

TABLE 1
McKEE 32, 42-21 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 @ 4.5'	11/1/2017	4.5	0.017	<0.0050	0.13	0.096	<0.010	326
SS02 @ 4.5'	11/1/2017	4.5	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS03 @ 4.5'	11/2/2017	4.5	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS04 @ 4.5'	11/3/2017	4.5	<0.0020	<0.0050	<0.0050	<0.010	<0.010	1.9
SS05 @ 4.5'	11/3/2017	4.5	0.011	<0.0050	<0.0050	0.011	<0.010	0.78
SS06 @ 4.5'	11/6/2017	4.5	0.027	<0.0050	0.0081	<0.010	<0.010	<50
SS07 @ 4.5'	11/9/2017	4.5	<0.0020	<0.0050	<0.0050	0.066	0.015	13
SS08 @ 4.5'	11/9/2017	4.5	<0.0020	<0.0050	0.65	1.4	0.26	400
SS09 @ 4.5'	11/9/2017	4.5	0.26	<0.0050	0.55	8.6	0.15	780
SS10 @ 4.5'	11/10/2017	4.5	0.24	<0.0050	0.075	0.37	0.019	9.0
SS11 @ 4.5'	11/13/2017	4.5	0.032	<0.0050	0.021	0.075	0.024	4.1

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.

TABLE 2
McKEE 32, 42-21 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 (feet bgs) ⁽²⁾
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	
GW01	11/20/2017	4.6	12	10	66	~5

Notes:

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

2. Depth to groundwater measured from ground surface.

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

November 02, 2017

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: McKee 32-21

Enclosed are the results of analyses for samples received by Summit Scientific on 11/01/17 16:45. 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: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/02/17 06:44

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@4.5'	1711003-01	Soil	11/01/17 11:17	11/01/17 16:45
SS02@4.5'	1711003-02	Soil	11/01/17 14:07	11/01/17 16:45

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.



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

Project: McKee 32-21

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/02/17 06:44

Sample Receipt Checklist

S2 Work Order: 1711003
Client: PDC Client Project ID: McKee 32-21
Shipped Via: P/U Airbill #: _____
(UPS, FedEx, Hand Delivered, Pick-up, etc.)
Matrix (check all that apply): Air ☒ Soil/Solid Water Other: _____
(Describe)

Cooler ID					
Temp (°C)	<u>4.5</u>				

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 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⁾ ?				
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.				
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

[Signature]
Signature or Initials of Custodian

11/2/17 1710
Date/Time



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

Project: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/02/17 06:44

SS01@4.5'
1711003-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/01/17 11:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	270	50	mg/kg	1	1711024	11/01/17	11/01/17	8015M	

Date Sampled: **11/01/17 11:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		99.6 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/01/17 11:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1711023	11/01/17	11/01/17	EPA 8260B	
Benzene	0.017	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.13	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.096	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	56	0.50	"	"	"	"	"	"	

Date Sampled: **11/01/17 11:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		112 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		105 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		142 %	21-167		"	"	"	"	

Summit Scientific

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

Project: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/02/17 06:44

SS02@4.5'
1711003-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/01/17 14:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1711024	11/01/17	11/01/17	8015M	

Date Sampled: **11/01/17 14:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		94.2 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/01/17 14:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1711023	11/01/17	11/01/17	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: **11/01/17 14:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		118 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	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: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/02/17 06:44

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 1711024 - EPA 3550A

Blank (1711024-BLK1)

Prepared & Analyzed: 11/01/17

C10-C28 (DRO) ND 50 mg/kg

Surrogate: o-Terphenyl 12.0 " 12.5 95.6 30-150

LCS (1711024-BS1)

Prepared & Analyzed: 11/01/17

C10-C28 (DRO) 488 50 mg/kg 499 97.7 73-134

Surrogate: o-Terphenyl 11.4 " 12.5 91.6 30-150

Matrix Spike (1711024-MS1)

Source: 1711003-02

Prepared & Analyzed: 11/01/17

C10-C28 (DRO) 436 50 mg/kg 499 22.9 82.8 50-148

Surrogate: o-Terphenyl 11.7 " 12.5 93.2 30-150

Matrix Spike Dup (1711024-MSD1)

Source: 1711003-02

Prepared & Analyzed: 11/01/17

C10-C28 (DRO) 493 50 mg/kg 499 22.9 94.3 50-148 12.3 20

Surrogate: o-Terphenyl 12.0 " 12.5 96.1 30-150

Summit Scientific

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

Project: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/02/17 06:44

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 1711023 - EPA 5030 Soil MS

Blank (1711023-BLK1)

Prepared & Analyzed: 11/01/17

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>0.0517</i>		<i>"</i>	<i>0.0400</i>		<i>129</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>0.0423</i>		<i>"</i>	<i>0.0400</i>		<i>106</i>	<i>21-167</i>			

LCS (1711023-BS1)

Prepared & Analyzed: 11/01/17

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.113	0.0020	"	0.100		113	58-130			
Toluene	0.113	0.0050	"	0.100		113	61-134			
Ethylbenzene	0.130	0.0050	"	0.0992		131	74-139			
m,p-Xylene	0.251	0.010	"	0.200		126	73-137			
o-Xylene	0.124	0.0050	"	0.0980		126	73-141			
Xylenes (total)	0.375	0.010	"				0-200			
Gasoline Range Hydrocarbons	3.36	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0466</i>		<i>"</i>	<i>0.0400</i>		<i>116</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0409</i>		<i>"</i>	<i>0.0400</i>		<i>102</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 (1711023-MS1)

Source: 1711003-02

Prepared & Analyzed: 11/01/17

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.114	0.0020	"	0.100	ND	114	30-131			
Toluene	0.114	0.0050	"	0.100	ND	114	30-134			
Ethylbenzene	0.133	0.0050	"	0.0992	ND	135	22-153			
m,p-Xylene	0.255	0.010	"	0.200	ND	128	10-159			
o-Xylene	0.127	0.0050	"	0.0980	ND	130	31-151			
Xylenes (total)	0.382	0.010	"		ND		30-160			
Gasoline Range Hydrocarbons	3.41	0.50	"		ND		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0478</i>		<i>"</i>	<i>0.0400</i>		<i>119</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0406</i>		<i>"</i>	<i>0.0400</i>		<i>101</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>			

