

TABLE 1
FORMER JR #1 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 @ 3'	12/13/2018	3	0.11	<0.0050	0.14	6.5	0.028	670
SS02 @ 19'	12/14/2018	19	1.0	<0.0050	9.2	71	0.65	2,180
SS03 @ 19'	12/14/2018	19	3.3	<0.0050	8.4	67	1.2	2,150
SS04 @ 20'	12/17/2018	20	<0.0020	<0.0050	0.0085	0.082	<0.010	1.8
SS05 @ 20'	12/19/2018	20	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS06 @ 15'	12/19/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS07 @ 18'	12/19/2018	18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	18
SS08 @ 15'	12/19/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	26
SS09 @ 18'	12/19/2018	18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	1.8
SS10 @ 15'	12/19/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS11 @ 18'	12/19/2018	18	<0.0020	<0.0050	<0.0050	<0.010	0.010	21
SS12 @ 20'	12/20/2018	20	0.43	<0.0050	0.12	0.74	0.018	5.0
SS13 @ 15'	12/20/2018	15	0.70	<0.0050	0.40	5.3	0.088	40
SS14 @ 18'	12/20/2018	18	0.010	<0.0050	<0.0050	0.036	0.013	3.8
SS15 @ 15'	12/20/2018	15	0.19	<0.0050	0.94	3.2	0.15	310
SS16 @ 18'	12/20/2018	18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS17 @ 15'	12/20/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS18 @ 18'	12/20/2018	18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	11
SS19 @ 20'	12/21/2018	20	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS20 @ 15'	12/26/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	1.5
SS21 @ 18'	12/26/2018	18	<0.0020	<0.0050	<0.0050	<0.010	0.019	62
SS22 @ 15'	12/26/2018	15	0.039	<0.0050	0.21	<0.010	0.063	39
SS23 @ 18'	12/26/2018	18	0.13	<0.0050	0.087	<0.010	0.021	19
SS24 @ 20'	12/26/2018	20	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS25 @ 15'	12/26/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS26 @ 18'	12/26/2018	18	0.031	<0.0050	0.036	<0.010	0.030	49
SS27 @ 15'	12/26/2018	15	0.47	<0.0050	0.016	<0.010	<0.010	1.1
SS28 @ 18'	12/26/2018	18	0.11	<0.0050	0.037	<0.010	0.026	55
SS29 @ 20'	12/27/2018	20	0.034	<0.0050	0.0087	0.036	<0.010	1.0
SS30 @ 15'	12/27/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	0.94
SS31 @ 18'	12/27/2018	18	0.0046	<0.0050	0.0095	<0.010	<0.010	45
SS32 @ 15'	12/28/2018	15	0.0045	<0.0050	<0.0050	<0.010	<0.010	1.8
SS33 @ 18'	12/28/2018	18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	10
SS34 @ 20'	12/28/2018	20	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS35 @ 15'	12/28/2018	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS36 @ 18'	12/28/2018	18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS37 @ 15'	1/2/2019	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS38 @ 18'	1/2/2019	18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	19
SS39 @ 15'	1/2/2019	15	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS40 @ 18'	1/2/2019	18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS41 @ 20'	1/2/2019	20	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50

TABLE 1
FORMER JR #1 TANK BATTERY
SOIL ANALYTICAL RESULTS SUMMARY TABLE

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.

TABLE 2
FORMER JR #1 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	1/4/2019	5.2	<1.0	1.1	11	~ 16'

Notes:

1. Groundwater standards referenced from 2 CCR 404-1, Table 910-1, effective May 1, 2018.

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

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

December 14, 2018

Mark Longhurst

PDC Energy

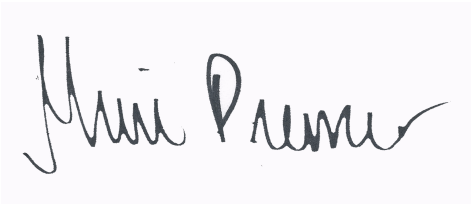
1775 Sherman St. STE. 3000

Denver, CO 80203

RE: JR #1

Enclosed are the results of analyses for samples received by Summit Scientific on 12/13/18 18:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink on a light blue background. The signature is cursive and reads "Muri Premier".

Muri Premier For Paul Shrewsbury

President



PDC Energy

1775 Sherman St. STE. 3000

Denver CO, 80203

Project: JR #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:

12/14/18 14:30

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@3'	1812168-01	Soil	12/13/18 13:16	12/13/18 18:00

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.

1812168

Page 1 of 1

Project Manager:	Mark Longhurst
E-Mail:	Mark.Longhurst@pdce.com
Project Name:	JR #1
Project Number:	

www.s2scientific.com

Sample Receipt Checklist

S2 Work Order: 1817168

Client: PDC Client Project ID: J.R. #1

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

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

Temp (°C)	<u>9.1</u>
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Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?				
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<u>/</u>			
Were all samples received intact ⁽¹⁾ ?	<u>/</u>			
Was adequate sample volume provided ⁽¹⁾ ?	<u>/</u>			
If custody seals are present, are they intact ⁽¹⁾ ?			<u>/</u>	
Are samples with holding times due within 48 hours sample due within 48 hours present?			<u>/</u>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<u>/</u>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<u>/</u>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<u>/</u>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<u>/</u>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			<u>/</u>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?			<u>/</u>	
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⁾ ?			<u>/</u>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			<u>/</u>	

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 or Initials of Custodian

12.13.18 1830
Date/Time



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

Project: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/14/18 14:30

SS01@3'
1812168-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/13/18 13:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.11	0.0020	mg/kg	1	1812191	12/13/18	12/14/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.14	0.0050	"	"	"	"	"	"	
Xylenes (total)	6.5	0.10	"	10	"	"	"	"	
Naphthalene	0.028	0.010	"	1	"	"	"	"	
Gasoline Range Hydrocarbons	90	0.50	"	"	"	"	"	"	

Date Sampled: **12/13/18 13:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		147 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		91.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		163 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/13/18 13:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	580	50	mg/kg	1	1812195	12/13/18	12/14/18	EPA 8015M	

Date Sampled: **12/13/18 13:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		116 %	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/14/18 14:30

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 1812191 - EPA 5030 Soil MS

Blank (1812191-BLK1)

Prepared: 12/13/18 Analyzed: 12/14/18

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	0.0416		"	0.0396	105	23-173				
Surrogate: Toluene-d8	0.0396		"	0.0400	99.0	20-170				
Surrogate: 4-Bromofluorobenzene	0.0421		"	0.0400	105	21-167				

LCS (1812191-BS1)

Prepared: 12/13/18 Analyzed: 12/14/18

Benzene	0.118	0.0020	mg/kg	0.100	118	70-130				
Toluene	0.115	0.0050	"	0.100	115	70-130				
Ethylbenzene	0.122	0.0050	"	0.100	122	70-130				
m,p-Xylene	0.228	0.010	"	0.200	114	70-130				
o-Xylene	0.109	0.0050	"	0.100	109	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0440		"	0.0396	111	23-173				
Surrogate: Toluene-d8	0.0413		"	0.0400	103	20-170				
Surrogate: 4-Bromofluorobenzene	0.0409		"	0.0400	102	21-167				

Matrix Spike (1812191-MS1)

Source: 1812149-03

Prepared: 12/13/18 Analyzed: 12/14/18

Benzene	0.121	0.0020	mg/kg	0.100	ND	121	70-130			
Toluene	0.118	0.0050	"	0.100	ND	118	70-130			
Ethylbenzene	0.124	0.0050	"	0.100	ND	124	70-130			
m,p-Xylene	0.234	0.010	"	0.200	ND	117	70-130			
o-Xylene	0.108	0.0050	"	0.100	ND	108	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0454		"	0.0396	115	23-173				
Surrogate: Toluene-d8	0.0411		"	0.0400	103	20-170				
Surrogate: 4-Bromofluorobenzene	0.0427		"	0.0400	107	21-167				

Summit Scientific

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

Project: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/14/18 14:30

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 1812191 - EPA 5030 Soil MS

Matrix Spike Dup (1812191-MSD1)		Source: 1812149-03			Prepared: 12/13/18 Analyzed: 12/14/18					
Benzene	0.122	0.0020	mg/kg	0.100	ND	122	70-130	0.297	30	
Toluene	0.118	0.0050	"	0.100	ND	118	70-130	0.457	30	
Ethylbenzene	0.125	0.0050	"	0.100	ND	125	70-130	0.966	30	
m,p-Xylene	0.239	0.010	"	0.200	ND	119	70-130	2.22	30	
o-Xylene	0.111	0.0050	"	0.100	ND	111	70-130	2.25	30	
<hr/>										
Surrogate: 1,2-Dichloroethane-d4	0.0450		"	0.0396		114	23-173			
Surrogate: Toluene-d8	0.0413		"	0.0400		103	20-170			
Surrogate: 4-Bromofluorobenzene	0.0442		"	0.0400		111	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/14/18 14:30

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 1812195 - EPA 3550A

Blank (1812195-BLK1)

Prepared: 12/13/18 Analyzed: 12/14/18

C10-C28 (DRO) ND 50 mg/kg

LCS (1812195-BS1)

Prepared: 12/13/18 Analyzed: 12/14/18

C10-C28 (DRO) 542 50 mg/kg 500 108 70-130

Matrix Spike (1812195-MS1)

Source: 1812162-01

Prepared: 12/13/18 Analyzed: 12/14/18

C10-C28 (DRO) 672 50 mg/kg 500 24.5 129 70-130

Matrix Spike Dup (1812195-MSD1)

Source: 1812162-01

Prepared: 12/13/18 Analyzed: 12/14/18

C10-C28 (DRO) 624 50 mg/kg 500 24.5 120 70-130 7.46 20

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: JR #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:

12/14/18 14:30

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

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

December 16, 2018

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: JR #1

Enclosed are the results of analyses for samples received by Summit Scientific on 12/14/18 18:30. 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: JR #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:

12/16/18 09:53

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS02@19'	1812184-01	Soil	12/14/18 13:23	12/14/18 18:30
SS03@19'	1812184-02	Soil	12/14/18 14:14	12/14/18 18:30

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


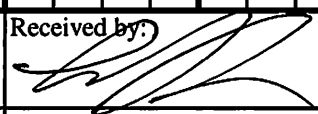
1812184

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: Jake McCarver

Project Manager: Mark Longhurst
E-Mail: Mark.Longhurst@pdce.com
Project Name: JR #1
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)	GBTEXN (8260)	TPH - DRO													
SS02 @ 19'	12/14/2018	1:23	1			X			X				X	X												
SS03 @ 19'	12/14/2018	2:14	1			X			X				X	X												
Relinquished by:  Date/Time: <u>12/14/18</u> <u>1830</u>				Received by:  Date/Time: <u>12.14.18</u> <u>1830</u>				Turn Around Time (Check) Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input type="checkbox"/> 48 Hours <input type="checkbox"/>																		
Relinquished by: _____ Date/Time: _____				Received by: _____ Date/Time: _____				Sample Integrity: Temperature Upon Receipt: <u>7.1</u> Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																		
Relinquished by: _____ Date/Time: _____				Received in Lab by: _____ Date/Time: _____																						

Sample Receipt Checklist

S2 Work Order: 1812184

Client: PDC Client Project ID: DR #1

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

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

Temp (°C)	<u>7.1</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 samples with holding times due within 48 hours sample due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? 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.				

