



PDC Energy, Inc.
Second Quarter 2014 Groundwater Monitoring Summary

May 12, 2014

H&S (Mineral) #1 Tank Battery
NWSW S6 T4N R65W
Weld County, API # 05-123-14802

This groundwater summary has been prepared by Tasman Geosciences, LLC for the H&S (Mineral) #1 tank battery. On April 30, 2014, groundwater monitoring 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 below and the laboratory report is included as Attachment A. Sample locations and corresponding analytical results are illustrated on Figure 1. Second quarter analytical results indicate that BTEX concentrations are in exceedance of COGCC Table 910-1 standards at monitoring wells BH01, BH02, and BH04. Constituent concentrations are below regulatory standards at the other five monitoring locations.

Tasman initiated enhanced fluid recovery (EFR) and air sparge (AS) events at the site during the third quarter 2013. A summary of the EFR/AS operational data is provided in Table 2. EFR/AS will remain the selected remediation strategy through the third quarter 2014 to address residual dissolved phase petroleum hydrocarbon impacts on site.

The third quarter 2014 groundwater sampling event will be conducted during July 2014.

TABLE 1
H&S (MINERAL) #1
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)
BH01	7/25/2013	6700	6200	1100	19000	16.53
BH01	10/31/2013	1700	1800	170	4400	15.65
BH01	1/24/2014	6.5	<1.0	<1.0	3000	17.19
BH01	4/30/2014	290	990	76	2700	17.35
BH02	7/25/2013	3300	4700	2100	36000	17.63
BH02	10/31/2013	770	24	39	3300	16.75
BH02	1/24/2014	730	20	<1.0	2600	18.25
BH02	4/30/2014	84	12	3.8	410	18.39
BH03	7/25/2013	760	4400	1300	23000	15.98
BH03	10/31/2013	3.6	8.6	2.2	100	15.15
BH03	1/24/2014	2.6	2	<1.0	62	16.63
BH03	4/30/2014	1.1	1.6	<1.0	45	16.79
BH04	7/25/2013	1700	170	1200	19000	15.91
BH04	10/31/2013	2500	140	620	13000	15.09
BH04	1/24/2014	2100	320	740	14000	16.60
BH04	4/30/2014	1700	300	1100	19000	16.74
BH05	7/25/2013	17	3300	930	15000	13.07
BH05	10/31/2013	<1.0	<1.0	2.0	85	12.01
BH05	1/24/2014	<1.0	<1.0	<1.0	<1.0	13.52
BH05	4/30/2014	<1.0	<1.0	<1.0	4.5	13.65
BH06	7/25/2013	1.9	12	3100	46000	13.47
BH06	10/31/2013	<1.0	<1.0	1.9	57	12.46
BH06	1/24/2014	<1.0	<1.0	<1.0	2.9	13.95
BH06	4/30/2014	<1.0	<1.0	2.0	49	14.06

TABLE 1
H&S (MINERAL) #1
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)
BH07	7/25/2013	<1.0	<1.0	<1.0	<1.0	15.33
BH07	10/31/2013	<1.0	<1.0	<1.0	<1.0	14.31
BH07	1/24/2014	<1.0	<1.0	<1.0	<1.0	15.81
BH07	4/30/2014	<1.0	<1.0	<1.0	<1.0	15.96
BH08	7/25/2013	<1.0	<1.0	<1.0	<1.0	13.47
BH08	10/31/2013	<1.0	<1.0	<1.0	<1.0	12.41
BH08	1/24/2014	<1.0	<1.0	<1.0	<1.0	13.91
BH08	4/30/2014	<1.0	<1.0	<1.0	<1.0	14.05
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

NM - Not Measured

TABLE 2
H&S (MINERAL) #1
AIR SPARGE / EFR OPERATIONAL SUMMARY TABLE

Date	EFR Wells	Total EFR/AS Duration (hours)	Approximate Gallons Extracted	AS Wells	Injection Pressure (psi)
Third Quarter 2013					
8/6/2013	BH01, BH02, BH03, BH04, BH05, BH06	6	50	BH01, BH02, BH03, BH05, BH06	10
8/19/2013		6	80		10
9/8/2013		6	21		10
9/16/2013		6	80		10
9/30/2013		5	90		15
Quarterly Totals		29	321		-
Fourth Quarter 2013					
10/11/2013	BH01, BH02, BH03, BH04, BH05, BH06	6	80	BH01, BH02, BH03, BH05, BH06	10
10/24/2013		6	110		12
11/26/2013		6	40		10
12/17/2013		6	42		10
Quarterly Totals		24	272		-
First Quarter 2014					
1/7/2014	BH01, BH02, BH03, BH04, BH05, BH06	5.5	90	BH01, BH02, BH03, BH05, BH06	10
1/22/2014		6	230		10
2/24/2014		6	180		10
3/11/2014		6	90		10
3/20/2014		6	135		10
Quarterly Totals		29.5	725		-
Second Quarter 2014					
4/10/2014	BH01, BH02, BH03,	8	230	BH01, BH02, BH03,	10
4/23/2014	BH04, BH05, BH06	6	0	BH05, BH06	10
Quarterly Totals		14	230		-



