

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401
303.277.9310 - laboratory ♦ 303.277.9531 - fax

Received 11/6/2017
Spill ID 452865
Document # 2615585

November 09, 2017

Blake Ford
Extraction Oil & Gas
570 17th St. Suite 550
Denver, CO 80202
RE: Saulcy 4-1

Enclosed are the results of analyses for samples received by Summit Scientific on 10/30/17 12:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury
President



Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: Saulcy 4-1

Project Number: [none]
Project Manager: Blake Ford

Reported:
11/09/17 09:29

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GW01	1710322-01	Water	10/30/17 08:31	10/30/17 12:30
Soil 01@2'	1710322-02	Soil	10/30/17 09:16	10/30/17 12:30
Soil 02@2'	1710322-03	Soil	10/30/17 09:19	10/30/17 12:30
Soil 03@2'	1710322-04	Soil	10/30/17 09:22	10/30/17 12:30

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: Saulcy 4-1

Project Number: [none]
Project Manager: Blake Ford

Reported:
11/09/17 09:29

Summit Scientific

1710322

S₂

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

Page 1 of 1

Client: Extraction oil and gas - Blake Ford Project Manager: Chris Hines 970.261.1127
Address: 370 17th st. suite 5300 E-Mail: BFord@extractionog.com, DenverRemediation@Apex Cos. nm,
City/State/Zip: denver, CO 80202
Phone: 970.778.5950 Fax: _____ Project Name: Saulcy 4-1
Sampler Name: Kennedy Whalen Project Number: pending

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested							Special Instructions		
					HCl	HNO3	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)	BTEX	Volatiles (C1-C6)	TDS, chloride sulfates	TPH (GOL)	PH, SAR, EC	TA06 910-10000		PAH	
1	Q1001	10/30/17	0831	7	3					X				X	X	X					
2	SOIL 0102'		0916	3			X			X				X		X	X	X			
3	SOIL 0202'		0919	3			X			X				X		X	X	X			
4	SOIL 0302'		0922	3			X			X				X		X	X	X			
5																					
6																					
7																					
8																					
9																					
10																					

Relinquished by: [Signature] Date/Time: 10/20/17

Relinquished by: _____ Date/Time: _____

Relinquished by: _____ Date/Time: _____

Received by: _____ Date/Time: _____

Received by: _____ Date/Time: _____

Received by: [Signature] Date/Time: 10-20-17 1230

Turn Around Time (Check)

Same Day 72 hours _____

24 hours _____ Standard _____

48 hours _____

Sample Integrity:

Temperature Upon Receipt: 5.8

Intact: Yes No

Notes:

www.s2scientific.com



Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: Saulcy 4-1

Project Number: [none]
Project Manager: Blake Ford

Reported:
11/09/17 09:29

Sample Receipt Checklist

S2 Work Order: 1710322

Client: XO Client Project ID: Saulcy

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

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

Cooler ID					
Temp (°C)	5.7				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?	X			
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⁾ ?	X			
Was adequate sample volume provided ⁽¹⁾ ?	X			
If custody seals are present, are they intact ⁽¹⁾ ?			X	
Are short holding time analytes or samples with HTs due within 48 hours present?	X			Rush
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	X			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	X			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	X			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	X			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		X		
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?	X			Ifcc
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.		X		Preserved in head < 2
If dissolved metals are requested, were samples field filtered?			X	
Additional Comments (if any):				

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

Paul Shushy
Custodian Printed Name

[Signature]
Signature or Initials of Custodian

11-30-17 (24)
Date/Time

[Signature]



Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: Saulcy 4-1

Project Number: [none]
Project Manager: Blake Ford

Reported:
11/09/17 09:29

GW01
1710322-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/30/17 08:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	6900	100	ug/l	100	1710343	10/31/17	10/31/17	EPA 8260B	
Toluene	7200	100	"	"	"	"	"	"	
Ethylbenzene	1100	100	"	"	"	"	"	"	
Xylenes (total)	6100	200	"	"	"	"	"	"	

Date Sampled: **10/30/17 08:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		135 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		97.8 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		101 %	45-146		"	"	"	"	

Total Metals by EPA Method 200.8

Date Sampled: **10/30/17 08:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	180	0.0500	mg/L	1	1710331	10/31/17	10/31/17	EPA 200.8	
Iron	279	0.0100	"	"	"	"	"	"	
Magnesium	48.6	0.0500	"	"	"	"	"	"	
Potassium	17.7	0.0500	"	"	"	"	"	"	
Sodium	1400	0.0500	"	"	"	"	"	"	

Anions by EPA Method 300.0

Date Sampled: **10/30/17 08:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sulfate	58.0	6.00	mg/L	20	1711008	11/01/17	11/01/17	EPA 300.0	
Fluoride	ND	0.100	"	1	"	"	"	"	
Bromide	ND	0.100	"	"	"	"	"	"	
Chloride	3890	200	"	2000	"	"	"	"	

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Project: Saulcy 4-1
 Project Number: [none]
 Project Manager: Blake Ford

Reported:
 11/09/17 09:29

GW01
1710322-01 (Water)

Summit Scientific

Total Dissolved Solids by 160.1

Date Sampled: **10/30/17 08:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Total Dissolved Solids	11500	8.00	mg/L	1	1711001	10/31/17	11/01/17	EPA 160.1	

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Extraction Oil & Gas
570 17th St. Suite 550
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Project: Saulcy 4-1
Project Number: [none]
Project Manager: Blake Ford