CP
Custodian Printed Name or Initials

[Signature]
Signature or Initials of Custodian

12.14.18 1830
Date/Time



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

Project: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/16/18 09:53

SS02@19'
1812184-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/14/18 13:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	1.0	0.20	mg/kg	100	1812214	12/14/18	12/15/18	EPA 8260B	
Toluene	ND	0.0050	"	1	"	"	12/15/18	"	
Ethylbenzene	9.2	0.50	"	100	"	"	12/15/18	"	
Xylenes (total)	71	1.0	"	"	"	"	"	"	
Naphthalene	0.65	0.010	"	1	"	"	12/15/18	"	
Gasoline Range Hydrocarbons	1800	50	"	100	"	"	12/15/18	"	

Date Sampled: **12/14/18 13:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		123 %	23-173		"	"	12/15/18	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		133 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/14/18 13:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	380	50	mg/kg	1	1812215	12/14/18	12/15/18	EPA 8015M	

Date Sampled: **12/14/18 13:23**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		110 %	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: JR #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/16/18 09:53

SS03@19'
1812184-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/14/18 14:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	3.3	0.20	mg/kg	100	1812214	12/14/18	12/15/18	EPA 8260B	
Toluene	ND	0.0050	"	1	"	"	12/15/18	"	
Ethylbenzene	8.4	0.50	"	100	"	"	12/15/18	"	
Xylenes (total)	67	1.0	"	"	"	"	"	"	
Naphthalene	1.2	0.010	"	1	"	"	12/15/18	"	
Gasoline Range Hydrocarbons	1600	50	"	100	"	"	12/15/18	"	

Date Sampled: **12/14/18 14:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		121 %	23-173		"	"	12/15/18	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		136 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/14/18 14:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	550	50	mg/kg	1	1812215	12/14/18	12/15/18	EPA 8015M	

Date Sampled: **12/14/18 14:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		111 %	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/16/18 09:53

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 1812214 - EPA 5030 Soil MS

Blank (1812214-BLK1)

Prepared & Analyzed: 12/14/18

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	0.0454		"	0.0396		115	23-173			
Surrogate: Toluene-d8	0.0410		"	0.0400		102	20-170			
Surrogate: 4-Bromofluorobenzene	0.0426		"	0.0400		106	21-167			

LCS (1812214-BS1)

Prepared & Analyzed: 12/14/18

Benzene	0.116	0.0020	mg/kg	0.100		116	70-130			
Toluene	0.113	0.0050	"	0.100		113	70-130			
Ethylbenzene	0.125	0.0050	"	0.100		125	70-130			
m,p-Xylene	0.234	0.010	"	0.200		117	70-130			
o-Xylene	0.111	0.0050	"	0.100		111	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0443		"	0.0396		112	23-173			
Surrogate: Toluene-d8	0.0404		"	0.0400		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0428		"	0.0400		107	21-167			

Matrix Spike (1812214-MS1)

Source: 1812181-01

Prepared & Analyzed: 12/14/18

Benzene	0.121	0.0020	mg/kg	0.100	ND	121	70-130			
Toluene	0.117	0.0050	"	0.100	ND	117	70-130			
Ethylbenzene	0.122	0.0050	"	0.100	ND	122	70-130			
m,p-Xylene	0.229	0.010	"	0.200	ND	115	70-130			
o-Xylene	0.109	0.0050	"	0.100	ND	109	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0454		"	0.0396		115	23-173			
Surrogate: Toluene-d8	0.0418		"	0.0400		105	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/16/18 09:53

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 1812214 - EPA 5030 Soil MS

Matrix Spike Dup (1812214-MSD1)		Source: 1812181-01			Prepared & Analyzed: 12/14/18					
Benzene	0.122	0.0020	mg/kg	0.100	ND	122	70-130	0.961	30	
Toluene	0.118	0.0050	"	0.100	ND	118	70-130	0.230	30	
Ethylbenzene	0.127	0.0050	"	0.100	ND	127	70-130	3.74	30	
m,p-Xylene	0.238	0.010	"	0.200	ND	119	70-130	3.64	30	
o-Xylene	0.110	0.0050	"	0.100	ND	110	70-130	0.822	30	
Surrogate: 1,2-Dichloroethane-d4	0.0456		"	0.0396		115	23-173			
Surrogate: Toluene-d8	0.0415		"	0.0400		104	20-170			
Surrogate: 4-Bromofluorobenzene	0.0433		"	0.0400		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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/16/18 09:53

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1812215 - EPA 3550A

Blank (1812215-BLK1)

Prepared: 12/14/18 Analyzed: 12/15/18

C10-C28 (DRO) ND 50 mg/kg

LCS (1812215-BS1)

Prepared: 12/14/18 Analyzed: 12/15/18

C10-C28 (DRO) 510 50 mg/kg 500 102 70-130

Matrix Spike (1812215-MS1)

Source: 1812181-01

Prepared: 12/14/18 Analyzed: 12/15/18

C10-C28 (DRO) 610 50 mg/kg 500 17.2 119 70-130

Matrix Spike Dup (1812215-MSD1)

Source: 1812181-01

Prepared: 12/14/18 Analyzed: 12/15/18

C10-C28 (DRO) 632 50 mg/kg 500 17.2 123 70-130 3.57 20

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: JR #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:

12/16/18 09:53

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

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

December 18, 2018

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: JR #1

Enclosed are the results of analyses for samples received by Summit Scientific on 12/17/18 18:00. 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: JR #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:

12/18/18 05:38

ANALYTICAL REPORT FOR SAMPLES


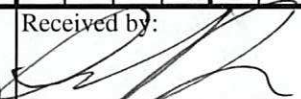
Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS04@20'	1812204-01	Soil	12/17/18 14:17	12/17/18 18:00

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.

Page 1 of 1

Project Manager:	Mark Longhurst
E-Mail:	Mark.Longhurst@pdce.com
Project Name:	JR #1
Project Number:	

				Preservative				Matrix				Analyze For:										Special Instructions
Sample Description	Date Sampled	Time Sampled	Number of Containers	HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	GBTEXN (8260)	TPH - DRO									
SS04 @ 20'	12/17/2018	2:17	1			X			X			X	X									
Relinquished by: 				Date/Time: 12/17/18 4:17 PM 1840				Received by: 				Date/Time: 12-17-18 1840				Turn Around Time (Check)						
Relinquished by:				Date/Time:				Received by:				Date/Time:				Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/>						
																24 Hours <input type="checkbox"/> Standard <input type="checkbox"/>						
																48 Hours <input type="checkbox"/>						
Relinquished by:				Date/Time:				Received in Lab by:				Date/Time:				Sample Integrity:						
																Temperature Upon Receipt: 5.6						
																Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>						

Sample Receipt Checklist

S2 Work Order 1812204

Client: PDC Client Project ID: JR #1

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

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

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⁾ ? 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"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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 samples with holding times due within 48 hours sample 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⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
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.

CP
Custodian Printed Name or Initials

[Signature]
Signature of Custodian

12.17.18 1840
Date/Time



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

Project: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/18/18 05:38

SS04@20'
1812204-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/17/18 14:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1812233	12/17/18	12/17/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.0085	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.082	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	1.8	0.50	"	"	"	"	"	"	

Date Sampled: **12/17/18 14:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/17/18 14:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1812234	12/17/18	12/17/18	EPA 8015M	

Date Sampled: **12/17/18 14:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		102 %	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/18/18 05:38

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 1812233 - EPA 5030 Soil MS

Blank (1812233-BLK1)

Prepared & Analyzed: 12/17/18

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	0.0454		"	0.0396		115	23-173			
Surrogate: Toluene-d8	0.0376		"	0.0400		94.0	20-170			
Surrogate: 4-Bromofluorobenzene	0.0415		"	0.0400		104	21-167			

LCS (1812233-BS1)

Prepared & Analyzed: 12/17/18

Benzene	0.112	0.0020	mg/kg	0.100		112	70-130			
Toluene	0.113	0.0050	"	0.100		113	70-130			
Ethylbenzene	0.121	0.0050	"	0.100		121	70-130			
m,p-Xylene	0.237	0.010	"	0.200		119	70-130			
o-Xylene	0.107	0.0050	"	0.100		107	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0453		"	0.0396		114	23-173			
Surrogate: Toluene-d8	0.0402		"	0.0400		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0426		"	0.0400		106	21-167			

Matrix Spike (1812233-MS1)

Source: 1812201-01

Prepared & Analyzed: 12/17/18

Benzene	0.111	0.0020	mg/kg	0.100	ND	111	70-130			
Toluene	0.113	0.0050	"	0.100	ND	113	70-130			
Ethylbenzene	0.124	0.0050	"	0.100	ND	124	70-130			
m,p-Xylene	0.246	0.010	"	0.200	0.00366	121	70-130			
o-Xylene	0.112	0.0050	"	0.100	ND	112	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0433		"	0.0396		109	23-173			
Surrogate: Toluene-d8	0.0401		"	0.0400		100	20-170			
Surrogate: 4-Bromofluorobenzene	0.0449		"	0.0400		112	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/18/18 05:38

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 1812233 - EPA 5030 Soil MS

Matrix Spike Dup (1812233-MSD1)		Source: 1812201-01			Prepared & Analyzed: 12/17/18					
Benzene	0.111	0.0020	mg/kg	0.100	ND	111	70-130	0.622	30	
Toluene	0.111	0.0050	"	0.100	ND	111	70-130	1.34	30	
Ethylbenzene	0.118	0.0050	"	0.100	ND	118	70-130	5.33	30	
m,p-Xylene	0.238	0.010	"	0.200	0.00366	117	70-130	3.22	30	
o-Xylene	0.104	0.0050	"	0.100	ND	104	70-130	7.20	30	
Surrogate: 1,2-Dichloroethane-d4	0.0449		"	0.0396		113	23-173			
Surrogate: Toluene-d8	0.0401		"	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/18/18 05:38