Summit Scientific

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

Project: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/02/17 06:44

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 1711023 - EPA 5030 Soil MS

Matrix Spike Dup (1711023-MSD1)			Source: 1711003-02		Prepared & Analyzed: 11/01/17					
Naphthalene	ND	0.010	mg/kg		ND		10-158		42	
Benzene	0.110	0.0020	"	0.100	ND	110	30-131	2.92	34	
Toluene	0.108	0.0050	"	0.100	ND	108	30-134	4.87	30	
Ethylbenzene	0.130	0.0050	"	0.0992	ND	132	22-153	2.27	24	
m,p-Xylene	0.247	0.010	"	0.200	ND	124	10-159	3.35	68	
o-Xylene	0.123	0.0050	"	0.0980	ND	126	31-151	3.06	38	
Xylenes (total)	0.370	0.010	"		ND		30-160	3.25	30	
Gasoline Range Hydrocarbons	3.39	0.50	"		ND		30-160	0.401	30	
Surrogate: 1,2-Dichloroethane-d4	0.0480		"	0.0400		120	23-173			
Surrogate: Toluene-d8	0.0399		"	0.0400		99.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0417		"	0.0400		104	21-167			

Summit Scientific

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

Project: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/02/17 06:44

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

November 03, 2017

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: McKee 32-21

Enclosed are the results of analyses for samples received by Summit Scientific on 11/02/17 17:00. 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, flowing script.

Paul Shrewsbury
President



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

Project: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/03/17 05:43

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS03@4.5'	1711019-01	Soil	11/02/17 09:55	11/02/17 17:00

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.



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

Project: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/03/17 05:43

Sample Receipt Checklist

S2 Work Order: 1711019

Client: PDC Energy

Client Project ID: McKee 32-21

Shipped Via: P/U

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

Airbill #: _____

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

Cooler ID					
Temp (°C)	<u>5.6</u>				

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"/>	<input type="checkbox"/>	<input 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"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<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

[Signature]
Signature or Initials of Custodian

11/2/17 1730
Date/Time



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

Project: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/03/17 05:43

SS03@4.5'
1711019-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/02/17 09:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1711041	11/02/17	11/02/17	8015M	

Date Sampled: **11/02/17 09:55**

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: **11/02/17 09:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1711040	11/02/17	11/03/17	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 09:55**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		127 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		110 %	21-167		"	"	"	"	

Summit Scientific

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

Project: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/03/17 05:43

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 1711041 - EPA 3550A

Blank (1711041-BLK1)

Prepared & Analyzed: 11/02/17

C10-C28 (DRO) ND 50 mg/kg

Surrogate: o-Terphenyl 14.7 " 12.5 118 30-150

LCS (1711041-BS1)

Prepared & Analyzed: 11/02/17

C10-C28 (DRO) 503 50 mg/kg 499 101 73-134

Surrogate: o-Terphenyl 13.8 " 12.5 110 30-150

Matrix Spike (1711041-MS1)

Source: 1711018-02

Prepared & Analyzed: 11/02/17

C10-C28 (DRO) 818 50 mg/kg 499 265 111 50-148

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

Matrix Spike Dup (1711041-MSD1)

Source: 1711018-02

Prepared & Analyzed: 11/02/17

C10-C28 (DRO) 711 50 mg/kg 499 265 89.2 50-148 14.0 20

Surrogate: o-Terphenyl 17.2 " 12.5 138 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: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/03/17 05:43

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 1711040 - EPA 5030 Soil MS

Blank (1711040-BLK1)

Prepared & Analyzed: 11/02/17

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>0.0436</i>		<i>"</i>	<i>0.0400</i>		<i>109</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0396</i>		<i>"</i>	<i>0.0400</i>		<i>98.9</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0409</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>21-167</i>			

LCS (1711040-BS1)

Prepared & Analyzed: 11/02/17

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.115	0.0020	"	0.100		115	58-130			
Toluene	0.120	0.0050	"	0.100		120	61-134			
Ethylbenzene	0.133	0.0050	"	0.0992		134	74-139			
m,p-Xylene	0.263	0.010	"	0.200		132	73-137			
o-Xylene	0.127	0.0050	"	0.0980		129	73-141			
Xylenes (total)	0.390	0.010	"				0-200			
Gasoline Range Hydrocarbons	3.47	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>0.0401</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0413</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>21-167</i>			

Matrix Spike (1711040-MS1)

Source: 1711018-02

Prepared & Analyzed: 11/02/17

Naphthalene	0.107	0.010	mg/kg		0.101		10-158			
Benzene	0.115	0.0020	"	0.100	ND	115	30-131			
Toluene	0.116	0.0050	"	0.100	ND	116	30-134			
Ethylbenzene	0.142	0.0050	"	0.0992	0.0102	133	22-153			
m,p-Xylene	0.285	0.010	"	0.200	0.0982	93.5	10-159			
o-Xylene	0.152	0.0050	"	0.0980	0.00627	149	31-151			
Xylenes (total)	0.437	0.010	"		0.104		30-160			
Gasoline Range Hydrocarbons	26.6	0.50	"		55.6		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0470</i>		<i>"</i>	<i>0.0400</i>		<i>117</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>0.0489</i>		<i>"</i>	<i>0.0400</i>		<i>122</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: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/03/17 05:43

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 1711040 - EPA 5030 Soil MS

Matrix Spike Dup (1711040-MSD1)			Source: 1711018-02		Prepared & Analyzed: 11/02/17					
Naphthalene	0.168	0.010	mg/kg		0.101		10-158	44.2	42	
Benzene	0.115	0.0020	"	0.100	ND	115	30-131	0.104	34	
Toluene	0.115	0.0050	"	0.100	ND	115	30-134	1.40	30	
Ethylbenzene	0.149	0.0050	"	0.0992	0.0102	140	22-153	4.47	24	
m,p-Xylene	0.296	0.010	"	0.200	0.0982	99.2	10-159	3.86	68	
o-Xylene	0.159	0.0050	"	0.0980	0.00627	156	31-151	4.67	38	
Xylenes (total)	0.455	0.010	"		0.104		30-160	4.14	30	
Gasoline Range Hydrocarbons	30.8	0.50	"		55.6		30-160	14.6	30	
Surrogate: 1,2-Dichloroethane-d4	0.0471		"	0.0400		118	23-173			
Surrogate: Toluene-d8	0.0407		"	0.0400		102	20-170			
Surrogate: 4-Bromofluorobenzene	0.0518		"	0.0400		129	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: McKee 32-21

