

TABLE 1
MILLER GJ 33-24
SOIL ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Depth (bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	TPH ⁽²⁾ (mg/kg)
COGCC standards for soil (mg/kg) ⁽¹⁾			0.17	85	100	175	23	500
SS01@7'	10/27/2014	7	0.021	<0.0050	<0.0050	<0.010	<0.010	<50
SS02@7'	10/27/2014	7	0.0032	<0.0050	<0.0050	<0.010	<0.010	<50
SS03@7'	10/29/2014	7	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS04@7'	10/29/2014	7	0.019	<0.0050	<0.0050	<0.010	<0.010	<50
SS05@7'	10/29/2014	7	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS06@7'	10/29/2014	7	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS07@7'	10/29/2014	7	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS08@7'	10/29/2014	7	0.048	<0.0050	<0.0050	<0.010	<0.010	0.59

Notes:

1. Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective February 1, 2014.

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

COGCC = Colorado Oil and Gas Conservation Commission

(<) = Analytical result is less than the indicated laboratory reporting limit.

GRO = Total volatile petroleum hydrocarbons - gasoline range organics

DRO = Total extractable petroleum hydrocarbons - diesel range organics

mg/kg = Milligrams per kilogram

bgs = Below ground surface

TABLE 2
MILLER GJ 33-24
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)
COGCC Table 910-1 Groundwater Standard (ug/L) ⁽¹⁾		5	560	700	1,400
GW01	11/3/2014	310	84	8.2	180
BH01	4/9/2015	3.0	<1.0	<1.0	<1.0
BH02	4/9/2015	<1.0	<1.0	<1.0	<1.0
BH03	4/9/2015	<1.0	<1.0	<1.0	<1.0
BH04	4/9/2015	<1.0	<1.0	<1.0	<1.0
BH05	4/9/2015	<1.0	<1.0	<1.0	1.0

Notes:

1. Groundwater standards referenced from 2 CCR 404-1, Table 910-1, effective February 1, 2014.

COGCC = Colorado Oil and Gas Conservation Commission

ug/L = Micrograms per liter

(<) = Analytical result is less than the indicated laboratory reporting limit.

BOLD= Analytical result is in exceedance of COGCC groundwater standards.

ATTACHMENT A

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

October 28, 2014

Brandon Bruns
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Miller GJ 33-24

Enclosed are the results of analyses for samples received by Summit Scientific on 10/27/14 18:12. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury
President



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

Project: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/28/14 06:43

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@7'	1410239-01	Soil	10/27/14 11:30	10/27/14 18:12
SS02@7'	1410239-02	Soil	10/27/14 11:40	10/27/14 18:12

Summit Scientific

A handwritten signature in black ink, appearing to be 'MSM'.

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: Miller GJ 33-24

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/28/14 06:43

Summit Scientific 1410239

S₂

741 Corporate Circle, Suite J&K ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933

Page (of)

Client: PDC Energy Project Manager: Brandon Bruns
Address: _____ E-Mail: _____
City/State/Zip: _____
Phone: _____ Fax: _____ Project Name: Miller GJ 33-24
Sampler Name: C. W. G. S. D. Project Number: _____

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested				Special Instructions	
					HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)	8260BTEX	NAP, GAO	8015 DO-D			
1	SS01 @ 7'	10/27/14	1130	1			X			X				X	X			
2	SS02 @ 7'	10/27/14	1140	1			X			X				X	X			
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Relinquished by: <u>[Signature]</u>	Date/Time: <u>10/27/14 5:30</u>	Received by: <u>MD</u>	Date/Time: <u>10/27/14 1548</u>	Turn Around Time (Check) Same Day <u>X</u> 72 hours — 24 hours — Standard — 48 hours —	Notes:
Relinquished by: _____	Date/Time: _____	Received by: _____	Date/Time: _____	Sample Integrity: <u>From please!</u>	
Relinquished by: _____	Date/Time: _____	Received by: _____	Date/Time: _____	Temperature Upon Receipt: <u>4°C</u> Intact: <u>(Yes)</u> No	