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1812234 - EPA 3550A

Blank (1812234-BLK1)

Prepared: 12/17/18 Analyzed: 12/18/18

C10-C28 (DRO) ND 50 mg/kg

LCS (1812234-BS1)

Prepared: 12/17/18 Analyzed: 12/18/18

C10-C28 (DRO) 539 50 mg/kg 500 108 70-130

Matrix Spike (1812234-MS1)

Source: 1812201-01

Prepared: 12/17/18 Analyzed: 12/18/18

C10-C28 (DRO) 590 50 mg/kg 500 22.2 113 70-130

Matrix Spike Dup (1812234-MSD1)

Source: 1812201-01

Prepared: 12/17/18 Analyzed: 12/18/18

C10-C28 (DRO) 601 50 mg/kg 500 22.2 116 70-130 1.85 20

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: JR #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:

12/18/18 05:38

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

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

December 20, 2018

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: JR #1

Enclosed are the results of analyses for samples received by Summit Scientific on 12/19/18 18:30. 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: JR #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
12/20/18 05:56

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS05@20'	1812243-01	Soil	12/19/18 10:40	12/19/18 18:30
SS06@15'	1812243-02	Soil	12/19/18 12:27	12/19/18 18:30
SS07@18'	1812243-03	Soil	12/19/18 12:30	12/19/18 18:30
SS08@15'	1812243-04	Soil	12/19/18 13:30	12/19/18 18:30
SS09@18'	1812243-05	Soil	12/19/18 13:35	12/19/18 18:30
SS10@15'	1812243-06	Soil	12/19/18 14:35	12/19/18 18:30
SS11@18'	1812243-07	Soil	12/19/18 14:40	12/19/18 18:30

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

1812243

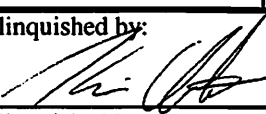
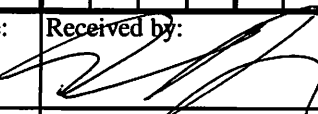
741 Corporate Circle Suite I ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933 Fax

Page 1 of 1

Client: PDC
Address: _____
City/State/Zip: _____
Phone: _____ Fax: _____
Sampler Name: Kevin Chritz

Project Manager: Mark Longhurst
E-Mail: mark.longhurst@pdce.com
Project Name: JR 1
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)	BTEXN	TPH (GRO/DRO)													
SS05@20'	12/19/2018	10:40	1			X			X					X	X											
SS06@15'	12/19/2018	12:27	1			X			X					X	X											
SS07@18'	12/19/2018	12:30	1			X			X					X	X											
SS08@15'	12/19/2018	13:30	1			X			X					X	X											
SS09@18'	12/19/2018	13:35	1			X			X					X	X											
SS10@15'	12/19/2018	14:35	1			X			X					X	X											
SS11@18'	12/19/2018	14:40	1			X			X					X	X											

Relinquished by: 	Date/Time: <u>12/19/18 1830</u>	Received by: 	Date/Time: <u>12.19.18 1830</u>	Turn Around Time (Check) Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input type="checkbox"/> 48 Hours <input type="checkbox"/> Sample Integrity: Temperature Upon Receipt: <u>6.1</u> Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Relinquished by:	Date/Time:	Received by:	Date/Time:	
Relinquished by:	Date/Time:	Received in Lab by:	Date/Time:	

Sample Receipt Checklist

S2 Work Order: 1812243

Client: PDC Client Project ID: JR1

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

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

Temp (°C)	<u>6 -1</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.	<u>/</u>			
Were all samples received intact ⁽¹⁾ ?	<u>/</u>			
Was adequate sample volume provided ⁽¹⁾ ?	<u>/</u>			
If custody seals are present, are they intact ⁽¹⁾ ?			<u>/</u>	
Are samples with holding times due within 48 hours sample due within 48 hours present?			<u>/</u>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<u>/</u>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<u>/</u>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<u>/</u>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<u>/</u>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			<u>/</u>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?				
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			<u>/</u>	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?			<u>/</u>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			<u>/</u>	
Additional Comments (if any): 				
⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.				

UP
Custodian Printed Name or Initials

[Signature]
Signature or Initials of Custodian

12-19-18 1830
Date/Time



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

Project: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/20/18 05:56

SS05@20'
1812243-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/19/18 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1812266	12/19/18	12/19/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **12/19/18 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		104 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/19/18 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1812267	12/19/18	12/19/18	EPA 8015M	

Date Sampled: **12/19/18 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		88.0 %	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/20/18 05:56

SS06@15'
1812243-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/19/18 12:27**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1812266	12/19/18	12/19/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **12/19/18 12:27**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		113 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/19/18 12:27**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1812267	12/19/18	12/19/18	EPA 8015M	

Date Sampled: **12/19/18 12:27**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		88.4 %	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/20/18 05:56

SS07@18'
1812243-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/19/18 12:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1812266	12/19/18	12/19/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	18	0.50	"	"	"	"	"	"	

Date Sampled: **12/19/18 12:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		104 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		91.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		155 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/19/18 12:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1812267	12/19/18	12/19/18	EPA 8015M	

Date Sampled: **12/19/18 12:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		104 %	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/20/18 05:56

SS08@15'
1812243-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/19/18 13:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1812266	12/19/18	12/20/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	26	0.50	"	"	"	"	"	"	

Date Sampled: **12/19/18 13:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		101 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/19/18 13:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1812267	12/19/18	12/19/18	EPA 8015M	

Date Sampled: **12/19/18 13:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		108 %	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: JR #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/20/18 05:56

SS09@18'
1812243-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/19/18 13:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1812266	12/19/18	12/19/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	1.8	0.50	"	"	"	"	"	"	

Date Sampled: **12/19/18 13:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		110 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		117 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/19/18 13:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1812267	12/19/18	12/19/18	EPA 8015M	

Date Sampled: **12/19/18 13:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		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: JR #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/20/18 05:56

SS10@15'
1812243-06 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/19/18 14:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1812266	12/19/18	12/19/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **12/19/18 14:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		105 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/19/18 14:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1812267	12/19/18	12/19/18	EPA 8015M	

Date Sampled: **12/19/18 14:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		108 %	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/20/18 05:56

SS11@18'
1812243-07 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/19/18 14:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1812266	12/19/18	12/20/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	0.010	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	21	0.50	"	"	"	"	"	"	

Date Sampled: **12/19/18 14:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		104 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		91.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		163 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/19/18 14:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1812267	12/19/18	12/19/18	EPA 8015M	

Date Sampled: **12/19/18 14:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		99.7 %	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/20/18 05:56

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 1812266 - EPA 5030 Soil MS

Blank (1812266-BLK1)

Prepared & Analyzed: 12/19/18

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	0.0430		"	0.0396	108	23-173				
Surrogate: Toluene-d8	0.0397		"	0.0400	99.3	20-170				
Surrogate: 4-Bromofluorobenzene	0.0409		"	0.0400	102	21-167				

LCS (1812266-BS1)

Prepared & Analyzed: 12/19/18

Benzene	0.114	0.0020	mg/kg	0.100	114	70-130				
Toluene	0.115	0.0050	"	0.100	115	70-130				
Ethylbenzene	0.117	0.0050	"	0.100	117	70-130				
m,p-Xylene	0.226	0.010	"	0.200	113	70-130				
o-Xylene	0.105	0.0050	"	0.100	105	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0422		"	0.0396	106	23-173				
Surrogate: Toluene-d8	0.0415		"	0.0400	104	20-170				
Surrogate: 4-Bromofluorobenzene	0.0420		"	0.0400	105	21-167				

Matrix Spike (1812266-MS1)

Source: 1812244-01

Prepared: 12/19/18 Analyzed: 12/20/18

Benzene	0.134	0.0020	mg/kg	0.100	0.0188	116	70-130			
Toluene	0.168	0.0050	"	0.100	0.0418	127	70-130			
Ethylbenzene	0.126	0.0050	"	0.100	0.00396	122	70-130			
m,p-Xylene	0.283	0.010	"	0.200	0.0399	121	70-130			
o-Xylene	0.128	0.0050	"	0.100	0.0130	115	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0425		"	0.0396	107	23-173				
Surrogate: Toluene-d8	0.0414		"	0.0400	104	20-170				
Surrogate: 4-Bromofluorobenzene	0.0428		"	0.0400	107	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/20/18 05:56

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 1812266 - EPA 5030 Soil MS

Matrix Spike Dup (1812266-MSD1)		Source: 1812244-01			Prepared: 12/19/18 Analyzed: 12/20/18					
Benzene	0.128	0.0020	mg/kg	0.100	0.0188	109	70-130	4.82	30	
Toluene	0.153	0.0050	"	0.100	0.0418	111	70-130	9.69	30	
Ethylbenzene	0.130	0.0050	"	0.100	0.00396	127	70-130	3.18	30	
m,p-Xylene	0.287	0.010	"	0.200	0.0399	124	70-130	1.54	30	
o-Xylene	0.127	0.0050	"	0.100	0.0130	114	70-130	1.10	30	
Surrogate: 1,2-Dichloroethane-d4	0.0460		"	0.0396		116	23-173			
Surrogate: Toluene-d8	0.0401		"	0.0400		100	20-170			
Surrogate: 4-Bromofluorobenzene	0.0434		"	0.0400		109	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/20/18 05:56

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1812267 - EPA 3550A

Blank (1812267-BLK1)

Prepared & Analyzed: 12/19/18

C10-C28 (DRO) ND 50 mg/kg

LCS (1812267-BS1)

Prepared & Analyzed: 12/19/18

C10-C28 (DRO) 588 50 mg/kg 500 118 70-130

Matrix Spike (1812267-MS1)

Source: 1812241-01

Prepared: 12/19/18 Analyzed: 12/20/18

C10-C28 (DRO) 600 50 mg/kg 500 38.2 112 70-130

Matrix Spike Dup (1812267-MSD1)

Source: 1812241-01

Prepared: 12/19/18 Analyzed: 12/20/18

C10-C28 (DRO) 583 50 mg/kg 500 38.2 109 70-130 2.92 20

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: JR #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:

12/20/18 05:56

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

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

December 21, 2018

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: JR #1

Enclosed are the results of analyses for samples received by Summit Scientific on 12/20/18 18:51. 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: JR #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
12/21/18 06:08

