

State of Colorado
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 Phone: (303)894-2100 Fax:(303)894-2109



FOR OGCC USE ONLY

RECEIVED
7/29/2013

SPILL/RELEASE REPORT

This form is to be submitted by the party responsible for the oil and gas spill or release. Any spill or release which may impact waters of the State must be reported as soon as practicable; any spill over 20 bbls must be reported within 24 hours and all spills over five bbls must be reported within ten days. Submit a Site Investigation and

Spill report taken by:

FACILITY ID:

OPERATOR INFORMATION

Name of Operator: <u>PDC Energy, Inc.</u> OGCC Operator No: <u>69175</u>	Phone Numbers
Address: <u>1775 Sherman Street, Suite 3000</u>	No: <u>(303) 831-3971</u>
City: <u>Denver</u> State: <u>CO</u> Zip: <u>80203</u>	Fax: <u>(303) 860-5838</u>
Contact Person: <u>Brandon Bruns</u>	Email: <u>brandon.bruns@pdce.com</u>

DESCRIPTION OF SPILL OR RELEASE

Date of Incident: <u>6/20/2013</u> Facility Name & No: <u>H&S (Mineral) #1</u>	County: <u>Weld</u>
Type of Facility (well, tank battery, flow line, pit): <u>Tank Battery</u>	QtrQtr: <u>NWSW</u> Section: <u>6</u>
Well Name and Number: <u>H&S (Mineral) #1</u>	Township: <u>4N</u> Range: <u>65W</u>
API Number: <u>05-123-11529</u>	Meridian: <u>6th</u>
Specify volume spilled and recovered (in bbls) for the following materials: Oil spilled: <u>0</u> Oil recov'd: <u>0</u> Water spilled: <u>0</u> Water recov'd: <u>0</u> Other spilled: <u>0</u> Other recov'd: <u>0</u>	
Ground Water impacted? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Surface Water impacted? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Contained within berm? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Area and vertical extent of spill: <u>~400 ft²</u> x <u>~13' bgs</u>
Current land use: <u>Storage Yard for Magna Energy Services</u>	Weather conditions: <u>High 90s</u>
Soil/geology description: <u>Valent sand, 0 to 3 percent slopes</u>	
IF LESS THAN A MILE, report distance IN FEET to nearest ... Surface water: <u>~1,855' N</u> Wetlands: <u>NA</u> Buildings: <u>~405' SW</u>	
Livestock: <u>NA</u> Water wells: <u>~580' SW</u> Depth to shallowest ground water: <u>Unknown</u>	
Cause of spill (e.g. equipment failure, human error, etc.): <u>Equipment failure</u> Detailed description of the spill/release incident: On June 20, 2013, a historical release was discovered below the produced water vault at the H&S (Mineral) #1 (API # 05-123-11529) tank battery. A topographic map of the site is included as Figure 1.	

CORRECTIVE ACTION

Describe immediate response (how stopped, contained and recovered):
Excavation of impacted soil occurred between June 20, 2013 and June 21, 2013. Approximately 130 cubic yards (yd3) of impacted material was removed and transported to the Waste Management Facility in Ault, Colorado under PDC waste manifests. The location and extent of the excavation is illustrated on Figure 2.

