



PDC Energy, Inc.
Fourth Quarter 2012 Groundwater Monitoring Summary

January 29, 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. Three temporary monitoring wells were installed on December 13, 2012 for groundwater monitoring and remediation purposes. On December 20, 2012 groundwater sampling was conducted at three monitoring well locations. Groundwater samples were submitted for laboratory analysis of BTEX constituents using 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. Fourth quarter analytical results indicate benzene concentrations are in exceedance of COGCC regulatory standards in BH01 and BH02. Elevated total xylenes were also observed in BH02 during the fourth quarter monitoring period. BTEX concentrations were below laboratory detection limits in BH03.

Tasman will initiate bi-weekly enhanced fluid recovery (EFR) and air sparging (AS) events during the first quarter 2013 to address residual dissolved phase petroleum hydrocarbon concentrations in groundwater. Chemical oxidation injections may be implemented as a final polishing technique, if warranted.

First quarter 2013 groundwater sampling will be conducted during March 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
BH02	12/20/2012	170	1.6	490	1,700	10.20
BH03	12/20/2012	<1.0	<1.0	<1.0	<1.0	12.78
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.

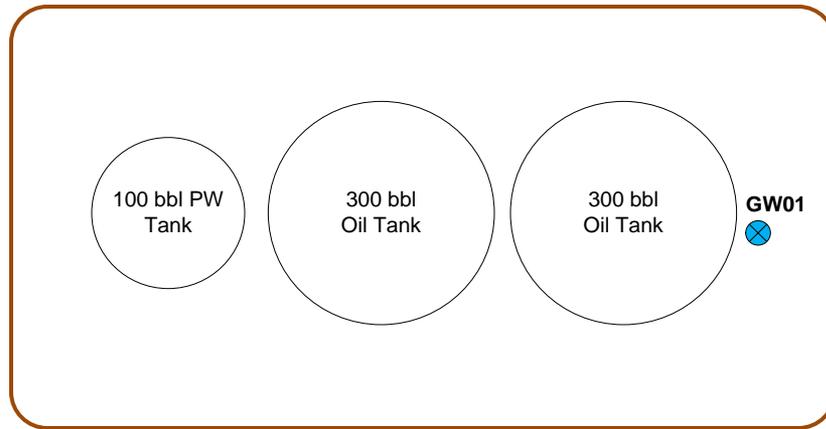
Bold red values indicate an exceedance of the COGCC groundwater standards for the Site.

ug/L= Micrograms per liter.



DCP / PDC Tank Battery

Property Fence



BH03

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

BH01

BH01	
Compound (ug/L)	12/20/2012
Benzene	97
Toluene	<1.0
Ethylbenzene	180
Total Xylenes	1,200

BH02

BH02	
Compound (ug/L)	12/20/2012
Benzene	170
Toluene	1.6
Ethylbenzene	490
Total Xylenes	1,700

Separator 10 bbl

Separator 10 bbl

Note: Surface drainage is approximated based on visual observation of the tank battery. It is not based on regional topography.

DRAWN BY: CAW

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

DATE: 1/14/2013

ATTACHMENT A

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

December 27, 2012

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 12/21/12 12:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Joseph J. Egry IV". The signature is stylized and cursive.

Joseph J Egry IV
Laboratory Director



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:
12/27/12 15:50

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	R212143-01	Water	12/20/12 13:20	12/21/12 12:00
BH02	R212143-02	Water	12/20/12 13:25	12/21/12 12:00
BH03	R212143-03	Water	12/20/12 13:30	12/21/12 12:00

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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:
 12/27/12 15:50

BH01
R212143-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/20/12 13:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	97	1.0	ug/l	1	2122608	12/26/12	12/27/12	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	180	1.0	"	"	"	"	"	"	
Xylenes (total)	1200	100	"	100	"	"	12/27/12	"	

Date Sampled: 12/20/12 13:20

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		107 %	37-154		"	"	12/27/12	"	
<i>Surrogate: Toluene-d8</i>		115 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		75.7 %	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 Brunns

Reported:
 12/27/12 15:50

BH02
R212143-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/20/12 13:25

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	170	1.0	ug/l	1	2122608	12/26/12	12/27/12	EPA 8260B	
Toluene	1.6	1.0	"	"	"	"	"	"	
Ethylbenzene	490	100	"	100	"	"	12/27/12	"	
Xylenes (total)	1700	100	"	"	"	"	"	"	

