

**TABLE 1
FORMER MARK 11, 12, 14-35 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@10'	11/7/2018	10	0.0048	0.029	0.14	0.76	0.021	51
GS01@6'	11/7/2018	6	18	<0.0050	45	510	0.42	1,072
GS02@8'	11/7/2018	8	17	<0.0050	15	230	0.070	3,500
GS03@8'	11/8/2018	8	1.2	<0.0050	0.20	0.51	0.085	865
SS02@6'	11/9/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS03@8'	11/9/2018	8	<0.0020	<0.0050	<0.0050	0.013	<0.010	<50
SS04@6'	11/9/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS05@8'	11/9/2018	8	<0.0020	<0.0050	<0.0050	<0.010	0.010	<50
SS06@6'	11/13/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS07@8'	11/13/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS08@6'	11/14/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS09@8'	11/14/2018	8	0.058	<0.0050	0.016	<0.010	<0.010	<50
SS10@10'	11/14/2018	10	0.10	<0.0050	0.031	<0.010	<0.010	4.4
SS11@6'	11/14/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS12@8'	11/14/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS13@6'	11/14/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS14@8'	11/14/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS15@10'	11/15/2018	10	<0.0020	<0.0050	<0.0050	0.057	<0.010	4.0
SS16@6'	11/15/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS17@8'	11/15/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS18@6'	11/15/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	9.6
SS19@8'	11/15/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS20@6'	11/15/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS21@8'	11/15/2018	8	<0.0020	<0.0050	<0.0050	0.024	<0.010	2.8
SS22@6'	11/15/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS23@8'	11/15/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS01@10'	11/15/2018	10	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS02@10'	11/16/2018	10	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS03@6'	11/16/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS04@8'	11/16/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS05@6'	11/16/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS06@8'	11/16/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS07@10'	11/16/2018	10	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS08@6'	11/16/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS09@8'	11/16/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS10@6'	11/16/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS11@8'	11/16/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS12@10'	11/16/2018	10	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS13@6'	11/16/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS14@8'	11/16/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS15@10'	11/19/2018	10	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS16@6'	11/19/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS17@8'	11/19/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS18@6'	11/19/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS19@8'	11/19/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS20@6'	11/19/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50

TABLE 1
FORMER MARK 11, 12, 14-35 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
WSS21@8'	11/19/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS22@10'	11/19/2018	10	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS23@10'	11/20/2018	10	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS24@6'	11/20/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS25@8'	11/20/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS26@6'	11/20/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS27@8'	11/20/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS28@6'	11/20/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS29@8'	11/20/2018	8	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS30@10'	11/20/2018	10	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS31@6'	11/20/2018	6	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
WSS32@8'	11/20/2018	8	0.095	<0.0050	0.020	0.048	<0.010	<50
BH03@8-9'	1/23/2019	8-9	0.0055	<0.0020	0.12	0.93	<0.010	1.3
BH05@9-10'	1/23/2019	9-10	<0.0020	<0.0050	<0.0050	0.12	<0.010	<50

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

bgs = Below ground surface

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

ATTACHMENT A

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

February 01, 2019

Mark Longhurst

PDC Energy

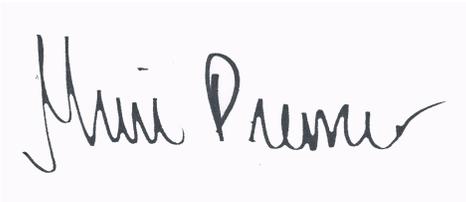
1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Mark 11,12,14-35

Enclosed are the results of analyses for samples received by Summit Scientific on 01/25/19 12:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Muri Premer". The signature is written in a cursive style with a large initial "M" and a long, sweeping underline.

Muri Premer For Paul Shrewsbury

President



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

Project: Mark 11,12,14-35

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/01/19 09:32

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH03@8-9'	1901322-01	Soil	01/23/19 09:35	01/25/19 12:30
BH05@9-10'	1901322-02	Soil	01/23/19 10:40	01/25/19 12:30

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

1901322

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: Zander Hamilton

Project Manager: Mark Langhurst
E-Mail: Mark.Langhurst@pdc.com
Project Name: Mark 11, 12, 14-35
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)							
BH03 @ 8-9'	1/23/19	935	1			X						X	X	X				
BH05 @ 9-10'	↓	1040	1			X						X	X	X				
Relinquished by: <u>Alexander Hamilton</u>	Date/Time: <u>1/25/19 12:30</u>	Received by: <u>Rock Nelson</u>	Date/Time: <u>1/25/2020</u>	Turn Around Time (Check)				Notes:										
				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"/>														
Relinquished by: <u>(Signature)</u>	Date/Time: <u>1.25.19 1800</u>	Received by: <u>(Signature)</u>	Date/Time: <u>1.25.19 1800</u>	Sample Integrity:														
				Temperature Upon Receipt: <u>4-2</u>														
				Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>														

Sample Receipt Checklist

S2 Work Order 1901322

Client: PDC Energy Client Project ID: Mark 11, 12, 14-35

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

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

Temp (°C)	4.2
-----------	-----

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? 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⁾ ?	/			
Was adequate sample volume provided ⁽¹⁾ ?	/			
If custody seals are present, are they intact ⁽¹⁾ ?			/	
Are samples with holding times due within 48 hours sample due within 48 hours present?			/	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	/			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	/			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	/			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?		/		Not relinquished
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			/	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? 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⁾ ? Record the pH in Comments.			/	
If dissolved metals are requested, were samples field filtered?			/	