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[Signature]



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

Project: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
10/28/14 06:43

SS01@7'
1410239-01 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: 10/27/14 11:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1410295	10/27/14	10/28/14	8015 DRO	

Date Sampled: 10/27/14 11:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		83.6 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/27/14 11:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1410294	10/27/14	10/27/14	EPA 8260B	
Benzene	0.021	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: 10/27/14 11:30

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/28/14 06:43

SS02@7'
1410239-02 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: 10/27/14 11:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1410295	10/27/14	10/28/14	8015 DRO	

Date Sampled: 10/27/14 11:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		74.6 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/27/14 11:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1410294	10/27/14	10/27/14	EPA 8260B	
Benzene	0.0032	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: 10/27/14 11:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

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

Project: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/28/14 06:43

Total Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1410295 - EPA 3550A

Blank (1410295-BLK1)

Prepared: 10/27/14 Analyzed: 10/28/14

C10-C28 (DRO) ND 50 mg/kg

LCS (1410295-BS1)

Prepared: 10/27/14 Analyzed: 10/28/14

C10-C28 (DRO) 516 50 mg/kg 501 103 73-134

LCS (1410295-BS2)

Prepared: 10/27/14 Analyzed: 10/28/14

C10-C28 (DRO) 564 50 mg/kg 501 113 73-134

Matrix Spike (1410295-MS1)

Source: 1410236-01

Prepared: 10/27/14 Analyzed: 10/28/14

C10-C28 (DRO) 620 50 mg/kg 471 ND 132 50-148

Matrix Spike (1410295-MS2)

Source: 1410236-02

Prepared: 10/27/14 Analyzed: 10/28/14

C10-C28 (DRO) 601 50 mg/kg 489 ND 123 50-148

Matrix Spike Dup (1410295-MSD1)

Source: 1410236-01

Prepared: 10/27/14 Analyzed: 10/28/14

C10-C28 (DRO) 596 50 mg/kg 467 ND 127 50-148 4.05 13

Matrix Spike Dup (1410295-MSD2)

Source: 1410236-02

Prepared: 10/27/14 Analyzed: 10/28/14

C10-C28 (DRO) 590 50 mg/kg 484 ND 122 50-148 1.83 13

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

Project: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
10/28/14 06:43

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 1410294 - EPA 5030 Soil MS

Blank (1410294-BLK1)

Prepared & Analyzed: 10/27/14

Naphthalene	ND	0.010	mg/kg							
Benzene	ND	0.0020	"							
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>0.0329</i>		<i>"</i>	<i>0.0396</i>		<i>83.2</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0404</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0395</i>		<i>"</i>	<i>0.0400</i>		<i>98.8</i>	<i>21-167</i>			

LCS (1410294-BS1)

Prepared & Analyzed: 10/27/14

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.115	0.0020	"	0.100		115	58-130			
Toluene	0.127	0.0050	"	0.100		127	61-134			
Ethylbenzene	0.127	0.0050	"	0.0992		128	74-139			
m,p-Xylene	0.251	0.010	"	0.200		126	73-137			
o-Xylene	0.126	0.0050	"	0.0984		128	73-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0326</i>		<i>"</i>	<i>0.0396</i>		<i>82.2</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0414</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0383</i>		<i>"</i>	<i>0.0400</i>		<i>95.8</i>	<i>21-167</i>			

LCS (1410294-BS2)

Prepared & Analyzed: 10/27/14

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.116	0.0020	"	0.100		116	58-130			
Toluene	0.126	0.0050	"	0.100		126	61-134			
Ethylbenzene	0.128	0.0050	"	0.0992		129	74-139			
m,p-Xylene	0.252	0.010	"	0.200		126	73-137			
o-Xylene	0.127	0.0050	"	0.0984		129	73-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0330</i>		<i>"</i>	<i>0.0396</i>		<i>83.3</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0398</i>		<i>"</i>	<i>0.0400</i>		<i>99.4</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0394</i>		<i>"</i>	<i>0.0400</i>		<i>98.6</i>	<i>21-167</i>			