Describe any emergency pits constructed: NA

How was the extent of contamination determined?
Excavation activities commenced on June 20, 2013 following the discovery of a historical release below the buried produced water vault. During excavation activities, soil sample locations were selected based on volatile organic compound (VOC) concentrations measured with a photoionization detector (PID). On June 20, 2103, a soil sample (SS01) was collected from the base of the excavation at 13 feet below ground surface (bgs) which exhibited elevated PID readings. On June 21, 2013, four shallow soil samples were collected from the walls of the excavation (SS02 - SS04) at approximately 6 feet bgs to confirm shallow petroleum hydrocarbon impacts were successfully mitigated by excavation activities. Soil samples were submitted to Summit Scientific Laboratories in Golden, Colorado for laboratory analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX), total petroleum hydrocarbons (TPH)-gasoline range organics (GRO), and naphthalene by EPA Method 8260B. Samples were also submitted for TPH-diesel range organics (DRO) by EPA Method 8015. Analytical results indicate that constituent concentrations are below COGCC Table 910-1 soil standards at all four wall sample locations. However, the soil sample collected at the total depth of the excavation exhibits benzene, total xylenes, and TPH concentrations in exceedance of regulatory standards. Residual impacts not addressed by excavation activities extend from approximately 7 feet to 13 feet bgs. A summary of soil analytical data is presented in Table 1. Groundwater was not encountered during excavation activities. The laboratory analytical reports are included as Attachment A. The extent of the excavation and soil sample locations are illustrated on Figure 2.

Further remediation activities proposed (attach separate sheet if needed):
PDC will submit a subsequent Form 27 outlining a proposed remedial strategy to address residual petroleum hydrocarbon concentrations in soil at the base of the excavation.

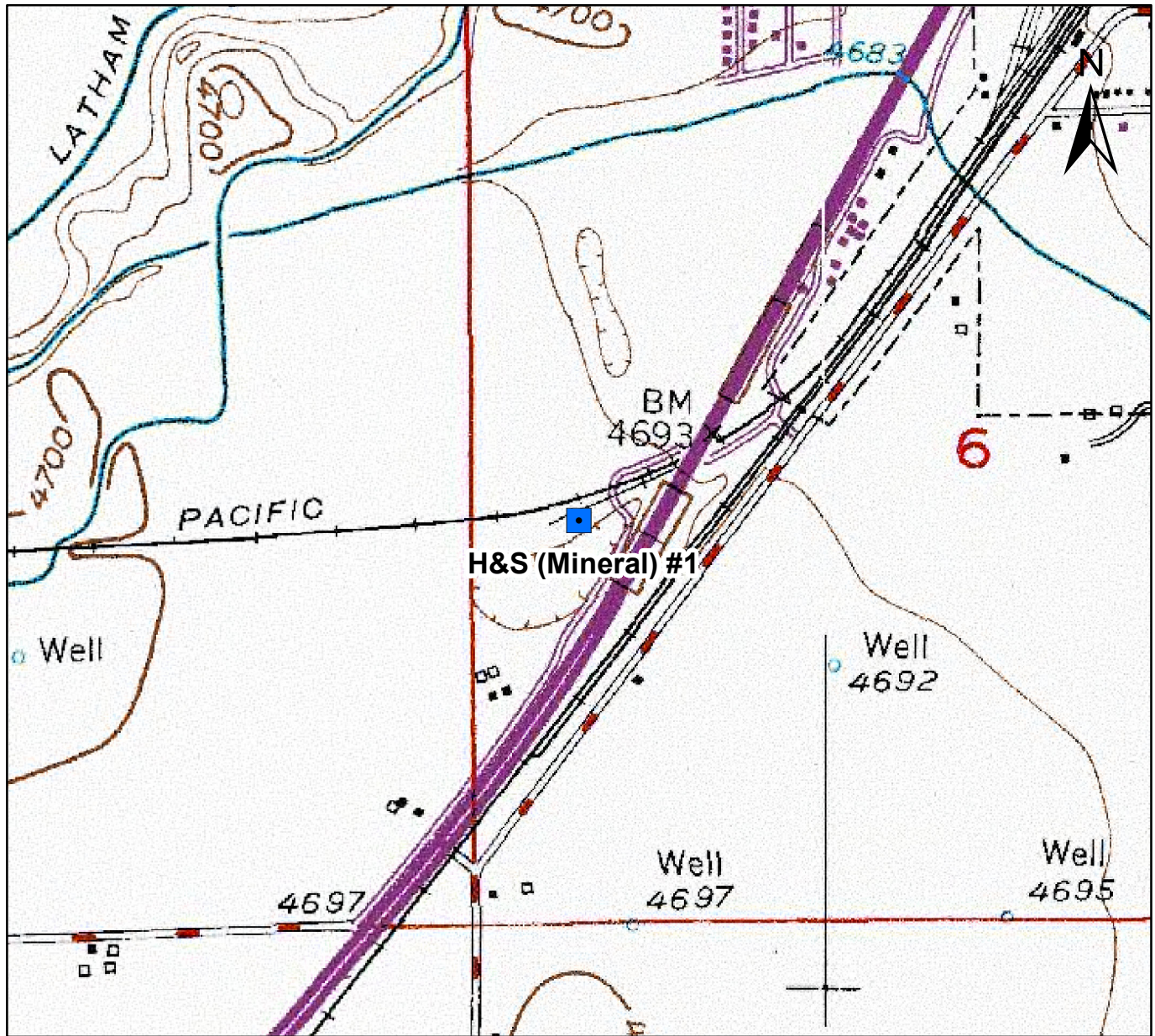
Describe measures taken to prevent problem from reoccurring:
PDC will continue yearly production line testing once the location is back to being operational.

