

**TABLE 1**  
**BARRELL 41-4 TANK BATTERY**  
**SOIL ANALYTICAL RESULTS SUMMARY TABLE**

Sample ID	Date Sampled	Depth (feet bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	TPH <sup>(2)</sup> (mg/kg)
<b>COGCC standards for soil (mg/kg) <sup>(1)</sup></b>			<b>0.17</b>	<b>85</b>	<b>100</b>	<b>175</b>	<b>23</b>	<b>500</b>
SS01	2/6/2011	15-20	<0.0050	0.0056	<0.0050	0.032	0.021	63
SS02	2/6/2011	25	<b>2.1</b>	36	11	73	2.9	<b>6,900</b>
SS03	2/6/2011	15-20	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<50
SS04	2/6/2011	23	<0.0050	<0.0050	<0.0050	<0.010	0.0062	<50
SS05	2/6/2011	23	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<50
SS06	2/6/2011	20	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<50
SS07	3/3/2011	32	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<50
SS08	3/3/2011	37	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<50
BH01 @ 27.5	6/21/2011	27.5	<b>1.5</b>	16	5.2	47	2.3	<b>2,750</b>
IP01	7/10/2012	15-18	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<50
IP02	7/10/2012	20-25	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<50
IP03	7/10/2012	15-18	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<50
IP04	7/10/2012	15-18	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<50
SS02A	1/8/2013	25-27'	0.034	14	11	83	0.24	<b>5,000</b>
BH01-R @ 23	9/25/2015	23	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<b>2,243</b>
SS02A-R @ 22	9/25/2015	22	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<b>2,050</b>
SS02A-R2 @ 22'	9/21/2017	22	<0.0020	<0.0050	0.012	0.20	<0.010	<b>2,581</b>
SS02A-R2 @ 25-27'	9/21/2017	25-27	0.018	0.14	7.3	41	0.47	<b>2,760</b>
SS02A-R2 @ 34.5'	9/21/2017	34.5	0.082	0.99	2.8	18	0.51	<b>2,210</b>
BH03 @ 22-23'	10/11/2017	22-23	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH03 @ 25-27'	10/11/2017	25-27	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH03 @ 34-35'	10/11/2017	34-35	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH04 @ 22-23'	10/11/2017	22-23	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH04 @ 25-27'	10/11/2017	25-27	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH04 @ 34-35'	10/11/2017	34-35	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH05 @ 22-23'	10/12/2017	22-23	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH05 @ 25-27'	10/12/2017	25-27	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH05 @ 34-35'	10/12/2017	34-35	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH06 @ 22-23'	10/12/2017	22-23	<0.0020	<0.0050	<0.0050	<0.010	0.012	157
BH06 @ 25-27'	10/12/2017	25-27	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<b>1,300</b>
BH06 @ 34-35'	10/12/2017	34-35	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH07 @ 25-27'	11/2/2017	25-27	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH07 @ 34-35'	11/2/2017	34-35	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH08 @ 25-27'	11/2/2017	25-27	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH08 @ 34-35'	11/2/2017	34-35	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH09 @ 25-27'	11/3/2017	25-27	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
BH09 @ 34-35'	11/3/2017	34-35	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50

**TABLE 1**  
**BARRELL 41-4 TANK BATTERY**  
**SOIL ANALYTICAL RESULTS SUMMARY TABLE**

**Notes:**

1. Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective January 30, 2015.
  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  
**BOLD** = Analytical result is in exceedance of COGCC soil standards.

## **ATTACHMENT A**

# Summit Scientific

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741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

October 02, 2015

Mark Longhurst  
PDC Energy  
1775 Sherman St. STE. 3000  
Denver, CO 80203  
RE: Barrell 41-4

Enclosed are the results of analyses for samples received by Summit Scientific on 09/25/15 17:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury  
President



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

Project: Barrell 41-4

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/02/15 16:45

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01-R@23'	1509250-01	Soil	09/25/15 10:30	09/25/15 17:00
SS02A-R@22'	1509250-02	Soil	09/25/15 10:40	09/25/15 17:00

Summit Scientific

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

Project: Barrell 41-4

Project Number: [none]  
Project Manager: Mark Longhurst

Reported:  
10/02/15 16:45

# Summit Scientific

S<sub>2</sub>

1509250

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

Page 1 of 1

Client: PDC Energy Project Manager: Mark Longhurst  
Address: \_\_\_\_\_ E-Mail: \_\_\_\_\_  
City/State/Zip: \_\_\_\_\_  
Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ Project Name: Barrell 41-4  
Sampler Name: C. W. 1509250 Project Number: \_\_\_\_\_

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested				Special Instructions	
					HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)					
1	BHD-RC23'	9/25/15	1050	1			X			X							
2	S802A-RC22'	9/25/15	1040	1			X			X							
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

  

Relinquished by: <u>[Signature]</u>	Date/Time: <u>9/25/15 1330</u>	Received by: <u>[Signature]</u>	Date/Time: <u>9/25/15 1700</u>	Turn Around Time (Check)	Notes:
Relinquished by: <u>[Signature]</u>	Date/Time: <u>9/25/15 1740</u>	Received by: <u>[Signature]</u>	Date/Time: <u>9/25 1740</u>	Same Day _____ 72 hours _____ 24 hours _____ Standard <u>X</u> 48 hours _____	on ice
Relinquished by: _____	Date/Time: _____	Received by: _____	Date/Time: _____	Sample Integrity: Temperature Upon Receipt: <u>25°C</u> Intact: <u>Yes</u> No	

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

Project: Barrell 41-4

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/02/15 16:45

**BH01-R@23'**  
**1509250-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/25/15 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>2200</b>	50	mg/kg	1	1509288	10/01/15	10/02/15	8015M	

Date Sampled: **09/25/15 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		148 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/25/15 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1509275	09/29/15	09/30/15	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>43</b>	0.50	"	"	"	"	"	"	

Date Sampled: **09/25/15 10:30**

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>		64.5 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		212 %	21-167		"	"	"	"	S-02

Summit Scientific

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

Project: Barrell 41-4

Project Number: [none]  
Project Manager: Mark Longhurst

Reported:  
10/02/15 16:45

**SS02A-R@22'**  
**1509250-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/25/15 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>1900</b>	50	mg/kg	1	1509288	10/01/15	10/02/15	8015M	

Date Sampled: **09/25/15 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		153 %	30-150		"	"	"	"	S-02

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/25/15 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1509275	09/29/15	09/30/15	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>150</b>	5.0	"	10	"	"	"	"	

Date Sampled: **09/25/15 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		107 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		28.1 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		342 %	21-167		"	"	"	"	S-02

