



PDC Energy, Inc.
Third Quarter 2014 Groundwater Monitoring Summary

August 5, 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 July 29, 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. Third 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 remaining five monitoring well 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 fourth quarter 2014 to address residual dissolved phase petroleum hydrocarbon impacts on site.

The fourth quarter 2014 groundwater sampling event will be conducted during October 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
BH01	7/25/2014	45	100	53	2100	14.68
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
BH02	7/25/2014	53	2.3	<1.0	68	15.75
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
BH03	7/25/2014	33	20	<1.0	480	14.14
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
BH04	7/25/2014	410	9.3	36	6400	14.11
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
BH05	7/25/2014	<1.0	<1.0	<1.0	5.8	11.03
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
BH06	7/25/2014	<1.0	<1.0	<1.0	4.9	11.44

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
BH07	7/25/2014	<1.0	<1.0	<1.0	<1.0	13.27
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
BH08	7/25/2014	<1.0	<1.0	<1.0	<1.0	11.42
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, BH04, BH05, BH06	8	230	BH01, BH02, BH03, BH04, BH05, BH06	10
4/23/2014		6	180		20
5/13/2014		6	220		10
5/28/2014		6	180		20
6/10/2014		8	270		25
6/23/2014		6	185		20
Quarterly Totals		40	1265		-
Third Quarter 2014					
7/11/2014	BH01, BH02, BH03,	6	150	BH01, BH02, BH03,	20
7/16/2014	BH04, BH05, BH06	6	240	BH04, BH05, BH06	15
Quarterly Totals		12	390		-



BH03		
Compound (ug/L)	4/30/2014	7/25/2014
Benzene	1.1	33
Toluene	1.6	20
Ethylbenzene	<1.0	<1.0
Total Xylenes	45	480

BH02		
Compound (ug/L)	4/30/2014	7/25/2014
Benzene	84	53
Toluene	12	2.3
Ethylbenzene	3.8	<1.0
Total Xylenes	410	68

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

DCP Buried Gas Line

Flow Line

BH07

BH01		
Compound (ug/L)	4/30/2014	7/25/2014
Benzene	290	45
Toluene	990	100
Ethylbenzene	76	53
Total Xylenes	2700	2100

BH05

BH06

BH04		
Compound (ug/L)	4/30/2014	7/25/2014
Benzene	1700	410
Toluene	300	9.3
Ethylbenzene	1100	36
Total Xylenes	19000	6400

BH05		
Compound (ug/L)	4/30/2014	7/25/2014
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	4.5	5.8

BH08		
Compound (ug/L)	4/30/2014	7/25/2014
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)	4/30/2014	7/25/2014
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	2	<1.0
Total Xylenes	49.0	4.9

BH07		
Compound (ug/L)	4/30/2014	7/25/2014
Benzene	<1.0	<1.0
Toluene	<1.0	<1.0
Ethylbenzene	<1.0	<1.0
Total Xylenes	<1.0	<1.0

DRAWN BY: BAM

DATE: 7/25/2014

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

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

August 04, 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 07/25/14 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 be '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:
08/04/14 16:32

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	1407171-01	Water	07/25/14 12:35	07/25/14 16:45
BH02	1407171-02	Water	07/25/14 12:40	07/25/14 16:45
BH03	1407171-03	Water	07/25/14 12:45	07/25/14 16:45
BH04	1407171-04	Water	07/25/14 12:50	07/25/14 16:45
BH05	1407171-05	Water	07/25/14 12:55	07/25/14 16:45
BH06	1407171-06	Water	07/25/14 13:00	07/25/14 16:45
BH07	1407171-07	Water	07/25/14 13:05	07/25/14 16:45
BH08	1407171-08	Water	07/25/14 13:10	07/25/14 16:45

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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:
 08/04/14 16:32

Summit Scientific
 140777

741 Corporate Circle Suite 1 • Golden, Colorado 80401
 303-277-9910 • 303-374-9933 Fax

Client: PDC Energy
 Address: _____
 City/State/Zip: _____
 Phone: _____ Fax: _____
 Sampler Name: DA BRUNS
 Project Manager: Brandon Bruns
 E-Mail: Brandon.Brunsb@pdc.com
 Project Name: H&S (140777)
 Project Number: _____

Page 1 of 1

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix				Analyze For:				Special Instructions	
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	8260B BTEX	8015 DRO	8260B BTEXN	8015 DRO		
BK01	7/25	1735	3	X				X									
BK02		1740															
BK03		1745															
BK04		1750															
BK05		1755															
BK06		1800															
BK07		1805															
BK08		1810															