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

Project: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/28/14 06:43

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 1410294 - EPA 5030 Soil MS

Matrix Spike (1410294-MS1)

Source: 1410236-01

Prepared & Analyzed: 10/27/14

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.104	0.0020	"	0.0924	ND	113	30-131			
Toluene	0.114	0.0050	"	0.0924	ND	123	30-134			
Ethylbenzene	0.120	0.0050	"	0.0917	ND	131	22-153			
m,p-Xylene	0.235	0.010	"	0.184	ND	127	10-159			
o-Xylene	0.117	0.0050	"	0.0909	ND	129	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0297		"	0.0366		81.1	23-173			
Surrogate: Toluene-d8	0.0361		"	0.0370		97.7	20-170			
Surrogate: 4-Bromofluorobenzene	0.0350		"	0.0370		94.7	21-167			

Matrix Spike (1410294-MS2)

Source: 1410236-02

Prepared & Analyzed: 10/27/14

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.112	0.0020	"	0.0960	ND	117	30-131			
Toluene	0.121	0.0050	"	0.0960	ND	126	30-134			
Ethylbenzene	0.123	0.0050	"	0.0952	ND	129	22-153			
m,p-Xylene	0.240	0.010	"	0.192	ND	125	10-159			
o-Xylene	0.120	0.0050	"	0.0944	ND	128	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0324		"	0.0380		85.2	23-173			
Surrogate: Toluene-d8	0.0383		"	0.0384		99.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0366		"	0.0384		95.2	21-167			

Matrix Spike Dup (1410294-MSD1)

Source: 1410236-01

Prepared & Analyzed: 10/27/14

Naphthalene	ND	0.010	mg/kg		ND		10-158		42	
Benzene	0.108	0.0020	"	0.0945	ND	115	30-131	3.67	34	
Toluene	0.118	0.0050	"	0.0945	ND	125	30-134	3.74	30	
Ethylbenzene	0.122	0.0050	"	0.0938	ND	130	22-153	1.48	24	
m,p-Xylene	0.240	0.010	"	0.189	ND	127	10-159	2.18	68	
o-Xylene	0.120	0.0050	"	0.0930	ND	129	31-151	2.50	38	
Surrogate: 1,2-Dichloroethane-d4	0.0303		"	0.0374		80.8	23-173			
Surrogate: Toluene-d8	0.0374		"	0.0378		99.0	20-170			
Surrogate: 4-Bromofluorobenzene	0.0373		"	0.0378		98.7	21-167			

Summit Scientific

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

Project: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
10/28/14 06:43

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 1410294 - EPA 5030 Soil MS

Matrix Spike Dup (1410294-MSD2)		Source: 1410236-02			Prepared & Analyzed: 10/27/14					
Naphthalene	ND	0.010	mg/kg		ND		10-158		42	
Benzene	0.114	0.0020	"	0.0951	ND	120	30-131	1.81	34	
Toluene	0.123	0.0050	"	0.0951	ND	129	30-134	1.42	30	
Ethylbenzene	0.122	0.0050	"	0.0943	ND	130	22-153	0.184	24	
m,p-Xylene	0.242	0.010	"	0.190	ND	128	10-159	1.09	68	
o-Xylene	0.122	0.0050	"	0.0935	ND	130	31-151	0.892	38	
Surrogate: 1,2-Dichloroethane-d4	0.0324		"	0.0376		86.0	23-173			
Surrogate: Toluene-d8	0.0385		"	0.0380		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0370		"	0.0380		97.2	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: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/28/14 06:43

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

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.

A handwritten signature in black ink, appearing to be 'MSM'.