Summit Scientific

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

Project: Barrell 41-4

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/02/15 16:45

**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 1509288 - EPA 3550A**

**Blank (1509288-BLK1)**

Prepared: 10/01/15 Analyzed: 10/02/15

C10-C28 (DRO)	ND	50	mg/kg								
<i>Surrogate: o-Terphenyl</i>	12.4		"	12.2		101	30-150				

**LCS (1509288-BS1)**

Prepared: 10/01/15 Analyzed: 10/02/15

C10-C28 (DRO)	433	50	mg/kg	499		86.7	73-134				
<i>Surrogate: o-Terphenyl</i>	12.4		"	12.2		102	30-150				

**Matrix Spike (1509288-MS1)**

Source: 1509124-04

Prepared: 10/01/15 Analyzed: 10/02/15

C10-C28 (DRO)	441	50	mg/kg	466	21.8	89.9	50-148				
<i>Surrogate: o-Terphenyl</i>	11.5		"	11.4		101	30-150				

**Matrix Spike Dup (1509288-MSD1)**

Source: 1509124-04

Prepared: 10/01/15 Analyzed: 10/02/15

C10-C28 (DRO)	467	50	mg/kg	494	21.8	90.2	50-148	5.71	13		
<i>Surrogate: o-Terphenyl</i>	11.7		"	12.1		97.0	30-150				

Summit Scientific

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

Project: Barrell 41-4

Project Number: [none]  
Project Manager: Mark Longhurst

Reported:  
10/02/15 16:45

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

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

**Batch 1509275 - EPA 5030 Soil MS**

**Blank (1509275-BLK1)**

Prepared: 09/29/15 Analyzed: 09/30/15

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>0.0468</i>		<i>"</i>	<i>0.0396</i>		<i>118</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0407</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0437</i>		<i>"</i>	<i>0.0400</i>		<i>109</i>	<i>21-167</i>			

**LCS (1509275-BS1)**

Prepared: 09/29/15 Analyzed: 09/30/15

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.117	0.0020	"	0.100		117	58-130			
Toluene	0.107	0.0050	"	0.100		107	61-134			
Ethylbenzene	0.121	0.0050	"	0.0992		121	74-139			
m,p-Xylene	0.236	0.010	"	0.200		118	73-137			
o-Xylene	0.124	0.0050	"	0.0984		126	73-141			
Xylenes (total)	0.360	0.010	"				0-200			
Gasoline Range Hydrocarbons	2.49	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0489</i>		<i>"</i>	<i>0.0396</i>		<i>124</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0417</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0427</i>		<i>"</i>	<i>0.0400</i>		<i>107</i>	<i>21-167</i>			

**Matrix Spike (1509275-MS1)**

Source: 1509235-01

Prepared: 09/29/15 Analyzed: 09/30/15

Naphthalene	0.0867	0.010	mg/kg		0.117		10-158			
Benzene	0.145	0.0020	"	0.0943	0.0328	119	30-131			
Toluene	0.294	0.0050	"	0.0943	0.193	108	30-134			
Ethylbenzene	0.243	0.0050	"	0.0936	0.159	89.9	22-153			
m,p-Xylene	0.416	0.010	"	0.188	0.230	98.7	10-159			
o-Xylene	0.275	0.0050	"	0.0928	0.168	116	31-151			
Xylenes (total)	0.692	0.010	"		0.398		30-160			
Gasoline Range Hydrocarbons	ND	0.50	"		18.0		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0465</i>		<i>"</i>	<i>0.0374</i>		<i>124</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0408</i>		<i>"</i>	<i>0.0377</i>		<i>108</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0406</i>		<i>"</i>	<i>0.0377</i>		<i>107</i>	<i>21-167</i>			

Summit Scientific

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

Project: Barrell 41-4

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/02/15 16:45

**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 1509275 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (1509275-MSD1)</b>	<b>Source: 1509235-01</b>			Prepared: 09/29/15		Analyzed: 09/30/15				
Naphthalene	0.0826	0.010	mg/kg		0.117		10-158	4.86	42	
Benzene	0.145	0.0020	"	0.0963	0.0328	116	30-131	0.101	34	
Toluene	0.268	0.0050	"	0.0963	0.193	77.4	30-134	9.59	30	
Ethylbenzene	0.227	0.0050	"	0.0956	0.159	71.0	22-153	6.92	24	
m,p-Xylene	0.394	0.010	"	0.192	0.230	85.2	10-159	5.41	68	
o-Xylene	0.255	0.0050	"	0.0948	0.168	92.0	31-151	7.75	38	
Xylenes (total)	0.649	0.010	"		0.398		30-160	6.33	30	
Gasoline Range Hydrocarbons	ND	0.50	"		18.0		30-160		30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0467</i>		<i>"</i>	<i>0.0382</i>		<i>122</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0415</i>		<i>"</i>	<i>0.0385</i>		<i>108</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0406</i>		<i>"</i>	<i>0.0385</i>		<i>105</i>	<i>21-167</i>			

Summit Scientific

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

Project: Barrell 41-4

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/02/15 16:45

### 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.
- 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

September 22, 2017

Mark Longhurst  
PDC Energy  
1775 Sherman St. STE. 3000  
Denver, CO 80203  
RE: Barrell 41-4

Enclosed are the results of analyses for samples received by Summit Scientific on 09/21/17 17:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury  
President



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

Project: Barrell 41-4

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/22/17 06:25

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS02A-R2@22'	1709206-01	Soil	09/21/17 12:31	09/21/17 17:00
SS02A-R2@25-27'	1709206-02	Soil	09/21/17 14:19	09/21/17 17:00
SS02A-R2@34.5'	1709206-03	Soil	09/21/17 15:39	09/21/17 17:00

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

Project: Barrell 41-4

Project Number: [none]  
Project Manager: Mark Longhurst

Reported:  
09/22/17 06:25

1709206

# Summit Scientific

S<sub>2</sub>

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

Page 1 of 1

Client: PDC Energy Project Manager: Mark Longhurst  
Address: \_\_\_\_\_ E-Mail: \_\_\_\_\_  
City/State/Zip: \_\_\_\_\_  
Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ Project Name: Barrell 41-4  
Sampler Name: Brook Nelson Project Number: \_\_\_\_\_

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested							Special Instructions
					HCl	HNO3	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)	CBTELH	TELH	TELH	TELH	TELH	TELH	
1	SS07A-R2@22'	9/21/17	1231	1			X			X			X	X	X	X	X		
2	SS02A-R2@25-27'		1419	1			X			X			X	X	X	X	X		
3	SS07A-R2@34.5'		1539	1			X			X			X	X	X	X	X		
4																			
5																			
6																			
7																			
8																			
9																			
10																			

  

