

TABLE 1
FORMER RICH 3 & 4-28 TANK BATTERY
SOIL ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Depth (ft. bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	TPH ⁽²⁾ (mg/kg)	pH (units)	EC (mmhos/cm)
COGCC Table 910-1 Soil Standard (mg/kg) ⁽¹⁾			0.17	85	100	175	23	500	6-9	<4
SS01 @ 4'	12/23/2020	4	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	8.50	0.406

Notes:

1. Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective May 1, 2018.
 2. TPH - Total volatile and extractable petroleum hydrocarbons. Value calculated by adding GRO and DRO concentrations.
- COGCC = Colorado Oil and Gas Conservation Commission
(<) = Analytical result is less than the indicated laboratory reporting limit.
GRO = Total volatile petroleum hydrocarbons - gasoline range organics
DRO = Total extractable petroleum hydrocarbons - diesel range organics
mg/kg = Milligrams per kilogram
ft. = Feet
bgs = Below ground surface
EC = Electrical conductivity
mmhos/cm = millimhos per centimeter

TABLE 2
FORMER RICH 3 & 4-28 TANK BATTERY
SAMPLE DETAIL SUMMARY TABLE

Sample ID	Date Sampled	Depth (ft. bgs)	GPS Data ⁽¹⁾		VOC Concentration ⁽²⁾ (ppm)
			Latitude / Longitude		
SS01 @ 4'	12/23/2020	4	40.550256	-104.563275	4.4
SS02 @ 2.5'	12/23/2020	2.5	40.550279	-104.563276	1.9
SS03 @ 2.5'	12/23/2020	2.5	40.550253	-104.563303	0.7
SS04 @ 2.5'	12/23/2020	2.5	40.550235	-104.563268	0.8
SS05 @ 2.5'	12/23/2020	2.5	40.550259	-104.563245	0.6

Notes:

1. Global Positioning System (GPS) data is provided in decimal degrees using World Geodetic System (WGS) 84 UTM Zone 13 North.
 2. Volatile organic compound (VOC) concentrations are measured in the field using a photoionization detector (PID).
- ft. = Feet
bgs = Below ground surface
ppm = Parts per million

Attachment A

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

January 04, 2021

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Rich 3, 4-28

Work Order #2012279

Enclosed are the results of analyses for samples received by Summit Scientific on 12/23/20 13:00. 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', written in a cursive style.

Paul Shrewsbury

President



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

Project: Rich 3, 4-28

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
01/04/21 15:17

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@4'	2012279-01	Soil	12/23/20 08:50	12/23/20 13:00

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.

Summit Scientific

S₂

2012279

4653 Table Mountain Drive ♦ Golden, Colorado 80403
303-277-9310

Page 1 of 1

Client: PDC / Tasman Project Manager: Mark Longhurst
Address: 6855 W 119th Ave E-Mail: mark.longhurst@PDCE.com
City/State/Zip: Broomfield/ CO/ 80020
Phone: 303-487-1228 Project Name: Rich 3,4-28
Sampler Name: Max Dahlgren Project Number:

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested				Special Instructions	
					HCl	HNO ₃	None	Other	Water	Soil	Air-Canister #	Other	8260 BTEX	8260B GBTEXN	8015 DRO		pH / EC
1	SS01 04'	12/23/20	850	1			X			X			X	X	X		
2	SS02 02.5'		855													X	
3	SS03 02.5'		900													X	
4	SS04 02.5'		905													X	
5	SS05 02.5'		910													X	
6																	
7																	
8																	
9																	
10																	

Relinquished by: 	Date/Time: 12/23/20 13:00	Received by: 	Date/Time: 12-23-20 13:00	Turn Around Time (Check) Same Day _____ 72 hours 24 hours _____ Standard <input checked="" type="checkbox"/> 48 hours _____ Sample Integrity: Temperature Upon Receipt: <u>50</u> Samples Intact: <input checked="" type="checkbox"/> Yes No	Notes:
Relinquished by: Tasman's Lock Box	Date/Time: 	Received by:	Date/Time:		
Relinquished by:	Date/Time:	Received by:	Date/Time:		

Sample Receipt Checklist

2012279

S2 Work Order _____

Client: PDC/Tasman Client Project ID: Rich 3,4-28

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

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

Additional Comments (if any):

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

Muri Premer
Custodian Printed Name or Initials

Muri Premer
Signature of Custodian

12/23/20
Date/Time



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

Project: Rich 3, 4-28

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/04/21 15:17

SS01@4'
2012279-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **12/23/20 08:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Benzene	ND	0.0020		mg/kg	1	BDL0373	12/31/20	12/31/20	EPA 8260B	
Toluene	ND	0.0050		"	"	"	"	"	"	
Ethylbenzene	ND	0.0050		"	"	"	"	"	"	
Xylenes (total)	ND	0.010		"	"	"	"	"	"	
Naphthalene	ND	0.010		"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50		"	"	"	"	"	"	

Date Sampled: **12/23/20 08:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		138 %		23-173		"	"	"	"	
Surrogate: Toluene-d8		120 %		20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %		21-167		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **12/23/20 08:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
C10-C28 (DRO)	ND	50		mg/kg	1	BDL0351	12/30/20	12/31/20	EPA 8015M	

Date Sampled: **12/23/20 08:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: o-Terphenyl		98.9 %		30-150		"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **12/23/20 08:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
pH	8.50			pH Units	1	BDL0344	12/30/20	12/30/20	EPA 9045D	

