

TABLE 1
WIEDEMAN 29K-343 TANK BATTERY
SOIL ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Depth (inches bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	TPH ⁽²⁾ (mg/kg)	EC (mmhos/cm)	pH (units)
COGCC standards for soil (mg/kg) ⁽¹⁾			0.17	85	100	175	23	500	<4	6-9
SS01 @ 1-2"	5/25/2016	1-2	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	0.958	8.64
SS02 @ 1-2"	5/25/2016	1-2	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	1.07	8.26
SS03 @ 1-2"	5/25/2016	1-2	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50	0.789	8.20
SS04 @ 1-2"	5/25/2016	1-2	<0.0020	<0.0050	<0.0050	<0.010	<0.010	0.54	0.702	8.38
SS05 @ 1-2"	5/25/2016	1-2	<0.0020	<0.0050	<0.0050	<0.010	<0.010	1.2	0.433	8.02
SS06 @ 1-2"	5/25/2016	1-2	<0.0020	<0.0050	<0.0050	<0.010	<0.010	1.2	0.454	8.21

Notes:

- Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective March 16, 2016.
- 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

EC = Electrical conductivity

mmhos/cm = millimhos per centimeter

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

ATTACHMENT A

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

May 26, 2016

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Wiedeman 29K-343

Enclosed are the results of analyses for samples received by Summit Scientific on 05/25/16 17:30. 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: Wiedeman 29K-343
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/26/16 07:40

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@1-2"	1605234-01	Soil	05/25/16 12:45	05/25/16 17:30
SS02@1-2"	1605234-02	Soil	05/25/16 12:46	05/25/16 17:30
SS03@1-2"	1605234-03	Soil	05/25/16 12:47	05/25/16 17:30
SS04@1-2"	1605234-04	Soil	05/25/16 12:48	05/25/16 17:30
SS05@1-2"	1605234-05	Soil	05/25/16 12:49	05/25/16 17:30
SS06@1-2"	1605234-06	Soil	05/25/16 12:50	05/25/16 17:30

Summit Scientific

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

Project: Wiedeman 29K-343

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/26/16 07:40

1605234

741 Corporate Circle Suite I Golden, Colorado 80401
303-277-9310 303-277-9531 Fax

Client: PDC
Address: _____
City/State/Zip: _____
Phone: 9704709042 Fax: _____
Sampler Name: Rob Frvin

Page 1 of 1

Project Manager: Mark Longhurst
E-Mail: mark.longhurst@pdc.com
Project Name: Wiedeman 29K-343
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)	3200 GBTEXN	3015 DRU	EC	pH	SAR (on hold)		
SS01 @ 1" 2"	5/25/16	1245	1			X						X	X	X	X			
SS02 @ 1" 2"	5/25/16	1246	1			X						X	X	X	X			
SS03 @ 1" 2"	5/25/16	1247	1			X						X	X	X	X			
SS04 @ 1" 2"	5/25/16	1248	1			X						X	X	X	X			
SS05 @ 1" 2"	5/25/16	1249	1			X						X	X	X	X			
SS06 @ 1" 2"	5/25/16	1250	1			X						X	X	X	X			
Relinquished by: <u>[Signature]</u> Date/Time: <u>5/25/16 1730</u>				Received by: <u>[Signature]</u> Date/Time: <u>5/25/16 1730</u>				Turn Around Time (Check)				Notes: <u>On ice</u>						
Relinquished by: <u>[Signature]</u> Date/Time: <u>5/25/16 1800</u>				Received by: <u>[Signature]</u> Date/Time: <u>5/25/16 1800</u>				Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/>										
Relinquished by: _____ Date/Time: _____				Received in Lab by: _____ Date/Time: _____				24 Hours <input type="checkbox"/> 48 Hours <input type="checkbox"/>										
Sample Integrity: Temperature Upon Receipt: <u>4.8°C</u>																		
Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																		

www.s2scientific.com



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

Project: Wiedeman 29K-343

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/26/16 07:40

SS01@1-2"
1605234-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/25/16 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1605248	05/25/16	05/25/16	8015M	

Date Sampled: **05/25/16 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		108 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/25/16 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1605247	05/25/16	05/25/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/25/16 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		105 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %	21-167		"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/25/16 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.958	0.0100	mmhos/cm	1	1605250	05/25/16	05/25/16	SM 2510B	

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

Project: Wiedeman 29K-343
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/26/16 07:40

SS01@1-2"
1605234-01 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/25/16 12:45**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.64	0.100	pH Units	1	1605249	05/25/16	05/25/16	EPA 9045	

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

Project: Wiedeman 29K-343
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/26/16 07:40