Relinquished by:	Date/Time: 9/21/17 1700	Received by:	Date/Time: 9-21-17 17:00	Turn Around Time (Check)	Notes:
Relinquished by:	Date/Time:	Received by:	Date/Time:	Same Day <input checked="" type="checkbox"/> 72 hours ___	
Relinquished by:	Date/Time:	Received by:	Date/Time:	24 hours ___ Standard ___	
Relinquished by:	Date/Time:	Received by:	Date/Time:	48 hours ___	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Sample Integrity:	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Temperature Upon Receipt: 14.1	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	

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

Project: Barrell 41-4

Project Number: [none]  
Project Manager: Mark Longhurst

Reported:  
09/22/17 06:25

1709206

Sample Receipt Checklist

S2 Work Order: \_\_\_\_\_  
Client: PDC Client Project ID: Barrell 41-4  
Shipped Via: H.D. ON ICE Airbill #: \_\_\_\_\_  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)  
Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_  
(Describe)

Cooler ID					
Temp (°C)	14.1				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C <sup>(1)</sup> ?				
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	X			
Were all samples received intact <sup>(1)</sup> ?	X			
Was adequate sample volume provided <sup>(1)</sup> ?	X			
If custody seals are present, are they intact <sup>(1)</sup> ?			X	
Are short holding time analytes or samples with HTs due within 48 hours present?			X	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	X			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	X			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	X			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	X			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			X	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ?			X	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			X	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?			X	
Record the pH in Comments.			X	
If dissolved metals are requested, were samples field filtered?			X	
Additional Comments (if any):				
_____				
_____				

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

Muril  
Custodian Printed Name

MS 9-21-17  
Signature or Initials of Custodian

18:00  
Date/Time



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

Project: Barrell 41-4  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/22/17 06:25

**SS02A-R2@22'**  
**1709206-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/21/17 12:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>2500</b>	50	mg/kg	1	1709225	09/21/17	09/21/17	8015M	

Date Sampled: **09/21/17 12:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		141 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/21/17 12:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1709224	09/21/17	09/21/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>0.012</b>	0.0050	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>0.20</b>	0.010	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>81</b>	0.50	"	"	"	"	"	"	

Date Sampled: **09/21/17 12:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		114 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		103 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		153 %	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: Barrell 41-4  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/22/17 06:25

**SS02A-R2@25-27'**  
**1709206-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/21/17 14:19**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>860</b>	50	mg/kg	1	1709225	09/21/17	09/21/17	8015M	

Date Sampled: **09/21/17 14:19**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		107 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/21/17 14:19**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Naphthalene</b>	<b>0.47</b>	0.010	mg/kg	1	1709224	09/21/17	09/21/17	EPA 8260B	
<b>Benzene</b>	<b>0.018</b>	0.0020	"	"	"	"	"	"	
<b>Toluene</b>	<b>0.14</b>	0.0050	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>7.3</b>	0.50	"	100	"	"	"	"	
<b>Xylenes (total)</b>	<b>41</b>	1.0	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>1900</b>	50	"	"	"	"	09/21/17	"	

Date Sampled: **09/21/17 14:19**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		108 %	23-173		"	"	09/21/17	"	
<i>Surrogate: Toluene-d8</i>		101 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		112 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Barrell 41-4  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/22/17 06:25

**SS02A-R2@34.5'**  
**1709206-03 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/21/17 15:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>1400</b>	50	mg/kg	1	1709225	09/21/17	09/21/17	8015M	

Date Sampled: **09/21/17 15:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		122 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/21/17 15:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Naphthalene</b>	<b>0.51</b>	0.010	mg/kg	1	1709224	09/21/17	09/21/17	EPA 8260B	
<b>Benzene</b>	<b>0.082</b>	0.0020	"	"	"	"	"	"	
<b>Toluene</b>	<b>0.99</b>	0.50	"	100	"	"	"	"	
<b>Ethylbenzene</b>	<b>2.8</b>	0.50	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>18</b>	1.0	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>810</b>	50	"	"	"	"	09/21/17	"	

Date Sampled: **09/21/17 15:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		111 %	23-173		"	"	09/21/17	"	
<i>Surrogate: Toluene-d8</i>		105 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		110 %	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: Barrell 41-4

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 09/22/17 06:25

**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 1709225 - EPA 3550A**

<b>Blank (1709225-BLK1)</b>					Prepared & Analyzed: 09/21/17					
C10-C28 (DRO)	ND	50	mg/kg							
<i>Surrogate: o-Terphenyl</i>	12.1		"	12.5		96.7	30-150			
<b>LCS (1709225-BS1)</b>					Prepared & Analyzed: 09/21/17					
C10-C28 (DRO)	399	50	mg/kg	499		80.1	73-134			
<i>Surrogate: o-Terphenyl</i>	12.3		"	12.5		98.2	30-150			
<b>Matrix Spike (1709225-MS1)</b>					Source: 1709207-01 Prepared & Analyzed: 09/21/17					
C10-C28 (DRO)	410	50	mg/kg	499	ND	82.1	50-148			
<i>Surrogate: o-Terphenyl</i>	12.1		"	12.5		96.6	30-150			
<b>Matrix Spike Dup (1709225-MSD1)</b>					Source: 1709207-01 Prepared & Analyzed: 09/21/17					
C10-C28 (DRO)	410	50	mg/kg	499	ND	82.1	50-148	0.0586	20	
<i>Surrogate: o-Terphenyl</i>	12.1		"	12.5		97.0	30-150			

Summit Scientific

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

Project: Barrell 41-4

Project Number: [none]  
Project Manager: Mark Longhurst

Reported:  
09/22/17 06:25

**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 1709224 - EPA 5030 Soil MS**

**Blank (1709224-BLK1)**

Prepared & Analyzed: 09/21/17

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>0.0424</i>		<i>"</i>	<i>0.0400</i>		<i>106</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0402</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0401</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>21-167</i>			

**LCS (1709224-BS1)**

Prepared & Analyzed: 09/21/17

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.121	0.0020	"	0.100		121	58-130			
Toluene	0.124	0.0050	"	0.100		124	61-134			
Ethylbenzene	0.132	0.0050	"	0.0992		133	74-139			
m,p-Xylene	0.256	0.010	"	0.200		128	73-137			
o-Xylene	0.121	0.0050	"	0.0980		124	73-141			
Xylenes (total)	0.377	0.010	"				0-200			
Gasoline Range Hydrocarbons	2.87	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0418</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0408</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0405</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>21-167</i>			