Retinquished by: <u>DA Bruns</u>	Date/Time: <u>7/25/14 1740</u>	Received by: <u>DA Bruns</u>	Date/Time: <u>7/25 16:45</u>	Turn Around Time (Check): <input type="checkbox"/> Same Day <input checked="" type="checkbox"/> 24 Hours <input type="checkbox"/> 48 Hours <input type="checkbox"/> 72 Hours <input type="checkbox"/> Standard	Notes:
Retinquished by:	Date/Time:	Received by:	Date/Time:	Sample Integrity: <input type="checkbox"/> Temperature Upon Receipt: <input type="checkbox"/> In tact: Yes <input checked="" type="checkbox"/> No	
Retinquished by:	Date/Time:	Received in Lab by:	Date/Time:		

www.s2scientific.com



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

Project: H&S Mineral #1

Project Number: [none]
 Project Manager: Brandon Bruns

Reported:
 08/04/14 16:32

BH01
1407171-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/25/14 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	45	1.0	ug/l	1	1407233	07/30/14	07/30/14	EPA 8260B	
Toluene	100	1.0	"	"	"	"	"	"	
Ethylbenzene	53	1.0	"	"	"	"	"	"	
Xylenes (total)	2100	100	"	100	"	"	07/31/14	"	

Date Sampled: **07/25/14 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		101 %	37-154		"	"	07/30/14	"	
<i>Surrogate: Toluene-d8</i>		105 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		99.8 %	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:
 08/04/14 16:32

BH02
1407171-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/25/14 12:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	53	1.0	ug/l	1	1407233	07/31/14	07/31/14	EPA 8260B	
Toluene	2.3	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	68	1.0	"	"	"	"	"	"	

Date Sampled: **07/25/14 12:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		102 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		100 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		102 %	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:
 08/04/14 16:32

BH03
1407171-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/25/14 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	33	1.0	ug/l	1	1407233	07/31/14	07/31/14	EPA 8260B	
Toluene	20	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	480	1.0	"	"	"	"	"	"	

Date Sampled: **07/25/14 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		98.5 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		100 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		99.5 %	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:
 08/04/14 16:32

BH04
1407171-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/25/14 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	410	100	ug/l	100	1407233	07/30/14	07/31/14	EPA 8260B	
Toluene	9.3	1.0	"	1	"	"	07/30/14	"	
Ethylbenzene	36	1.0	"	"	"	"	"	"	
Xylenes (total)	6400	100	"	100	"	"	07/31/14	"	

Date Sampled: **07/25/14 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		98.5 %	37-154		"	"	07/30/14	"	
<i>Surrogate: Toluene-d8</i>		109 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		96.5 %	45-146		"	"	"	"	

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 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: H&S Mineral #1

Project Number: [none]
 Project Manager: Brandon Bruns

Reported:
 08/04/14 16:32

BH05
1407171-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/25/14 12:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1407233	07/31/14	07/31/14	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	5.8	1.0	"	"	"	"	"	"	

Date Sampled: **07/25/14 12:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		98.2 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		99.0 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		102 %	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:
 08/04/14 16:32

BH06
1407171-06 (Water)

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Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/25/14 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1407233	07/31/14	07/31/14	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	4.9	1.0	"	"	"	"	"	"	

Date Sampled: **07/25/14 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		101 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		100 %	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:
 08/04/14 16:32

BH07
1407171-07 (Water)

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Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/25/14 13:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1407233	07/31/14	07/31/14	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **07/25/14 13:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		99.8 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		99.8 %	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 Bruns

Reported:
 08/04/14 16:32

BH08
1407171-08 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/25/14 13:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1407233	07/31/14	07/31/14	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **07/25/14 13:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		<i>101 %</i>	<i>37-154</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: Toluene-d8</i>		<i>99.1 %</i>	<i>45-149</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>		<i>101 %</i>	<i>45-146</i>		<i>"</i>	<i>"</i>	<i>"</i>	<i>"</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:
08/04/14 16:32

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 1407233 - EPA 5030 Water MS

Blank (1407233-BLK1)

Prepared & Analyzed: 07/29/14

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	13.4		"	13.2		101	37-154			
Surrogate: Toluene-d8	13.3		"	13.3		99.5	45-149			
Surrogate: 4-Bromofluorobenzene	13.7		"	13.3		103	45-146			

LCS (1407233-BS1)

Prepared & Analyzed: 07/29/14

Benzene	41.2	1.0	ug/l	33.3		124	51-132			
Toluene	38.9	1.0	"	33.3		117	51-138			
Ethylbenzene	40.3	1.0	"	33.1		122	58-146			
m,p-Xylene	77.7	2.0	"	66.5		117	57-144			
o-Xylene	38.9	1.0	"	32.8		119	53-146			
Surrogate: 1,2-Dichloroethane-d4	13.3		"	13.2		101	37-154			
Surrogate: Toluene-d8	13.6		"	13.3		102	45-149			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		101	45-146			

