/20/2012	3/19/2013
Benzene	97.0	1.7
Toluene	<1.0	<1.0
Ethylbenzene	180	4.9
Total Xylenes	1,200	48

BH02

BH02		
Compound (ug/L)	12/20/2012	3/19/2013
Benzene	170	<1.0
Toluene	1.6	<1.0
Ethylbenzene	490	<1.0
Total Xylenes	1,700	2.8

Separator 10 bbl

Separator 10 bbl

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

DRAWN BY: ESS

DATE: 4/12/2013

Facility Diagram
PDC Energy – DJ Basin
Becker 5-1, 2, 14, 15
SE 1/4 S5 T3N R64W
Weld County, CO



6899 Pecos Street
Unit C
Denver, CO 80221

LEGEND

- Earthen Berm
- Temporary Monitoring Well
- Groundwater Sample Location Collected During Excavation Activities

FIGURE 2
GROUNDWATER
ANALYTICAL RESULTS
Not to Scale

ATTACHMENT A

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

March 26, 2013

Brandon Bruns
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 03/19/13 16:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Joseph J Egry IV
Laboratory Director

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

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

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
03/26/13 16:25

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	R303136-01	Water	03/19/13 09:00	03/19/13 16:30
BH02	R303136-02	Water	03/19/13 09:05	03/19/13 16:30
BH03	R303136-03	Water	03/19/13 09:10	03/19/13 16:30

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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: Brandon Bruns

Reported:
03/26/13 16:25

Summit Scientific
R303136

S₂
741 Corporate Circle Suite I ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-277-9531 Fax

Page 1 of 1

Client: ~~Tasman Geosciences~~ PDX Energy

Address: 6899 Pecos Street

City/State/Zip: Denver, CO 80221

Phone: (770) 988-7004

Sampler Name:

Project Manager: Brandon Bink

E-Mail: irandev@vms.fi.pde.com

Printed Name: 'Zack' - 17.4/5

Project Number.	186853
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[illegible]

www.s2scientific.com

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Legal Eagle IV



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

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

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
03/26/13 16:25

BH01
R303136-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/19/13 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	1.7	1.0	ug/l	1	3032309	03/23/13	03/25/13	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	4.9	1.0	"	"	"	"	"	"	
Xylenes (total)	48	1.0	"	"	"	"	"	"	

Date Sampled: **03/19/13 09:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		103 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	45-146		"	"	"	"	

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

Project: Becker 5-1,2,14,15
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
03/26/13 16:25

BH02
R303136-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/19/13 09:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	3032309	03/23/13	03/25/13	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	2.8	1.0	"	"	"	"	"	"	

Date Sampled: **03/19/13 09:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		105 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		99.5 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	45-146		"	"	"	"	

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

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
03/26/13 16:25

BH03
R303136-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/19/13 09:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	3032309	03/23/13	03/25/13	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	1.0		"	"	"	"	"	"	

Date Sampled: **03/19/13 09:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		108 %		37-154		"	"	"	"	
Surrogate: Toluene-d8		100 %		45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %		45-146		"	"	"	"	

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1775 Sherman St. STE. 3000
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Project: Becker 5-1,2,14,15
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
03/26/13 16:25

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 3032309 - EPA 5030 Water MS

Blank (3032309-BLK1)

Prepared: 03/23/13 Analyzed: 03/25/13

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	14.2		"	13.2		107	37-154			
Surrogate: Toluene-d8	13.3		"	13.3		100	45-149			
Surrogate: 4-Bromofluorobenzene	13.3		"	13.3		99.8	45-146			

LCS (3032309-BS1)

Prepared: 03/23/13 Analyzed: 03/25/13

Benzene	23.4	1.0	ug/l	33.3		70.1	51-132			
Toluene	24.5	1.0	"	33.3		73.4	51-138			
Ethylbenzene	25.2	1.0	"	33.3		75.7	58-146			
m,p-Xylene	52.1	2.0	"	66.7		78.1	57-144			
o-Xylene	26.2	1.0	"	33.3		78.6	53-146			
Surrogate: 1,2-Dichloroethane-d4	14.0		"	13.2		106	37-154			
Surrogate: Toluene-d8	13.2		"	13.3		98.7	45-149			
Surrogate: 4-Bromofluorobenzene	13.9		"	13.3		104	45-146			

LCS Dup (3032309-BSD1)

Prepared: 03/23/13 Analyzed: 03/25/13

Benzene	23.3	1.0	ug/l	33.3		70.0	51-132	0.129	17	
Toluene	24.3	1.0	"	33.3		72.8	51-138	0.820	17	
Ethylbenzene	24.6	1.0	"	33.3		73.9	58-146	2.37	16	
m,p-Xylene	50.6	2.0	"	66.7		75.8	57-144	2.92	16	
o-Xylene	25.7	1.0	"	33.3		77.0	53-146	2.12	15	
Surrogate: 1,2-Dichloroethane-d4	14.4		"	13.2		109	37-154			
Surrogate: Toluene-d8	13.2		"	13.3		99.4	45-149			
Surrogate: 4-Bromofluorobenzene	13.1		"	13.3		98.0	45-146			

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03/26/13 16:25

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

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

Batch 3032309 - EPA 5030 Water MS

Matrix Spike (3032309-MS1)				Source: R303134-01		Prepared: 03/23/13		Analyzed: 03/25/13	
Benzene	22.8	1.0	ug/l	33.3	ND	68.3	34-141		
Toluene	23.8	1.0	"	33.3	ND	71.3	27-151		
Ethylbenzene	24.6	1.0	"	33.3	ND	73.7	29-160		
m,p-Xylene	49.9	2.0	"	66.7	ND	74.8	20-166		
o-Xylene	26.1	1.0	"	33.3	ND	78.2	33-159		
Surrogate: 1,2-Dichloroethane-d4	14.6		"	13.2		110	37-154		
Surrogate: Toluene-d8	13.3		"	13.3		99.6	45-149		
Surrogate: 4-Bromofluorobenzene	14.0		"	13.3		105	45-146		
Matrix Spike Dup (3032309-MSD1)				Source: R303134-01		Prepared: 03/23/13		Analyzed: 03/25/13	
Benzene	20.2	1.0	ug/l	33.3	ND	60.7	34-141	11.8	32
Toluene	21.1	1.0	"	33.3	ND	63.2	27-151	12.0	25
Ethylbenzene	21.2	1.0	"	33.3	ND	63.8	29-160	14.5	50
m,p-Xylene	43.6	2.0	"	66.7	ND	65.4	20-166	13.4	36
o-Xylene	22.3	1.0	"	33.3	ND	66.9	33-159	15.6	26
Surrogate: 1,2-Dichloroethane-d4	14.6		"	13.2		111	37-154		
Surrogate: Toluene-d8	13.5		"	13.3		101	45-149		
Surrogate: 4-Bromofluorobenzene	13.8		"	13.3		104	45-146		

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1775 Sherman St. STE. 3000
Denver CO, 80203

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

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
03/26/13 16:25

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

A handwritten signature in black ink, appearing to read 'Daniel A. Bruns IV'.