**Matrix Spike (1709224-MS1)**

Source: 1709207-01

Prepared & Analyzed: 09/21/17

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.122	0.0020	"	0.100	ND	122	30-131			
Toluene	0.125	0.0050	"	0.100	ND	125	30-134			
Ethylbenzene	0.130	0.0050	"	0.0992	ND	131	22-153			
m,p-Xylene	0.251	0.010	"	0.200	0.00948	121	10-159			
o-Xylene	0.120	0.0050	"	0.0980	ND	122	31-151			
Xylenes (total)	0.370	0.010	"		0.00948		30-160			
Gasoline Range Hydrocarbons	2.85	0.50	"		ND		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0454</i>		<i>"</i>	<i>0.0400</i>		<i>113</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0417</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0399</i>		<i>"</i>	<i>0.0400</i>		<i>99.7</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: Barrell 41-4

Project Number: [none]  
 Project Manager: Mark Longhurst

Reported:  
 09/22/17 06:25

**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 1709224 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (1709224-MSD1)</b>	<b>Source: 1709207-01</b>			<b>Prepared &amp; Analyzed: 09/21/17</b>						
Naphthalene	ND	0.010	mg/kg	ND	ND	125	10-158		42	
Benzene	0.125	0.0020	"	0.100	ND	125	30-131	2.21	34	
Toluene	0.127	0.0050	"	0.100	ND	127	30-134	1.31	30	
Ethylbenzene	0.133	0.0050	"	0.0992	ND	134	22-153	2.09	24	
m,p-Xylene	0.255	0.010	"	0.200	0.00948	123	10-159	1.71	68	
o-Xylene	0.122	0.0050	"	0.0980	ND	125	31-151	2.11	38	
Xylenes (total)	0.377	0.010	"		0.00948		30-160	1.84	30	
Gasoline Range Hydrocarbons	2.78	0.50	"		ND		30-160	2.37	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0494</i>		<i>"</i>	<i>0.0400</i>		<i>123</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0416</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0417</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>21-167</i>			

Summit Scientific

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

Project: Barrell 41-4  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
09/22/17 06:25

### 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

---

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

October 13, 2017

Mark Longhurst  
PDC Energy  
1775 Sherman St. STE. 3000  
Denver, CO 80203  
RE: Barrell 41-4

Enclosed are the results of analyses for samples received by Summit Scientific on 10/12/17 17:12. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury  
President



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

Project: Barrell 41-4

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/13/17 06:13

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH03@22-23'	1710127-01	Soil	10/11/17 09:50	10/12/17 17:12
BH03@25-27'	1710127-02	Soil	10/11/17 10:04	10/12/17 17:12
BH03@34-35'	1710127-03	Soil	10/11/17 10:53	10/12/17 17:12
BH04@22-23'	1710127-04	Soil	10/11/17 13:26	10/12/17 17:12
BH04@25-27'	1710127-05	Soil	10/11/17 14:21	10/12/17 17:12
BH04@34-35'	1710127-06	Soil	10/11/17 14:52	10/12/17 17:12

Summit Scientific

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

Project: Barrell 41-4

Project Number: [none]  
Project Manager: Mark Longhurst

Reported:  
10/13/17 06:13

# Summit Scientific 17/10/27

741 Corporate Circle Suite I ♦ Golden, Colorado 80401  
303-277-9310 ♦ 303-374-5933 Fax

Page 1 of 1

Client: PDC Energy  
Address: \_\_\_\_\_  
City/State/Zip: \_\_\_\_\_  
Phone: \_\_\_\_\_ Fax: \_\_\_\_\_  
Sampler Name: Brack Nelson

Project Manager: Mark Longhurst  
E-Mail: \_\_\_\_\_  
Project Name: Barrell 41-4  
Project Number: \_\_\_\_\_

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:				Special Instructions		
				HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	GT	TPH	DEO		BOIS	
BH03 @ 22-23'	10/12/17	950	1			X							X	X			
BH03 @ 25-27'		1004	1			X							X	X			
BH03 @ 34-35'		1053	1			X							X	X			
BH04 @ 22-25'		1326	1			X							X	X			
BH04 @ 25-27'		1421	1			*							X	X			
BH04 @ 34-35'		1452	1			+							X	X			

  

Relinquished by: <u>[Signature]</u> Date/Time: <u>10/12/17</u>	Received by: <u>[Signature]</u> Date/Time: <u>10-12-17 17:12</u>	Turn Around Time (Check) Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input type="checkbox"/> 48 Hours <input type="checkbox"/>	Notes:
Relinquished by: _____ Date/Time: _____	Received by: _____ Date/Time: _____	Sample Integrity: Temperature Upon Receipt: <u>65</u> Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Relinquished by: _____ Date/Time: _____	Received in Lab by: _____ Date/Time: _____		

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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: Barrell 41-4

Project Number: [none]  
Project Manager: Mark Longhurst

Reported:  
10/13/17 06:13

Sample Receipt Checklist

S2 Work Order: 1710127  
Client: PDC Client Project ID: BARRELL 41-4  
Shipped Via: H.D. Airbill #: \_\_\_\_\_  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)  
Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_  
(Describe)

Cooler ID				
Temp (°C)	<u>6.5</u>			

Thermometer ID: 61657155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C <sup>(1)</sup> ?				
NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>			
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?	<input checked="" type="checkbox"/>			
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Record the pH in Comments.			<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

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

Muri P.  
Custodian Printed Name

MA 10-12-17  
Signature or Initials of Custodian

17:30  
Date/Time



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

Project: Barrell 41-4  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/13/17 06:13

**BH03@22-23'**  
**1710127-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **10/11/17 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1710127	10/12/17	10/12/17	8015M	

Date Sampled: **10/11/17 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		111 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **10/11/17 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1710126	10/12/17	10/12/17	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: **10/11/17 09:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %	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: Barrell 41-4  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/13/17 06:13

**BH03@25-27'**  
**1710127-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **10/11/17 10:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1710127	10/12/17	10/12/17	8015M	

Date Sampled: **10/11/17 10:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		110 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **10/11/17 10:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1710126	10/12/17	10/12/17	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: **10/11/17 10:04**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		110 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		108 %	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: Barrell 41-4

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/13/17 06:13

**BH03@34-35'**  
**1710127-03 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **10/11/17 10:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1710127	10/12/17	10/12/17	8015M	

Date Sampled: **10/11/17 10:53**

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

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **10/11/17 10:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1710126	10/12/17	10/12/17	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: **10/11/17 10:53**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		112 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		107 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %	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: Barrell 41-4  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/13/17 06:13

**BH04@22-23'**  
**1710127-04 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **10/11/17 13:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1710127	10/12/17	10/12/17	8015M	

Date Sampled: **10/11/17 13:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		110 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **10/11/17 13:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1710126	10/12/17	10/12/17	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: **10/11/17 13:26**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		108 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	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: Barrell 41-4  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/13/17 06:13

**BH04@25-27'**  
**1710127-05 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **10/11/17 14:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1710127	10/12/17	10/12/17	8015M	