BH03		
Compound (ug/L)	1/24/2014	4/30/2014
Benzene	2.6	1.1
Toluene	2.0	1.6
Ethylbenzene	<1.0	<1.0
Total Xylenes	62	45

BH02		
Compound (ug/L)	1/24/2014	4/30/2014
Benzene	730	84
Toluene	20	12
Ethylbenzene	<1.0	3.8
Total Xylenes	2600	410

Surface
Drainage



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

Fence Line

Steep Grade

Immobile Magna Equipment

BH02

Above Ground Gas Line

M

Separator 10 bbl

100 bbl PW tank

300 bbl Oil Tank

BH03

BH01

BH04

Flow Line

DCP Buried Gas Line

BH07

BH01		
Compound (ug/L)	1/24/2014	4/30/2014
Benzene	6.5	290
Toluene	<1.0	990
Ethylbenzene	<1.0	76
Total Xylenes	3000	2700

BH05

BH06

BH04		
Compound (ug/L)	1/24/2014	4/30/2014
Benzene	2100	1700
Toluene	320	300
Ethylbenzene	740	1100
Total Xylenes	14000	19000

BH05		
Compound (ug/L)	1/24/2014	4/30/2014
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	4.5

BH08		
Compound (ug/L)	1/24/2014	4/30/2014
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

Wellhead

BH08

BH06		
Compound (ug/L)	1/24/2014	4/30/2014
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	2.0
Total Xylenes	2.9	49

BH07		
Compound (ug/L)	1/24/2014	4/30/2014
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

DRAWN BY: ESS

DATE: 5/12/2014

Facility Diagram
PDC Energy – DJ Basin
H&S (Mineral) #1
NWSW S6 T4N R65W
Weld County, CO



6899 Pecos Street
Unit C
Denver, CO 80221

LEGEND

- Earthen Berm
- Approximate Area of Excavation
- Temporary Monitoring Well
- Temporary Monitoring Well – SVE Screen
- Horizontal Remediation Pipe
- Meter House

FIGURE 1
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

May 06, 2014

Brandon Bruns
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: H&S Mineral #1

Enclosed are the results of analyses for samples received by Summit Scientific on 04/30/14 16:45. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'BS', with a long, sweeping horizontal line extending to the right.

Ben Shrewsbury
President / Laboratory Manager



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

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
05/06/14 15:42

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH-01	1405001-01	Water	04/30/14 11:50	04/30/14 16:45
BH-02	1405001-02	Water	04/30/14 12:00	04/30/14 16:45
BH-03	1405001-03	Water	04/30/14 12:10	04/30/14 16:45
BH-04	1405001-04	Water	04/30/14 12:25	04/30/14 16:45
BH-05	1405001-05	Water	04/30/14 12:50	04/30/14 16:45
BH-06	1405001-06	Water	04/30/14 13:05	04/30/14 16:45
BH-07	1405001-07	Water	04/30/14 13:30	04/30/14 16:45
BH-08	1405001-08	Water	04/30/14 13:15	04/30/14 16:45

Summit Scientific

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

Project: H&S Mineral #1

Project Number: [none]
 Project Manager: Brandon Bruns

Reported:
 05/06/14 15:42

1405001

Summit Scientific

741 Corporate Circle, Suite 1 • Golden, Colorado 80401
 303-277-9510 • 303-374-5933 Fax

Client: PDC Energy Page 1 of 1
 Address: _____
 City/State/Zip: _____
 Phone: _____ Fax: _____
 Sampler Name: DON BRUNN
 Project Manager: Brandon Bruns
 E-Mail: Brandon.Brunn@PDC.com
 Project Name: H&S (Mineral #1)
 Project Number: _____

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix	Analyze For	Special Instructions	
				HCl	Other (Specify)	Soil	Air - Canister Serial #				
BH-01	4/30/14	1150	3	X					X BTEX (82608)		
BH-02		1200									
BH-03		1210									
BH-04		1225									
BH-05		1250									
BH-06		1305									
BH-07		1330									
BH-08		1315									
Retransmitted by: <u>DB</u> Date/Time: <u>4/30/14</u>				Received by: <u>MM</u> Date/Time: <u>4/30/14</u>				Date/Time: _____			
Retransmitted by: _____				Received by: _____				Date/Time: _____			
Retransmitted by: _____				Received in Lab by: _____				Date/Time: _____			

