

TABLE 1
COOK 43, 44-20, 20D 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 ⁽²⁾ (mg/kg)
COGCC standards for soil (mg/kg) ⁽¹⁾			0.17	85	100	175	23	500
SB01 @ 3.5'	9/28/2016	3.5	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SB02 @ 3.5'	9/28/2016	3.5	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SB03 @ 3.5'	9/28/2016	3.5	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SB04 @ 3.5'	9/28/2016	3.5	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SB04 @ 3.5'	9/28/2016	3.5	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50

Notes:

- Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective January 30, 2015.
 - 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.

TABLE 2
COOK 43, 44-20, 20D TANK BATTERY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water ⁽²⁾ (feet)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	
SB01	9/28/2016	2.5	<1.0	<1.0	<1.0	7.12
SB02	9/28/2016	<1.0	<1.0	<1.0	<1.0	7.49
SB03	9/28/2016	<1.0	<1.0	<1.0	<1.0	9.35
SB04	9/28/2016	<1.0	<1.0	<1.0	<1.0	8.36
SB05	9/28/2016	<1.0	<1.0	<1.0	<1.0	8.84

Notes:

1. Groundwater standards referenced from 2 CCR 404-1, Table 910-1, effective January 30, 2015.

2. Depth to water measured from top of well casing for monitoring well samples.

COGCC = Colorado Oil and Gas Conservation Commission

µg/L= Micrograms per liter

bgs = Below ground surface

(<) = 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 06, 2016

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Cook 43, 44-20, 20D

Enclosed are the results of analyses for samples received by Summit Scientific on 09/28/16 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: Cook 43, 44-20, 20D

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/06/16 15:15

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB01	1609191-01	Water	09/28/16 13:44	09/28/16 16:30
SB02	1609191-02	Water	09/28/16 13:31	09/28/16 16:30
SB03	1609191-03	Water	09/28/16 13:49	09/28/16 16:30
SB04	1609191-04	Water	09/28/16 13:41	09/28/16 16:30
SB05	1609191-05	Water	09/28/16 13:54	09/28/16 16:30
SB01@3.5'	1609191-06	Soil	09/28/16 10:23	09/28/16 16:30
SB02@3.5'	1609191-07	Soil	09/28/16 11:07	09/28/16 16:30
SB03@3.5'	1609191-08	Soil	09/28/16 11:51	09/28/16 16:30
SB04@3.5'	1609191-09	Soil	09/28/16 12:16	09/28/16 16:30
SB05@3.5'	1609191-10	Soil	09/28/16 12:38	09/28/16 16:30

Summit Scientific

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

Project: Cook 43, 44-20, 20D

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/06/16 15:15

Summit Scientific

1609191

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: Tyler Davis, Kevin Chize

Project Manager: Mark Longhurst

E-Mail: mark.longhurst@pdce.com

Project Name: Cook 43, 44-20, 20D

Project Number:

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix		Analyze For:				Special Instructions
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	BTEX 8200	CBTEX 8200	
S801	9/28/16	13:44	3	X										
S802		13:31	3											
S803		13:44	3											
S804		13:41	3											
S805		13:54	3											
S801 @ 3.5'		10:23	1		X			X			X	X		
S802 @ 3.5'		11:07	1											
S803 @ 3.5'		11:51	1											
S804 @ 3.5'		12:16	1											
S805 @ 3.5'		12:38	1											

Relinquished by:	Date/Time: 9/28/16 1740	Received by:	Date/Time: 9/28/16 1730	Turn Around Time (Check): Same Day <input type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input checked="" type="checkbox"/> 48 Hours <input type="checkbox"/>	Notes: UN 166
Relinquished by:	Date/Time: 9/28/16 1740	Received by:	Date/Time: 9-28-16 1740	Sample Integrity: Temperature Upon Receipt: 15°C	
Relinquished by:	Date/Time:	Received in Lab by:	Date/Time:	Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	

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

Project: Cook 43, 44-20, 20D

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/06/16 15:15

Sample Receipt Checklist

S2 Work Order: 1609191

Client: PDC Energy

Client Project ID: Cook 43, 44-20; 20D

Shipped Via: P/V

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

Airbill #: _____

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

Cooler ID					
Temp (°C)	<u>1.5°C</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⁾ ?	<input checked="" type="checkbox"/>			
NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.				
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact ⁽¹⁾ ?			<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 ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<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) ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Note the type of preservative in the Comments column – (HCl) H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

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

Nakita
Custodian Printed Name

MA
Signature or Initials of Custodian

9/28/16 1410
Date/Time



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

Project: Cook 43, 44-20, 20D
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/06/16 15:15

SB01
1609191-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/28/16 13:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	2.5	1.0	ug/l	1	1609262	10/01/16	10/01/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **09/28/16 13:44**

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>		96.1 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		98.9 %	45-146		"	"	"	"	

Summit Scientific

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

Project: Cook 43, 44-20, 20D

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/06/16 15:15

SB02
1609191-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/28/16 13:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1609262	10/01/16	10/01/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **09/28/16 13:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		105 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		93.9 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	45-146		"	"	"	"	