Date Sampled: **10/11/17 14:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		116 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **10/11/17 14:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1710126	10/12/17	10/12/17	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: **10/11/17 14:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %	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: Barrell 41-4  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/13/17 06:13

**BH04@34-35'**  
**1710127-06 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **10/11/17 14:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1710127	10/12/17	10/12/17	8015M	

Date Sampled: **10/11/17 14:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		111 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **10/11/17 14:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1710126	10/12/17	10/12/17	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: **10/11/17 14:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		99.4 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %	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: Barrell 41-4  
 Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/13/17 06:13

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

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

**Batch 1710127 - EPA 3550A**

<b>Blank (1710127-BLK1)</b>				Prepared & Analyzed: 10/12/17							
C10-C28 (DRO)	ND	50	mg/kg								
<i>Surrogate: o-Terphenyl</i>	14.2		"	12.5		114	30-150				
<b>LCS (1710127-BS1)</b>				Prepared & Analyzed: 10/12/17							
C10-C28 (DRO)	461	50	mg/kg	499		92.3	73-134				
<i>Surrogate: o-Terphenyl</i>	14.1		"	12.5		113	30-150				
<b>Matrix Spike (1710127-MS1)</b>				<b>Source: 1710118-01</b>		Prepared & Analyzed: 10/12/17					
C10-C28 (DRO)	511	50	mg/kg	499	14.4	99.6	50-148				
<i>Surrogate: o-Terphenyl</i>	14.9		"	12.5		119	30-150				
<b>Matrix Spike Dup (1710127-MSD1)</b>				<b>Source: 1710118-01</b>		Prepared & Analyzed: 10/12/17					
C10-C28 (DRO)	494	50	mg/kg	499	14.4	96.2	50-148	3.41		20	
<i>Surrogate: o-Terphenyl</i>	14.7		"	12.5		118	30-150				

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: Barrell 41-4

Project Number: [none]  
Project Manager: Mark Longhurst

Reported:  
10/13/17 06:13

**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 1710126 - EPA 5030 Soil MS**

**Blank (1710126-BLK1)**

Prepared & Analyzed: 10/12/17

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>0.0374</i>		<i>"</i>	<i>0.0400</i>		<i>93.6</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0425</i>		<i>"</i>	<i>0.0400</i>		<i>106</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0417</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>21-167</i>			

**LCS (1710126-BS1)**

Prepared & Analyzed: 10/12/17

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.0834	0.0020	"	0.100		83.4	58-130			
Toluene	0.0949	0.0050	"	0.100		94.9	61-134			
Ethylbenzene	0.127	0.0050	"	0.0992		128	74-139			
m,p-Xylene	0.216	0.010	"	0.200		108	73-137			
o-Xylene	0.109	0.0050	"	0.0980		111	73-141			
Xylenes (total)	0.326	0.010	"				0-200			
Gasoline Range Hydrocarbons	6.11	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0686</i>		<i>"</i>	<i>0.0400</i>		<i>171</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0423</i>		<i>"</i>	<i>0.0400</i>		<i>106</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0436</i>		<i>"</i>	<i>0.0400</i>		<i>109</i>	<i>21-167</i>			

**Matrix Spike (1710126-MS1)**

Source: 1710118-01

Prepared & Analyzed: 10/12/17

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.0825	0.0020	"	0.100	ND	82.5	30-131			
Toluene	0.0927	0.0050	"	0.100	ND	92.7	30-134			
Ethylbenzene	0.128	0.0050	"	0.0992	ND	129	22-153			
m,p-Xylene	0.218	0.010	"	0.200	ND	109	10-159			
o-Xylene	0.109	0.0050	"	0.0980	ND	111	31-151			
Xylenes (total)	0.327	0.010	"		ND		30-160			
Gasoline Range Hydrocarbons	6.12	0.50	"		ND		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0685</i>		<i>"</i>	<i>0.0400</i>		<i>171</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0418</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0428</i>		<i>"</i>	<i>0.0400</i>		<i>107</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: Barrell 41-4

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 10/13/17 06:13

**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 1710126 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (1710126-MSD1)</b>	<b>Source: 1710118-01</b>			<b>Prepared &amp; Analyzed: 10/12/17</b>						
Naphthalene	ND	0.010	mg/kg	ND	ND	83.0	10-158	0.544	42	
Benzene	0.0830	0.0020	"	0.100	ND	96.2	30-131	3.68	30	
Toluene	0.0962	0.0050	"	0.100	ND	129	22-153	0.257	24	
Ethylbenzene	0.128	0.0050	"	0.0992	ND	111	10-159	1.88	68	
m,p-Xylene	0.222	0.010	"	0.200	ND	115	31-151	3.08	38	
o-Xylene	0.113	0.0050	"	0.0980	ND		30-160	2.28	30	
Xylenes (total)	0.335	0.010	"		ND		30-160	3.17	30	
Gasoline Range Hydrocarbons	5.93	0.50	"		ND		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0422</i>		<i>"</i>	<i>0.0400</i>		<i>106</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0416</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0446</i>		<i>"</i>	<i>0.0400</i>		<i>112</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: Barrell 41-4

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
10/13/17 06:13

### 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

---

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

October 16, 2017

Brandon Bruns  
PDC Energy  
1775 Sherman St. STE. 3000  
Denver, CO 80203  
RE: Barrell 41-4

Enclosed are the results of analyses for samples received by Summit Scientific on 10/13/17 16:12. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury  
President



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

Project: Barrell 41-4

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
10/16/17 05:40

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH05@22-23'	1710139-01	Soil	10/13/17 09:18	10/13/17 16:12
BH05@25-27'	1710139-02	Soil	10/13/17 09:34	10/13/17 16:12
BH05@34-35'	1710139-03	Soil	10/13/17 09:59	10/13/17 16:12
BH06@22-23'	1710139-04	Soil	10/13/17 12:32	10/13/17 16:12
BH06@25-27'	1710139-05	Soil	10/13/17 12:50	10/13/17 16:12
BH06@34-35'	1710139-06	Soil	10/13/17 13:11	10/13/17 16:12

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: Barrell 41-4

Project Number: [none]  
Project Manager: Brandon Brunns

Reported:  
10/16/17 05:40

# Summit Scientific 1710139

S<sub>2</sub>

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

Client: PDC Energy Project Manager: Mark Longhurst Page 1 of 1  
Address: \_\_\_\_\_ E-Mail: \_\_\_\_\_  
City/State/Zip: \_\_\_\_\_  
Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ Project Name: Barrell 41-4  
Sampler Name: Brak Nelson Project Number: \_\_\_\_\_