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS12@20'	1812263-01	Soil	12/20/18 12:45	12/20/18 18:51
SS13@15'	1812263-02	Soil	12/20/18 12:48	12/20/18 18:51
SS14@18'	1812263-03	Soil	12/20/18 12:51	12/20/18 18:51
SS15@15'	1812263-04	Soil	12/20/18 13:00	12/20/18 18:51
SS16@18'	1812263-05	Soil	12/20/18 13:05	12/20/18 18:51
SS17@15'	1812263-06	Soil	12/20/18 14:30	12/20/18 18:51
SS18@18'	1812263-07	Soil	12/20/18 14:38	12/20/18 18:51

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

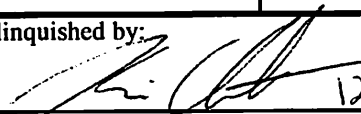
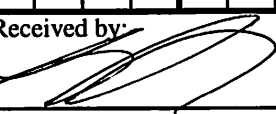
1812263

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: Kevin Chritz

Project Manager: Mark Longhurst
E-Mail: mark.longhurst@pdce.com
Project Name: JR 1
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)	BTEXN	TPH (GRO/DRO)												
SS12@20'	12/20/2018	12:45	1			X			X				X	X											
SS13@15'	12/20/2018	12:48	1			X			X				X	X											
SS14@18'	12/20/2018	12:51	1			X			X				X	X											
SS15@15'	12/20/2018	13:00	1			X			X				X	X											
SS16@18'	12/20/2018	13:05	1			X			X				X	X											
SS17@15'	12/20/2018	14:30	1			X			X				X	X											
SS18@18'	12/20/2018	14:38	1			X			X				X	X											
Relinquished by:  Date/Time: <u>12/20/18 1650</u>				Received by:  Date/Time: <u>12-20-18 1850</u>				Turn Around Time (Check) Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input type="checkbox"/> 48 Hours <input type="checkbox"/>																	
Relinquished by: _____ Date/Time: _____				Received by: _____ Date/Time: _____				Sample Integrity: Temperature Upon Receipt: <u>2.5</u> Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																	
Relinquished by: _____ Date/Time: _____				Received in Lab by: _____ Date/Time: _____																					

Sample Receipt Checklist

S2 Work Order 1812263

Client: PDC Client Project ID: JR1

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)	<u>2.5</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⁾ ? 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"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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 samples with holding times due within 48 hours sample 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⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
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.				

Custodian Printed Name or Initials

Signature of Custodian

Date/Time

12.20.18 1850



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

Project: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/21/18 06:08

SS12@20'
1812263-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/20/18 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.43	0.020	mg/kg	10	1812290	12/20/18	12/21/18	EPA 8260B	
Toluene	ND	0.0050	"	1	"	"	"	"	
Ethylbenzene	0.12	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.74	0.010	"	"	"	"	"	"	
Naphthalene	0.018	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	5.0	0.50	"	"	"	"	"	"	

Date Sampled: **12/20/18 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		114 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		115 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/20/18 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1812291	12/20/18	12/21/18	EPA 8015M	

Date Sampled: **12/20/18 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		91.9 %	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: JR #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/21/18 06:08

SS13@15'
1812263-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/20/18 12:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.70	0.020	mg/kg	10	1812290	12/20/18	12/21/18	EPA 8260B	
Toluene	ND	0.0050	"	1	"	"	"	"	
Ethylbenzene	0.40	0.0050	"	"	"	"	"	"	
Xylenes (total)	5.3	0.10	"	10	"	"	"	"	
Naphthalene	0.088	0.010	"	1	"	"	"	"	
Gasoline Range Hydrocarbons	40	0.50	"	"	"	"	"	"	

Date Sampled: **12/20/18 12:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		117 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		107 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		157 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/20/18 12:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1812291	12/20/18	12/20/18	EPA 8015M	

Date Sampled: **12/20/18 12:48**

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

Summit Scientific

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

Project: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/21/18 06:08

SS14@18'
1812263-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/20/18 12:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.010	0.0020	mg/kg	1	1812290	12/20/18	12/21/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.036	0.010	"	"	"	"	"	"	
Naphthalene	0.013	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	3.8	0.50	"	"	"	"	"	"	

Date Sampled: **12/20/18 12:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		110 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/20/18 12:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1812291	12/20/18	12/20/18	EPA 8015M	

Date Sampled: **12/20/18 12:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		90.3 %	30-150		"	"	"	"	

Summit Scientific

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

Project: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/21/18 06:08

SS15@15'
1812263-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/20/18 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.19	0.0020	mg/kg	1	1812290	12/20/18	12/21/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.94	0.50	"	100	"	"	"	"	
Xylenes (total)	3.2	1.0	"	"	"	"	"	"	
Naphthalene	0.15	0.010	"	1	"	"	"	"	
Gasoline Range Hydrocarbons	310	50	"	100	"	"	"	"	

Date Sampled: **12/20/18 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		115 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/20/18 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1812291	12/20/18	12/20/18	EPA 8015M	

Date Sampled: **12/20/18 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		78.6 %	30-150		"	"	"	"	

Summit Scientific

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

Project: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/21/18 06:08

SS16@18'
1812263-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/20/18 13:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1812290	12/20/18	12/20/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **12/20/18 13:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		116 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		110 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/20/18 13:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1812291	12/20/18	12/20/18	EPA 8015M	

Date Sampled: **12/20/18 13:05**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		84.6 %	30-150		"	"	"	"	

Summit Scientific

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

Project: JR #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/21/18 06:08

SS17@15'
1812263-06 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/20/18 14:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1812290	12/20/18	12/20/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **12/20/18 14:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/20/18 14:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1812291	12/20/18	12/20/18	EPA 8015M	

Date Sampled: **12/20/18 14:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		77.6 %	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: JR #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/21/18 06:08

SS18@18'
1812263-07 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/20/18 14:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1812290	12/20/18	12/21/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	11	0.50	"	"	"	"	"	"	

Date Sampled: **12/20/18 14:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		128 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/20/18 14:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1812291	12/20/18	12/20/18	EPA 8015M	

Date Sampled: **12/20/18 14:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		74.2 %	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/21/18 06:08

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 1812290 - EPA 5030 Soil MS

Blank (1812290-BLK1)

Prepared: 12/20/18 Analyzed: 12/21/18

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	0.0431		"	0.0396	109	23-173				
Surrogate: Toluene-d8	0.0410		"	0.0400	102	20-170				
Surrogate: 4-Bromofluorobenzene	0.0419		"	0.0400	105	21-167				

LCS (1812290-BS1)

Prepared: 12/20/18 Analyzed: 12/21/18

Benzene	0.116	0.0020	mg/kg	0.100	116	70-130				
Toluene	0.115	0.0050	"	0.100	115	70-130				
Ethylbenzene	0.121	0.0050	"	0.100	121	70-130				
m,p-Xylene	0.230	0.010	"	0.200	115	70-130				
o-Xylene	0.109	0.0050	"	0.100	109	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0441		"	0.0396	111	23-173				
Surrogate: Toluene-d8	0.0411		"	0.0400	103	20-170				
Surrogate: 4-Bromofluorobenzene	0.0432		"	0.0400	108	21-167				

Matrix Spike (1812290-MS1)

Source: 1812260-01

Prepared: 12/20/18 Analyzed: 12/21/18

Benzene	0.113	0.0020	mg/kg	0.100	ND	113	70-130			
Toluene	0.115	0.0050	"	0.100	ND	115	70-130			
Ethylbenzene	0.123	0.0050	"	0.100	ND	123	70-130			
m,p-Xylene	0.254	0.010	"	0.200	0.0111	121	70-130			
o-Xylene	0.116	0.0050	"	0.100	0.00393	112	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0438		"	0.0396	111	23-173				
Surrogate: Toluene-d8	0.0395		"	0.0400	98.8	20-170				
Surrogate: 4-Bromofluorobenzene	0.0430		"	0.0400	107	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/21/18 06:08

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 1812290 - EPA 5030 Soil MS

Matrix Spike Dup (1812290-MSD1)		Source: 1812260-01			Prepared: 12/20/18 Analyzed: 12/21/18					
Benzene	0.118	0.0020	mg/kg	0.100	ND	118	70-130	4.65	30	
Toluene	0.122	0.0050	"	0.100	ND	122	70-130	5.76	30	
Ethylbenzene	0.125	0.0050	"	0.100	ND	125	70-130	1.26	30	
m,p-Xylene	0.244	0.010	"	0.200	0.0111	117	70-130	3.71	30	
o-Xylene	0.116	0.0050	"	0.100	0.00393	112	70-130	0.207	30	
<hr/>										
Surrogate: 1,2-Dichloroethane-d4	0.0463		"	0.0396		117	23-173			
Surrogate: Toluene-d8	0.0409		"	0.0400		102	20-170			
Surrogate: 4-Bromofluorobenzene	0.0448		"	0.0400		112	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/21/18 06:08

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1812291 - EPA 3550A

Blank (1812291-BLK1)

Prepared: 12/20/18 Analyzed: 12/21/18

C10-C28 (DRO) ND 50 mg/kg

LCS (1812291-BS1)

Prepared: 12/20/18 Analyzed: 12/21/18

C10-C28 (DRO) 596 50 mg/kg 500 119 70-130

Matrix Spike (1812291-MS1)

Source: 1812260-01

Prepared: 12/20/18 Analyzed: 12/21/18

C10-C28 (DRO) 648 50 mg/kg 500 21.6 125 70-130

Matrix Spike Dup (1812291-MSD1)

Source: 1812260-01

Prepared: 12/20/18 Analyzed: 12/21/18

C10-C28 (DRO) 648 50 mg/kg 500 21.6 125 70-130 0.0552 20

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: JR #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:

12/21/18 06:08

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

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

December 24, 2018

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: JR #1

Enclosed are the results of analyses for samples received by Summit Scientific on 12/21/18 18:00. 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: JR #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:

12/24/18 13:38

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS19@20'	1812293-01	Soil	12/21/18 12:00	12/21/18 18:00

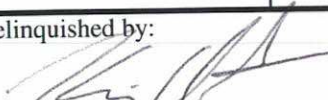
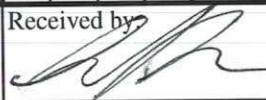
Summit Scientific

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.