OTHER NOTIFICATIONS

List the parties and agencies notified (County, BLM, EPA, DOT, Local Emergency Planning Coordinator or other).

Date	Agency	Contact	Phone	Response
6/21/2013	Landowner			left message

Spill/Release Tracking No: **2145651**



0 375 750 1,500 Feet



Figure 1
 Site Location Map
 H&S (Mineral) #1
 NWSW S6 T4N R65W
 Weld County, Colorado

Drawn By: CAW
 Date: 7/1/2013





Surface
Drainage

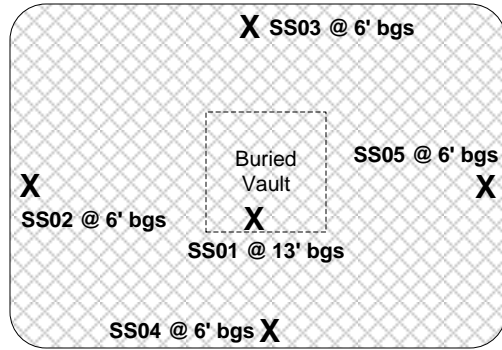


Fence Line



Steep Grade

Immobile
Magna
Equipment



Gas
Line

Gas Line

M

Separator 10 bbl

100 bbl
PW
tank

300 bbl Oil
Tank

Approximate Excavation
Dimensions:
20 feet by 20 feet

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

DRAWN BY: CAW

DATE: 6/21/2013

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
- Former Tank Location
- Approximate Area of Excavation
- Soil Sample Location

M Meter House

FIGURE 2
Excavation Site Map
Not to Scale

TABLE 1
H and S (MINERAL) #1
SOIL ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Depth (Feet bgs)	PID Readings (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	TPH ⁽²⁾ (mg/kg)
SS01	6/20/2013	13	2,500	0.51	41	13	200	0.32	5,900
SS02	6/21/2013	6	1.7	<0.005	<0.005	<0.005	<0.010	<0.005	<50
SS03	6/21/2013	6	1.6	<0.005	<0.005	<0.005	<0.010	<0.005	0.74
SS04	6/21/2013	6	1,150	<0.005	0.011	<0.005	0.65	<0.005	310
SS05	6/21/2013	6	1.9	<0.005	<0.005	<0.005	<0.010	<0.005	<50
COGCC standards for Soil (mg/kg) ⁽¹⁾				0.17	85	100	175	23	500

Notes:

1). Standards for Soil are taken from 2 CCR 404-1, Table 910-1, effective April 1, 2009.

2). TPH - Total volatile and extractable petroleum hydrocarbons. Value calculated by adding GRO and DRO concentrations.

GRO - Gasoline range organics.