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

October 30, 2014

Brandon Bruns
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Miller GJ 33-24

Enclosed are the results of analyses for samples received by Summit Scientific on 10/29/14 16:15. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury
President



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

Project: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/30/14 06:41

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS03@7'	1410282-01	Soil	10/29/14 10:00	10/29/14 16:15
SS04@7'	1410282-02	Soil	10/29/14 10:10	10/29/14 16:15
SS05@7'	1410282-03	Soil	10/29/14 10:20	10/29/14 16:15
SS06@7'	1410282-04	Soil	10/29/14 10:30	10/29/14 16:15
SS07@7'	1410282-05	Soil	10/29/14 10:40	10/29/14 16:15
SS08@7'	1410282-06	Soil	10/29/14 10:50	10/29/14 16:15

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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.

Page 2 of 13



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

Project: Miller GJ 33-24

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
10/30/14 06:41

SS03@7'
1410282-01 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: **10/29/14 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1410326	10/29/14	10/29/14	8015 DRO	

Date Sampled: **10/29/14 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		97.9 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/29/14 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1410327	10/29/14	10/29/14	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/29/14 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		114 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	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: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
10/30/14 06:41

SS04@7'
1410282-02 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: **10/29/14 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1410326	10/29/14	10/29/14	8015 DRO	

Date Sampled: **10/29/14 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		99.9 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/29/14 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1410327	10/29/14	10/29/14	EPA 8260B	
Benzene	0.019	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/29/14 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
10/30/14 06:41

SS05@7'
1410282-03 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: **10/29/14 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1410326	10/29/14	10/29/14	8015 DRO	

Date Sampled: **10/29/14 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		98.3 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/29/14 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1410327	10/29/14	10/29/14	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/29/14 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		115 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	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: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
10/30/14 06:41

SS06@7'
1410282-04 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: **10/29/14 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1410326	10/29/14	10/29/14	8015 DRO	

Date Sampled: **10/29/14 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		97.2 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/29/14 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1410327	10/29/14	10/29/14	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/29/14 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		81.4 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.0 %	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: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
10/30/14 06:41

SS07@7'
1410282-05 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: 10/29/14 10:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1410326	10/29/14	10/29/14	8015 DRO	

Date Sampled: 10/29/14 10:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		97.3 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/29/14 10:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1410327	10/29/14	10/29/14	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: 10/29/14 10:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		83.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.7 %	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: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
10/30/14 06:41

SS08@7'
1410282-06 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: 10/29/14 10:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1410326	10/29/14	10/29/14	8015 DRO	

Date Sampled: 10/29/14 10:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		97.5 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 10/29/14 10:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1410327	10/29/14	10/29/14	EPA 8260B	
Benzene	0.048	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	0.59	0.50	"	"	"	"	"	"	

Date Sampled: 10/29/14 10:50

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		84.7 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.6 %	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: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/30/14 06:41

Total Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1410326 - EPA 3550A

Blank (1410326-BLK1)

Prepared: 10/29/14 Analyzed: 10/30/14

C10-C28 (DRO) ND 50 mg/kg

LCS (1410326-BS1)

Prepared: 10/29/14 Analyzed: 10/30/14

C10-C28 (DRO) 391 50 mg/kg 501 78.1 73-134

LCS (1410326-BS2)

Prepared: 10/29/14 Analyzed: 10/30/14

C10-C28 (DRO) 475 50 mg/kg 501 94.7 73-134

Matrix Spike (1410326-MS1)

Source: 1410281-01

Prepared: 10/29/14 Analyzed: 10/30/14

C10-C28 (DRO) 422 50 mg/kg 501 42.7 75.6 50-148

Matrix Spike Dup (1410326-MSD1)

Source: 1410281-01

Prepared: 10/29/14 Analyzed: 10/30/14

C10-C28 (DRO) 408 50 mg/kg 501 42.7 72.9 50-148 3.29 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: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/30/14 06:41

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 1410327 - EPA 5030 Soil MS

Blank (1410327-BLK1)

Prepared: 10/29/14 Analyzed: 10/30/14

Naphthalene	ND	0.010	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0314		"	0.0396	79.3	23-173				
Surrogate: Toluene-d8	0.0386		"	0.0400	96.5	20-170				
Surrogate: 4-Bromofluorobenzene	0.0386		"	0.0400	96.4	21-167				