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/03/17 05:43

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

November 05, 2017

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: McKee 32-21

Enclosed are the results of analyses for samples received by Summit Scientific on 11/03/17 16:35. 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: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/05/17 12:33

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS04@4.5	1711031-01	Soil	11/03/17 10:01	11/03/17 16:35
SS05@4.5	1711031-02	Soil	11/03/17 11:57	11/03/17 16:35

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: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/05/17 12:33

Sample Receipt Checklist

S2 Work Order: 1711031

Client: PDC Energy

Client Project ID: McKee 32-21

Shipped Via: PLU

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

Airbill #: _____

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

Cooler ID					
Temp (°C)	<u>3.3</u>				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽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 short holding time analytes or samples with HTs 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⁾ ?	✓			
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.

Nakita
Custodian Printed Name

[Signature]
Signature or Initials of Custodian

11/3/17 1700
Date/Time



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

Project: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/05/17 12:33

SS04@4.5
1711031-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/03/17 10:01**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1711058	11/03/17	11/04/17	8015M	

Date Sampled: **11/03/17 10:01**

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/03/17 10:01**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1711065	11/03/17	11/04/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	1.9	0.50	"	"	"	"	"	"	

Date Sampled: **11/03/17 10:01**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		139 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.2 %	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: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/05/17 12:33

SS05@4.5
1711031-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/03/17 11:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1711058	11/03/17	11/04/17	8015M	

Date Sampled: **11/03/17 11:57**

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: **11/03/17 11:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1711065	11/03/17	11/04/17	EPA 8260B	
Benzene	0.011	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.011	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	0.78	0.50	"	"	"	"	"	"	

Date Sampled: **11/03/17 11:57**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		130 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.0 %	21-167		"	"	"	"	

Summit Scientific

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

Project: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/05/17 12:33

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 1711058 - EPA 3550A

Blank (1711058-BLK1)

Prepared & Analyzed: 11/03/17

C10-C28 (DRO)	ND	50	mg/kg							
Surrogate: o-Terphenyl	13.2		"	12.5		105	30-150			

LCS (1711058-BS1)

Prepared & Analyzed: 11/03/17

C10-C28 (DRO)	483	50	mg/kg	499		96.8	73-134			
Surrogate: o-Terphenyl	13.4		"	12.5		107	30-150			

Matrix Spike (1711058-MS1)

Source: 1711024-01

Prepared & Analyzed: 11/03/17

C10-C28 (DRO)	445	50	mg/kg	499	115	66.1	50-148			
Surrogate: o-Terphenyl	13.6		"	12.5		109	30-150			

Matrix Spike Dup (1711058-MSD1)

Source: 1711024-01

Prepared & Analyzed: 11/03/17

C10-C28 (DRO)	445	50	mg/kg	499	115	66.0	50-148	0.140	20	
Surrogate: o-Terphenyl	14.9		"	12.5		119	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: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/05/17 12:33

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

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

Batch 1711065 - EPA 5030 Soil MS

Blank (1711065-BLK1)

Prepared & Analyzed: 11/03/17

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>0.0480</i>		<i>"</i>	<i>0.0400</i>		<i>120</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0384</i>		<i>"</i>	<i>0.0400</i>		<i>96.0</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0377</i>		<i>"</i>	<i>0.0400</i>		<i>94.4</i>	<i>21-167</i>			

LCS (1711065-BS1)

Prepared & Analyzed: 11/03/17

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.0914	0.0020	"	0.100		91.4	58-130			
Toluene	0.0914	0.0050	"	0.100		91.4	61-134			
Ethylbenzene	0.0961	0.0050	"	0.0992		96.9	74-139			
m,p-Xylene	0.188	0.010	"	0.200		94.3	73-137			
o-Xylene	0.0925	0.0050	"	0.0980		94.3	73-141			
Xylenes (total)	0.281	0.010	"				0-200			
Gasoline Range Hydrocarbons	1.65	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0481</i>		<i>"</i>	<i>0.0400</i>		<i>120</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0397</i>		<i>"</i>	<i>0.0400</i>		<i>99.2</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0382</i>		<i>"</i>	<i>0.0400</i>		<i>95.6</i>	<i>21-167</i>			

Matrix Spike (1711065-MS1)

Source: 1711031-01

Prepared & Analyzed: 11/03/17

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.0969	0.0020	"	0.100	ND	96.9	30-131			
Toluene	0.0823	0.0050	"	0.100	ND	82.3	30-134			
Ethylbenzene	0.0875	0.0050	"	0.0992	ND	88.2	22-153			
m,p-Xylene	0.174	0.010	"	0.200	0.00774	83.5	10-159			
o-Xylene	0.0831	0.0050	"	0.0980	ND	84.8	31-151			
Xylenes (total)	0.258	0.010	"		0.00774		30-160			
Gasoline Range Hydrocarbons	1.84	0.50	"		1.87		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0485</i>		<i>"</i>	<i>0.0400</i>		<i>121</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>0.0395</i>		<i>"</i>	<i>0.0400</i>		<i>98.8</i>	<i>21-167</i>			