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested				Special Instructions
					HCl	HNO3	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)	GC/MS	IC/MS	TPH-DRO	
1	BH05 @ 22-23'	10/13/17	918	1			X			X			X	X		
2	BH05 @ 25-27'		934	1			X						X	X		
3	BH05 @ 34-35'		959	1			X						X	X		
4	BH06 @ 22-23'		1232	1			X			X			X	X		
5	BH06 @ 25-27'		1250	1			X			X			X	X		
6	BH06 @ 34-35'		1311	1			X			X			X	X		
7																
8																
9																
10																

  

Relinquished by:	Date/Time: 10/13/17 1617	Received by:	Date/Time: 10-13-17 16:12	Turn Around Time (Check)	Notes:
Relinquished by:	Date/Time:	Received by:	Date/Time:	Same Day <input type="checkbox"/> 72 hours <input type="checkbox"/>	
Relinquished by:	Date/Time:	Received by:	Date/Time:	24 hours <input checked="" type="checkbox"/> Standard <input type="checkbox"/>	
Relinquished by:	Date/Time:	Received by:	Date/Time:	48 hours <input type="checkbox"/>	
				Sample Integrity:	
				Temperature Upon Receipt: 7.3	
				Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	

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

Project: Barrell 41-4

Project Number: [none]  
Project Manager: Brandon Bruns

Reported:  
10/16/17 05:40

**Sample Receipt Checklist**

S2 Work Order: 1710139  
Client: FDC Client Project ID: BARRELL 41-4  
Shipped Via: H.D. Airbill #: \_\_\_\_\_  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)  
Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_ (Describe)

Cooler ID					
Temp (°C)	<u>7.3</u>				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C <sup>(1)</sup> ?				
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	X			
Were all samples received intact <sup>(1)</sup> ?	X			
Was adequate sample volume provided <sup>(1)</sup> ?	X			
If custody seals are present, are they intact <sup>(1)</sup> ?			X	
Are short holding time analytes or samples with HTs due within 48 hours present?	X			
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	X			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	X			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	X			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	X			
For volatiles in water – is there headspace present? <b>if yes, contact client and note in narrative.</b>			X	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ?			X	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			X	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.			X	
If dissolved metals are requested, were samples field filtered?			X	
Additional Comments (if any):				

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

Muri P.  
Custodian Printed Name

MB 10-13-17  
Signature or Initials of Custodian

18:00  
Date/Time



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

Project: Barrell 41-4

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
10/16/17 05:40

**BH05@22-23'**  
**1710139-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **10/13/17 09:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1710143	10/13/17	10/13/17	8015M	

Date Sampled: **10/13/17 09:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		113 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **10/13/17 09:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1710142	10/13/17	10/13/17	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: **10/13/17 09:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Barrell 41-4  
Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
10/16/17 05:40

**BH05@25-27'**  
**1710139-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **10/13/17 09:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1710143	10/13/17	10/13/17	8015M	

Date Sampled: **10/13/17 09:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		119 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **10/13/17 09:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1710142	10/13/17	10/13/17	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: **10/13/17 09:34**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		104 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Barrell 41-4

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
10/16/17 05:40

**BH05@34-35'**  
**1710139-03 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **10/13/17 09:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1710143	10/13/17	10/13/17	8015M	

Date Sampled: **10/13/17 09:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		114 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **10/13/17 09:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1710142	10/13/17	10/13/17	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: **10/13/17 09:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Barrell 41-4

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
10/16/17 05:40

**BH06@22-23'**  
**1710139-04 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **10/13/17 12:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>110</b>	50	mg/kg	1	1710143	10/13/17	10/14/17	8015M	

Date Sampled: **10/13/17 12:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		114 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **10/13/17 12:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Naphthalene</b>	<b>0.012</b>	0.010	mg/kg	1	1710142	10/13/17	10/13/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>47</b>	0.50	"	"	"	"	"	"	

Date Sampled: **10/13/17 12:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		106 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		96.4 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		154 %	21-167		"	"	"	"	

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

Project: Barrell 41-4  
Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
10/16/17 05:40

**BH06@25-27'**  
**1710139-05 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **10/13/17 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>1200</b>	50	mg/kg	1	1710143	10/13/17	10/14/17	8015M	

Date Sampled: **10/13/17 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		222 %	30-150		"	"	"	"	S-02

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **10/13/17 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1710142	10/13/17	10/13/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>100</b>	5.0	"	10	"	"	"	"	

Date Sampled: **10/13/17 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		106 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		200 %	20-170		"	"	"	"	S-02
<i>Surrogate: 4-Bromofluorobenzene</i>		307 %	21-167		"	"	"	"	S-02

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

Project: Barrell 41-4

Project Number: [none]  
Project Manager: Brandon Brunns

**Reported:**  
10/16/17 05:40

**BH06@34-35'**  
**1710139-06 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **10/13/17 13:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1710143	10/13/17	10/14/17	8015M	

Date Sampled: **10/13/17 13:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		116 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **10/13/17 13:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1710142	10/13/17	10/13/17	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: **10/13/17 13:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		103 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Barrell 41-4

Project Number: [none]  
 Project Manager: Brandon Brunns

**Reported:**  
 10/16/17 05:40

**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 1710143 - EPA 3550A**

<b>Blank (1710143-BLK1)</b>				Prepared & Analyzed: 10/13/17							
C10-C28 (DRO)	ND	50	mg/kg								
<i>Surrogate: o-Terphenyl</i>	14.1		"	12.5		113	30-150				
<b>LCS (1710143-BS1)</b>				Prepared & Analyzed: 10/13/17							
C10-C28 (DRO)	488	50	mg/kg	499	97.8	73-134					
<i>Surrogate: o-Terphenyl</i>	15.9		"	12.5		127	30-150				
<b>Matrix Spike (1710143-MS1)</b>				Source: 1710139-01		Prepared & Analyzed: 10/13/17					
C10-C28 (DRO)	498	50	mg/kg	499	7.38	98.4	50-148				
<i>Surrogate: o-Terphenyl</i>	16.2		"	12.5		129	30-150				
<b>Matrix Spike Dup (1710143-MSD1)</b>				Source: 1710139-01		Prepared & Analyzed: 10/13/17					
C10-C28 (DRO)	521	50	mg/kg	499	7.38	103	50-148	4.42	20		
<i>Surrogate: o-Terphenyl</i>	15.1		"	12.5		121	30-150				

Summit Scientific

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

Project: Barrell 41-4  
Project Number: [none]  
Project Manager: Brandon Brunns

Reported:  
10/16/17 05:40

**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 1710142 - EPA 5030 Soil MS**

**Blank (1710142-BLK1)**

Prepared & Analyzed: 10/13/17

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>0.0412</i>		<i>"</i>	<i>0.0400</i>		<i>103</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>0.0406</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>		<i>21-167</i>		