LCS (1410327-BS1)

Prepared: 10/29/14 Analyzed: 10/30/14

Naphthalene	ND	0.010	mg/kg			66-138				
Benzene	0.118	0.0020	"	0.100	118	58-130				
Toluene	0.125	0.0050	"	0.100	125	61-134				
Ethylbenzene	0.125	0.0050	"	0.0992	126	74-139				
m,p-Xylene	0.247	0.010	"	0.200	124	73-137				
o-Xylene	0.122	0.0050	"	0.0984	124	73-141				
Surrogate: 1,2-Dichloroethane-d4	0.0328		"	0.0396	82.7	23-173				
Surrogate: Toluene-d8	0.0401		"	0.0400	100	20-170				
Surrogate: 4-Bromofluorobenzene	0.0372		"	0.0400	93.0	21-167				

LCS (1410327-BS2)

Prepared: 10/29/14 Analyzed: 10/30/14

Naphthalene	ND	0.010	mg/kg			66-138				
Benzene	0.114	0.0020	"	0.100	114	58-130				
Toluene	0.123	0.0050	"	0.100	123	61-134				
Ethylbenzene	0.126	0.0050	"	0.0992	127	74-139				
m,p-Xylene	0.250	0.010	"	0.200	125	73-137				
o-Xylene	0.124	0.0050	"	0.0984	126	73-141				
Surrogate: 1,2-Dichloroethane-d4	0.0325		"	0.0396	82.0	23-173				
Surrogate: Toluene-d8	0.0393		"	0.0400	98.2	20-170				
Surrogate: 4-Bromofluorobenzene	0.0374		"	0.0400	93.4	21-167				

Summit Scientific

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

Project: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/30/14 06:41

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 1410327 - EPA 5030 Soil MS

Matrix Spike (1410327-MS1)

Source: 1410281-01

Prepared: 10/29/14

Analyzed: 10/30/14

Naphthalene	ND	0.010	mg/kg	ND	ND		10-158			
Benzene	0.114	0.0020	"	0.100	0.00306	111	30-131			
Toluene	0.123	0.0050	"	0.100	0.0163	107	30-134			
Ethylbenzene	0.127	0.0050	"	0.0992	ND	128	22-153			
m,p-Xylene	0.253	0.010	"	0.200	0.00684	124	10-159			
o-Xylene	0.126	0.0050	"	0.0984	ND	128	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0321		"	0.0396		81.0	23-173			
Surrogate: Toluene-d8	0.0395		"	0.0400		98.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0391		"	0.0400		97.8	21-167			

Matrix Spike (1410327-MS2)

Source: 1410281-01

Prepared: 10/29/14

Analyzed: 10/30/14

Naphthalene	ND	0.010	mg/kg	ND	ND		10-158			
Benzene	0.117	0.0020	"	0.100	0.00306	114	30-131			
Toluene	0.125	0.0050	"	0.100	0.0163	109	30-134			
Ethylbenzene	0.126	0.0050	"	0.0992	ND	127	22-153			
m,p-Xylene	0.251	0.010	"	0.200	0.00684	122	10-159			
o-Xylene	0.125	0.0050	"	0.0984	ND	128	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0331		"	0.0396		83.5	23-173			
Surrogate: Toluene-d8	0.0397		"	0.0400		99.3	20-170			
Surrogate: 4-Bromofluorobenzene	0.0386		"	0.0400		96.4	21-167			

Matrix Spike Dup (1410327-MSD1)

Source: 1410281-01

Prepared: 10/29/14

Analyzed: 10/30/14

Naphthalene	ND	0.010	mg/kg	ND	ND		10-158		42	
Benzene	0.117	0.0020	"	0.100	0.00306	114	30-131	2.18	34	
Toluene	0.126	0.0050	"	0.100	0.0163	109	30-134	2.00	30	
Ethylbenzene	0.125	0.0050	"	0.0992	ND	126	22-153	1.59	24	
m,p-Xylene	0.248	0.010	"	0.200	0.00684	121	10-159	2.17	68	
o-Xylene	0.125	0.0050	"	0.0984	ND	127	31-151	0.787	38	
Surrogate: 1,2-Dichloroethane-d4	0.0329		"	0.0396		83.2	23-173			
Surrogate: Toluene-d8	0.0397		"	0.0400		99.3	20-170			
Surrogate: 4-Bromofluorobenzene	0.0376		"	0.0400		94.1	21-167			