Notes:
 Turn Around Time (Check)
 Same Day
 24 Hours
 48 Hours
 72 Hours
 Standard
 Sample Integrity:
 Temperature Upon Receipt: 1°C
 Inter: (VA) No



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

Project: H&S Mineral #1

Project Number: [none]
 Project Manager: Brandon Brunns

Reported:
 05/06/14 15:42

BH-01
1405001-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/30/14 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	290	1.0	ug/l	1	1405009	05/01/14	05/02/14	EPA 8260B	
Toluene	990	100	"	100	"	"	05/01/14	"	
Ethylbenzene	76	1.0	"	1	"	"	05/02/14	"	
Xylenes (total)	2700	100	"	100	"	"	05/01/14	"	

Date Sampled: **04/30/14 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		87.4 %	37-154		"	"	05/02/14	"	
<i>Surrogate: Toluene-d8</i>		93.5 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		105 %	45-146		"	"	"	"	

Summit Scientific

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

Project: H&S Mineral #1

Project Number: [none]
 Project Manager: Brandon Brunns

Reported:
 05/06/14 15:42

BH-02
1405001-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/30/14 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	84	1.0	ug/l	1	1405009	05/01/14	05/02/14	EPA 8260B	
Toluene	12	1.0	"	"	"	"	"	"	
Ethylbenzene	3.8	1.0	"	"	"	"	"	"	
Xylenes (total)	410	1.0	"	"	"	"	"	"	

Date Sampled: **04/30/14 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		85.7 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		98.0 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		94.7 %	45-146		"	"	"	"	

Summit Scientific

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

Project: H&S Mineral #1

Project Number: [none]
 Project Manager: Brandon Brunns

Reported:
 05/06/14 15:42

BH-03
1405001-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/30/14 12:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	1.1	1.0	ug/l	1	1405009	05/02/14	05/02/14	EPA 8260B	
Toluene	1.6	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	45	1.0	"	"	"	"	"	"	

Date Sampled: **04/30/14 12:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		106 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		99.9 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		105 %	45-146		"	"	"	"	

Summit Scientific

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

Project: H&S Mineral #1

Project Number: [none]
 Project Manager: Brandon Brunns

Reported:
 05/06/14 15:42

BH-04
1405001-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/30/14 12:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	1700	100	ug/l	100	1405009	05/01/14	05/01/14	EPA 8260B	
Toluene	300	100	"	"	"	"	"	"	
Ethylbenzene	1100	100	"	"	"	"	"	"	
Xylenes (total)	19000	100	"	"	"	"	"	"	

Date Sampled: **04/30/14 12:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		93.5 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		101 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		95.8 %	45-146		"	"	"	"	

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

Project: H&S Mineral #1

Project Number: [none]
 Project Manager: Brandon Bruns

Reported:
 05/06/14 15:42

BH-05
1405001-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/30/14 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1405009	05/02/14	05/02/14	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	4.5	1.0	"	"	"	"	"	"	

Date Sampled: **04/30/14 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		107 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		98.5 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		104 %	45-146		"	"	"	"	

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

Project: H&S Mineral #1

Project Number: [none]
 Project Manager: Brandon Brunns

Reported:
 05/06/14 15:42

BH-06
1405001-06 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/30/14 13:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1405009	05/02/14	05/02/14	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	2.0	1.0	"	"	"	"	"	"	
Xylenes (total)	49	1.0	"	"	"	"	"	"	

Date Sampled: **04/30/14 13:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		105 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		100 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		103 %	45-146		"	"	"	"	

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

Project: H&S Mineral #1

Project Number: [none]
 Project Manager: Brandon Brunns

Reported:
 05/06/14 15:42

BH-07
1405001-07 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/30/14 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1405009	05/02/14	05/02/14	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **04/30/14 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		<i>105 %</i>	<i>37-154</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: Toluene-d8</i>		<i>98.9 %</i>	<i>45-149</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>		<i>104 %</i>	<i>45-146</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	

Summit Scientific

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

Project: H&S Mineral #1

Project Number: [none]
 Project Manager: Brandon Brunns

Reported:
 05/06/14 15:42

BH-08
1405001-08 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/30/14 13:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1405009	05/02/14	05/02/14	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **04/30/14 13:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		105 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		98.6 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		105 %	45-146		"	"	"	"	

Summit Scientific

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

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
05/06/14 15:42

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 1405009 - EPA 5030 Water MS

Blank (1405009-BLK1)

Prepared & Analyzed: 05/02/14

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	14.1		"	13.2		106	37-154			
Surrogate: Toluene-d8	13.3		"	13.3		99.5	45-149			
Surrogate: 4-Bromofluorobenzene	13.8		"	13.3		103	45-146			

LCS (1405009-BS1)