DRO - Diesel range organics.

mg/kg= Milligrams per kilogram.

bgs - Below ground surface.

ppm - Parts per million

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

ATTACHMENT A

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

June 21, 2013

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 06/20/13 15:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury For 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 Brunns

Reported:
06/21/13 06:32

SS01@13'
R306150-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/20/13 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	2100	50	mg/kg	1	3062006	06/20/13	06/20/13	8015M	

Date Sampled: **06/20/13 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		109 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/20/13 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.32	0.0050	mg/kg	1	3062005	06/20/13	06/20/13	EPA 8260B	
Benzene	0.51	0.0050	"	"	"	"	"	"	
Toluene	41	0.050	"	10	"	"	"	"	E
Ethylbenzene	13	0.050	"	"	"	"	"	"	E
Xylenes (total)	200	0.10	"	"	"	"	"	"	E
Gasoline Range Hydrocarbons	3800	5.0	"	"	"	"	"	"	E

Date Sampled: **06/20/13 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		98.4 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		255 %	20-170		"	"	"	"	S-02
<i>Surrogate: 4-Bromofluorobenzene</i>		79.0 %	21-167		"	"	"	"	

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: H&S Mineral #1

Project Number: [none]
 Project Manager: Brandon Brunns

Reported:
 06/21/13 06:32

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 3062006 - EPA 3550A

Blank (3062006-BLK1)					Prepared & Analyzed: 06/20/13						
C10-C28 (DRO)	ND	50	mg/kg								
LCS (3062006-BS1)					Prepared & Analyzed: 06/20/13						
C10-C28 (DRO)	569	50	mg/kg	501	114	73-134					
LCS Dup (3062006-BSD1)					Prepared & Analyzed: 06/20/13						
C10-C28 (DRO)	603	50	mg/kg	501	120	73-134	5.83	11			
Matrix Spike (3062006-MS1)					Source: R306149-01 Prepared: 06/20/13 Analyzed: 06/21/13						
C10-C28 (DRO)	588	50	mg/kg	501	45.9	108	50-148				
Matrix Spike Dup (3062006-MSD1)					Source: R306149-01 Prepared: 06/20/13 Analyzed: 06/21/13						
C10-C28 (DRO)	581	50	mg/kg	501	45.9	107	50-148	1.18	13		

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: H&S Mineral #1

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
06/21/13 06:32

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 3062005 - EPA 5030 Soil MS

Blank (3062005-BLK1)

Prepared & Analyzed: 06/20/13

Naphthalene	ND	0.0050	mg/kg							
Benzene	ND	0.0050	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0349</i>		<i>"</i>	<i>0.0397</i>		<i>88.0</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0393</i>		<i>"</i>	<i>0.0400</i>		<i>98.2</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0354</i>		<i>"</i>	<i>0.0400</i>		<i>88.6</i>	<i>21-167</i>			

LCS (3062005-BS1)

Prepared & Analyzed: 06/20/13

Naphthalene	ND	0.0050	mg/kg				66-138			
Benzene	0.0948	0.0050	"	0.100		94.8	58-130			
Toluene	0.0984	0.0050	"	0.100		98.4	61-134			
Ethylbenzene	0.101	0.0050	"	0.100		101	74-139			
m,p-Xylene	0.210	0.010	"	0.200		105	73-137			
o-Xylene	0.105	0.0050	"	0.100		105	73-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0403</i>		<i>"</i>	<i>0.0397</i>		<i>102</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0399</i>		<i>"</i>	<i>0.0400</i>		<i>99.8</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0379</i>		<i>"</i>	<i>0.0400</i>		<i>94.7</i>	<i>21-167</i>			

LCS Dup (3062005-BSD1)