Additional Comments (if any):

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

CP
Custodian Printed Name or Initials

[Signature]
Signature of Custodian

1.25.19 1830
Date/Time



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

Project: Mark 11,12,14-35

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/01/19 09:32

BH03@8-9'
1901322-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 09:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	0.0055	0.0020		mg/kg	1	1901329	01/28/19	01/28/19	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	0.12	0.0050		"	"	"	"	"	"	
Xylenes (total)	0.93	0.010		"	"	"	"	"	"	
Naphthalene	ND	0.010		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	1.3	0.50		"	"	"	"	01/28/19	"	

Date Sampled: **01/23/19 09:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		104 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		97.6 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %		21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/19 09:35**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	1901330	01/28/19	01/28/19	EPA 8015M	

Date Sampled: **01/23/19 09:35**

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

Summit Scientific

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

Project: Mark 11,12,14-35

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/01/19 09:32

BH05@9-10'
1901322-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/19 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1901329	01/28/19	01/28/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.12	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	01/29/19	"	

Date Sampled: **01/23/19 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		98.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.0 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/19 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1901330	01/28/19	01/29/19	EPA 8015M	

Date Sampled: **01/23/19 10:40**

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

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

Project: Mark 11,12,14-35

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/01/19 09:32

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1901329 - Volatiles

Blank (1901329-BLK1)

Prepared & Analyzed: 01/28/19

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	0.0389		"	0.0400		97.4		23-173		
Surrogate: Toluene-d8	0.0396		"	0.0400		99.0		20-170		
Surrogate: 4-Bromofluorobenzene	0.0390		"	0.0400		97.5		21-167		

LCS (1901329-BS1)

Prepared & Analyzed: 01/28/19

Benzene	0.0899	0.0020	mg/kg	0.100		89.9		70-130		
Toluene	0.0908	0.0050	"	0.100		90.8		70-130		
Ethylbenzene	0.0858	0.0050	"	0.100		85.8		70-130		
m,p-Xylene	0.175	0.010	"	0.200		87.5		70-130		
o-Xylene	0.0910	0.0050	"	0.100		91.0		70-130		
Surrogate: 1,2-Dichloroethane-d4	0.0390		"	0.0400		97.5		23-173		
Surrogate: Toluene-d8	0.0404		"	0.0400		101		20-170		
Surrogate: 4-Bromofluorobenzene	0.0380		"	0.0400		95.0		21-167		

Matrix Spike (1901329-MS1)

Source: 1901316-01

Prepared & Analyzed: 01/28/19

Benzene	0.0973	0.0020	mg/kg	0.100	ND	97.3		70-130		
Toluene	0.0932	0.0050	"	0.100	ND	93.2		70-130		
Ethylbenzene	0.0844	0.0050	"	0.100	ND	84.4		70-130		
m,p-Xylene	0.199	0.010	"	0.200	ND	99.6		70-130		
o-Xylene	0.0880	0.0050	"	0.100	ND	88.0		70-130		
Surrogate: 1,2-Dichloroethane-d4	0.0404		"	0.0400		101		23-173		
Surrogate: Toluene-d8	0.0404		"	0.0400		101		20-170		
Surrogate: 4-Bromofluorobenzene	0.0374		"	0.0400		93.6		21-167		

Summit Scientific

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

Project: Mark 11,12,14-35

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 02/01/19 09:32

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

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

Batch 1901329 - Volatiles

Matrix Spike Dup (1901329-MSD1)

Source: 1901316-01

Prepared & Analyzed: 01/28/19

Benzene	0.100	0.0020	mg/kg	0.100	ND	100	70-130	3.19	30	
Toluene	0.0973	0.0050	"	0.100	ND	97.3	70-130	4.35	30	
Ethylbenzene	0.0920	0.0050	"	0.100	ND	92.0	70-130	8.64	30	
m,p-Xylene	0.214	0.010	"	0.200	ND	107	70-130	7.33	30	
o-Xylene	0.0940	0.0050	"	0.100	ND	94.0	70-130	6.63	30	
Surrogate: 1,2-Dichloroethane-d4	0.0391		"	0.0400		97.8	23-173			
Surrogate: Toluene-d8	0.0396		"	0.0400		99.1	20-170			
Surrogate: 4-Bromofluorobenzene	0.0364		"	0.0400		91.0	21-167			

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

Project: Mark 11,12,14-35

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 02/01/19 09:32

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 1901330 - EPA 5030 Soil GC

Blank (1901330-BLK1)

Prepared & Analyzed: 01/28/19

C10-C28 (DRO) ND 50 mg/kg

LCS (1901330-BS1)

Prepared & Analyzed: 01/28/19

C10-C28 (DRO) 580 50 mg/kg 500 116 70-130

Matrix Spike (1901330-MS1)

Source: 1901316-01

Prepared & Analyzed: 01/28/19

C10-C28 (DRO) 704 50 mg/kg 500 131 115 70-130

Matrix Spike Dup (1901330-MSD1)

Source: 1901316-01

Prepared & Analyzed: 01/28/19

C10-C28 (DRO) 749 50 mg/kg 500 131 124 70-130 6.16 20

Summit Scientific

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

Project: Mark 11,12,14-35

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/01/19 09:32

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