Date Sampled: 12/20/12 13:25

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		109 %	37-154		"	"	12/27/12	"	
<i>Surrogate: Toluene-d8</i>		104 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		75.3 %	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 Bruns

Reported:
 12/27/12 15:50

BH03
R212143-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 12/20/12 13:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	2122608	12/26/12	12/27/12	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: 12/20/12 13:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		117 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		98.4 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %	45-146		"	"	"	"	

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Project Manager: Brandon Brunns

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12/27/12 15:50

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 2122608 - EPA 5030 Water MS

Blank (2122608-BLK1)

Prepared & Analyzed: 12/26/12

Benzene	ND	1.0	ug/l								
Toluene	ND	1.0	"								
Ethylbenzene	ND	1.0	"								
Xylenes (total)	ND	1.0	"								
Surrogate: 1,2-Dichloroethane-d4	12.8		"	13.2		96.9	37-154				
Surrogate: Toluene-d8	12.8		"	13.3		96.2	45-149				
Surrogate: 4-Bromofluorobenzene	12.3		"	13.3		92.4	45-146				

Blank (2122608-BLK2)

Prepared & Analyzed: 12/26/12

Benzene	ND	1.0	ug/l								
Toluene	ND	1.0	"								
Ethylbenzene	ND	1.0	"								
Xylenes (total)	ND	1.0	"								
Surrogate: 1,2-Dichloroethane-d4	12.4		"	13.2		93.3	37-154				
Surrogate: Toluene-d8	12.7		"	13.3		95.0	45-149				
Surrogate: 4-Bromofluorobenzene	12.5		"	13.3		93.7	45-146				

LCS (2122608-BS1)

Prepared & Analyzed: 12/26/12

Benzene	27.1	1.0	ug/l	33.3		81.3	51-132				
Toluene	32.3	1.0	"	33.3		96.9	51-138				
Ethylbenzene	42.1	1.0	"	33.3		126	58-146				
m,p-Xylene	77.3	2.0	"	66.7		116	57-144				
o-Xylene	40.5	1.0	"	33.3		121	53-146				
Surrogate: 1,2-Dichloroethane-d4	12.6		"	13.2		94.9	37-154				
Surrogate: Toluene-d8	12.9		"	13.3		96.5	45-149				
Surrogate: 4-Bromofluorobenzene	12.8		"	13.3		95.9	45-146				

LCS (2122608-BS2)

Prepared & Analyzed: 12/26/12

Benzene	27.5	1.0	ug/l	33.3		82.4	51-132				
Toluene	32.3	1.0	"	33.3		97.0	51-138				
Ethylbenzene	41.5	1.0	"	33.3		124	58-146				
m,p-Xylene	75.5	2.0	"	66.7		113	57-144				
o-Xylene	40.1	1.0	"	33.3		120	53-146				
Surrogate: 1,2-Dichloroethane-d4	12.3		"	13.2		93.2	37-154				
Surrogate: Toluene-d8	13.1		"	13.3		98.3	45-149				
Surrogate: 4-Bromofluorobenzene	12.3		"	13.3		92.1	45-146				

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Denver CO, 80203

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

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
12/27/12 15:50

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 2122608 - EPA 5030 Water MS

LCS Dup (2122608-BSD1)

Prepared & Analyzed: 12/26/12

Benzene	27.7	1.0	ug/l	33.3		83.1	51-132	2.19	17	
Toluene	32.1	1.0	"	33.3		96.4	51-138	0.497	17	
Ethylbenzene	41.8	1.0	"	33.3		126	58-146	0.524	16	
m,p-Xylene	74.9	2.0	"	66.7		112	57-144	3.11	16	
o-Xylene	40.7	1.0	"	33.3		122	53-146	0.468	15	
Surrogate: 1,2-Dichloroethane-d4	12.5		"	13.2		94.6	37-154			
Surrogate: Toluene-d8	12.9		"	13.3		96.6	45-149			
Surrogate: 4-Bromofluorobenzene	12.4		"	13.3		93.2	45-146			

LCS Dup (2122608-BSD2)

