

TABLE 1
SAPPINGTON 22Q-301 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
SS01 @ 1'	5/5/2017	1	<0.0020	0.049	0.041	0.57	0.056	953
SS02 @ 4'	5/5/2017	4	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS03 @ 5'	5/5/2017	5	<0.0020	<0.0050	<0.0050	<0.010	<0.010	2.7
SS04 @ 4'	5/5/2017	4	<0.0020	<0.0050	<0.0050	<0.010	<0.010	1.3
SS05 @ 5'	5/5/2017	5	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS06 @ 5'	5/9/2016	5	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50

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

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

May 09, 2017

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Sappington 22Q-301

Enclosed are the results of analyses for samples received by Summit Scientific on 05/08/17 01:28. 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: Sappington 22Q-301

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/09/17 06:24

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@1'	1705074-01	Soil	05/05/17 15:17	05/08/17 01:28
SS02@4'	1705074-02	Soil	05/05/17 15:44	05/08/17 01:28
SS03@5'	1705074-03	Soil	05/05/17 16:44	05/08/17 01:28
SS04@4'	1705074-04	Soil	05/05/17 17:02	05/08/17 01:28
SS05@5'	1705074-05	Soil	05/05/17 17:27	05/08/17 01:28

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: Sappington 22Q-301

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/09/17 06:24

Sample Receipt Checklist

S2 Work Order: 1705074

Client: PDC

Client Project ID: Sappington 22Q-301

Shipped Via: H/D

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

Airbill #:

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

(Describe)

Cooler ID					
Temp (°C)	<u>2.0</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.				<u>on ice</u>
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.

Paul S. [Signature]
Custodian Printed Name

[Signature]
Signature or Initials of Custodian

5-18-17
Date/Time



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

Project: Sappington 22Q-301

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/09/17 06:24

SS01@1'
1705074-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/05/17 15:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	920	50	mg/kg	1	1705076	05/08/17	05/08/17	8015M	

Date Sampled: **05/05/17 15:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		118 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/05/17 15:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.056	0.010	mg/kg	1	1705073	05/08/17	05/08/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	0.049	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.041	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.57	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	33	0.50	"	"	"	"	"	"	

Date Sampled: **05/05/17 15:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		115 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		100 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		127 %	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: Sappington 22Q-301
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/09/17 06:24

SS02@4'
1705074-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/05/17 15:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1705076	05/08/17	05/08/17	8015M	

Date Sampled: **05/05/17 15:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		104 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/05/17 15:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1705073	05/08/17	05/08/17	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: **05/05/17 15:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		114 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	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: Sappington 22Q-301
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/09/17 06:24

SS03@5'
1705074-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/05/17 16:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1705076	05/08/17	05/08/17	8015M	

Date Sampled: **05/05/17 16:44**

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/05/17 16:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1705073	05/08/17	05/08/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	2.7	0.50	"	"	"	"	"	"	

Date Sampled: **05/05/17 16:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		110 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Sappington 22Q-301
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/09/17 06:24

SS04@4'
1705074-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/05/17 17:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1705076	05/08/17	05/08/17	8015M	

Date Sampled: **05/05/17 17:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		106 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/05/17 17:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1705073	05/08/17	05/08/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	1.3	0.50	"	"	"	"	"	"	

Date Sampled: **05/05/17 17:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %	21-167		"	"	"	"	

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

Project: Sappington 22Q-301
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/09/17 06:24

SS05@5'
1705074-05 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/05/17 17:27**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1705076	05/08/17	05/09/17	8015M	

Date Sampled: **05/05/17 17:27**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		106 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/05/17 17:27**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1705073	05/08/17	05/08/17	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: **05/05/17 17:27**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		110 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		93.8 %	21-167		"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



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

Project: Sappington 22Q-301

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/09/17 06:24

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 1705076 - EPA 3550A

Blank (1705076-BLK1)

Prepared & Analyzed: 05/08/17

C10-C28 (DRO) ND 50 mg/kg

Surrogate: o-Terphenyl 13.2 " 12.5 106 30-150

LCS (1705076-BS1)

Prepared & Analyzed: 05/08/17

C10-C28 (DRO) 655 50 mg/kg 499 131 73-134

Surrogate: o-Terphenyl 13.3 " 12.5 107 30-150

Matrix Spike (1705076-MS1)

Source: 1705045-01

Prepared: 05/08/17 Analyzed: 05/09/17

C10-C28 (DRO) 1160 50 mg/kg 499 233 50-148 QM-07

Surrogate: o-Terphenyl 12.9 " 12.5 103 30-150

Matrix Spike Dup (1705076-MSD1)

Source: 1705045-01

Prepared: 05/08/17 Analyzed: 05/09/17

C10-C28 (DRO) 924 50 mg/kg 499 185 50-148 22.7 20 QM-07

Surrogate: o-Terphenyl 12.5 " 12.5 100 30-150

Summit Scientific

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

Project: Sappington 22Q-301
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/09/17 06:24