1812293

Page 1 of 1

Project Manager:	Mark Longhurst
E-Mail:	mark.longhurst@pdce.com
Project Name:	JR 1
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)	BTEXN	TPH (GRO/DRO)							Special Instructions	
SS19@20'	12/21/2018	12:00	1			X			X			X	X								
Relinquished by:  Date/Time: 12/21/18 1835				Received by:  Date/Time: 12-21-18 1835				Turn Around Time (Check) Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input type="checkbox"/> 48 Hours <input type="checkbox"/>													
Relinquished by: _____ Date/Time: _____				Received by: _____ Date/Time: _____				Sample Integrity: Temperature Upon Receipt: 5.9 Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>													
Relinquished by: _____ Date/Time: _____				Received in Lab by: _____ Date/Time: _____																	

Sample Receipt Checklist

S2 Work Order 1812293

Client: PDC Client Project ID: JR1

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)	<u>5.9</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⁾ ?	<u> / </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⁾ ?	<u> / </u>			
Was adequate sample volume provided ⁽¹⁾ ?	<u> / </u>			
If custody seals are present, are they intact ⁽¹⁾ ?			<u> / </u>	
Are samples with holding times due within 48 hours sample due within 48 hours present?			<u> / </u>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<u> / </u>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<u> / </u>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<u> / </u>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<u> / </u>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			<u> / </u>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?			<u> / </u>	
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.			<u> / </u>	
If dissolved metals are requested, were samples field filtered?			<u> / </u>	

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

12.21.18 1635
Date/Time



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

Project: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/24/18 13:38

SS19@20'
1812293-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/21/18 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1812321	12/21/18	12/21/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **12/21/18 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		96.7 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		87.2 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/21/18 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1812322	"	12/22/18	EPA 8015M	

Date Sampled: **12/21/18 12:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		93.3 %	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/24/18 13:38

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 1812321 - EPA 5030 Soil MS

Blank (1812321-BLK1)

Prepared: 12/21/18 Analyzed: 12/22/18

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	0.0348		"	0.0396		88.0	23-173			
Surrogate: Toluene-d8	0.0371		"	0.0400		92.7	20-170			
Surrogate: 4-Bromofluorobenzene	0.0338		"	0.0400		84.4	21-167			

LCS (1812321-BS1)

Prepared: 12/21/18 Analyzed: 12/22/18

Benzene	0.101	0.0020	mg/kg	0.100		101	70-130			
Toluene	0.0998	0.0050	"	0.100		99.8	70-130			
Ethylbenzene	0.0954	0.0050	"	0.100		95.4	70-130			
m,p-Xylene	0.191	0.010	"	0.200		95.5	70-130			
o-Xylene	0.0959	0.0050	"	0.100		95.9	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0376		"	0.0396		95.1	23-173			
Surrogate: Toluene-d8	0.0396		"	0.0400		98.9	20-170			
Surrogate: 4-Bromofluorobenzene	0.0349		"	0.0400		87.3	21-167			

Matrix Spike (1812321-MS1)

Source: 1812291-01

Prepared: 12/21/18 Analyzed: 12/22/18

Benzene	0.0921	0.0020	mg/kg	0.100	ND	92.1	70-130			
Toluene	0.0887	0.0050	"	0.100	ND	88.7	70-130			
Ethylbenzene	0.0866	0.0050	"	0.100	ND	86.6	70-130			
m,p-Xylene	0.173	0.010	"	0.200	0.00789	82.6	70-130			
o-Xylene	0.0864	0.0050	"	0.100	ND	86.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0362		"	0.0396		91.5	23-173			
Surrogate: Toluene-d8	0.0385		"	0.0400		96.3	20-170			
Surrogate: 4-Bromofluorobenzene	0.0345		"	0.0400		86.2	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/24/18 13:38

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 1812321 - EPA 5030 Soil MS

Matrix Spike Dup (1812321-MSD1)		Source: 1812291-01			Prepared: 12/21/18 Analyzed: 12/22/18					
Benzene	0.0933	0.0020	mg/kg	0.100	ND	93.3	70-130	1.26	30	
Toluene	0.0887	0.0050	"	0.100	ND	88.7	70-130	0.0676	30	
Ethylbenzene	0.0879	0.0050	"	0.100	ND	87.9	70-130	1.44	30	
m,p-Xylene	0.174	0.010	"	0.200	0.00789	83.3	70-130	0.777	30	
o-Xylene	0.0888	0.0050	"	0.100	ND	88.8	70-130	2.77	30	
<hr/>										
Surrogate: 1,2-Dichloroethane-d4	0.0362		"	0.0396		91.4	23-173			
Surrogate: Toluene-d8	0.0390		"	0.0400		97.4	20-170			
Surrogate: 4-Bromofluorobenzene	0.0346		"	0.0400		86.4	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/24/18 13:38

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1812322 - EPA 3550A

Blank (1812322-BLK1)

Prepared & Analyzed: 12/21/18

C10-C28 (DRO) ND 50 mg/kg

LCS (1812322-BS1)

Prepared & Analyzed: 12/21/18

C10-C28 (DRO) 592 50 mg/kg 500 118 70-130

Matrix Spike (1812322-MS1)

Source: 1812291-01

Prepared & Analyzed: 12/21/18

C10-C28 (DRO) 552 50 mg/kg 500 26.0 105 70-130

Matrix Spike Dup (1812322-MSD1)

Source: 1812291-01

Prepared & Analyzed: 12/21/18

C10-C28 (DRO) 502 50 mg/kg 500 26.0 95.2 70-130 9.53 20

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: JR #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:

12/24/18 13:38

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

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

December 27, 2018

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: JR #1

Enclosed are the results of analyses for samples received by Summit Scientific on 12/26/18 18:00. 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: JR #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
12/27/18 09:26

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS20@15'	1812311-01	Soil	12/26/18 11:30	12/26/18 18:00
SS21@18'	1812311-02	Soil	12/26/18 11:35	12/26/18 18:00
SS22@15'	1812311-03	Soil	12/26/18 12:35	12/26/18 18:00
SS23@18'	1812311-04	Soil	12/26/18 12:39	12/26/18 18:00
SS24@20'	1812311-05	Soil	12/26/18 12:44	12/26/18 18:00
SS25@15'	1812311-06	Soil	12/26/18 14:32	12/26/18 18:00
SS26@18'	1812311-07	Soil	12/26/18 14:35	12/26/18 18:00
SS27@15'	1812311-08	Soil	12/26/18 14:40	12/26/18 18:00
SS28@18'	1812311-09	Soil	12/26/18 14:45	12/26/18 18:00

CASE NARRATIVE

A sample was submitted with the incorrect ID, this report contains the corrected ID.

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

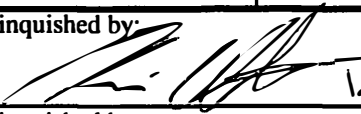
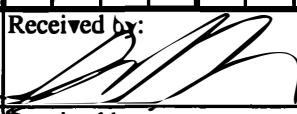
1812311

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: Kevin Chritz

Project Manager: Mark Longhurst
E-Mail: mark.longhurst@pdce.com
Project Name: JR 1
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)	BTEXN	TPH (GRO/DRO)												
SS20@15'	12/26/2018	11:30	1			X			X				X	X											
SS21@18'	12/26/2018	11:35	1			X			X				X	X											
SS22@15'	12/26/2018	12:35	1			X			X				X	X											
SS23@18'	12/26/2018	12:39	1			X			X				X	X											
SS24@20'	12/26/2018	12:44	1			X			X				X	X											
SS25@15'	12/26/2018	14:32	1			X			X				X	X											
SS26@18'	12/26/2018	14:35	1			X			X				X	X											
SS27@18' 5'	12/26/2018	14:40	1			X			X				X	X											
SS28@18'	12/26/2018	14:45	1			X			X				X	X											
Relinquished by:  Date/Time: <u>12/26/18 1805</u>				Received by:  Date/Time: <u>12.26.18 1805</u>				Turn Around Time (Check) Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input type="checkbox"/> 48 Hours <input type="checkbox"/>																	
Relinquished by: _____ Date/Time: _____				Received by: _____ Date/Time: _____				Sample Integrity: Temperature Upon Receipt: <u>7.3</u> Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																	
Relinquished by: _____ Date/Time: _____				Received in Lab by: _____ Date/Time: _____																					

Sample Receipt Checklist

S2 Work Order 1812311

Client: PDC Client Project ID: JR1

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)	<u>7.3</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⁾ ?	<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 samples with holding times due within 48 hours sample 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.

CP Custodian Printed Name or Initials
 [Signature] Signature of Custodian
 12-26-15 1805 Date/Time



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

Project: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/27/18 09:26

SS20@15'
1812311-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/26/18 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1812342	12/26/18	12/26/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	1.5	0.50	"	"	"	"	"	"	

Date Sampled: **12/26/18 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		123 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		113 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/26/18 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1812343	"	12/26/18	EPA 8015M	

Date Sampled: **12/26/18 11:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		110 %	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/27/18 09:26

SS21@18'
1812311-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/26/18 11:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1812342	12/26/18	12/26/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	0.019	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	62	0.50	"	"	"	"	"	"	

Date Sampled: **12/26/18 11:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		100 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		92.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		108 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/26/18 11:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1812343	"	12/26/18	EPA 8015M	

Date Sampled: **12/26/18 11:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		101 %	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/27/18 09:26

SS22@15'
1812311-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/26/18 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.039	0.0020	mg/kg	1	1812342	12/26/18	12/26/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.21	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	0.063	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	39	0.50	"	"	"	"	"	"	

Date Sampled: **12/26/18 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		91.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		147 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/26/18 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1812343	"	12/26/18	EPA 8015M	

Date Sampled: **12/26/18 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		99.4 %	30-150		"	"	"	"	

Summit Scientific

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

Project: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/27/18 09:26

SS23@18'
1812311-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/26/18 12:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.13	0.0020	mg/kg	1	1812342	12/26/18	12/26/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.087	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	0.021	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	19	0.50	"	"	"	"	"	"	

Date Sampled: **12/26/18 12:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		103 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		93.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		161 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/26/18 12:39**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1812343	"	12/26/18	EPA 8015M	

Date Sampled: **12/26/18 12:39**

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

Summit Scientific

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

Project: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/27/18 09:26

SS24@20'
1812311-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/26/18 12:44**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1812342	12/26/18	12/26/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **12/26/18 12:44**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		125 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		110 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/26/18 12:44**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1812343	"	12/27/18	EPA 8015M	

Date Sampled: **12/26/18 12:44**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		106 %	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/27/18 09:26

SS25@15'
1812311-06 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/26/18 14:32**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1812342	12/26/18	12/26/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **12/26/18 14:32**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		124 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/26/18 14:32**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1812343	"	12/27/18	EPA 8015M	

Date Sampled: **12/26/18 14:32**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		115 %	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: JR #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/27/18 09:26

SS26@18'
1812311-07 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/26/18 14:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.031	0.0020	mg/kg	1	1812342	12/26/18	12/26/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.036	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	0.030	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	49	0.50	"	"	"	"	"	"	

Date Sampled: **12/26/18 14:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		97.7 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		91.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		159 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/26/18 14:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1812343	"	12/27/18	EPA 8015M	