Summit Scientific

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

Project: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/05/17 12:33

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 1711065 - EPA 5030 Soil MS

Matrix Spike Dup (1711065-MSD1)	Source: 1711031-01			Prepared & Analyzed: 11/03/17						
Naphthalene	ND	0.010	mg/kg		ND		10-158		42	
Benzene	0.0816	0.0020	"	0.100	ND	81.6	30-131	17.2	34	
Toluene	0.0730	0.0050	"	0.100	ND	73.0	30-134	11.9	30	
Ethylbenzene	0.0737	0.0050	"	0.0992	ND	74.3	22-153	17.0	24	
m,p-Xylene	0.146	0.010	"	0.200	0.00774	69.3	10-159	17.7	68	
o-Xylene	0.0707	0.0050	"	0.0980	ND	72.2	31-151	16.1	38	
Xylenes (total)	0.217	0.010	"		0.00774		30-160	17.2	30	
Gasoline Range Hydrocarbons	1.49	0.50	"		1.87		30-160	21.0	30	
Surrogate: 1,2-Dichloroethane-d4	0.0504		"	0.0400		126	23-173			
Surrogate: Toluene-d8	0.0404		"	0.0400		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0382		"	0.0400		95.6	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: McKee 32-21

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/05/17 12:33

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

November 07, 2017

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: McKee 32-21

Enclosed are the results of analyses for samples received by Summit Scientific on 11/06/17 17:20. 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: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/07/17 06:40

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS06@4.5'	1711041-01	Soil	11/06/17 10:44	11/06/17 17:20

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.



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

Project: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/07/17 06:40

Sample Receipt Checklist

S2 Work Order: 1711041
Client: PDC Energy Client Project ID: McKee 32-21
Shipped Via: P/U Airbill #: _____
(UPS, FedEx, Hand Delivered, Pick-up, etc.)
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 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.	<input checked="" type="checkbox"/>			
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			<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.

Nakita
Custodian Printed Name

[Signature]
Signature or Initials of Custodian

11/6/17 17:55
Date/Time



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

Project: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/07/17 06:40

SS06@4.5'
1711041-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/06/17 10:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1711083	11/06/17	11/06/17	8015M	

Date Sampled: **11/06/17 10:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		105 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/06/17 10:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1711082	11/06/17	11/06/17	EPA 8260B	
Benzene	0.027	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.0081	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **11/06/17 10:44**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	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: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/07/17 06:40

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 1711083 - EPA 3550A

Blank (1711083-BLK1)

Prepared: 11/06/17 Analyzed: 11/07/17

C10-C28 (DRO) ND 50 mg/kg

Surrogate: o-Terphenyl 13.6 " 12.5 109 30-150

LCS (1711083-BS1)

Prepared: 11/06/17 Analyzed: 11/07/17

C10-C28 (DRO) 577 50 mg/kg 499 116 73-134

Surrogate: o-Terphenyl 13.7 " 12.5 110 30-150

Matrix Spike (1711083-MS1)

Source: 1711040-02

Prepared: 11/06/17 Analyzed: 11/07/17

C10-C28 (DRO) 519 50 mg/kg 499 51.3 93.7 50-148

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

Matrix Spike Dup (1711083-MSD1)

Source: 1711040-02

Prepared: 11/06/17 Analyzed: 11/07/17

C10-C28 (DRO) 509 50 mg/kg 499 51.3 91.6 50-148 2.03 20

Surrogate: o-Terphenyl 14.0 " 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: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/07/17 06:40

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

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

Batch 1711082 - EPA 5030 Soil MS

Blank (1711082-BLK1)

Prepared & Analyzed: 11/06/17

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>0.0435</i>		<i>"</i>	<i>0.0400</i>		<i>109</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0397</i>		<i>"</i>	<i>0.0400</i>		<i>99.2</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0413</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>21-167</i>			

LCS (1711082-BS1)

Prepared & Analyzed: 11/06/17

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.0968	0.0020	"	0.100		96.8	58-130			
Toluene	0.0952	0.0050	"	0.100		95.2	61-134			
Ethylbenzene	0.102	0.0050	"	0.0992		103	74-139			
m,p-Xylene	0.194	0.010	"	0.200		97.2	73-137			
o-Xylene	0.0968	0.0050	"	0.0980		98.8	73-141			
Xylenes (total)	0.291	0.010	"				0-200			
Gasoline Range Hydrocarbons	2.56	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0419</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0442</i>		<i>"</i>	<i>0.0400</i>		<i>111</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0422</i>		<i>"</i>	<i>0.0400</i>		<i>106</i>	<i>21-167</i>			

Matrix Spike (1711082-MS1)

Source: 1711040-01

Prepared & Analyzed: 11/06/17

Naphthalene	0.00483	0.010	mg/kg		0.0416		10-158			
Benzene	0.152	0.0020	"	0.100	ND	152	30-131			QM-07
Toluene	0.107	0.0050	"	0.100	ND	107	30-134			
Ethylbenzene	0.130	0.0050	"	0.0992	0.00393	128	22-153			
m,p-Xylene	0.227	0.010	"	0.200	0.0417	92.7	10-159			
o-Xylene	0.113	0.0050	"	0.0980	ND	115	31-151			
Xylenes (total)	0.340	0.010	"		0.0417		30-160			
Gasoline Range Hydrocarbons	3.52	0.50	"		18.9		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0452</i>		<i>"</i>	<i>0.0400</i>		<i>113</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0424</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>			

Summit Scientific

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

Project: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/07/17 06:40

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 1711082 - EPA 5030 Soil MS

Matrix Spike Dup (1711082-MSD1)	Source: 1711040-01			Prepared & Analyzed: 11/06/17						
Naphthalene	0.00597	0.010	mg/kg		0.0416		10-158	21.1	42	
Benzene	0.156	0.0020	"	0.100	ND	156	30-131	2.48	34	QM-07
Toluene	0.112	0.0050	"	0.100	ND	112	30-134	4.18	30	
Ethylbenzene	0.140	0.0050	"	0.0992	0.00393	137	22-153	7.04	24	
m,p-Xylene	0.243	0.010	"	0.200	0.0417	101	10-159	7.11	68	
o-Xylene	0.121	0.0050	"	0.0980	ND	123	31-151	6.42	38	
Xylenes (total)	0.364	0.010	"		0.0417		30-160	6.88	30	
Gasoline Range Hydrocarbons	3.78	0.50	"		18.9		30-160	7.09	30	
Surrogate: 1,2-Dichloroethane-d4	0.0469		"	0.0400		117	23-173			
Surrogate: Toluene-d8	0.0410		"	0.0400		102	20-170			
Surrogate: 4-Bromofluorobenzene	0.0422		"	0.0400		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: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/07/17 06:40