**LCS (1710142-BS1)**

Prepared & Analyzed: 10/13/17

Naphthalene	ND	0.010	mg/kg					66-138		
Benzene	0.116	0.0020	"	0.100		116		58-130		
Toluene	0.122	0.0050	"	0.100		122		61-134		
Ethylbenzene	0.134	0.0050	"	0.0992		135		74-139		
m,p-Xylene	0.248	0.010	"	0.200		124		73-137		
o-Xylene	0.122	0.0050	"	0.0980		124		73-141		
Xylenes (total)	0.369	0.010	"					0-200		
Gasoline Range Hydrocarbons	2.77	0.50	"					30-150		
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0420</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>		<i>23-173</i>		
<i>Surrogate: Toluene-d8</i>	<i>0.0411</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>		<i>20-170</i>		
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0402</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>		<i>21-167</i>		

**Matrix Spike (1710142-MS1)**

Source: 1710139-01

Prepared & Analyzed: 10/13/17

Naphthalene	ND	0.010	mg/kg		ND			10-158		
Benzene	0.113	0.0020	"	0.100	ND	113		30-131		
Toluene	0.121	0.0050	"	0.100	ND	121		30-134		
Ethylbenzene	0.136	0.0050	"	0.0992	ND	137		22-153		
m,p-Xylene	0.252	0.010	"	0.200	ND	126		10-159		
o-Xylene	0.123	0.0050	"	0.0980	ND	126		31-151		
Xylenes (total)	0.375	0.010	"		ND			30-160		
Gasoline Range Hydrocarbons	2.70	0.50	"		ND			30-160		
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0440</i>		<i>"</i>	<i>0.0400</i>		<i>110</i>		<i>23-173</i>		
<i>Surrogate: Toluene-d8</i>	<i>0.0402</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>		<i>20-170</i>		
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0422</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>		<i>21-167</i>		

Summit Scientific

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

Project: Barrell 41-4  
 Project Number: [none]  
 Project Manager: Brandon Brunns

**Reported:**  
 10/16/17 05:40

**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 1710142 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (1710142-MSD1)</b>	<b>Source: 1710139-01</b>			<b>Prepared &amp; Analyzed: 10/13/17</b>						
Naphthalene	ND	0.010	mg/kg	ND	ND	116	30-131	2.22	42	
Benzene	0.116	0.0020	"	0.100	ND	123	30-134	1.70	30	
Toluene	0.123	0.0050	"	0.100	ND	136	22-153	1.26	24	
Ethylbenzene	0.135	0.0050	"	0.0992	ND	125	10-159	0.597	68	
m,p-Xylene	0.122	0.0050	"	0.0980	ND	125	31-151	0.783	38	
o-Xylene	0.373	0.010	"		ND		30-160	0.658	30	
Xylenes (total)	2.82	0.50	"		ND		30-160	4.25	30	
Gasoline Range Hydrocarbons										
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0446</i>		<i>"</i>	<i>0.0400</i>		<i>112</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0410</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0407</i>		<i>"</i>	<i>0.0400</i>		<i>102</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: Barrell 41-4

Project Number: [none]  
Project Manager: Brandon Bruns

**Reported:**  
10/16/17 05:40

### 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.
- 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

November 13, 2017

Mark Longhurst  
PDC Energy  
1775 Sherman St. STE. 3000  
Denver, CO 80203  
RE: Barrell 41-4

Enclosed are the results of analyses for samples received by Summit Scientific on 11/06/17 13:55. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury For Ben Shrewsbury  
Laboratory Manager



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

Project: Barrell 41-4

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
11/13/17 12:56

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH07@25-27'	1711050-01	Soil	11/02/17 09:29	11/06/17 13:55
BH07@34-35'	1711050-02	Soil	11/02/17 09:47	11/06/17 13:55
BH08@25-27'	1711050-03	Soil	11/02/17 12:06	11/06/17 13:55
BH08@34-35'	1711050-04	Soil	11/02/17 12:39	11/06/17 13:55
BH09@25-27'	1711050-05	Soil	11/03/17 10:06	11/06/17 13:55
BH09@34-35'	1711050-06	Soil	11/03/17 10:41	11/06/17 13:55

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.*

# Summit Scientific

1711050

S<sub>2</sub>

741 Corporate Circle, Suite J ♦ Golden, Colorado 80401

303-277-9310 ♦ 303-374-5933

Page 1 of 1

Client: PDC Energy Project Manager: Mark Longhurst  
 Address: \_\_\_\_\_ E-Mail: \_\_\_\_\_  
 City/State/Zip: \_\_\_\_\_  
 Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ Project Name: Barrell 41-4  
 Sampler Name: Brack Nelson Project Number: \_\_\_\_\_

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested				Special Instructions
					HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)					
1	BH07② 25-27'	11/2/17	929	1			X			X							
2	BH07② 34-35'	11/2/17	947	1			X			X							
3	BH08② 25-27'	11/2/17	1206	1			X			X							
4	BH08② 34-35'	11/2/17	1239	1			X			X							
5	BH09② 25-27'	11/3/17	1006	1			X			X							
6	BH09② 34-35'	11/3/17	1041	1			X			X							
7																	
8																	
9																	
10																	

Relinquished by: <u>[Signature]</u> Date/Time: <u>11/3/17 1355</u>	Received by: <u>[Signature]</u> Date/Time: <u>11-3-17 13:55</u>	Turn Around Time (Check) Same Day _____ 72 hours 24 hours _____ Standard <u>X</u> 48 hours _____ Sample Integrity: Temperature Upon Receipt: <u>.4</u> Intact: <u>Yes</u> No	Notes:
Relinquished by: _____ Date/Time: _____	Received by: _____ Date/Time: _____		
Relinquished by: _____ Date/Time: _____	Received by: _____ Date/Time: _____		

1711050

Sample Receipt Checklist

S2 Work Order: \_\_\_\_\_

Client: PDC ENERGY Client Project ID: BARRELL 41-4

Shipped Via: H.D. ON ICE Airbill #: \_\_\_\_\_  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_  
(Describe)

Cooler ID				
Temp (°C)	<u>.4</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 <sup>(1)</sup> ? NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>			
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.			<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

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

Musi P.  
Custodian Printed Name

DA 11-3-17  
Signature or Initials of Custodian

15:00  
Date/Time



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

Project: Barrell 41-4  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
11/13/17 12:56

**BH07@25-27'**  
**1711050-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **11/02/17 09:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1711094	11/07/17	11/08/17	8015M	

Date Sampled: **11/02/17 09:29**

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

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **11/02/17 09:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1711092	11/07/17	11/07/17	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: **11/02/17 09:29**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		156 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		166 %	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: Barrell 41-4  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
11/13/17 12:56