Prepared & Analyzed: 05/02/14

Benzene	42.4	1.0	ug/l	33.2		128	51-132			
Toluene	43.0	1.0	"	33.3		129	51-138			
Ethylbenzene	45.1	1.0	"	33.1		136	58-146			
m,p-Xylene	91.2	2.0	"	66.7		137	57-144			
o-Xylene	46.7	1.0	"	32.9		142	53-146			
Surrogate: 1,2-Dichloroethane-d4	14.4		"	13.2		108	37-154			
Surrogate: Toluene-d8	13.2		"	13.3		98.8	45-149			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		99.3	45-146			

LCS (1405009-BS2)

Prepared & Analyzed: 05/02/14

Benzene	42.3	1.0	ug/l	33.2		127	51-132			
Toluene	43.0	1.0	"	33.3		129	51-138			
Ethylbenzene	44.6	1.0	"	33.1		135	58-146			
m,p-Xylene	91.2	2.0	"	66.7		137	57-144			
o-Xylene	46.2	1.0	"	32.9		140	53-146			
Surrogate: 1,2-Dichloroethane-d4	13.7		"	13.2		104	37-154			
Surrogate: Toluene-d8	13.2		"	13.3		98.8	45-149			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		100	45-146			

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

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
05/06/14 15:42

Volatile Organic Compounds by EPA Method 8260B - Quality Control
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Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch 1405009 - EPA 5030 Water MS

Matrix Spike (1405009-MS1)	Source: 1405003-01			Prepared & Analyzed: 05/02/14						
Benzene	43.8	1.0	ug/l	33.2	ND	132	34-141			
Toluene	44.8	1.0	"	33.3	ND	134	27-151			
Ethylbenzene	45.8	1.0	"	33.1	ND	139	29-160			
m,p-Xylene	93.6	2.0	"	66.7	ND	140	20-166			
o-Xylene	47.0	1.0	"	32.9	ND	143	33-159			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>14.0</i>		<i>"</i>	<i>13.2</i>		<i>106</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>13.5</i>		<i>"</i>	<i>13.3</i>		<i>101</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>13.4</i>		<i>"</i>	<i>13.3</i>		<i>100</i>	<i>45-146</i>			

Matrix Spike (1405009-MS2)	Source: 1405003-02			Prepared & Analyzed: 05/02/14						
Benzene	44.0	1.0	ug/l	33.2	ND	133	34-141			
Toluene	45.4	1.0	"	33.3	ND	136	27-151			
Ethylbenzene	46.1	1.0	"	33.1	ND	139	29-160			
m,p-Xylene	95.2	2.0	"	66.7	ND	143	20-166			
o-Xylene	47.4	1.0	"	32.9	ND	144	33-159			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>14.1</i>		<i>"</i>	<i>13.2</i>		<i>107</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>13.4</i>		<i>"</i>	<i>13.3</i>		<i>100</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>13.6</i>		<i>"</i>	<i>13.3</i>		<i>102</i>	<i>45-146</i>			

Matrix Spike Dup (1405009-MSD1)	Source: 1405003-01			Prepared & Analyzed: 05/02/14						
Benzene	44.2	1.0	ug/l	33.2	ND	133	34-141		0.931	32
Toluene	45.3	1.0	"	33.3	ND	136	27-151		1.13	25
Ethylbenzene	46.1	1.0	"	33.1	ND	139	29-160		0.631	50
m,p-Xylene	94.4	2.0	"	66.7	ND	142	20-166		0.830	36
o-Xylene	46.8	1.0	"	32.9	ND	142	33-159		0.320	26
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>14.2</i>		<i>"</i>	<i>13.2</i>		<i>107</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>13.5</i>		<i>"</i>	<i>13.3</i>		<i>102</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>13.4</i>		<i>"</i>	<i>13.3</i>		<i>101</i>	<i>45-146</i>			

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

Project: H&S Mineral #1

Project Number: [none]
 Project Manager: Brandon Brunns

Reported:
 05/06/14 15:42

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 1405009 - EPA 5030 Water MS

Matrix Spike Dup (1405009-MSD2)	Source: 1405003-02			Prepared & Analyzed: 05/02/14						
Benzene	44.0	1.0	ug/l	33.2	ND	132	34-141	0.182	32	
Toluene	44.3	1.0	"	33.3	ND	133	27-151	2.50	25	
Ethylbenzene	46.3	1.0	"	33.1	ND	140	29-160	0.411	50	
m,p-Xylene	95.1	2.0	"	66.7	ND	143	20-166	0.105	36	
o-Xylene	47.4	1.0	"	32.9	ND	144	33-159	0.0633	26	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>14.5</i>		<i>"</i>	<i>13.2</i>		<i>110</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>13.3</i>		<i>"</i>	<i>13.3</i>		<i>99.7</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>14.0</i>		<i>"</i>	<i>13.3</i>		<i>105</i>	<i>45-146</i>			

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

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
05/06/14 15:42

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