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

November 10, 2017

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: McKee 32-21

Enclosed are the results of analyses for samples received by Summit Scientific on 11/09/17 17:00. 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: McKee 32-21

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/10/17 16:08

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS07@4.5'	1711104-01	Soil	11/09/17 11:32	11/09/17 17:00
SS08@4.5'	1711104-02	Soil	11/09/17 15:14	11/09/17 17:00
SS09@4.5'	1711104-03	Soil	11/09/17 15:18	11/09/17 17:00

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: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/10/17 16:08

Sample Receipt Checklist

S2 Work Order: 711104
Client: PDC Client Project ID: McKee 32-21
Shipped Via: P/U (UPS, FedEx, Hand Delivered, Pick-up, etc.) Airbill #: _____
Matrix (check all that apply): ☐ Air ☒ Soil/Solid ☐ Water ☐ Other: _____ (Describe)

Cooler ID					
Temp (°C)	<u>5.8</u>				

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.	<input checked="" type="checkbox"/>			
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			<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.				

Nakita
Custodian Printed Name

[Signature]
Signature or Initials of Custodian

11/9/17 1730
Date/Time



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

Project: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/10/17 16:08

SS07@4.5'
1711104-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/09/17 11:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1711136	11/09/17	11/09/17	8015M	

Date Sampled: **11/09/17 11:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		88.9 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/09/17 11:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.015	0.010	mg/kg	1	1711134	11/09/17	11/09/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.066	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	13	0.50	"	"	"	"	"	"	

Date Sampled: **11/09/17 11:32**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		141 %	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: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/10/17 16:08

SS08@4.5'
1711104-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/09/17 15:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	200	50	mg/kg	1	1711136	11/09/17	11/09/17	8015M	

Date Sampled: **11/09/17 15:14**

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/09/17 15:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.26	0.10	mg/kg	10	1711134	11/09/17	11/09/17	EPA 8260B	
Benzene	ND	0.0020	"	1	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.65	0.0050	"	"	"	"	"	"	
Xylenes (total)	1.4	0.10	"	10	"	"	"	"	
Gasoline Range Hydrocarbons	200	5.0	"	"	"	"	11/09/17	"	

Date Sampled: **11/09/17 15:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		127 %	23-173		"	"	11/09/17	"	
<i>Surrogate: Toluene-d8</i>		95.0 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		161 %	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: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/10/17 16:08

SS09@4.5'
1711104-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/09/17 15:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	590	50	mg/kg	1	1711136	11/09/17	11/09/17	8015M	

Date Sampled: **11/09/17 15:18**

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/09/17 15:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.15	0.10	mg/kg	10	1711134	11/09/17	11/10/17	EPA 8260B	
Benzene	0.26	0.0020	"	1	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.55	0.050	"	10	"	"	11/09/17	"	
Xylenes (total)	8.6	0.10	"	"	"	"	11/10/17	"	
Gasoline Range Hydrocarbons	190	5.0	"	"	"	"	11/09/17	"	

Date Sampled: **11/09/17 15:18**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		114 %	23-173		"	"	11/10/17	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		168 %	21-167		"	"	"	"	S-02

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: McKee 32-21

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/10/17 16:08

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 1711136 - EPA 3550A

Blank (1711136-BLK1)

Prepared: 11/09/17 Analyzed: 11/10/17

C10-C28 (DRO) ND 50 mg/kg

Surrogate: o-Terphenyl 12.9 " 12.5 104 30-150

LCS (1711136-BS1)

Prepared: 11/09/17 Analyzed: 11/10/17

C10-C28 (DRO) 515 50 mg/kg 499 103 73-134

Surrogate: o-Terphenyl 13.9 " 12.5 111 30-150

Matrix Spike (1711136-MS1)

Source: 1711104-01

Prepared: 11/09/17 Analyzed: 11/10/17

C10-C28 (DRO) 442 50 mg/kg 499 45.6 79.4 50-148

Surrogate: o-Terphenyl 11.3 " 12.5 90.6 30-150

Matrix Spike Dup (1711136-MSD1)

Source: 1711104-01

Prepared: 11/09/17 Analyzed: 11/10/17

C10-C28 (DRO) 537 50 mg/kg 499 45.6 98.6 50-148 19.6 20

Surrogate: o-Terphenyl 12.4 " 12.5 98.9 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: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/10/17 16:08

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 1711134 - EPA 5030 Soil MS

Blank (1711134-BLK1)

Prepared & Analyzed: 11/09/17

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>0.0449</i>		<i>"</i>	<i>0.0400</i>		<i>112</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>0.0412</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>21-167</i>			

LCS (1711134-BS1)

Prepared & Analyzed: 11/09/17

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.111	0.0020	"	0.100		111	58-130			
Toluene	0.112	0.0050	"	0.100		112	61-134			
Ethylbenzene	0.127	0.0050	"	0.0992		128	74-139			
m,p-Xylene	0.240	0.010	"	0.200		120	73-137			
o-Xylene	0.120	0.0050	"	0.0980		123	73-141			
Xylenes (total)	0.360	0.010	"				0-200			
Gasoline Range Hydrocarbons	3.23	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0470</i>		<i>"</i>	<i>0.0400</i>		<i>117</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0410</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0425</i>		<i>"</i>	<i>0.0400</i>		<i>106</i>	<i>21-167</i>			

Matrix Spike (1711134-MS1)

Source: 1711104-01

Prepared: 11/09/17 Analyzed: 11/10/17

Naphthalene	ND	0.010	mg/kg		0.0147		10-158			
Benzene	0.129	0.0020	"	0.100	ND	129	30-131			
Toluene	0.114	0.0050	"	0.100	ND	114	30-134			
Ethylbenzene	0.132	0.0050	"	0.0992	0.00432	128	22-153			
m,p-Xylene	0.250	0.010	"	0.200	0.0664	92.1	10-159			
o-Xylene	0.126	0.0050	"	0.0980	ND	128	31-151			
Xylenes (total)	0.376	0.010	"		0.0664		30-160			
Gasoline Range Hydrocarbons	3.51	0.50	"		13.1		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0484</i>		<i>"</i>	<i>0.0400</i>		<i>121</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0414</i>		<i>"</i>	<i>0.0400</i>		<i>104</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