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

Project: Rich 3, 4-28

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/04/21 15:17

SS01@4'
2012279-01 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Specific Conductance by EPA Method 120.1

Date Sampled: **12/23/20 08:50**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Specific Conductance (EC)	0.406	0.0100		mmhos/cm	1	BDL0345	12/30/20	12/30/20	EPA 120.1	

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1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Rich 3, 4-28

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/04/21 15:17

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Summit Scientific

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

Batch BDL0373 - EPA 5030 Soil MS

Blank (BDL0373-BLK1)

Prepared & Analyzed: 12/31/20

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Naphthalene	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0554		"	0.0400		138	23-173			
Surrogate: Toluene-d8	0.0505		"	0.0400		126	20-170			
Surrogate: 4-Bromofluorobenzene	0.0415		"	0.0400		104	21-167			

LCS (BDL0373-BS1)

Prepared & Analyzed: 12/31/20

Benzene	0.0922	0.0020	mg/kg	0.100		92.2	70-130			
Toluene	0.0907	0.0050	"	0.100		90.7	70-130			
Ethylbenzene	0.0857	0.0050	"	0.100		85.7	70-130			
m,p-Xylene	0.166	0.010	"	0.200		82.9	70-130			
o-Xylene	0.0874	0.0050	"	0.100		87.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0402		"	0.0400		100	23-173			
Surrogate: Toluene-d8	0.0483		"	0.0400		121	20-170			
Surrogate: 4-Bromofluorobenzene	0.0399		"	0.0400		99.8	21-167			

Matrix Spike (BDL0373-MS1)

Source: 2012279-01

Prepared & Analyzed: 12/31/20

Benzene	0.0968	0.0020	mg/kg	0.100	ND	96.8	70-130			
Toluene	0.0979	0.0050	"	0.100	ND	97.9	70-130			
Ethylbenzene	0.0936	0.0050	"	0.100	ND	93.6	70-130			
m,p-Xylene	0.183	0.010	"	0.200	ND	91.3	70-130			
o-Xylene	0.0947	0.0050	"	0.100	ND	94.7	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0402		"	0.0400		100	23-173			
Surrogate: Toluene-d8	0.0490		"	0.0400		123	20-170			
Surrogate: 4-Bromofluorobenzene	0.0406		"	0.0400		102	21-167			

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 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: Rich 3, 4-28

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 01/04/21 15:17

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

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

Batch BDL0373 - EPA 5030 Soil MS

Matrix Spike Dup (BDL0373-MSD1)	Source: 2012279-01			Prepared & Analyzed: 12/31/20						
Benzene	0.0969	0.0020	mg/kg	0.100	ND	96.9	70-130	0.0310	30	
Toluene	0.101	0.0050	"	0.100	ND	101	70-130	3.17	30	
Ethylbenzene	0.0916	0.0050	"	0.100	ND	91.6	70-130	2.14	30	
m,p-Xylene	0.177	0.010	"	0.200	ND	88.5	70-130	3.12	30	
o-Xylene	0.0943	0.0050	"	0.100	ND	94.3	70-130	0.444	30	
Surrogate: 1,2-Dichloroethane-d4	0.0430		"	0.0400		107	23-173			
Surrogate: Toluene-d8	0.0490		"	0.0400		123	20-170			
Surrogate: 4-Bromofluorobenzene	0.0422		"	0.0400		105	21-167			

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

Project: Rich 3, 4-28

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 01/04/21 15:17

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch BDL0351 - EPA 3550A

Blank (BDL0351-BLK1)

Prepared: 12/30/20 Analyzed: 12/31/20

C10-C28 (DRO) ND 50 mg/kg

LCS (BDL0351-BS1)

Prepared: 12/30/20 Analyzed: 12/31/20

C10-C28 (DRO) 464 50 mg/kg 500 92.9 70-130

Matrix Spike (BDL0351-MS1)

Source: 2012279-01

Prepared: 12/30/20 Analyzed: 12/31/20

C10-C28 (DRO) 469 50 mg/kg 500 ND 93.8 70-130

Matrix Spike Dup (BDL0351-MSD1)

Source: 2012279-01

Prepared: 12/30/20 Analyzed: 12/31/20

C10-C28 (DRO) 477 50 mg/kg 500 ND 95.4 70-130 1.68 20

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

Project: Rich 3, 4-28

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/04/21 15:17

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

Summit Scientific

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

Batch BDL0344 - General Preparation

LCS (BDL0344-BS1)

Prepared & Analyzed: 12/30/20

pH 9.30 pH Units 9.21 101 95-105

Duplicate (BDL0344-DUP1)

Source: 2012309-05

Prepared & Analyzed: 12/30/20

pH 6.73 pH Units 6.78 0.740 20

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

Project: Rich 3, 4-28

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
 01/04/21 15:17

Specific Conductance by EPA Method 120.1 - Quality Control

Summit Scientific

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

Batch BDL0345 - General Preparation

Blank (BDL0345-BLK1)

Prepared & Analyzed: 12/30/20

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (BDL0345-BS1)

Prepared & Analyzed: 12/30/20

Specific Conductance (EC) 0.814 0.0100 mmhos/cm 0.750 109 90-110

Duplicate (BDL0345-DUP1)

Source: 2012309-05

Prepared & Analyzed: 12/30/20

Specific Conductance (EC) 0.0722 0.0100 mmhos/cm 0.0726 0.552 20

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

Project: Rich 3, 4-28

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/04/21 15:17

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