SS02@1-2"
1605234-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/25/16 12:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1605248	05/25/16	05/25/16	8015M	

Date Sampled: **05/25/16 12:46**

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/25/16 12:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1605247	05/25/16	05/25/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/25/16 12:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/25/16 12:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.07	0.0100	mmhos/cm	1	1605250	05/25/16	05/25/16	SM 2510B	

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

Project: Wiedeman 29K-343

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/26/16 07:40

SS02@1-2"
1605234-02 (Soil)

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Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/25/16 12:46**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.26	0.100	pH Units	1	1605249	05/25/16	05/25/16	EPA 9045	

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

Project: Wiedeman 29K-343

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/26/16 07:40

SS03@1-2"
1605234-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/25/16 12:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1605248	05/25/16	05/25/16	8015M	

Date Sampled: **05/25/16 12:47**

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/25/16 12:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1605247	05/25/16	05/25/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **05/25/16 12:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/25/16 12:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.789	0.0100	mmhos/cm	1	1605250	05/25/16	05/25/16	SM 2510B	

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

Project: Wiedeman 29K-343

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/26/16 07:40

SS03@1-2"
1605234-03 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/25/16 12:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.20	0.100	pH Units	1	1605249	05/25/16	05/25/16	EPA 9045	

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

Project: Wiedeman 29K-343
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/26/16 07:40

SS04@1-2"
1605234-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/25/16 12:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1605248	05/25/16	05/25/16	8015M	

Date Sampled: **05/25/16 12:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		102 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/25/16 12:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1605247	05/25/16	05/25/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	0.54	0.50	"	"	"	"	"	"	

Date Sampled: **05/25/16 12:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		123 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.3 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		109 %	21-167		"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/25/16 12:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.702	0.0100	mmhos/cm	1	1605250	05/25/16	05/25/16	SM 2510B	

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

Project: Wiedeman 29K-343

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/26/16 07:40

SS04@1-2"
1605234-04 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/25/16 12:48**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.38	0.100	pH Units	1	1605249	05/25/16	05/25/16	EPA 9045	

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

Project: Wiedeman 29K-343
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/26/16 07:40

SS05@1-2"
1605234-05 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/25/16 12:49**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1605248	05/25/16	05/25/16	8015M	

Date Sampled: **05/25/16 12:49**

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/25/16 12:49**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1605247	05/25/16	05/25/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	1.2	0.50	"	"	"	"	"	"	

Date Sampled: **05/25/16 12:49**

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		106 %	21-167		"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/25/16 12:49**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.433	0.0100	mmhos/cm	1	1605250	05/25/16	05/25/16	SM 2510B	

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

Project: Wiedeman 29K-343

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/26/16 07:40

SS05@1-2"
1605234-05 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/25/16 12:49**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.02	0.100	pH Units	1	1605249	05/25/16	05/25/16	EPA 9045	

Summit Scientific

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

Project: Wiedeman 29K-343
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/26/16 07:40

SS06@1-2"
1605234-06 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/25/16 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1605248	05/25/16	05/26/16	8015M	

Date Sampled: **05/25/16 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		104 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/25/16 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1605247	05/25/16	05/25/16	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	1.2	0.50	"	"	"	"	"	"	

Date Sampled: **05/25/16 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %	21-167		"	"	"	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/25/16 12:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.454	0.0100	mmhos/cm	1	1605250	05/25/16	05/25/16	SM 2510B	

Summit Scientific

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

Project: Wiedeman 29K-343

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/26/16 07:40

SS06@1-2"
1605234-06 (Soil)

Summit Scientific

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/25/16 12:50**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
pH	8.21	0.100	pH Units	1	1605249	05/25/16	05/25/16	EPA 9045	

Summit Scientific

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

Project: Wiedeman 29K-343
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/26/16 07:40

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 1605248 - EPA 3550A

Blank (1605248-BLK1)

Prepared & Analyzed: 05/25/16

C10-C28 (DRO)	ND	50	mg/kg							
Surrogate: o-Terphenyl	13.5		"	12.5		108	30-150			

LCS (1605248-BS1)

Prepared & Analyzed: 05/25/16

C10-C28 (DRO)	556	50	mg/kg	499		111	73-134			
Surrogate: o-Terphenyl	13.1		"	12.5		105	30-150			

Matrix Spike (1605248-MS1)

Source: 1605234-01

Prepared & Analyzed: 05/25/16

C10-C28 (DRO)	523	50	mg/kg	464	ND	113	50-148			
Surrogate: o-Terphenyl	12.2		"	11.6		105	30-150			

Matrix Spike Dup (1605248-MSD1)