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: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/10/17 16:08

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 1711134 - EPA 5030 Soil MS

Matrix Spike Dup (1711134-MSD1)		Source: 1711104-01			Prepared: 11/09/17		Analyzed: 11/10/17			
Naphthalene	ND	0.010	mg/kg		0.0147		10-158		42	
Benzene	0.120	0.0020	"	0.100	ND	120	30-131	7.19	34	
Toluene	0.111	0.0050	"	0.100	ND	111	30-134	2.77	30	
Ethylbenzene	0.129	0.0050	"	0.0992	0.00432	125	22-153	2.37	24	
m,p-Xylene	0.247	0.010	"	0.200	0.0664	90.3	10-159	1.47	68	
o-Xylene	0.123	0.0050	"	0.0980	ND	125	31-151	2.51	38	
Xylenes (total)	0.369	0.010	"		0.0664		30-160	1.82	30	
Gasoline Range Hydrocarbons	3.51	0.50	"		13.1		30-160	0.0932	30	
Surrogate: 1,2-Dichloroethane-d4	0.0476		"	0.0400		119	23-173			
Surrogate: Toluene-d8	0.0402		"	0.0400		100	20-170			
Surrogate: 4-Bromofluorobenzene	0.0425		"	0.0400		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: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/10/17 16:08

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 12, 2017

Mark Longhurst
Tasman Geosciences
6899 Pecos Street
Denver, CO 80221
RE: McKee 32-21

Enclosed are the results of analyses for samples received by Summit Scientific on 11/10/17 16:40. 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



Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: McKee 32-21

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/12/17 16:23

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS10 @ 4.5'	1711132-01	Soil	11/10/17 09:56	11/10/17 16:40

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.

Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: McKee 32-21

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/12/17 16:23

Summit Scientific

1711132

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

Page 1 of 1

Client:	PDC
Address:	
City/State/Zip:	
Phone:	Fax:
Sampler Name:	Tyler Blessing

Project Manager: Mark Longhurst
E-Mail: Mark.Longhurst@pdce.com
Project Name: McKee 32-21
Project Number:

[illegible]

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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.





Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: McKee 32-21

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/12/17 16:23

Sample Receipt Checklist

S2 Work Order: 1711132

Client: PDC

Client Project ID: McKee 32-21

Shipped Via: P/U

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

Airbill #: _____

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

Cooler ID					
Temp (°C)	<u>2.1°C</u>				

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"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>on ice</u>
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"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any):				

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

Eric H
Custodian Printed Name

[Signature]
Signature or Initials of Custodian

11-10-17 16:46
Date/Time



Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/12/17 16:23

SS10 @ 4.5'
1711132-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 11/10/17 09:56									
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1711164	11/10/17	11/10/17	8015M	

Date Sampled: 11/10/17 09:56									
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		100 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 11/10/17 09:56									
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.019	0.010	mg/kg	1	1711163	11/10/17	11/10/17	EPA 8260B	
Benzene	0.24	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.075	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.37	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	9.0	0.50	"	"	"	"	"	"	

Date Sampled: 11/10/17 09:56									
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		116 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		106 %	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.



Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: McKee 32-21

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/12/17 16:23

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 1711164 - EPA 3550A

Blank (1711164-BLK1)

Prepared & Analyzed: 11/10/17

C10-C28 (DRO)	ND	50	mg/kg							
Surrogate: o-Terphenyl	12.9		"	12.5		103	30-150			

LCS (1711164-BS1)

Prepared & Analyzed: 11/10/17

C10-C28 (DRO)	510	50	mg/kg	499		102	73-134			
Surrogate: o-Terphenyl	15.4		"	12.5		123	30-150			

Matrix Spike (1711164-MS1)

Source: 1711138-04

Prepared & Analyzed: 11/10/17

C10-C28 (DRO)	553	50	mg/kg	499	8.37	109	50-148			
Surrogate: o-Terphenyl	13.8		"	12.5		110	30-150			

Matrix Spike Dup (1711164-MSD1)

Source: 1711138-04

Prepared & Analyzed: 11/10/17

C10-C28 (DRO)	539	50	mg/kg	499	8.37	106	50-148	2.46	20	
Surrogate: o-Terphenyl	14.3		"	12.5		114	30-150			

Summit Scientific

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Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/12/17 16:23

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

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

Batch 1711163 - EPA 5030 Soil MS

Blank (1711163-BLK1)

Prepared & Analyzed: 11/10/17

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>0.0464</i>		<i>"</i>	<i>0.0400</i>		<i>116</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>0.0414</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>21-167</i>			

LCS (1711163-BS1)

Prepared & Analyzed: 11/10/17

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.109	0.0020	"	0.100		109	58-130			
Toluene	0.111	0.0050	"	0.100		111	61-134			
Ethylbenzene	0.125	0.0050	"	0.0992		126	74-139			
m,p-Xylene	0.237	0.010	"	0.200		119	73-137			
o-Xylene	0.119	0.0050	"	0.0980		121	73-141			
Xylenes (total)	0.356	0.010	"				0-200			
Gasoline Range Hydrocarbons	3.20	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0468</i>		<i>"</i>	<i>0.0400</i>		<i>117</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0403</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0420</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>	<i>21-167</i>			

Matrix Spike (1711163-MS1)

Source: 1711138-04

Prepared & Analyzed: 11/10/17

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.113	0.0020	"	0.100	ND	113	30-131			
Toluene	0.114	0.0050	"	0.100	ND	114	30-134			
Ethylbenzene	0.130	0.0050	"	0.0992	ND	131	22-153			
m,p-Xylene	0.247	0.010	"	0.200	ND	124	10-159			
o-Xylene	0.123	0.0050	"	0.0980	ND	125	31-151			
Xylenes (total)	0.370	0.010	"		ND		30-160			
Gasoline Range Hydrocarbons	3.36	0.50	"		ND		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0471</i>		<i>"</i>	<i>0.0400</i>		<i>118</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0406</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0413</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.



Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/12/17 16:23

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 1711163 - EPA 5030 Soil MS

Matrix Spike Dup (1711163-MSD1)		Source: 1711138-04			Prepared & Analyzed: 11/10/17					
Naphthalene	ND	0.010	mg/kg		ND		10-158		42	
Benzene	0.113	0.0020	"	0.100	ND	113	30-131	0.213	34	
Toluene	0.114	0.0050	"	0.100	ND	114	30-134	0.0262	30	
Ethylbenzene	0.131	0.0050	"	0.0992	ND	132	22-153	0.711	24	
m,p-Xylene	0.248	0.010	"	0.200	ND	124	10-159	0.0970	68	
o-Xylene	0.123	0.0050	"	0.0980	ND	125	31-151	0.0489	38	
Xylenes (total)	0.370	0.010	"		ND		30-160	0.0810	30	
Gasoline Range Hydrocarbons	3.38	0.50	"		ND		30-160	0.508	30	
Surrogate: 1,2-Dichloroethane-d4	0.0477		"	0.0400		119	23-173			
Surrogate: Toluene-d8	0.0405		"	0.0400		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0426		"	0.0400		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.



Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: McKee 32-21

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/12/17 16:23

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

November 14, 2017

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: McKee 32-21

Enclosed are the results of analyses for samples received by Summit Scientific on 11/13/17 17:00. 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: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/14/17 06:56

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS11@4.5'	1711153-01	Soil	11/13/17 10:25	11/13/17 17:00

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.

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

Project: McKee 32-21

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/14/17 06:56

Summit Scientific

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

171153

Page 1 of 1

Client:	PDC
Address:	
City/State/Zip:	
Phone:	Fax:
Sampler Name:	Tyler Blessing

Project Manager: Mark Longhurst
E-Mail: Mark.Longhurst@pdce.com
Project Name: McKee 32-21
Project Number:

				Preservative		Matrix		Analyze For:																
Sample Description	Date Sampled	Time Sampled	Number of Containers	HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	GBTEXN (8260)	DRO (TPH)											Special Instructions
SS11 @ 4.5'	11/13/2017	10:25	1		X			X				X	X											Notes: HOLD SS09 @ 4.5'
Relinquished by:	Date/Time:	Received by:		Date/Time:		Turn Around Time (Check)																		
				11-13-17 18:30		Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/>																		
Relinquished by:	Date/Time:	Received by:		Date/Time:		48 Hours <input type="checkbox"/>		Standard <input type="checkbox"/>																
Relinquished by:	Date/Time:	Received in Lab by:		Date/Time:		Sample Integrity:																		
						Temperature Upon Receipt: 5.2																		
						Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																		

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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: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/14/17 06:56

Sample Receipt Checklist

S2 Work Order: 1711153

Client: PDC

Client Project ID: McKee 32-21

Shipped Via: _____

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

Airbill #: _____

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

Cooler ID					
Temp (°C)	<u>3.2</u>				

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 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"/>			Emb: <u>Loe</u> <u>NO</u> <u>619</u>
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⁾ ?				
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.				

Loe
Custodian Printed Name

[Signature]
Signature or Initials of Custodian

11-13-17-18:30
Date/Time



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

Project: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/14/17 06:56

SS11@4.5'
171153-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **11/13/17 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1711182	11/13/17	11/13/17	8015M	

Date Sampled: **11/13/17 10:25**

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **11/13/17 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.024	0.010	mg/kg	1	1711181	11/13/17	11/14/17	EPA 8260B	
Benzene	0.032	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.021	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.075	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	4.1	0.50	"	"	"	"	"	"	

Date Sampled: **11/13/17 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		118 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %	21-167		"	"	"	"	

Summit Scientific

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

Project: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/14/17 06:56

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 1711182 - EPA 3550A

Blank (1711182-BLK1)

Prepared & Analyzed: 11/13/17

C10-C28 (DRO)	ND	50	mg/kg							
Surrogate: o-Terphenyl	14.9		"	12.5		119	30-150			

LCS (1711182-BS1)

Prepared & Analyzed: 11/13/17

C10-C28 (DRO)	555	50	mg/kg	499		111	73-134			
Surrogate: o-Terphenyl	14.5		"	12.5		116	30-150			

Matrix Spike (1711182-MS1)

Source: 1711151-01

Prepared & Analyzed: 11/13/17

C10-C28 (DRO)	845	50	mg/kg	499	429	83.4	50-148			
Surrogate: o-Terphenyl	13.7		"	12.5		110	30-150			

Matrix Spike Dup (1711182-MSD1)

Source: 1711151-01

Prepared & Analyzed: 11/13/17

C10-C28 (DRO)	908	50	mg/kg	499	429	95.9	50-148	7.15	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: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/14/17 06:56

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 1711181 - EPA 5030 Soil MS

Blank (1711181-BLK1)

Prepared & Analyzed: 11/13/17

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>0.0444</i>		<i>"</i>	<i>0.0400</i>		<i>111</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>0.0408</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>21-167</i>			

LCS (1711181-BS1)

Prepared & Analyzed: 11/13/17

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.106	0.0020	"	0.100		106	58-130			
Toluene	0.107	0.0050	"	0.100		107	61-134			
Ethylbenzene	0.118	0.0050	"	0.0992		119	74-139			
m,p-Xylene	0.222	0.010	"	0.200		111	73-137			
o-Xylene	0.111	0.0050	"	0.0980		113	73-141			
Xylenes (total)	0.332	0.010	"				0-200			
Gasoline Range Hydrocarbons	3.03	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0451</i>		<i>"</i>	<i>0.0400</i>		<i>113</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0431</i>		<i>"</i>	<i>0.0400</i>		<i>108</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0426</i>		<i>"</i>	<i>0.0400</i>		<i>106</i>	<i>21-167</i>			

Matrix Spike (1711181-MS1)