Prepared & Analyzed: 12/26/12

Benzene	27.9	1.0	ug/l	33.3		83.8	51-132	1.70	17	
Toluene	33.2	1.0	"	33.3		99.5	51-138	2.50	17	
Ethylbenzene	41.3	1.0	"	33.3		124	58-146	0.387	16	
m,p-Xylene	75.1	2.0	"	66.7		113	57-144	0.624	16	
o-Xylene	40.6	1.0	"	33.3		122	53-146	1.29	15	
Surrogate: 1,2-Dichloroethane-d4	12.7		"	13.2		95.9	37-154			
Surrogate: Toluene-d8	13.2		"	13.3		99.2	45-149			
Surrogate: 4-Bromofluorobenzene	12.4		"	13.3		92.7	45-146			

Matrix Spike (2122608-MS1)

Source: R212154-01

Prepared & Analyzed: 12/26/12

Benzene	27.7	1.0	ug/l	33.3	ND	83.2	34-141			
Toluene	33.3	1.0	"	33.3	ND	99.9	27-151			
Ethylbenzene	40.9	1.0	"	33.3	ND	123	29-160			
m,p-Xylene	75.5	2.0	"	66.7	ND	113	20-166			
o-Xylene	40.0	1.0	"	33.3	ND	120	33-159			
Surrogate: 1,2-Dichloroethane-d4	13.0		"	13.2		98.4	37-154			
Surrogate: Toluene-d8	13.1		"	13.3		98.2	45-149			
Surrogate: 4-Bromofluorobenzene	11.8		"	13.3		88.6	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 Brunns

Reported:
12/27/12 15:50

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 2122608 - EPA 5030 Water MS

Matrix Spike (2122608-MS2)

Source: R212154-02

Prepared & Analyzed: 12/26/12

Benzene	28.5	1.0	ug/l	33.3	ND	85.5	34-141			
Toluene	33.2	1.0	"	33.3	ND	99.5	27-151			
Ethylbenzene	42.1	1.0	"	33.3	ND	126	29-160			
m,p-Xylene	77.0	2.0	"	66.7	ND	116	20-166			
o-Xylene	41.0	1.0	"	33.3	ND	123	33-159			
Surrogate: 1,2-Dichloroethane-d4	12.4		"	13.2		94.1	37-154			
Surrogate: Toluene-d8	13.3		"	13.3		99.7	45-149			
Surrogate: 4-Bromofluorobenzene	12.4		"	13.3		92.6	45-146			

Matrix Spike Dup (2122608-MSD1)

Source: R212154-01

Prepared & Analyzed: 12/26/12

Benzene	28.3	1.0	ug/l	33.3	ND	85.0	34-141	2.18	32
Toluene	33.6	1.0	"	33.3	ND	101	27-151	0.926	25
Ethylbenzene	42.7	1.0	"	33.3	ND	128	29-160	4.38	50
m,p-Xylene	78.3	2.0	"	66.7	ND	117	20-166	3.66	36
o-Xylene	41.7	1.0	"	33.3	ND	125	33-159	4.24	26
Surrogate: 1,2-Dichloroethane-d4	12.5		"	13.2		94.5	37-154		
Surrogate: Toluene-d8	13.3		"	13.3		99.9	45-149		
Surrogate: 4-Bromofluorobenzene	12.6		"	13.3		94.7	45-146		

Matrix Spike Dup (2122608-MSD2)

Source: R212154-02

Prepared & Analyzed: 12/26/12

Benzene	28.4	1.0	ug/l	33.3	ND	85.3	34-141	0.211	32
Toluene	33.7	1.0	"	33.3	ND	101	27-151	1.56	25
Ethylbenzene	41.2	1.0	"	33.3	ND	124	29-160	2.04	50
m,p-Xylene	75.1	2.0	"	66.7	ND	113	20-166	2.50	36
o-Xylene	40.7	1.0	"	33.3	ND	122	33-159	0.832	26
Surrogate: 1,2-Dichloroethane-d4	12.4		"	13.2		93.9	37-154		
Surrogate: Toluene-d8	13.0		"	13.3		97.6	45-149		
Surrogate: 4-Bromofluorobenzene	12.1		"	13.3		90.8	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 Bruns

Reported:
12/27/12 15:50

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