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 1705073 - EPA 5030 Soil MS

Blank (1705073-BLK1)

Prepared & Analyzed: 05/08/17

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	"							
Surrogate: 1,2-Dichloroethane-d4	0.0440		"	0.0400		110	23-173			
Surrogate: Toluene-d8	0.0403		"	0.0400		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0405		"	0.0400		101	21-167			

LCS (1705073-BS1)

Prepared & Analyzed: 05/08/17

Naphthalene	0.0130	0.010	mg/kg				66-138			
Benzene	0.0903	0.0020	"	0.100		90.3	58-130			
Toluene	0.100	0.0050	"	0.100		100	61-134			
Ethylbenzene	0.114	0.0050	"	0.0992		115	74-139			
m,p-Xylene	0.207	0.010	"	0.200		104	73-137			
o-Xylene	0.103	0.0050	"	0.0980		105	73-141			
Xylenes (total)	0.311	0.010	"				0-200			
Gasoline Range Hydrocarbons	2.94	0.50	"				30-150			
Surrogate: 1,2-Dichloroethane-d4	0.0440		"	0.0400		110	23-173			
Surrogate: Toluene-d8	0.0404		"	0.0400		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0405		"	0.0400		101	21-167			

Matrix Spike (1705073-MS1)

Source: 1705069-01

Prepared & Analyzed: 05/08/17

Naphthalene	0.0107	0.010	mg/kg		0.00867		10-158			
Benzene	0.0928	0.0020	"	0.100	ND	92.8	30-131			
Toluene	0.102	0.0050	"	0.100	ND	102	30-134			
Ethylbenzene	0.116	0.0050	"	0.0992	ND	117	22-153			
m,p-Xylene	0.213	0.010	"	0.200	ND	107	10-159			
o-Xylene	0.109	0.0050	"	0.0980	ND	111	31-151			
Xylenes (total)	0.322	0.010	"		ND		30-160			
Gasoline Range Hydrocarbons	6.40	0.50	"		1.56		30-160			
Surrogate: 1,2-Dichloroethane-d4	0.0453		"	0.0400		113	23-173			
Surrogate: Toluene-d8	0.0406		"	0.0400		102	20-170			
Surrogate: 4-Bromofluorobenzene	0.0425		"	0.0400		106	21-167			

Summit Scientific

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

Project: Sappington 22Q-301

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/09/17 06:24

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 1705073 - EPA 5030 Soil MS

Matrix Spike Dup (1705073-MSD1)		Source: 1705069-01			Prepared & Analyzed: 05/08/17					
Naphthalene	0.00963	0.010	mg/kg		0.00867		10-158	10.9	42	
Benzene	0.0911	0.0020	"	0.100	ND	91.1	30-131	1.89	34	
Toluene	0.101	0.0050	"	0.100	ND	101	30-134	1.21	30	
Ethylbenzene	0.115	0.0050	"	0.0992	ND	116	22-153	1.12	24	
m,p-Xylene	0.211	0.010	"	0.200	ND	106	10-159	1.30	68	
o-Xylene	0.109	0.0050	"	0.0980	ND	111	31-151	0.193	38	
Xylenes (total)	0.319	0.010	"		ND		30-160	0.926	30	
Gasoline Range Hydrocarbons	6.80	0.50	"		1.56		30-160	6.09	30	
Surrogate: 1,2-Dichloroethane-d4	0.0446		"	0.0400		112	23-173			
Surrogate: Toluene-d8	0.0411		"	0.0400		103	20-170			
Surrogate: 4-Bromofluorobenzene	0.0417		"	0.0400		104	21-167			

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



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

Project: Sappington 22Q-301

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/09/17 06:24

Notes and Definitions

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

May 10, 2017

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Sappington 22Q-301

Enclosed are the results of analyses for samples received by Summit Scientific on 05/09/17 17:45. 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: Sappington 22Q-301

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/10/17 06:49

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS06@5'	1705085-01	Soil	05/09/17 10:20	05/09/17 17:45

Summit Scientific

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

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Page 2 of 8



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

Project: Sappington 22Q-301

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/10/17 06:49

Sample Receipt Checklist

S2 Work Order: 1105085

Client: PDC Client Project ID: Sappington 22Q-301

Shipped Via: _____ Airbill #: _____
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

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

Cooler ID					
Temp (°C)	<u>6.0</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⁾ ?				
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			<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?			<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):				

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

Mark Longhurst
Custodian Printed Name

[Signature]
Signature or Initials of Custodian

5.9.17
Date/Time



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

Project: Sappington 22Q-301
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/10/17 06:49