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1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Cook 43, 44-20, 20D

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/06/16 15:15

SB03
1609191-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/28/16 13:49**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1609262	10/01/16	10/01/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **09/28/16 13:49**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		112 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		94.8 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	45-146		"	"	"	"	

Summit Scientific

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

Project: Cook 43, 44-20, 20D
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/06/16 15:15

SB04
1609191-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/28/16 13:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1609262	10/01/16	10/01/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **09/28/16 13:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		96.1 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.6 %	45-146		"	"	"	"	

Summit Scientific

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

Project: Cook 43, 44-20, 20D
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/06/16 15:15

SB05
1609191-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/28/16 13:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1609262	10/01/16	10/01/16	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	

Date Sampled: **09/28/16 13:54**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		97.0 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	45-146		"	"	"	"	

Summit Scientific

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

Project: Cook 43, 44-20, 20D
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/06/16 15:15

SB01@3.5'
1609191-06 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/28/16 10:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609256	09/30/16	10/01/16	8015M	

Date Sampled: **09/28/16 10:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		95.9 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/28/16 10:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1609253	09/30/16	10/01/16	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: **09/28/16 10:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Cook 43, 44-20, 20D
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/06/16 15:15

SB02@3.5'
1609191-07 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/28/16 11:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609256	09/30/16	10/01/16	8015M	

Date Sampled: **09/28/16 11:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		93.6 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/28/16 11:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1609253	09/30/16	10/01/16	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: **09/28/16 11:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

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

Project: Cook 43, 44-20, 20D
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/06/16 15:15

SB03@3.5'
1609191-08 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/28/16 11:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609256	09/30/16	10/01/16	8015M	

Date Sampled: **09/28/16 11:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		93.9 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/28/16 11:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1609253	09/30/16	10/01/16	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: **09/28/16 11:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.2 %	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: Cook 43, 44-20, 20D
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/06/16 15:15

SB04@3.5'
1609191-09 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/28/16 12:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609256	09/30/16	10/01/16	8015M	

Date Sampled: **09/28/16 12:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		99.0 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/28/16 12:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1609253	09/30/16	10/01/16	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: **09/28/16 12:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

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

Project: Cook 43, 44-20, 20D

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/06/16 15:15

SB05@3.5'
1609191-10 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **09/28/16 12:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1609256	09/30/16	10/01/16	8015M	

Date Sampled: **09/28/16 12:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		87.9 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **09/28/16 12:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1609253	09/30/16	10/01/16	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: **09/28/16 12:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.7 %	21-167		"	"	"	"	

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

Project: Cook 43, 44-20, 20D
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/06/16 15:15

Extractable 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 1609256 - EPA 3550A

Blank (1609256-BLK1)

Prepared & Analyzed: 09/30/16

C10-C28 (DRO)	ND	50	mg/kg							
Surrogate: o-Terphenyl	12.0		"	12.5		95.9	30-150			

LCS (1609256-BS1)

Prepared & Analyzed: 09/30/16

C10-C28 (DRO)	411	50	mg/kg	499		82.3	73-134			
Surrogate: o-Terphenyl	14.8		"	12.5		118	30-150			

Matrix Spike (1609256-MS1)

Source: 1609176-02

Prepared & Analyzed: 09/30/16

C10-C28 (DRO)	462	50	mg/kg	499	71.0	78.4	50-148			
Surrogate: o-Terphenyl	16.1		"	12.5		129	30-150			

Matrix Spike Dup (1609256-MSD1)

Source: 1609176-02

Prepared & Analyzed: 09/30/16

C10-C28 (DRO)	444	50	mg/kg	499	71.0	74.8	50-148	4.05	20	
Surrogate: o-Terphenyl	13.8		"	12.5		110	30-150			

Summit Scientific

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

Project: Cook 43, 44-20, 20D
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/06/16 15:15

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 1609253 - EPA 5030 Soil MS

Blank (1609253-BLK1)

Prepared & Analyzed: 09/30/16

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>0.0403</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0389</i>		<i>"</i>	<i>0.0400</i>		<i>97.3</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0410</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>21-167</i>			

LCS (1609253-BS1)

Prepared & Analyzed: 09/30/16

Naphthalene	0.0250	0.010	mg/kg				66-138			
Benzene	0.112	0.0020	"	0.100		112	58-130			
Toluene	0.120	0.0050	"	0.100		120	61-134			
Ethylbenzene	0.132	0.0050	"	0.0992		133	74-139			
m,p-Xylene	0.241	0.010	"	0.200		121	73-137			
o-Xylene	0.125	0.0050	"	0.0980		127	73-141			
Xylenes (total)	0.366	0.010	"				0-200			
Gasoline Range Hydrocarbons	0.610	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>0.0399</i>		<i>"</i>	<i>0.0400</i>		<i>99.8</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0411</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>21-167</i>			

Matrix Spike (1609253-MS1)