LCS (1407233-BS2)

Prepared & Analyzed: 07/29/14

Benzene	41.6	1.0	ug/l	33.3		125	51-132			
Toluene	39.1	1.0	"	33.3		117	51-138			
Ethylbenzene	41.1	1.0	"	33.1		124	58-146			
m,p-Xylene	79.2	2.0	"	66.5		119	57-144			
o-Xylene	39.3	1.0	"	32.8		120	53-146			
Surrogate: 1,2-Dichloroethane-d4	13.5		"	13.2		102	37-154			
Surrogate: Toluene-d8	13.6		"	13.3		102	45-149			
Surrogate: 4-Bromofluorobenzene	13.1		"	13.3		98.0	45-146			

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Project Number: [none]
Project Manager: Brandon Brunns

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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 1407233 - EPA 5030 Water MS

Matrix Spike (1407233-MS1)	Source: 1407167-01			Prepared & Analyzed: 07/29/14						
Benzene	41.8	1.0	ug/l	33.3	ND	125	34-141			
Toluene	39.4	1.0	"	33.3	ND	118	27-151			
Ethylbenzene	40.8	1.0	"	33.1	ND	123	29-160			
m,p-Xylene	79.1	2.0	"	66.5	ND	119	20-166			
o-Xylene	39.1	1.0	"	32.8	ND	119	33-159			
Surrogate: 1,2-Dichloroethane-d4	13.8		"	13.2		104	37-154			
Surrogate: Toluene-d8	13.8		"	13.3		104	45-149			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		99.3	45-146			

Matrix Spike (1407233-MS2)	Source: 1407167-02			Prepared & Analyzed: 07/29/14						
Benzene	41.8	1.0	ug/l	33.3	ND	125	34-141			
Toluene	39.6	1.0	"	33.3	ND	119	27-151			
Ethylbenzene	41.4	1.0	"	33.1	ND	125	29-160			
m,p-Xylene	79.2	2.0	"	66.5	ND	119	20-166			
o-Xylene	39.3	1.0	"	32.8	ND	120	33-159			
Surrogate: 1,2-Dichloroethane-d4	13.4		"	13.2		102	37-154			
Surrogate: Toluene-d8	13.6		"	13.3		102	45-149			
Surrogate: 4-Bromofluorobenzene	13.3		"	13.3		99.8	45-146			

Matrix Spike Dup (1407233-MSD1)	Source: 1407167-01			Prepared & Analyzed: 07/29/14						
Benzene	41.5	1.0	ug/l	33.3	ND	124	34-141	0.721	32	
Toluene	39.5	1.0	"	33.3	ND	119	27-151	0.279	25	
Ethylbenzene	41.2	1.0	"	33.1	ND	125	29-160	1.10	50	
m,p-Xylene	79.4	2.0	"	66.5	ND	119	20-166	0.379	36	
o-Xylene	39.2	1.0	"	32.8	ND	119	33-159	0.230	26	
Surrogate: 1,2-Dichloroethane-d4	14.0		"	13.2		106	37-154			
Surrogate: Toluene-d8	13.5		"	13.3		101	45-149			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		99.2	45-146			

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Project: H&S Mineral #1

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 Project Manager: Brandon Brunns

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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 1407233 - EPA 5030 Water MS

Matrix Spike Dup (1407233-MSD2)	Source: 1407167-02			Prepared & Analyzed: 07/29/14						
Benzene	41.9	1.0	ug/l	33.3	ND	126	34-141	0.239	32	
Toluene	39.6	1.0	"	33.3	ND	119	27-151	0.0253	25	
Ethylbenzene	41.7	1.0	"	33.1	ND	126	29-160	0.819	50	
m,p-Xylene	80.5	2.0	"	66.5	ND	121	20-166	1.63	36	
o-Xylene	39.6	1.0	"	32.8	ND	121	33-159	0.710	26	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>13.6</i>		<i>"</i>	<i>13.2</i>		<i>103</i>	<i>37-154</i>			
<i>Surrogate: Toluene-d8</i>	<i>13.6</i>		<i>"</i>	<i>13.3</i>		<i>102</i>	<i>45-149</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>13.3</i>		<i>"</i>	<i>13.3</i>		<i>99.9</i>	<i>45-146</i>			

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Project: H&S Mineral #1

Project Number: [none]
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08/04/14 16:32

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

Summit Scientific

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