Summit Scientific

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

Project: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
10/30/14 06:41

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 1410327 - EPA 5030 Soil MS

Matrix Spike Dup (1410327-MSD2)		Source: 1410281-01			Prepared: 10/29/14		Analyzed: 10/30/14			
Naphthalene	ND	0.010	mg/kg		ND		10-158		42	
Benzene	0.120	0.0020	"	0.100	0.00306	117	30-131	2.31	34	
Toluene	0.125	0.0050	"	0.100	0.0163	109	30-134	0.0240	30	
Ethylbenzene	0.128	0.0050	"	0.0992	ND	129	22-153	1.16	24	
m,p-Xylene	0.253	0.010	"	0.200	0.00684	124	10-159	1.08	68	
o-Xylene	0.126	0.0050	"	0.0984	ND	128	31-151	0.453	38	
Surrogate: 1,2-Dichloroethane-d4		0.0332	"	0.0396		83.9	23-173			
Surrogate: Toluene-d8		0.0393	"	0.0400		98.2	20-170			
Surrogate: 4-Bromofluorobenzene		0.0381	"	0.0400		95.2	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: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
10/30/14 06:41

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

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.

A handwritten signature in black ink, appearing to be 'MSM'.

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

November 03, 2014

Brandon Bruns
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Miller GJ 33-24

Enclosed are the results of analyses for samples received by Summit Scientific on 11/03/14 17:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury
President



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

Project: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/03/14 21:42

GW01
1411007-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 11/03/14 10:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	310	1.0	ug/l	1	1411018	11/03/14	11/03/14	EPA 8260B	
Toluene	84	1.0	"	"	"	"	"	"	
Ethylbenzene	8.2	1.0	"	"	"	"	"	"	
Xylenes (total)	180	1.0	"	"	"	"	"	"	

Date Sampled: 11/03/14 10:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		108 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		111 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		101 %	45-146		"	"	"	"	

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: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/03/14 21:42

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 1411018 - EPA 5030 Water MS

Blank (1411018-BLK1)

Prepared & Analyzed: 11/03/14

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	10.8		"	13.2		82.1	37-154			
Surrogate: Toluene-d8	12.9		"	13.3		96.9	45-149			
Surrogate: 4-Bromofluorobenzene	12.8		"	13.3		95.9	45-146			

LCS (1411018-BS1)

Prepared & Analyzed: 11/03/14

Benzene	37.0	1.0	ug/l	33.3		111	51-132			
Toluene	40.1	1.0	"	33.3		120	51-138			
Ethylbenzene	41.4	1.0	"	33.1		125	58-146			
m,p-Xylene	81.9	2.0	"	66.5		123	57-144			
o-Xylene	41.2	1.0	"	32.8		126	53-146			
Surrogate: 1,2-Dichloroethane-d4	10.5		"	13.2		79.4	37-154			
Surrogate: Toluene-d8	12.9		"	13.3		96.6	45-149			
Surrogate: 4-Bromofluorobenzene	12.9		"	13.3		97.0	45-146			

Matrix Spike (1411018-MS1)

Source: 1411007-01

Prepared & Analyzed: 11/03/14

Benzene	193	1.0	ug/l	33.3	308	NR	34-141			QM-07
Toluene	82.4	1.0	"	33.3	83.5	NR	27-151			QM-07
Ethylbenzene	60.9	1.0	"	33.1	8.23	159	29-160			
m,p-Xylene	261	2.0	"	66.5	138	186	20-166			QM-07
o-Xylene	91.4	1.0	"	32.8	44.3	144	33-159			
Surrogate: 1,2-Dichloroethane-d4	11.2		"	13.2		85.2	37-154			
Surrogate: Toluene-d8	14.0		"	13.3		105	45-149			
Surrogate: 4-Bromofluorobenzene	12.8		"	13.3		96.4	45-146			