Date Sampled: **12/26/18 14:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/27/18 09:26

SS27@15'
1812311-08 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/26/18 14:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.47	0.0020	mg/kg	1	1812342	12/26/18	12/26/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.016	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	1.1	0.50	"	"	"	"	"	"	

Date Sampled: **12/26/18 14:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		114 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/26/18 14:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1812343	"	12/27/18	EPA 8015M	

Date Sampled: **12/26/18 14:40**

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

Summit Scientific

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

Project: JR #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/27/18 09:26

SS28@18'
1812311-09 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/26/18 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.11	0.0020	mg/kg	1	1812342	12/26/18	12/27/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.037	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	0.026	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	55	0.50	"	"	"	"	"	"	

Date Sampled: **12/26/18 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		100 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		91.4 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/26/18 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1812343	"	12/27/18	EPA 8015M	

Date Sampled: **12/26/18 14:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		120 %	30-150		"	"	"	"	

Summit Scientific

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

Project: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/27/18 09:26

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

Batch 1812342 - EPA 5030 Soil MS

Blank (1812342-BLK1)

Prepared & Analyzed: 12/26/18

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	0.0441		"	0.0396		111	23-173		
Surrogate: Toluene-d8	0.0383		"	0.0400		95.8	20-170		
Surrogate: 4-Bromofluorobenzene	0.0441		"	0.0400		110	21-167		

LCS (1812342-BS1)

Prepared & Analyzed: 12/26/18

Benzene	0.0965	0.0020	mg/kg	0.100		96.5	70-130		
Toluene	0.105	0.0050	"	0.100		105	70-130		
Ethylbenzene	0.109	0.0050	"	0.100		109	70-130		
m,p-Xylene	0.221	0.010	"	0.200		111	70-130		
o-Xylene	0.102	0.0050	"	0.100		102	70-130		
Surrogate: 1,2-Dichloroethane-d4	0.0452		"	0.0396		114	23-173		
Surrogate: Toluene-d8	0.0390		"	0.0400		97.5	20-170		
Surrogate: 4-Bromofluorobenzene	0.0434		"	0.0400		109	21-167		

Matrix Spike (1812342-MS1)

Source: 1812311-01

Prepared & Analyzed: 12/26/18

Benzene	0.0971	0.0020	mg/kg	0.100	ND	97.1	70-130		
Toluene	0.105	0.0050	"	0.100	ND	105	70-130		
Ethylbenzene	0.114	0.0050	"	0.100	ND	114	70-130		
m,p-Xylene	0.225	0.010	"	0.200	0.00318	111	70-130		
o-Xylene	0.106	0.0050	"	0.100	ND	106	70-130		
Surrogate: 1,2-Dichloroethane-d4	0.0480		"	0.0396		121	23-173		
Surrogate: Toluene-d8	0.0398		"	0.0400		99.4	20-170		
Surrogate: 4-Bromofluorobenzene	0.0461		"	0.0400		115	21-167		

Summit Scientific

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

Project: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/27/18 09:26

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 1812342 - EPA 5030 Soil MS

Matrix Spike Dup (1812342-MSD1)		Source: 1812311-01			Prepared & Analyzed: 12/26/18					
Benzene	0.0988	0.0020	mg/kg	0.100	ND	98.8	70-130	1.75	30	
Toluene	0.107	0.0050	"	0.100	ND	107	70-130	1.10	30	
Ethylbenzene	0.112	0.0050	"	0.100	ND	112	70-130	1.48	30	
m,p-Xylene	0.225	0.010	"	0.200	0.00318	111	70-130	0.0666	30	
o-Xylene	0.103	0.0050	"	0.100	ND	103	70-130	2.56	30	
<hr/>										
Surrogate: 1,2-Dichloroethane-d4	0.0449		"	0.0396		113	23-173			
Surrogate: Toluene-d8	0.0392		"	0.0400		98.1	20-170			
Surrogate: 4-Bromofluorobenzene	0.0428		"	0.0400		107	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/27/18 09:26

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1812343 - EPA 3550A

Blank (1812343-BLK1)

Prepared: 12/26/18 Analyzed: 12/27/18

C10-C28 (DRO) ND 50 mg/kg

LCS (1812343-BS1)

Prepared: 12/26/18 Analyzed: 12/27/18

C10-C28 (DRO) 644 50 mg/kg 500 129 70-130

Matrix Spike (1812343-MS1)

Source: 1812311-01

Prepared: 12/26/18 Analyzed: 12/27/18

C10-C28 (DRO) 624 50 mg/kg 500 ND 125 70-130

Matrix Spike Dup (1812343-MSD1)

Source: 1812311-01

Prepared: 12/26/18 Analyzed: 12/27/18

C10-C28 (DRO) 612 50 mg/kg 500 ND 122 70-130 1.89 20

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: JR #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:

12/27/18 09:26

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

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

December 28, 2018

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: JR #1

Enclosed are the results of analyses for samples received by Summit Scientific on 12/27/18 18:15. 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: JR #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
12/28/18 07:13

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS29@20'	1812321-01	Soil	12/27/18 09:43	12/27/18 18:15
SS30@15'	1812321-02	Soil	12/27/18 15:10	12/27/18 18:15
SS31@18'	1812321-03	Soil	12/27/18 15:15	12/27/18 18:15

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



1812321

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: Kevin Chritz

Project Manager: Mark Longhurst
E-Mail: mark.longhurst@pdce.com
Project Name: JR 1
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)	BTEXN	TPH (GRO/DRO)															
SS29@20'	12/27/2018	9:43	1			X			X				X	X														
SS30@15'	12/27/2018	15:10	1			X			X				X	X														
SS31@18'	12/27/2018	15:15	1			X			X				X	X														
Relinquished by:  Date/Time: <u>12/27/18 1515</u>				Received by:  Date/Time: <u>12-27-18 1815</u>				Turn Around Time (Check) Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input type="checkbox"/> 48 Hours <input type="checkbox"/>																				
Relinquished by: _____ Date/Time: _____				Received by: _____ Date/Time: _____				Sample Integrity: Temperature Upon Receipt: <u>5.6</u> Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																				
Relinquished by: _____ Date/Time: _____				Received in Lab by: _____ Date/Time: _____																								

Sample Receipt Checklist

S2 Work Order: 1812321

Client: PDC Client Project ID: JR1

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

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

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⁾ ?				
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 samples with holding times due within 48 hours sample due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

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

CP
Custodian Printed Name or Initials

[Signature]
Signature or Initials of Custodian

12.27.18 1815
Date/Time



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

Project: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/28/18 07:13

SS29@20'
1812321-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/27/18 09:43**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	0.034	0.0020	mg/kg	1	1812354	12/27/18	12/27/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.0087	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.036	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	1.0	0.50	"	"	"	"	"	"	

Date Sampled: **12/27/18 09:43**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		92.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		115 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/27/18 09:43**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
C10-C28 (DRO)	ND	50	mg/kg	1	1812355	"	12/27/18	EPA 8015M	

Date Sampled: **12/27/18 09:43**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: o-Terphenyl		114 %	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/28/18 07:13

SS30@15'
1812321-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/27/18 15:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1812354	12/27/18	12/27/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	0.94	0.50	"	"	"	"	"	"	

Date Sampled: **12/27/18 15:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/27/18 15:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1812355	"	12/27/18	EPA 8015M	

Date Sampled: **12/27/18 15:10**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		118 %	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: JR #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/28/18 07:13

SS31@18'
1812321-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/27/18 15:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.0046	0.0020	mg/kg	1	1812354	12/27/18	12/27/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.0095	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	45	0.50	"	"	"	"	"	"	

Date Sampled: **12/27/18 15:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		132 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/27/18 15:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1812355	"	12/27/18	EPA 8015M	

Date Sampled: **12/27/18 15:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		116 %	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/28/18 07:13

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 1812354 - EPA 5030 Soil MS

Blank (1812354-BLK1)

Prepared: 12/27/18 Analyzed: 12/28/18

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	0.0437		"	0.0396	110	23-173				
Surrogate: Toluene-d8	0.0396		"	0.0400	99.0	20-170				
Surrogate: 4-Bromofluorobenzene	0.0433		"	0.0400	108	21-167				

LCS (1812354-BS1)

Prepared: 12/27/18 Analyzed: 12/28/18

Benzene	0.103	0.0020	mg/kg	0.100	103	70-130				
Toluene	0.106	0.0050	"	0.100	106	70-130				
Ethylbenzene	0.115	0.0050	"	0.100	115	70-130				
m,p-Xylene	0.221	0.010	"	0.200	110	70-130				
o-Xylene	0.105	0.0050	"	0.100	105	70-130				
Surrogate: 1,2-Dichloroethane-d4	0.0430		"	0.0396	109	23-173				
Surrogate: Toluene-d8	0.0400		"	0.0400	100	20-170				
Surrogate: 4-Bromofluorobenzene	0.0442		"	0.0400	110	21-167				

Matrix Spike (1812354-MS1)

Source: 1812309-03

Prepared: 12/27/18 Analyzed: 12/28/18

Benzene	0.104	0.0020	mg/kg	0.100	ND	104	70-130			
Toluene	0.110	0.0050	"	0.100	ND	110	70-130			
Ethylbenzene	0.114	0.0050	"	0.100	ND	114	70-130			
m,p-Xylene	0.223	0.010	"	0.200	ND	111	70-130			
o-Xylene	0.105	0.0050	"	0.100	ND	105	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0451		"	0.0396	114	23-173				
Surrogate: Toluene-d8	0.0407		"	0.0400	102	20-170				
Surrogate: 4-Bromofluorobenzene	0.0447		"	0.0400	112	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/28/18 07:13

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 1812354 - EPA 5030 Soil MS

Matrix Spike Dup (1812354-MSD1)		Source: 1812309-03			Prepared: 12/27/18 Analyzed: 12/28/18					
Benzene	0.107	0.0020	mg/kg	0.100	ND	107	70-130	2.61	30	
Toluene	0.111	0.0050	"	0.100	ND	111	70-130	1.22	30	
Ethylbenzene	0.116	0.0050	"	0.100	ND	116	70-130	1.86	30	
m,p-Xylene	0.229	0.010	"	0.200	ND	114	70-130	2.57	30	
o-Xylene	0.110	0.0050	"	0.100	ND	110	70-130	4.33	30	
Surrogate: 1,2-Dichloroethane-d4	0.0450		"	0.0396		114	23-173			
Surrogate: Toluene-d8	0.0412		"	0.0400		103	20-170			
Surrogate: 4-Bromofluorobenzene	0.0455		"	0.0400		114	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/28/18 07:13