Source: 1711151-01

Prepared & Analyzed: 11/13/17

Naphthalene	0.00732	0.010	mg/kg		0.00480		10-158			
Benzene	0.109	0.0020	"	0.100	ND	109	30-131			
Toluene	0.113	0.0050	"	0.100	ND	113	30-134			
Ethylbenzene	0.123	0.0050	"	0.0992	ND	124	22-153			
m,p-Xylene	0.233	0.010	"	0.200	ND	117	10-159			
o-Xylene	0.116	0.0050	"	0.0980	ND	118	31-151			
Xylenes (total)	0.349	0.010	"		ND		30-160			
Gasoline Range Hydrocarbons	5.32	0.50	"		6.64		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0473</i>		<i>"</i>	<i>0.0400</i>		<i>118</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>0.0439</i>		<i>"</i>	<i>0.0400</i>		<i>110</i>	<i>21-167</i>			

Summit Scientific

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

Project: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/14/17 06:56

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 1711181 - EPA 5030 Soil MS

Matrix Spike Dup (1711181-MSD1)	Source: 1711151-01			Prepared & Analyzed: 11/13/17						
Naphthalene	0.00630	0.010	mg/kg		0.00480		10-158	15.0	42	
Benzene	0.111	0.0020	"	0.100	ND	111	30-131	2.05	34	
Toluene	0.113	0.0050	"	0.100	ND	113	30-134	0.610	30	
Ethylbenzene	0.130	0.0050	"	0.0992	ND	131	22-153	5.28	24	
m,p-Xylene	0.246	0.010	"	0.200	ND	123	10-159	5.17	68	
o-Xylene	0.124	0.0050	"	0.0980	ND	126	31-151	6.63	38	
Xylenes (total)	0.370	0.010	"		ND		30-160	5.66	30	
Gasoline Range Hydrocarbons	5.44	0.50	"		6.64		30-160	2.28	30	
Surrogate: 1,2-Dichloroethane-d4	0.0484		"	0.0400		121	23-173			
Surrogate: Toluene-d8	0.0409		"	0.0400		102	20-170			
Surrogate: 4-Bromofluorobenzene	0.0452		"	0.0400		113	21-167			

Summit Scientific

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

Project: McKee 32-21

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/14/17 06:56

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

November 21, 2017

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: McKee 32-21

Enclosed are the results of analyses for samples received by Summit Scientific on 11/20/17 13:30. 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: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/21/17 08:31

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GW01	1711250-01	Water	11/20/17 11:39	11/20/17 13:30

Summit Scientific

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

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

Project: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/21/17 08:31

GW01
1711250-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 11/20/17 11:39									
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	4.6	1.0	ug/l	1	1711280	11/20/17	11/20/17	EPA 8260B	
Toluene	12	1.0	"	"	"	"	"	"	
Ethylbenzene	10	1.0	"	"	"	"	"	"	
Xylenes (total)	66	2.0	"	"	"	"	11/20/17	"	

Date Sampled: 11/20/17 11:39									
Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		95.6 %	37-154		"	"	11/20/17	"	
Surrogate: Toluene-d8		98.0 %	45-149		"	"	11/20/17	"	
Surrogate: 4-Bromofluorobenzene		102 %	45-146		"	"	"	"	

Summit Scientific

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

Project: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/21/17 08:31

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 1711280 - EPA 5030 Water MS

Blank (1711280-BLK1)

Prepared & Analyzed: 11/20/17

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	14.1		"	13.3	106	37-154				
Surrogate: Toluene-d8	13.6		"	13.3	102	45-149				
Surrogate: 4-Bromofluorobenzene	13.8		"	13.3	103	45-146				

LCS (1711280-BS1)

Prepared & Analyzed: 11/20/17

Benzene	24.6	1.0	ug/l	33.3	74.0	51-132				
Toluene	30.9	1.0	"	33.3	92.6	51-138				
Ethylbenzene	36.8	1.0	"	33.1	111	58-146				
m,p-Xylene	71.8	2.0	"	66.5	108	57-144				
o-Xylene	34.7	1.0	"	32.7	106	53-146				
Surrogate: 1,2-Dichloroethane-d4	14.4		"	13.3	108	37-154				
Surrogate: Toluene-d8	13.4		"	13.3	100	45-149				
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3	100	45-146				

Matrix Spike (1711280-MS1)

Source: 1711227-01

Prepared & Analyzed: 11/20/17

Benzene	410	1.0	ug/l	33.3	NR	34-141				E, QM-07
Toluene	701	1.0	"	33.3	NR	27-151				E, QM-07
Ethylbenzene	191	1.0	"	33.1	578	29-160				QM-07
m,p-Xylene	978	2.0	"	66.5	NR	20-166				E, QM-07
o-Xylene	428	1.0	"	32.7	NR	33-159				E, QM-07
Surrogate: 1,2-Dichloroethane-d4	14.6		"	13.3	109	37-154				
Surrogate: Toluene-d8	13.5		"	13.3	101	45-149				
Surrogate: 4-Bromofluorobenzene	13.6		"	13.3	102	45-146				

Summit Scientific

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

Project: McKee 32-21
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/21/17 08:31

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 1711280 - EPA 5030 Water MS

Matrix Spike Dup (1711280-MSD1)		Source: 1711227-01			Prepared & Analyzed: 11/20/17					
Benzene	361	1.0	ug/l	33.3	NR	34-141	12.7	32	E, QM-07	
Toluene	639	1.0	"	33.3	NR	27-151	9.25	25	E, QM-07	
Ethylbenzene	173	1.0	"	33.1	523	29-160	9.89	50	QM-07	
m,p-Xylene	911	2.0	"	66.5	NR	20-166	7.09	36	E, QM-07	
o-Xylene	392	1.0	"	32.7	NR	33-159	8.78	26	E, QM-07	
Surrogate: 1,2-Dichloroethane-d4	15.6		"	13.3	117	37-154				
Surrogate: Toluene-d8	13.1		"	13.3	98.3	45-149				
Surrogate: 4-Bromofluorobenzene	14.8		"	13.3	111	45-146				

Summit Scientific

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

Project: McKee 32-21

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
11/21/17 08:31

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.
E	The concentration indicated for this analyte is an estimated value above the calibration range of the instrument.
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