**BH07@34-35'**  
**1711050-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **11/02/17 09:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1711094	11/07/17	11/08/17	8015M	

Date Sampled: **11/02/17 09:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		102 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **11/02/17 09:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1711092	11/07/17	11/08/17	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: **11/02/17 09:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		119 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		86.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.4 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Barrell 41-4  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
11/13/17 12:56

**BH08@25-27'**  
**1711050-03 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **11/02/17 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1711094	11/07/17	11/08/17	8015M	

Date Sampled: **11/02/17 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		102 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **11/02/17 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1711092	11/07/17	11/08/17	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: **11/02/17 12:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		122 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		119 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Barrell 41-4  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
11/13/17 12:56

**BH08@34-35'**  
**1711050-04 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **11/02/17 12:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1711094	11/07/17	11/08/17	8015M	

Date Sampled: **11/02/17 12:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		102 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **11/02/17 12:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1711092	11/07/17	11/08/17	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: **11/02/17 12:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		120 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.4 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Barrell 41-4  
Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
11/13/17 12:56

**BH09@25-27'**  
**1711050-05 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **11/03/17 10:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1711094	11/07/17	11/08/17	8015M	

Date Sampled: **11/03/17 10:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		103 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **11/03/17 10:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1711092	11/07/17	11/08/17	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: **11/03/17 10:06**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		101 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		117 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.4 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Barrell 41-4

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
11/13/17 12:56

**BH09@34-35'**  
**1711050-06 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **11/03/17 10:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1711094	11/07/17	11/08/17	8015M	

Date Sampled: **11/03/17 10:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		99.5 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **11/03/17 10:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1711092	11/07/17	11/08/17	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: **11/03/17 10:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.4 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Barrell 41-4

Project Number: [none]  
Project Manager: Mark Longhurst

**Reported:**  
11/13/17 12:56

**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 1711094 - EPA 3550A**

<b>Blank (1711094-BLK1)</b>				Prepared: 11/07/17 Analyzed: 11/08/17						
C10-C28 (DRO)	ND	50	mg/kg							
Surrogate: <i>o</i> -Terphenyl	13.1		"	12.5		105	30-150			
<b>LCS (1711094-BS1)</b>				Prepared: 11/07/17 Analyzed: 11/08/17						
C10-C28 (DRO)	547	50	mg/kg	499		110	73-134			
Surrogate: <i>o</i> -Terphenyl	14.2		"	12.5		114	30-150			
<b>Matrix Spike (1711094-MS1)</b>				<b>Source: 1711045-01</b>		Prepared: 11/07/17 Analyzed: 11/08/17				
C10-C28 (DRO)	567	50	mg/kg	499	39.6	106	50-148			
Surrogate: <i>o</i> -Terphenyl	16.1		"	12.5		129	30-150			
<b>Matrix Spike Dup (1711094-MSD1)</b>				<b>Source: 1711045-01</b>		Prepared: 11/07/17 Analyzed: 11/08/17				
C10-C28 (DRO)	528	50	mg/kg	499	39.6	97.9	50-148	7.02	20	
Surrogate: <i>o</i> -Terphenyl	13.9		"	12.5		112	30-150			

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: Barrell 41-4

Project Number: [none]  
Project Manager: Mark Longhurst

Reported:  
11/13/17 12:56

**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 1711092 - EPA 5030 Soil MS**

**Blank (1711092-BLK1)**

Prepared & Analyzed: 11/07/17

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>0.0424</i>		<i>"</i>	<i>0.0400</i>		<i>106</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0373</i>		<i>"</i>	<i>0.0400</i>		<i>93.2</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0390</i>		<i>"</i>	<i>0.0400</i>		<i>97.4</i>	<i>21-167</i>			

**LCS (1711092-BS1)**

Prepared & Analyzed: 11/07/17

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.0695	0.0020	"	0.100		69.5	58-130			
Toluene	0.0848	0.0050	"	0.100		84.8	61-134			
Ethylbenzene	0.0909	0.0050	"	0.0992		91.7	74-139			
m,p-Xylene	0.158	0.010	"	0.200		79.4	73-137			
o-Xylene	0.0722	0.0050	"	0.0980		73.7	73-141			
Xylenes (total)	0.231	0.010	"				0-200			
Gasoline Range Hydrocarbons	1.50	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0453</i>		<i>"</i>	<i>0.0400</i>		<i>113</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>0.0326</i>		<i>"</i>	<i>0.0400</i>		<i>81.4</i>	<i>21-167</i>			

**Matrix Spike (1711092-MS1)**

Source: 1711045-01

Prepared & Analyzed: 11/07/17

Naphthalene	0.00330	0.010	mg/kg		ND		10-158			
Benzene	0.0656	0.0020	"	0.100	ND	65.6	30-131			
Toluene	0.0782	0.0050	"	0.100	ND	78.2	30-134			
Ethylbenzene	0.0810	0.0050	"	0.0992	ND	81.6	22-153			
m,p-Xylene	0.213	0.010	"	0.200	0.0535	80.0	10-159			
o-Xylene	0.121	0.0050	"	0.0980	0.0314	91.1	31-151			
Xylenes (total)	0.334	0.010	"		0.0850		30-160			
Gasoline Range Hydrocarbons	3.07	0.50	"		1.90		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0493</i>		<i>"</i>	<i>0.0400</i>		<i>123</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>0.0414</i>		<i>"</i>	<i>0.0400</i>		<i>103</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: Barrell 41-4

Project Number: [none]  
 Project Manager: Mark Longhurst

**Reported:**  
 11/13/17 12:56

**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 1711092 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (1711092-MSD1)</b>	<b>Source: 1711045-01</b>			<b>Prepared &amp; Analyzed: 11/07/17</b>						
Naphthalene	ND	0.010	mg/kg	ND	ND	10-158				42
Benzene	0.0563	0.0020	"	0.100	ND	56.3	30-131	15.2		34
Toluene	0.0690	0.0050	"	0.100	ND	69.0	30-134	12.5		30
Ethylbenzene	0.0746	0.0050	"	0.0992	ND	75.2	22-153	8.22		24
m,p-Xylene	0.177	0.010	"	0.200	0.0535	62.0	10-159	18.4		68
o-Xylene	0.112	0.0050	"	0.0980	0.0314	82.1	31-151	7.59		38
Xylenes (total)	0.289	0.010	"		0.0850		30-160	14.4		30
Gasoline Range Hydrocarbons	2.96	0.50	"		1.90		30-160	3.69		30
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0469</i>		<i>"</i>	<i>0.0400</i>		<i>117</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0389</i>		<i>"</i>	<i>0.0400</i>		<i>97.2</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0419</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>	<i>21-167</i>			

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### 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