SS06@5'
1705085-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/09/17 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1705086	05/09/17	05/09/17	8015M	

Date Sampled: **05/09/17 10:20**

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/09/17 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1705088	05/09/17	05/09/17	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: **05/09/17 10:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		100 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.7 %	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: Sappington 22Q-301

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/10/17 06:49

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 1705086 - EPA 3550A

Blank (1705086-BLK1)

Prepared & Analyzed: 05/09/17

C10-C28 (DRO) ND 50 mg/kg

Surrogate: o-Terphenyl 13.1 " 12.5 105 30-150

LCS (1705086-BS1)

Prepared: 05/09/17 Analyzed: 05/10/17

C10-C28 (DRO) 472 50 mg/kg 499 94.5 73-134

Surrogate: o-Terphenyl 14.1 " 12.5 113 30-150

Matrix Spike (1705086-MS1)

Source: 1705083-01

Prepared: 05/09/17 Analyzed: 05/10/17

C10-C28 (DRO) 496 50 mg/kg 499 15.3 96.4 50-148

Surrogate: o-Terphenyl 14.7 " 12.5 117 30-150

Matrix Spike Dup (1705086-MSD1)

Source: 1705083-01

Prepared: 05/09/17 Analyzed: 05/10/17

C10-C28 (DRO) 480 50 mg/kg 499 15.3 93.2 50-148 3.27 20

Surrogate: o-Terphenyl 14.0 " 12.5 112 30-150

Summit Scientific

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

Project: Sappington 22Q-301
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/10/17 06:49

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 1705088 - EPA 5030 Soil MS

Blank (1705088-BLK1)

Prepared & Analyzed: 05/09/17

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>0.0399</i>		<i>"</i>	<i>0.0400</i>		<i>99.8</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0388</i>		<i>"</i>	<i>0.0400</i>		<i>97.1</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0399</i>		<i>"</i>	<i>0.0400</i>		<i>99.8</i>	<i>21-167</i>			

LCS (1705088-BS1)

Prepared & Analyzed: 05/09/17

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.103	0.0020	"	0.100		103	58-130			
Toluene	0.113	0.0050	"	0.100		113	61-134			
Ethylbenzene	0.121	0.0050	"	0.0992		122	74-139			
m,p-Xylene	0.225	0.010	"	0.200		113	73-137			
o-Xylene	0.115	0.0050	"	0.0980		117	73-141			
Xylenes (total)	0.340	0.010	"				0-200			
Gasoline Range Hydrocarbons	2.58	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0400</i>		<i>"</i>	<i>0.0400</i>		<i>100</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>0.0393</i>		<i>"</i>	<i>0.0400</i>		<i>98.3</i>	<i>21-167</i>			

Matrix Spike (1705088-MS1)

Source: 1705058-01

Prepared & Analyzed: 05/09/17

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.105	0.0020	"	0.100	ND	105	30-131			
Toluene	0.116	0.0050	"	0.100	ND	116	30-134			
Ethylbenzene	0.126	0.0050	"	0.0992	ND	127	22-153			
m,p-Xylene	0.235	0.010	"	0.200	ND	118	10-159			
o-Xylene	0.119	0.0050	"	0.0980	ND	122	31-151			
Xylenes (total)	0.354	0.010	"		ND		30-160			
Gasoline Range Hydrocarbons	2.92	0.50	"		1.85		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0409</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0393</i>		<i>"</i>	<i>0.0400</i>		<i>98.3</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0380</i>		<i>"</i>	<i>0.0400</i>		<i>95.0</i>	<i>21-167</i>			

Summit Scientific

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

Project: Sappington 22Q-301

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/10/17 06:49

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 1705088 - EPA 5030 Soil MS

Matrix Spike Dup (1705088-MSD1)			Source: 1705058-01		Prepared & Analyzed: 05/09/17					
Naphthalene	ND	0.010	mg/kg		ND		10-158		42	
Benzene	0.106	0.0020	"	0.100	ND	106	30-131	1.28	34	
Toluene	0.118	0.0050	"	0.100	ND	118	30-134	1.66	30	
Ethylbenzene	0.127	0.0050	"	0.0992	ND	128	22-153	0.948	24	
m,p-Xylene	0.237	0.010	"	0.200	ND	119	10-159	1.12	68	
o-Xylene	0.122	0.0050	"	0.0980	ND	125	31-151	2.51	38	
Xylenes (total)	0.360	0.010	"		ND		30-160	1.59	30	
Gasoline Range Hydrocarbons	2.83	0.50	"		1.85		30-160	3.10	30	
Surrogate: 1,2-Dichloroethane-d4	0.0417		"	0.0400		104	23-173			
Surrogate: Toluene-d8	0.0387		"	0.0400		96.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0389		"	0.0400		97.3	21-167			

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

Project: Sappington 22Q-301

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/10/17 06:49

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