Prepared & Analyzed: 06/20/13

Naphthalene	ND	0.0050	mg/kg				66-138		12	
Benzene	0.103	0.0050	"	0.100		103	58-130	8.17	13	
Toluene	0.0989	0.0050	"	0.100		98.9	61-134	0.517	16	
Ethylbenzene	0.109	0.0050	"	0.100		109	74-139	6.83	12	
m,p-Xylene	0.223	0.010	"	0.200		111	73-137	5.92	14	
o-Xylene	0.111	0.0050	"	0.100		111	73-141	5.40	12	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0437</i>		<i>"</i>	<i>0.0397</i>		<i>110</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0366</i>		<i>"</i>	<i>0.0400</i>		<i>91.4</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0382</i>		<i>"</i>	<i>0.0400</i>		<i>95.6</i>	<i>21-167</i>			

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: H&S Mineral #1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
06/21/13 06:32

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 3062005 - EPA 5030 Soil MS

Matrix Spike (3062005-MS1)

Source: R306149-01

Prepared & Analyzed: 06/20/13

Naphthalene	ND	0.0050	mg/kg	ND	ND		10-158			
Benzene	0.0839	0.0050	"	0.100	0.00	83.9	30-131			
Toluene	0.0894	0.0050	"	0.100	0.00	89.4	30-134			
Ethylbenzene	0.0902	0.0050	"	0.100	0.00	90.2	22-153			
m,p-Xylene	0.184	0.010	"	0.200	0.00	91.8	10-159			
o-Xylene	0.0899	0.0050	"	0.100	0.00	89.9	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0413		"	0.0397		104	23-173			
Surrogate: Toluene-d8	0.0400		"	0.0400		100	20-170			
Surrogate: 4-Bromofluorobenzene	0.0379		"	0.0400		94.6	21-167			

Matrix Spike Dup (3062005-MSD1)

Source: R306149-01

Prepared: 06/20/13 Analyzed: 06/21/13

Naphthalene	ND	0.0050	mg/kg	ND	ND		10-158			42
Benzene	0.0889	0.0050	"	0.100	0.00	88.9	30-131	5.76		34
Toluene	0.0917	0.0050	"	0.100	0.00	91.7	30-134	2.55		30
Ethylbenzene	0.0923	0.0050	"	0.100	0.00	92.3	22-153	2.40		24
m,p-Xylene	0.187	0.010	"	0.200	0.00	93.7	10-159	2.04		68
o-Xylene	0.0922	0.0050	"	0.100	0.00	92.2	31-151	2.54		38
Surrogate: 1,2-Dichloroethane-d4	0.0441		"	0.0397		111	23-173			
Surrogate: Toluene-d8	0.0412		"	0.0400		103	20-170			
Surrogate: 4-Bromofluorobenzene	0.0388		"	0.0400		96.9	21-167			

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: H&S Mineral #1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
06/21/13 06:32

Notes and Definitions

- S-02 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
- E The concentration indicated for this analyte is an estimated value above the calibration range of the instrument.
- 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

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

June 23, 2013

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 06/21/13 16:10. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury For 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:
06/23/13 16:37

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS02@6'	R306168-01	Soil	06/21/13 10:45	06/21/13 16:10
SS03@6'	R306168-02	Soil	06/21/13 10:50	06/21/13 16:10
SS04@6'	R306168-03	Soil	06/21/13 10:55	06/21/13 16:10
SS05@6'	R306168-04	Soil	06/21/13 11:30	06/21/13 16:10

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: H&S Mineral #1

Project Number: [none]
Project Manager: Brandon Brunis

Reported:
06/23/13 16:37

Summit Scientific R306168

741 Corporate Circle Suite 1 • Golden, Colorado 80401
303-277-9310 • 303-374-9333 Fax

Client: PDC Energy
Address: _____
City/State/Zip: _____
Phone: _____
Project Manager: Brandon Brunis
E-Mail: H&S MINERAL #1
Project Name: _____
Project Number: _____
Sample Name: CANSARD

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)			
53020	6/21/13	10:55	1											
53500	10:50													
53500	10:55													
53500	11:59													

Relinquished by: _____ Date/Time: _____
Relinquished by: _____ Date/Time: 6/21/13 16:10
Relinquished by: _____ Date/Time: _____