Source: 1605234-01

Prepared & Analyzed: 05/25/16

C10-C28 (DRO)	521	50	mg/kg	464	ND	112	50-148	0.240	13	
Surrogate: o-Terphenyl	12.0		"	11.6		103	30-150			

Summit Scientific

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

Project: Wiedeman 29K-343
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/26/16 07:40

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

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

Batch 1605247 - EPA 5030 Soil MS

Blank (1605247-BLK1)

Prepared & Analyzed: 05/25/16

Naphthalene	ND	0.010	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0424</i>		<i>"</i>	<i>0.0400</i>		<i>106</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0398</i>		<i>"</i>	<i>0.0400</i>		<i>99.4</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0418</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>	<i>21-167</i>			

LCS (1605247-BS1)

Prepared & Analyzed: 05/25/16

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.114	0.0020	"	0.100		114	58-130			
Toluene	0.124	0.0050	"	0.100		124	61-134			
Ethylbenzene	0.135	0.0050	"	0.0992		136	74-139			
m,p-Xylene	0.250	0.010	"	0.200		125	73-137			
o-Xylene	0.124	0.0050	"	0.0980		127	73-141			
Xylenes (total)	0.374	0.010	"				0-200			
Gasoline Range Hydrocarbons	5.47	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0421</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0428</i>		<i>"</i>	<i>0.0400</i>		<i>107</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0408</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>21-167</i>			

Matrix Spike (1605247-MS1)

Source: 1605234-01

Prepared & Analyzed: 05/25/16

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.112	0.0020	"	0.0949	ND	118	30-131			
Toluene	0.121	0.0050	"	0.0949	ND	127	30-134			
Ethylbenzene	0.137	0.0050	"	0.0941	ND	145	22-153			
m,p-Xylene	0.256	0.010	"	0.189	ND	135	10-159			
o-Xylene	0.128	0.0050	"	0.0930	ND	138	31-151			
Xylenes (total)	0.384	0.010	"		ND		30-160			
Gasoline Range Hydrocarbons	5.92	0.50	"		0.452		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0402</i>		<i>"</i>	<i>0.0380</i>		<i>106</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0394</i>		<i>"</i>	<i>0.0380</i>		<i>104</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0375</i>		<i>"</i>	<i>0.0380</i>		<i>98.9</i>	<i>21-167</i>			

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

Project: Wiedeman 29K-343
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/26/16 07:40

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

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

Batch 1605247 - EPA 5030 Soil MS

Matrix Spike Dup (1605247-MSD1)			Source: 1605234-01		Prepared & Analyzed: 05/25/16					
Naphthalene	ND	0.010	mg/kg		ND		10-158		42	
Benzene	0.114	0.0020	"	0.0986	ND	115	30-131	1.48	34	
Toluene	0.126	0.0050	"	0.0986	ND	127	30-134	4.15	30	
Ethylbenzene	0.149	0.0050	"	0.0978	ND	152	22-153	8.70	24	
m,p-Xylene	0.278	0.010	"	0.197	ND	141	10-159	8.33	68	
o-Xylene	0.138	0.0050	"	0.0966	ND	143	31-151	7.47	38	
Xylenes (total)	0.416	0.010	"		ND		30-160	8.04	30	
Gasoline Range Hydrocarbons	6.18	0.50	"		0.452		30-160	4.35	30	
Surrogate: 1,2-Dichloroethane-d4	0.0424		"	0.0394		108	23-173			
Surrogate: Toluene-d8	0.0396		"	0.0394		100	20-170			
Surrogate: 4-Bromofluorobenzene	0.0402		"	0.0394		102	21-167			

Summit Scientific

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

Project: Wiedeman 29K-343
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/26/16 07:40

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

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

Batch 1605249 - General Preparation

LCS (1605249-BS1)

Prepared & Analyzed: 05/25/16

pH	7.97	0.100	pH Units	8.00	99.6	95-105
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Duplicate (1605249-DUP1)

Source: 1605232-06

Prepared & Analyzed: 05/25/16

pH	8.11	0.100	pH Units	8.08	0.371	20
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Batch 1605250 - General Preparation

Blank (1605250-BLK1)

Prepared & Analyzed: 05/25/16

Specific Conductance (EC)	ND	0.0100	mmhos/cm
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LCS (1605250-BS1)

Prepared & Analyzed: 05/25/16

Specific Conductance (EC)	0.477	0.0100	mmhos/cm	0.500	95.3	90-110
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Duplicate (1605250-DUP1)

Source: 1605232-06

Prepared & Analyzed: 05/25/16

Specific Conductance (EC)	1.02	0.0100	mmhos/cm	1.11	8.10	20
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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Wiedeman 29K-343

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
05/26/16 07:40

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

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