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1812355 - EPA 3550A

Blank (1812355-BLK1)

Prepared & Analyzed: 12/27/18

C10-C28 (DRO) ND 50 mg/kg

LCS (1812355-BS1)

Prepared & Analyzed: 12/27/18

C10-C28 (DRO) 623 50 mg/kg 500 125 70-130

Matrix Spike (1812355-MS1)

Source: 1812309-03

Prepared & Analyzed: 12/27/18

C10-C28 (DRO) 618 50 mg/kg 500 ND 124 70-130

Matrix Spike Dup (1812355-MSD1)

Source: 1812309-03

Prepared & Analyzed: 12/27/18

C10-C28 (DRO) 604 50 mg/kg 500 ND 121 70-130 2.28 20

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: JR #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:

12/28/18 07:13

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

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

December 31, 2018

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: JR #1

Enclosed are the results of analyses for samples received by Summit Scientific on 12/28/18 17:51. 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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/31/18 06:12

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS32@15'	1812337-01	Soil	12/28/18 10:25	12/28/18 17:51
SS33@18'	1812337-02	Soil	12/28/18 10:30	12/28/18 17:51
SS34@20'	1812337-03	Soil	12/28/18 10:44	12/28/18 17:51
SS35@15'	1812337-04	Soil	12/28/18 13:40	12/28/18 17:51
SS36@18'	1812337-05	Soil	12/28/18 13:44	12/28/18 17:51

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

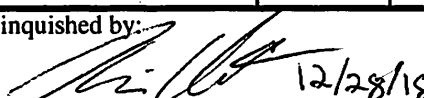
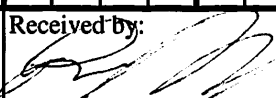
1812337

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: Kevin Chritz

Project Manager: Mark Longhurst
E-Mail: mark.longhurst@pdce.com
Project Name: JR 1
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)	BTEXN	TPH (GRO/DRO)													
SS32@15'	12/28/2018	10:25	1			X			X				X	X												
SS33@18'	12/28/2018	10:30	1			X			X				X	X												
SS34@20'	12/28/2018	10:44	1			X			X				X	X												
SS35@15'	12/28/2018	13:40	1			X			X				X	X												
SS36@18'	12/28/2018	13:44	1			X			X				X	X												
Relinquished by:  12/28/18 1951				Date/Time:				Received by:  12.28.18 1751				Date/Time:				Turn Around Time (Check)										
Relinquished by:				Date/Time:				Received by:				Date/Time:				Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input type="checkbox"/> 48 Hours <input type="checkbox"/>										
Relinquished by:				Date/Time:				Received in Lab by:				Date/Time:				Sample Integrity: Temperature Upon Receipt: <u>5.0</u> Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>										

Sample Receipt Checklist

S2 Work Order: 1812337

Client: PDC Client Project ID: SR 1

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

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

Temp (°C)	5.0
-----------	-----

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

UP
Custodian Printed Name or Initials

[Signature]
Signature or Initials of Custodian

12.28.18 1815
Date/Time



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

Project: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/31/18 06:12

SS32@15'
1812337-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/28/18 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	0.0045	0.0020	mg/kg	1	1812377	12/28/18	12/28/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	1.8	0.50	"	"	"	"	"	"	

Date Sampled: **12/28/18 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		95.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		123 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/28/18 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1812378	12/28/18	12/29/18	EPA 8015M	

Date Sampled: **12/28/18 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		118 %	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: JR #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/31/18 06:12

SS33@18'
1812337-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/28/18 10:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1812377	12/28/18	12/29/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	10	0.50	"	"	"	"	"	"	

Date Sampled: **12/28/18 10:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		114 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		164 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/28/18 10:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1812378	12/28/18	12/29/18	EPA 8015M	

Date Sampled: **12/28/18 10:30**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		111 %	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: JR #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/31/18 06:12

SS34@20'
1812337-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/28/18 10:44**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1812377	12/28/18	12/28/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **12/28/18 10:44**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		178 %	23-173		"	"	"	"	S-02
Surrogate: Toluene-d8		111 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		112 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/28/18 10:44**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1812378	12/28/18	12/29/18	EPA 8015M	

Date Sampled: **12/28/18 10:44**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		113 %	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: JR #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/31/18 06:12

SS35@15'
1812337-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/28/18 13:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1812377	12/28/18	12/28/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **12/28/18 13:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		114 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		110 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/28/18 13:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1812378	12/28/18	12/29/18	EPA 8015M	

Date Sampled: **12/28/18 13:40**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		115 %	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/31/18 06:12

SS36@18'
1812337-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/28/18 13:44**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1812377	12/28/18	12/29/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **12/28/18 13:44**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		120 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/28/18 13:44**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1812378	12/28/18	12/29/18	EPA 8015M	

Date Sampled: **12/28/18 13:44**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		115 %	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/31/18 06:12

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 1812377 - EPA 5030 Soil MS

Blank (1812377-BLK1)

Prepared & Analyzed: 12/28/18

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	0.0437		"	0.0396		110	23-173			
Surrogate: Toluene-d8	0.0375		"	0.0400		93.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0436		"	0.0400		109	21-167			

LCS (1812377-BS1)

Prepared & Analyzed: 12/28/18

Benzene	0.0959	0.0020	mg/kg	0.100		95.9	70-130			
Toluene	0.104	0.0050	"	0.100		104	70-130			
Ethylbenzene	0.113	0.0050	"	0.100		113	70-130			
m,p-Xylene	0.227	0.010	"	0.200		113	70-130			
o-Xylene	0.108	0.0050	"	0.100		108	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0436		"	0.0396		110	23-173			
Surrogate: Toluene-d8	0.0396		"	0.0400		99.0	20-170			
Surrogate: 4-Bromofluorobenzene	0.0453		"	0.0400		113	21-167			

Matrix Spike (1812377-MS1)

Source: 1812336-01

Prepared & Analyzed: 12/28/18

Benzene	0.0965	0.0020	mg/kg	0.100	ND	96.5	70-130			
Toluene	0.107	0.0050	"	0.100	ND	107	70-130			
Ethylbenzene	0.113	0.0050	"	0.100	ND	113	70-130			
m,p-Xylene	0.222	0.010	"	0.200	ND	111	70-130			
o-Xylene	0.105	0.0050	"	0.100	ND	105	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0478		"	0.0396		121	23-173			
Surrogate: Toluene-d8	0.0393		"	0.0400		98.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0437		"	0.0400		109	21-167			

Summit Scientific

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

Project: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/31/18 06:12

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 1812377 - EPA 5030 Soil MS

Matrix Spike Dup (1812377-MSD1)		Source: 1812336-01			Prepared & Analyzed: 12/28/18					
Benzene	0.101	0.0020	mg/kg	0.100	ND	101	70-130	4.47	30	
Toluene	0.109	0.0050	"	0.100	ND	109	70-130	2.14	30	
Ethylbenzene	0.120	0.0050	"	0.100	ND	120	70-130	6.13	30	
m,p-Xylene	0.237	0.010	"	0.200	ND	119	70-130	6.73	30	
o-Xylene	0.110	0.0050	"	0.100	ND	110	70-130	4.87	30	
Surrogate: 1,2-Dichloroethane-d4	0.0499		"	0.0396		126	23-173			
Surrogate: Toluene-d8	0.0415		"	0.0400		104	20-170			
Surrogate: 4-Bromofluorobenzene	0.0452		"	0.0400		113	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
12/31/18 06:12

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1812378 - EPA 3550A

Blank (1812378-BLK1)

Prepared & Analyzed: 12/28/18

C10-C28 (DRO) ND 50 mg/kg

LCS (1812378-BS1)

Prepared & Analyzed: 12/28/18

C10-C28 (DRO) 566 50 mg/kg 500 113 70-130

Matrix Spike (1812378-MS1)

Source: 1812336-01

Prepared & Analyzed: 12/28/18

C10-C28 (DRO) 601 50 mg/kg 500 120 70-130

Matrix Spike Dup (1812378-MSD1)

Source: 1812336-01

Prepared & Analyzed: 12/28/18

C10-C28 (DRO) 608 50 mg/kg 500 122 70-130 1.26 20

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: JR #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:

12/31/18 06:12

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

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

January 03, 2019

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: JR #1

Enclosed are the results of analyses for samples received by Summit Scientific on 01/02/19 18:08. 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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/03/19 05:49

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS37@15'	1901003-01	Soil	01/02/19 11:14	01/02/19 18:08
SS38@18'	1901003-02	Soil	01/02/19 11:20	01/02/19 18:08
SS39@15'	1901003-03	Soil	01/02/19 12:15	01/02/19 18:08
SS40@18'	1901003-04	Soil	01/02/19 12:20	01/02/19 18:08
SS41@20'	1901003-05	Soil	01/02/19 12:37	01/02/19 18:08

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

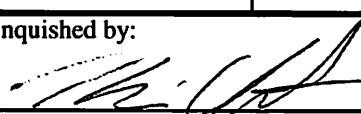
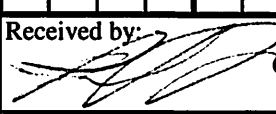
1901003

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: Kevin Chritz

Project Manager: Mark Longhurst
E-Mail: mark.longhurst@pdce.com
Project Name: JR 1
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)	BTEXN	TPH (GRO/DRO)												
SS37@15'	1/2/2019	11:14	1			X			X				X	X											
SS38@18'	1/2/2019	11:20	1			X			X				X	X											
SS39@15'	1/2/2019	12:15	1			X			X				X	X											
SS40@18'	1/2/2019	12:20	1			X			X				X	X											
SS41@20'	1/2/2019	12:37	1			X			X				X	X											
Relinquished by:  Date/Time: <u>1/2/19 1808</u>				Received by:  Date/Time: <u>1.2.19 1808</u>				Turn Around Time (Check) Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input type="checkbox"/> 48 Hours <input type="checkbox"/>																	
Relinquished by: _____ Date/Time: _____				Received by: _____ Date/Time: _____				Sample Integrity: Temperature Upon Receipt: <u>6.5</u> Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																	
Relinquished by: _____ Date/Time: _____				Received in Lab by: _____ Date/Time: _____																					

Sample Receipt Checklist

S2 Work Order: 1901003

Client: PDC Client Project ID: JR1

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

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

Temp (°C)	<u>6.5</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"/>	<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 samples with holding times due within 48 hours sample 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.