Received by: _____ Date/Time: _____
Received in Lab by: _____ Date/Time: _____

Turn Around Time (Check)
 Same Day
 24 Hours
 48 Hours
 72 Hours
 Standard

Sample Integrity:
 Temperature Upon Receipt: _____
 Integrity: Yes No

Notes: _____



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

Project: H&S Mineral #1

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
06/23/13 16:37

SS02@6'
R306168-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/21/13 10:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	3062107	06/21/13	06/21/13	8015M	

Date Sampled: **06/21/13 10:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		93.2 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/21/13 10:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.0050	mg/kg	1	3062106	06/21/13	06/21/13	EPA 8260B	
Benzene	ND	0.0050	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **06/21/13 10:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.8 %	21-167		"	"	"	"	

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: H&S Mineral #1

Project Number: [none]
 Project Manager: Brandon Bruns

Reported:
 06/23/13 16:37

SS03@6'
R306168-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/21/13 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	3062107	06/21/13	06/21/13	8015M	

Date Sampled: **06/21/13 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		91.0 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/21/13 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.0050	mg/kg	1	3062106	06/21/13	06/21/13	EPA 8260B	
Benzene	ND	0.0050	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	0.74	0.50	"	"	"	"	"	"	

Date Sampled: **06/21/13 10:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		110 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.8 %	21-167		"	"	"	"	

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: H&S Mineral #1

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
06/23/13 16:37

SS04@6'
R306168-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/21/13 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	170	50	mg/kg	1	3062107	06/21/13	06/21/13	8015M	

Date Sampled: **06/21/13 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		101 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/21/13 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.0050	mg/kg	1	3062106	06/21/13	06/21/13	EPA 8260B	
Benzene	ND	0.0050	"	"	"	"	"	"	
Toluene	0.011	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.65	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	140	0.50	"	"	"	"	"	"	E

Date Sampled: **06/21/13 10:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		116 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		94.4 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		77.0 %	21-167		"	"	"	"	

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: H&S Mineral #1

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
06/23/13 16:37

SS05@6'
R306168-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **06/21/13 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	3062107	06/21/13	06/21/13	8015M	

Date Sampled: **06/21/13 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		92.8 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **06/21/13 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.0050	mg/kg	1	3062106	06/21/13	06/21/13	EPA 8260B	
Benzene	ND	0.0050	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **06/21/13 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		110 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.7 %	21-167		"	"	"	"	

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: H&S Mineral #1

Project Number: [none]
 Project Manager: Brandon Bruns

Reported:
 06/23/13 16:37

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 3062107 - EPA 3550A

Blank (3062107-BLK1)				Prepared: 06/21/13 Analyzed: 06/22/13							
C10-C28 (DRO)	ND	50	mg/kg								
LCS (3062107-BS1)				Prepared: 06/21/13 Analyzed: 06/22/13							
C10-C28 (DRO)	554	50	mg/kg	501	111	73-134					
LCS Dup (3062107-BSD1)				Prepared: 06/21/13 Analyzed: 06/22/13							
C10-C28 (DRO)	516	50	mg/kg	501	103	73-134	7.01	11			
Matrix Spike (3062107-MS1)				Source: R306168-01 Prepared: 06/21/13 Analyzed: 06/22/13							
C10-C28 (DRO)	598	50	mg/kg	501	ND	119	50-148				
Matrix Spike Dup (3062107-MSD1)				Source: R306168-01 Prepared: 06/21/13 Analyzed: 06/22/13							
C10-C28 (DRO)	600	50	mg/kg	501	ND	120	50-148	0.360	13		

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: H&S Mineral #1
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
06/23/13 16:37

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 3062106 - EPA 5030 Soil MS

Blank (3062106-BLK1)

Prepared: 06/21/13 Analyzed: 06/22/13

Naphthalene	ND	0.0050	mg/kg							
Benzene	ND	0.0050	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0376</i>		<i>"</i>	<i>0.0397</i>		<i>94.8</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0394</i>		<i>"</i>	<i>0.0400</i>		<i>98.6</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0404</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>21-167</i>			