Source: 1609176-02

Prepared & Analyzed: 09/30/16

Naphthalene	0.0148	0.010	mg/kg		0.0106		10-158			
Benzene	0.120	0.0020	"	0.100	ND	120	30-131			
Toluene	0.122	0.0050	"	0.100	ND	122	30-134			
Ethylbenzene	0.136	0.0050	"	0.0992	ND	138	22-153			
m,p-Xylene	0.245	0.010	"	0.200	ND	123	10-159			
o-Xylene	0.127	0.0050	"	0.0980	ND	129	31-151			
Xylenes (total)	0.372	0.010	"		ND		30-160			
Gasoline Range Hydrocarbons	2.17	0.50	"		ND		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0445</i>		<i>"</i>	<i>0.0400</i>		<i>111</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0401</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0389</i>		<i>"</i>	<i>0.0400</i>		<i>97.4</i>	<i>21-167</i>			

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

Project: Cook 43, 44-20, 20D
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/06/16 15:15

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 1609253 - EPA 5030 Soil MS

Matrix Spike Dup (1609253-MSD1)				Source: 1609176-02		Prepared & Analyzed: 09/30/16				
Naphthalene	0.0124	0.010	mg/kg		0.0106		10-158	17.9	42	
Benzene	0.118	0.0020	"	0.100	ND	118	30-131	1.54	34	
Toluene	0.121	0.0050	"	0.100	ND	121	30-134	1.01	30	
Ethylbenzene	0.136	0.0050	"	0.0992	ND	137	22-153	0.728	24	
m,p-Xylene	0.244	0.010	"	0.200	ND	122	10-159	0.270	68	
o-Xylene	0.128	0.0050	"	0.0980	ND	131	31-151	1.32	38	
Xylenes (total)	0.373	0.010	"		ND		30-160	0.274	30	
Gasoline Range Hydrocarbons	2.64	0.50	"		ND		30-160	19.3	30	
Surrogate: 1,2-Dichloroethane-d4	0.0428		"	0.0400		107	23-173			
Surrogate: Toluene-d8	0.0397		"	0.0400		99.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0387		"	0.0400		96.7	21-167			

Batch 1609262 - EPA 5030 Water MS

Blank (1609262-BLK1)				Prepared & Analyzed: 10/01/16						
Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Surrogate: 1,2-Dichloroethane-d4	13.8		"	13.3		104	37-154			
Surrogate: Toluene-d8	12.9		"	13.3		96.5	45-149			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		99.4	45-146			
LCS (1609262-BS1)				Prepared & Analyzed: 10/01/16						
Benzene	38.9	1.0	ug/l	33.3		117	51-132			
Toluene	38.6	1.0	"	33.3		116	51-138			
Ethylbenzene	43.4	1.0	"	33.1		131	58-146			
m,p-Xylene	78.5	2.0	"	66.5		118	57-144			
o-Xylene	41.2	1.0	"	32.7		126	53-146			
Surrogate: 1,2-Dichloroethane-d4	14.6		"	13.3		109	37-154			
Surrogate: Toluene-d8	13.0		"	13.3		97.2	45-149			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		98.9	45-146			

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

Project: Cook 43, 44-20, 20D
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/06/16 15:15

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 1609262 - EPA 5030 Water MS

Matrix Spike (1609262-MS1)				Source: 1609174-21		Prepared & Analyzed: 10/01/16				
Benzene	39.1	1.0	ug/l	33.3	ND	117	34-141			
Toluene	38.9	1.0	"	33.3	ND	117	27-151			
Ethylbenzene	43.6	1.0	"	33.1	ND	132	29-160			
m,p-Xylene	79.2	2.0	"	66.5	ND	119	20-166			
o-Xylene	41.6	1.0	"	32.7	ND	127	33-159			
Surrogate: 1,2-Dichloroethane-d4	14.6		"	13.3		110	37-154			
Surrogate: Toluene-d8	13.1		"	13.3		98.6	45-149			
Surrogate: 4-Bromofluorobenzene	13.3		"	13.3		99.6	45-146			
Matrix Spike Dup (1609262-MSD1)				Source: 1609174-21		Prepared & Analyzed: 10/01/16				
Benzene	39.9	1.0	ug/l	33.3	ND	120	34-141	1.98	32	
Toluene	39.9	1.0	"	33.3	ND	120	27-151	2.67	25	
Ethylbenzene	44.0	1.0	"	33.1	ND	133	29-160	1.00	50	
m,p-Xylene	80.5	2.0	"	66.5	ND	121	20-166	1.59	36	
o-Xylene	42.5	1.0	"	32.7	ND	130	33-159	2.09	26	
Surrogate: 1,2-Dichloroethane-d4	14.7		"	13.3		110	37-154			
Surrogate: Toluene-d8	13.0		"	13.3		97.7	45-149			
Surrogate: 4-Bromofluorobenzene	13.3		"	13.3		99.6	45-146			

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

Project: Cook 43, 44-20, 20D

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
10/06/16 15:15

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