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: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
11/03/14 21:42

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 1411018 - EPA 5030 Water MS

Matrix Spike Dup (1411018-MSD1)	Source: 1411007-01			Prepared & Analyzed: 11/03/14						
Benzene	181	1.0	ug/l	33.3	308	NR	34-141	6.19	32	QM-07
Toluene	80.1	1.0	"	33.3	83.5	NR	27-151	2.90	25	QM-07
Ethylbenzene	59.7	1.0	"	33.1	8.23	156	29-160	1.96	50	
m,p-Xylene	250	2.0	"	66.5	138	169	20-166	4.37	36	QM-07
o-Xylene	88.2	1.0	"	32.8	44.3	134	33-159	3.52	26	
Surrogate: 1,2-Dichloroethane-d4	11.0		"	13.2		83.6	37-154			
Surrogate: Toluene-d8	14.2		"	13.3		106	45-149			
Surrogate: 4-Bromofluorobenzene	12.7		"	13.3		95.4	45-146			

Summit Scientific

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

Project: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
11/03/14 21:42

Notes and Definitions

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.

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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A handwritten signature in black ink, appearing to be 'MSM'.

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

April 16, 2015

Brandon Bruns
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Miller GJ 33-24

Enclosed are the results of analyses for samples received by Summit Scientific on 04/09/15 16:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury
President



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

Project: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/16/15 14:16

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	1504099-01	Water	04/09/15 11:00	04/09/15 16:30
BH02	1504099-02	Water	04/09/15 11:05	04/09/15 16:30
BH03	1504099-03	Water	04/09/15 11:10	04/09/15 16:30
BH04	1504099-04	Water	04/09/15 11:15	04/09/15 16:30
BH05	1504099-05	Water	04/09/15 11:20	04/09/15 16:30

Summit Scientific

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

Project: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/16/15 14:16

Sample Receipt Checklist

S2 Work Order: 1504099

Client: PDC

Client Project ID: Miller GJ 33-24

Shipped Via: HD

(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Airbill #: _____

Matrix (check all that apply): ☐ Air ☐ Soil/Solid ☒ Water ☐ Other: _____
(Describe)

Cooler ID					
Temp (°C)	<u>5.9</u>				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C ⁽¹⁾ ?				
NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.	<u>X</u>			
Were all samples received intact ⁽¹⁾ ?	<u>X</u>			
Was adequate sample volume provided ⁽¹⁾ ?	<u>X</u>			
If custody seals are present, are they intact ⁽¹⁾ ?			<u>X</u>	
Are short holding time analytes or samples with HTs due within 48 hours present?			<u>X</u>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<u>X</u>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<u>X</u>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<u>X</u>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<u>X</u>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		<u>X</u>		
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?				
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, etc.	<u>X</u>			<u>HCl</u>
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?			<u>X</u>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			<u>X</u>	
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

Ben Shrawsbury
Custodian Printed Name

[Signature]
Signature or Initials of Custodian

4/16/15 1950
Date/Time

[Signature]



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

Project: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/16/15 14:16

BH01
1504099-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/09/15 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	3.0	1.0	ug/l	1	1504123	04/15/15	04/15/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **04/09/15 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		94.6 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		99.7 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		110 %	45-146		"	"	"	"	

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: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
04/16/15 14:16

BH02
1504099-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/09/15 11:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	1504123	04/15/15	04/15/15	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **04/09/15 11:05**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		96.7 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		98.8 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		112 %	45-146		"	"	"	"	

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: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
04/16/15 14:16

BH03
1504099-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/09/15 11:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1504123	04/15/15	04/15/15	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	1.0		"	"	"	"	"	"	

Date Sampled: **04/09/15 11:10**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		94.8 %		37-154		"	"	"	"	
Surrogate: Toluene-d8		97.1 %		45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		110 %		45-146		"	"	"	"	