LCS (3062106-BS1)

Prepared: 06/21/13 Analyzed: 06/22/13

Naphthalene	ND	0.0050	mg/kg				66-138			
Benzene	0.101	0.0050	"	0.100		101	58-130			
Toluene	0.110	0.0050	"	0.100		110	61-134			
Ethylbenzene	0.108	0.0050	"	0.100		108	74-139			
m,p-Xylene	0.230	0.010	"	0.200		115	73-137			
o-Xylene	0.108	0.0050	"	0.100		108	73-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0351</i>		<i>"</i>	<i>0.0397</i>		<i>88.5</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0396</i>		<i>"</i>	<i>0.0400</i>		<i>99.1</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0368</i>		<i>"</i>	<i>0.0400</i>		<i>91.9</i>	<i>21-167</i>			

LCS Dup (3062106-BSD1)

Prepared: 06/21/13 Analyzed: 06/22/13

Naphthalene	ND	0.0050	mg/kg				66-138		12	
Benzene	0.101	0.0050	"	0.100		101	58-130	0.0592	13	
Toluene	0.111	0.0050	"	0.100		111	61-134	1.00	16	
Ethylbenzene	0.112	0.0050	"	0.100		112	74-139	3.59	12	
m,p-Xylene	0.235	0.010	"	0.200		117	73-137	1.92	14	
o-Xylene	0.113	0.0050	"	0.100		113	73-141	4.24	12	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0374</i>		<i>"</i>	<i>0.0397</i>		<i>94.1</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0400</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0370</i>		<i>"</i>	<i>0.0400</i>		<i>92.6</i>	<i>21-167</i>			

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: H&S Mineral #1

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
06/23/13 16:37

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 3062106 - EPA 5030 Soil MS

Matrix Spike (3062106-MS1)

Source: R306168-01 Prepared: 06/21/13 Analyzed: 06/22/13

Naphthalene	ND	0.0050	mg/kg	ND	ND		10-158			
Benzene	0.0832	0.0050	"	0.100	0.00	83.2	30-131			
Toluene	0.0756	0.0050	"	0.100	0.00	75.6	30-134			
Ethylbenzene	0.0686	0.0050	"	0.100	0.00	68.6	22-153			
m,p-Xylene	0.175	0.010	"	0.200	0.00	87.3	10-159			
o-Xylene	0.0964	0.0050	"	0.100	0.00	96.4	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0387		"	0.0397		97.4	23-173			
Surrogate: Toluene-d8	0.0393		"	0.0400		98.3	20-170			
Surrogate: 4-Bromofluorobenzene	0.0404		"	0.0400		101	21-167			

Matrix Spike Dup (3062106-MSD1)

Source: R306168-01 Prepared: 06/21/13 Analyzed: 06/22/13

Naphthalene	ND	0.0050	mg/kg	ND	ND		10-158			42
Benzene	0.0901	0.0050	"	0.100	0.00	90.1	30-131	7.93		34
Toluene	0.0771	0.0050	"	0.100	0.00	77.1	30-134	1.93		30
Ethylbenzene	0.0693	0.0050	"	0.100	0.00	69.3	22-153	1.09		24
m,p-Xylene	0.173	0.010	"	0.200	0.00	86.7	10-159	0.603		68
o-Xylene	0.0962	0.0050	"	0.100	0.00	96.2	31-151	0.218		38
Surrogate: 1,2-Dichloroethane-d4	0.0397		"	0.0397		100	23-173			
Surrogate: Toluene-d8	0.0403		"	0.0400		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0401		"	0.0400		100	21-167			

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: H&S Mineral #1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
06/23/13 16:37

Notes and Definitions

- E The concentration indicated for this analyte is an estimated value above the calibration range of the instrument.
- 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

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.