

TABLE 1
FORMER CANNON FARMS 1-35C TANK BATTERY
SOIL ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Depth (ft. bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	TPH ⁽²⁾ (mg/kg)	pH (units)	EC (mmhos/cm)
COGCC Table 910-1 Soil Standard (mg/kg) ⁽¹⁾			0.17	85	100	175	23	500	6-9	<4
SS01 @ 5'	1/29/2020	5	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	8.91	1.44

Notes:
1. Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective May 1, 2018.
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
ft. = Feet
bgs = Below ground surface
EC = Electrical conductivity
mmhos/cm = millimhos per centimeter

TABLE 2
FORMER CANNON FARMS 1-35C TANK BATTERY
VOC CONCENTRATIONS SUMMARY TABLE

Sample ID	Date Sampled	Depth (ft. bgs)	Sample Location ⁽¹⁾	Field Measured VOC Concentration ⁽²⁾ (ppm)
SS01 @ 5'	1/29/2020	5	Base	0.0
SS02 @ 3'	1/29/2020	3	North Sidewall	0.0
SS03 @ 3'	1/29/2020	3	West Sidewall	0.0
SS04 @ 3'	1/29/2020	3	South Sidewall	0.0
SS05 @ 3'	1/29/2020	3	East Sidewall	0.0

Notes:

1. Refers to the sample location within the excavation area below the former produced water vessel.

2. Volatile organic compound (VOC) concentrations are measured in the field using a photoionization detector (PID).

ft. = Feet

bgs = Below ground surface

ppm = Parts per million

 = Sample submitted for laboratory analysis.

ATTACHMENT A

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

February 05, 2020

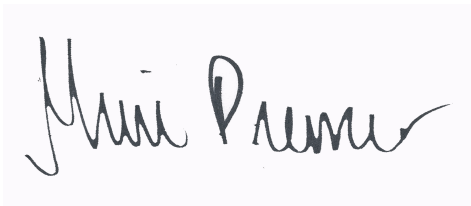
Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203

RE: Cannon Farms 1-35c

Work Order #2001337

Enclosed are the results of analyses for samples received by Summit Scientific on 01/29/20 18:47. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Muri Premier", is displayed on a light purple rectangular background.

Muri Premier For Paul Shrewsbury
President



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

Project: Cannon Farms 1-35c
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/05/20 16:19

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@5'	2001337-01	Soil	01/29/20 14:15	01/29/20 18:47

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

S₂

2001337

4653 Table Mountain Drive ♦ Golden, Colorado 80403

303-277-9310

Page 1 of 1

Client:	PDC / Tasman	Project Manager:	Mark Longhurst
Address:	6855 W 119th Ave	E-Mail:	mark.longhurst@PDCE.com
City/State/Zip:	Broomfield/ CO/ 80020		
Phone:	303-487-1228	Project Name:	Cannon Farms 1-35 c
Sampler Name:	S. Jungman	Project Number:	

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested						Special Instructions	
					HCl	HNO ₃	None	Other	Water	Soil	Air-Canister #	Other	8260 BTEX	8260B GBTEXN	8015 DRO	pH / EC	HOLD			
1	SS01 C 5'	1/22/20	1415	1			X			X					X	X	X			
2	SS02 C 3'	↓	1420	↓			↓			↓								X		
3	SS03 C 3'	↓	1425	↓			↓			↓								X		
4	SS04 C 3'	↓	1430	↓			↓			↓								X		
5	SS05 C 3'	↓	1435	↓			↓			↓								X		
6																				
7																				
8																				
9																				
10																				

Relinquished by:	Date/Time:	Received by:	Date/Time:	Turn Around Time (Check)	Notes: Please hold SS02 - SS05
	01/29/20 1534	Tasman's Lock Box		Same Day <input type="checkbox"/>	
Relinquished by:	Date/Time:	Received by:	Date/Time:	24 hours <input type="checkbox"/>	
Tasman's Lock Box			1-27-20 6:47	48 hours <input type="checkbox"/>	
Relinquished by:	Date/Time:	Received by:	Date/Time:	Sample Integrity:	
				Temperature Upon Receipt:	
				Samples Intact: <input checked="" type="radio"/> Yes <input type="radio"/> No	

Sample Receipt Checklist

S2 Work Order 2001337

Client: PDC/Tasman

Client Project ID: Cannon Farms 1-35C

Shipped Via: H.D./P.U. FedEx/UPS/USPS/Other _____ Airbill #: _____

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

Temp (°C)	<u>42</u>
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Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
NOTE: If samples are delivered the same day of sampling, this requirement is met 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 samples with holding times due within 48 hours sample 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.