UP
Custodian Printed Name or Initials

[Signature]
Signature or Initials of Custodian

1.2.19 1835
Date/Time



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

Project: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/03/19 05:49

SS37@15'
1901003-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/02/19 11:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1901008	01/02/19	01/02/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/02/19 11:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		86.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/02/19 11:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1901009	"	01/02/19	EPA 8015M	

Date Sampled: **01/02/19 11:14**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		87.4 %	30-150		"	"	"	"	

Summit Scientific

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

Project: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/03/19 05:49

SS38@18'
1901003-02 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/02/19 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1901008	01/02/19	01/02/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	19	0.50	"	"	"	"	"	"	

Date Sampled: **01/02/19 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		79.3 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		145 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/02/19 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1901009	"	01/03/19	EPA 8015M	

Date Sampled: **01/02/19 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		90.4 %	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/03/19 05:49

SS39@15'
1901003-03 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/02/19 12:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1901008	01/02/19	01/02/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/02/19 12:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		86.0 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		109 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		111 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/02/19 12:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1901009	"	01/03/19	EPA 8015M	

Date Sampled: **01/02/19 12:15**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		93.1 %	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/03/19 05:49

SS40@18'
1901003-04 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/02/19 12:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1901008	01/02/19	01/02/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/02/19 12:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		86.2 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		107 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.9 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/02/19 12:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1901009	"	01/03/19	EPA 8015M	

Date Sampled: **01/02/19 12:20**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		90.1 %	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/03/19 05:49

SS41@20'
1901003-05 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/02/19 12:37**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	0.0020	mg/kg	1	1901008	01/02/19	01/02/19	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Naphthalene	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **01/02/19 12:37**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		83.7 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.6 %	21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/02/19 12:37**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
C10-C28 (DRO)	ND	50	mg/kg	1	1901009	"	01/03/19	EPA 8015M	

Date Sampled: **01/02/19 12:37**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: o-Terphenyl		88.3 %	30-150		"	"	"	"	

Summit Scientific

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

Project: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/03/19 05:49

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch 1901008 - EPA 5030 Soil MS

Blank (1901008-BLK1)

Prepared: 01/02/19 Analyzed: 01/03/19

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	0.0473		"	0.0400		118	23-173			
Surrogate: Toluene-d8	0.0390		"	0.0400		97.4	20-170			
Surrogate: 4-Bromofluorobenzene	0.0355		"	0.0400		88.6	21-167			

LCS (1901008-BS1)

Prepared: 01/02/19 Analyzed: 01/03/19

Benzene	0.0846	0.0020	mg/kg	0.100		84.6	70-130			
Toluene	0.0926	0.0050	"	0.100		92.6	70-130			
Ethylbenzene	0.102	0.0050	"	0.100		102	70-130			
m,p-Xylene	0.209	0.010	"	0.200		104	70-130			
o-Xylene	0.0965	0.0050	"	0.100		96.5	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0473		"	0.0400		118	23-173			
Surrogate: Toluene-d8	0.0374		"	0.0400		93.4	20-170			
Surrogate: 4-Bromofluorobenzene	0.0366		"	0.0400		91.5	21-167			

Matrix Spike (1901008-MS1)

Source: 1901001-01

Prepared: 01/02/19 Analyzed: 01/03/19

Benzene	0.0812	0.0020	mg/kg	0.100	ND	81.2	70-130			
Toluene	0.0981	0.0050	"	0.100	0.00348	94.6	70-130			
Ethylbenzene	0.122	0.0050	"	0.100	ND	122	70-130			
m,p-Xylene	0.244	0.010	"	0.200	0.00585	119	70-130			
o-Xylene	0.119	0.0050	"	0.100	ND	119	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0496		"	0.0400		124	23-173			
Surrogate: Toluene-d8	0.0376		"	0.0400		93.9	20-170			
Surrogate: 4-Bromofluorobenzene	0.0374		"	0.0400		93.4	21-167			

Summit Scientific

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

Project: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/03/19 05:49

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

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

Batch 1901008 - EPA 5030 Soil MS

Matrix Spike Dup (1901008-MSD1)		Source: 1901001-01			Prepared: 01/02/19 Analyzed: 01/03/19					
Benzene	0.0847	0.0020	mg/kg	0.100	ND	84.7	70-130	4.19	30	
Toluene	0.0949	0.0050	"	0.100	0.00348	91.4	70-130	3.39	30	
Ethylbenzene	0.109	0.0050	"	0.100	ND	109	70-130	11.1	30	
m,p-Xylene	0.228	0.010	"	0.200	0.00585	111	70-130	6.95	30	
o-Xylene	0.109	0.0050	"	0.100	ND	109	70-130	8.85	30	
<hr/>										
Surrogate: 1,2-Dichloroethane-d4	0.0554		"	0.0400		139	23-173			
Surrogate: Toluene-d8	0.0383		"	0.0400		95.7	20-170			
Surrogate: 4-Bromofluorobenzene	0.0386		"	0.0400		96.5	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: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/03/19 05:49

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1901009 - EPA 3550A

Blank (1901009-BLK1)

Prepared: 01/02/19 Analyzed: 01/03/19

C10-C28 (DRO) ND 50 mg/kg

LCS (1901009-BS1)

Prepared: 01/02/19 Analyzed: 01/03/19

C10-C28 (DRO) 650 50 mg/kg 500 130 70-130

Matrix Spike (1901009-MS1)

Source: 1901001-01

Prepared: 01/02/19 Analyzed: 01/03/19

C10-C28 (DRO) 591 50 mg/kg 500 11.7 116 70-130

Matrix Spike Dup (1901009-MSD1)

Source: 1901001-01

Prepared: 01/02/19 Analyzed: 01/03/19

C10-C28 (DRO) 610 50 mg/kg 500 11.7 120 70-130 3.13 20

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: JR #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:

01/03/19 05:49

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

January 07, 2019

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: JR #1

Enclosed are the results of analyses for samples received by Summit Scientific on 01/04/19 18:53. 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: JR #1

Project Number: [none]

Project Manager: Mark Longhurst

Reported:

01/07/19 06:42

ANALYTICAL REPORT FOR SAMPLES

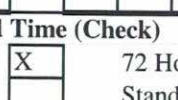
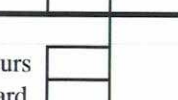
Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GW01	1901043-01	Water	01/04/19 09:50	01/04/19 18:53

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.

Page 1 of 1

Project Manager:	Mark Longhurst
E-Mail:	mark.longhurst@pdce.com
Project Name:	JR 1
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)	BTEX								Special Instructions
GW01	1/4/2019	9:50	3			X		X				X								
Relinquished by: 				Date/Time: 1-4-19 1855				Received by: THERMAN BOO				Date/Time: 1-4-19 1855				Turn Around Time (Check) Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input type="checkbox"/> 48 Hours <input type="checkbox"/>				
Refiniquished by: THERMAN BOO				Date/Time: 1-4-19 1855				Received by: 				Date/Time: 1-4-19 1855				Sample Integrity: Temperature Upon Receipt: 5.0 Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
Relinquished by:				Date/Time:				Received in Lab by:				Date/Time:								

Sample Receipt Checklist

S2 Work Order 1901043

Client: PDC Client Project ID: JR1

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)	<u>3.0</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"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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 samples with holding times due within 48 hours sample 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 type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Not signed to box
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
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.				

CP
Custodian Printed Name or Initials

[Signature]
Signature of Custodian

1.4.19 1855
Date/Time



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

Project: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/07/19 06:42

GW01
1901043-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/04/19 09:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	5.2	1.0		ug/l	1	1901042	01/04/19	01/05/19	EPA 8260B	
Toluene	ND	1.0		"	"	"	"	"	"	
Ethylbenzene	1.1	1.0		"	"	"	"	"	"	
Xylenes (total)	11	2.0		"	"	"	"	"	"	

Date Sampled: **01/04/19 09:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		89.8 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		84.5 %		21-167		"	"	"	"	

Summit Scientific

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

Project: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/07/19 06:42

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 1901042 - EPA 5030 Water MS

Blank (1901042-BLK1)

Prepared: 01/04/19 Analyzed: 01/05/19

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	13.4		"	13.2		101	23-173			
Surrogate: Toluene-d8	12.8		"	13.3		95.8	20-170			
Surrogate: 4-Bromofluorobenzene	12.9		"	13.3		96.6	21-167			

LCS (1901042-BS1)

Prepared: 01/04/19 Analyzed: 01/05/19

Benzene	54.4	1.0	ug/l	50.0		109	70-130			
Toluene	54.2	1.0	"	50.0		108	70-130			
Ethylbenzene	61.7	1.0	"	50.0		123	70-130			
m,p-Xylene	103	2.0	"	100		103	70-130			
o-Xylene	47.6	1.0	"	50.0		95.1	70-130			
Surrogate: 1,2-Dichloroethane-d4	14.9		"	13.2		113	23-173			
Surrogate: Toluene-d8	13.3		"	13.3		99.9	20-170			
Surrogate: 4-Bromofluorobenzene	13.3		"	13.3		99.5	21-167			

Matrix Spike (1901042-MS1)

Source: 1901037-01

Prepared: 01/04/19 Analyzed: 01/05/19

Benzene	58.0	1.0	ug/l	50.0	ND	116	70-130			
Toluene	58.6	1.0	"	50.0	ND	117	70-130			
Ethylbenzene	43.6	1.0	"	50.0	ND	87.3	70-130			
m,p-Xylene	119	2.0	"	100	ND	119	70-130			
o-Xylene	54.9	1.0	"	50.0	ND	110	70-130			
Surrogate: 1,2-Dichloroethane-d4	12.6		"	13.2		95.3	23-173			
Surrogate: Toluene-d8	13.0		"	13.3		97.4	20-170			
Surrogate: 4-Bromofluorobenzene	13.5		"	13.3		101	21-167			

Summit Scientific

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

Project: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/07/19 06:42

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 1901042 - EPA 5030 Water MS

Matrix Spike Dup (1901042-MSD1)		Source: 1901037-01			Prepared: 01/04/19 Analyzed: 01/05/19					
Benzene	55.4	1.0	ug/l	50.0	ND	111	70-130	4.48	30	QM-07
Toluene	56.2	1.0	"	50.0	ND	112	70-130	4.08	30	
Ethylbenzene	59.1	1.0	"	50.0	ND	118	70-130	30.1	30	
m,p-Xylene	114	2.0	"	100	ND	114	70-130	4.60	30	
o-Xylene	53.2	1.0	"	50.0	ND	106	70-130	3.17	30	
Surrogate: 1,2-Dichloroethane-d4	12.7		"	13.2		96.5	23-173			
Surrogate: Toluene-d8	12.9		"	13.3		96.9	20-170			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		99.0	21-167			

Summit Scientific

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

Project: JR #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/07/19 06:42

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