Summit Scientific

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

Project: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
04/16/15 14:16

BH04
1504099-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/09/15 11:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1504123	04/16/15	04/16/15	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	ND	1.0		"	"	"	"	"	"	

Date Sampled: **04/09/15 11:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		94.8 %		37-154		"	"	"	"	
Surrogate: Toluene-d8		99.5 %		45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		110 %		45-146		"	"	"	"	

Summit Scientific

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

Project: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
04/16/15 14:16

BH05
1504099-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/09/15 11:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	1.0		ug/l	1	1504123	04/16/15	04/16/15	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	ND	1.0		"	"	"	"	"	"	
Xylenes (total)	1.0	1.0		"	"	"	"	"	"	

Date Sampled: **04/09/15 11:20**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		97.9 %		37-154		"	"	"	"	
Surrogate: Toluene-d8		99.5 %		45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		112 %		45-146		"	"	"	"	

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

Project: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/16/15 14:16

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 1504123 - EPA 5030 Water MS

Blank (1504123-BLK1)

Prepared & Analyzed: 04/11/15

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	12.9		"	13.2		97.4	37-154			
Surrogate: Toluene-d8	13.0		"	13.3		97.7	45-149			
Surrogate: 4-Bromofluorobenzene	12.6		"	13.3		94.3	45-146			

LCS (1504123-BS1)

Prepared & Analyzed: 04/11/15

Benzene	46.1	1.0	ug/l	50.0		92.2	51-132			
Toluene	47.2	1.0	"	50.0		94.5	51-138			
Ethylbenzene	47.4	1.0	"	50.0		94.9	58-146			
m,p-Xylene	96.8	2.0	"	100		96.8	57-144			
o-Xylene	48.6	1.0	"	50.0		97.1	53-146			
Surrogate: 1,2-Dichloroethane-d4	11.8		"	13.2		89.8	37-154			
Surrogate: Toluene-d8	13.2		"	13.3		98.7	45-149			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.6	45-146			

Matrix Spike (1504123-MS1)

Source: 1504047-01

Prepared & Analyzed: 04/11/15

Benzene	47.2	1.0	ug/l	50.0	ND	94.3	34-141			
Toluene	48.0	1.0	"	50.0	ND	95.9	27-151			
Ethylbenzene	48.7	1.0	"	50.0	ND	97.4	29-160			
m,p-Xylene	99.3	2.0	"	100	ND	99.3	20-166			
o-Xylene	50.1	1.0	"	50.0	ND	100	33-159			
Surrogate: 1,2-Dichloroethane-d4	11.7		"	13.2		88.9	37-154			
Surrogate: Toluene-d8	13.2		"	13.3		99.2	45-149			
Surrogate: 4-Bromofluorobenzene	13.1		"	13.3		98.1	45-146			

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

Project: Miller GJ 33-24
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
04/16/15 14:16

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 1504123 - EPA 5030 Water MS

Matrix Spike Dup (1504123-MSD1)	Source: 1504047-01			Prepared & Analyzed: 04/11/15						
Benzene	48.3	1.0	ug/l	50.0	ND	96.7	34-141	2.47	32	
Toluene	49.6	1.0	"	50.0	ND	99.3	27-151	3.46	25	
Ethylbenzene	49.8	1.0	"	50.0	ND	99.7	29-160	2.29	50	
m,p-Xylene	101	2.0	"	100	ND	101	20-166	1.96	36	
o-Xylene	51.5	1.0	"	50.0	ND	103	33-159	2.72	26	
Surrogate: 1,2-Dichloroethane-d4	11.9		"	13.2		90.5	37-154			
Surrogate: Toluene-d8	13.2		"	13.3		99.0	45-149			
Surrogate: 4-Bromofluorobenzene	13.1		"	13.3		98.3	45-146			

Summit Scientific

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

Project: Miller GJ 33-24

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/16/15 14:16

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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A handwritten signature in black ink, appearing to be 'MSM'.