CS
Custodian Printed Name or Initials

[Signature]
Signature of Custodian

1-29-20 6:50
Date/Time



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

Project: Cannon Farms 1-35c
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/05/20 16:19

SS01@5'
2001337-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/29/20 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	2001407	01/30/20	01/31/20	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/29/20 14:15**

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		106 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/29/20 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2001408	01/30/20	01/30/20	EPA 8015M	

Date Sampled: **01/29/20 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		98.4 %	30-150		"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **01/29/20 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.91		pH Units	1	2001402	01/30/20	01/30/20	EPA 9045D	

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1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Cannon Farms 1-35c
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/05/20 16:19

SS01@5'
2001337-01 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Specific Conductance by EPA Method 120.1

Date Sampled: **01/29/20 14:15**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	1.44	0.0100		mmhos/cm	1	2001403	01/30/20	01/30/20	EPA 120.1	

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1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Cannon Farms 1-35c
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/05/20 16:19

Volatile Organic Compounds by EPA Method 8260B - Quality Control

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

Batch 2001407 - EPA 5030 Soil MS

Blank (2001407-BLK1)

Prepared: 01/30/20 Analyzed: 01/31/20

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Naphthalene	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0429		"	0.0400		107	23-173			
Surrogate: Toluene-d8	0.0400		"	0.0400		100	20-170			
Surrogate: 4-Bromofluorobenzene	0.0409		"	0.0400		102	21-167			

LCS (2001407-BS1)

Prepared: 01/30/20 Analyzed: 01/31/20

Benzene	0.0721	0.0020	mg/kg	0.100		72.1	70-130			
Toluene	0.0893	0.0050	"	0.100		89.3	70-130			
Ethylbenzene	0.0974	0.0050	"	0.100		97.4	70-130			
m,p-Xylene	0.196	0.010	"	0.200		98.2	70-130			
o-Xylene	0.0891	0.0050	"	0.100		89.1	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0380		"	0.0400		95.0	23-173			
Surrogate: Toluene-d8	0.0407		"	0.0400		102	20-170			
Surrogate: 4-Bromofluorobenzene	0.0415		"	0.0400		104	21-167			

Matrix Spike (2001407-MS1)

Source: 2001337-01

Prepared: 01/30/20 Analyzed: 01/31/20

Benzene	0.0984	0.0020	mg/kg	0.100	ND	98.4	70-130			
Toluene	0.0849	0.0050	"	0.100	ND	84.9	70-130			
Ethylbenzene	0.0935	0.0050	"	0.100	ND	93.5	70-130			
m,p-Xylene	0.185	0.010	"	0.200	ND	92.7	70-130			
o-Xylene	0.0873	0.0050	"	0.100	ND	87.3	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0399		"	0.0400		99.8	23-173			
Surrogate: Toluene-d8	0.0406		"	0.0400		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0412		"	0.0400		103	21-167			

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Denver CO, 80203

Project: Cannon Farms 1-35c
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/05/20 16:19

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 2001407 - EPA 5030 Soil MS

Matrix Spike Dup (2001407-MSD1)		Source: 2001337-01			Prepared: 01/30/20 Analyzed: 01/31/20					
Benzene	0.0729	0.0020	mg/kg	0.100	ND	72.9	70-130	29.8	30	
Toluene	0.0963	0.0050	"	0.100	ND	96.3	70-130	12.6	30	
Ethylbenzene	0.103	0.0050	"	0.100	ND	103	70-130	9.82	30	
m,p-Xylene	0.206	0.010	"	0.200	ND	103	70-130	10.5	30	
o-Xylene	0.0966	0.0050	"	0.100	ND	96.6	70-130	10.1	30	
Surrogate: 1,2-Dichloroethane-d4	0.0394		"	0.0400		98.5	23-173			
Surrogate: Toluene-d8	0.0446		"	0.0400		112	20-170			
Surrogate: 4-Bromofluorobenzene	0.0428		"	0.0400		107	21-167			

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1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Cannon Farms 1-35c
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/05/20 16:19

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 2001408 - EPA 3550A

Blank (2001408-BLK1)

Prepared & Analyzed: 01/30/20

C10-C28 (DRO) ND 50 mg/kg

LCS (2001408-BS1)

Prepared & Analyzed: 01/30/20

C10-C28 (DRO) 496 50 mg/kg 500 99.3 70-130

Matrix Spike (2001408-MS1)

Source: 2001337-01

Prepared & Analyzed: 01/30/20

C10-C28 (DRO) 506 50 mg/kg 500 12.6 98.6 70-130

Matrix Spike Dup (2001408-MSD1)

Source: 2001337-01

Prepared & Analyzed: 01/30/20

C10-C28 (DRO) 438 50 mg/kg 500 12.6 85.1 70-130 14.3 20

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

Project: Cannon Farms 1-35c

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
02/05/20 16:19

Physical Parameters by APHA/ASTM/EPA Methods - Quality Control

Summit Scientific

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

Batch 2001402 - General Preparation

LCS (2001402-BS1)

Prepared & Analyzed: 01/30/20

pH	9.21	pH Units	9.18	100	95-105
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Duplicate (2001402-DUP1)

Source: 2001211-01

Prepared & Analyzed: 01/30/20

pH	8.26	pH Units	8.23	0.364	20
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1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Cannon Farms 1-35c
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/05/20 16:19

Specific Conductance by EPA Method 120.1 - Quality Control
Summit Scientific

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

Batch 2001403 - General Preparation

Blank (2001403-BLK1)

Prepared & Analyzed: 01/30/20

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (2001403-BS1)

Prepared & Analyzed: 01/30/20

Specific Conductance (EC) 0.801 0.0100 mmhos/cm 0.750 107 90-110

Duplicate (2001403-DUP1)

Source: 2001211-01

Prepared & Analyzed: 01/30/20

Specific Conductance (EC) 1.11 0.0100 mmhos/cm 1.11 0.0901 20

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

Project: Cannon Farms 1-35c

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
02/05/20 16:19

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