Reported:
11/09/17 09:29

Soil 01@2'
1710322-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/30/17 09:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1710335	10/31/17	11/01/17	8015M	

Date Sampled: **10/30/17 09:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		98.5 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/30/17 09:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1710336	10/31/17	11/01/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/30/17 09:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		94.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

Semivolatile Organic Compounds by EPA Method 8270D SIM

Date Sampled: **10/30/17 09:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	1710320	10/30/17	11/01/17	EPA 8270D SIM	

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: Saulcy 4-1

Project Number: [none]
Project Manager: Blake Ford

Reported:
11/09/17 09:29

Soil 01@2'
1710322-02 (Soil)

Summit Scientific

Semivolatile Organic Compounds by EPA Method 8270D SIM

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Anthracene	ND	0.00500	mg/kg	1	1710320	10/30/17	11/01/17	EPA 8270D SIM
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"
Chrysene	ND	0.00500	"	"	"	"	"	"
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"
Fluoranthene	ND	0.00500	"	"	"	"	"	"
Fluorene	ND	0.00500	"	"	"	"	"	"
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"
Naphthalene	ND	0.00500	"	"	"	"	"	"
Pyrene	ND	0.00500	"	"	"	"	"	"

Date Sampled: **10/30/17 09:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		76.5 %	30-150		"	"	"	"	
Surrogate: Fluoranthene-d10		59.4 %	30-150		"	"	"	"	

Total Metals by EPA Method 6020 - Dry Weight Basis

Date Sampled: **10/30/17 09:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.30	0.233	mg/kg dry	1	1710314	10/30/17	10/30/17	EPA 6020A	
Barium	184	0.467	"	"	"	"	"	"	
Cadmium	0.304	0.117	"	"	"	"	"	"	
Chromium	21.6	0.583	"	"	"	"	"	"	
Copper	16.0	0.583	"	"	"	"	"	"	
Lead	11.6	0.233	"	"	"	"	"	"	
Nickel	19.6	0.117	"	"	"	"	"	"	
Selenium	ND	0.467	"	"	"	"	"	"	
Silver	ND	0.117	"	"	"	"	"	"	
Zinc	54.7	11.7	"	"	"	"	"	"	

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Project Number: [none]
Project Manager: Blake Ford

Reported:
11/09/17 09:29

Soil 01@2'
1710322-02 (Soil)

Summit Scientific

Total Mercury by EPA Method 7471

Date Sampled: **10/30/17 09:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Mercury	ND	0.0583	mg/kg dry	1	1710315	10/30/17	10/31/17	EPA 7471	

Hexavalent Chromium by EPA 7196

Date Sampled: **10/30/17 09:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.300	mg/kg dry	1	1710337	10/31/17	11/01/17	EPA 7196	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/30/17 09:16**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	85.7		%	1	1710334	10/31/17	11/01/17	% calculation	
pH	8.34	0.100	pH Units	"	1710325	10/30/17	10/30/17	EPA 9045	
Specific Conductance (EC)	0.886	0.0100	mmhos/cm	"	1710324	10/30/17	10/31/17	SM 2510B	

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: Saulcy 4-1
Project Number: [none]
Project Manager: Blake Ford

Reported:
11/09/17 09:29

Soil 02@2'
1710322-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/30/17 09:19**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	630	50	mg/kg	1	1710335	10/31/17	11/01/17	8015M	D-09

Date Sampled: **10/30/17 09:19**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		90.1 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/30/17 09:19**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1710336	10/31/17	11/01/17	EPA 8260B	
Benzene	0.12	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.011	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/30/17 09:19**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		90.1 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		98.0 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		97.6 %	21-167		"	"	"	"	

Semivolatile Organic Compounds by EPA Method 8270D SIM

Date Sampled: **10/30/17 09:19**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	1710320	10/30/17	11/01/17	EPA 8270D SIM	
Anthracene	ND	0.00500	"	"	"	"	"	"	

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: Saulcy 4-1

Project Number: [none]
Project Manager: Blake Ford

Reported:
11/09/17 09:29

Soil 02@2'
1710322-03 (Soil)

Summit Scientific

Semivolatile Organic Compounds by EPA Method 8270D SIM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Benzo (a) anthracene	0.0752	0.00500	mg/kg	1	1710320	10/30/17	11/01/17	EPA 8270D SIM
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"
Chrysene	0.0723	0.00500	"	"	"	"	"	"
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"
Fluoranthene	ND	0.00500	"	"	"	"	"	"
Fluorene	ND	0.00500	"	"	"	"	"	"
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"
Naphthalene	ND	0.00500	"	"	"	"	"	"
Pyrene	ND	0.00500	"	"	"	"	"	"

Date Sampled: **10/30/17 09:19**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		80.3 %	30-150		"	"	"	"	
Surrogate: Fluoranthene-d10		42.0 %	30-150		"	"	"	"	

Total Metals by EPA Method 6020 - Dry Weight Basis

Date Sampled: **10/30/17 09:19**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.37	0.247	mg/kg dry	1	1710314	10/30/17	10/30/17	EPA 6020A	
Barium	164	0.494	"	"	"	"	"	"	
Cadmium	0.442	0.124	"	"	"	"	"	"	
Chromium	17.9	0.618	"	"	"	"	"	"	
Copper	56.0	0.618	"	"	"	"	"	"	
Lead	395	0.247	"	"	"	"	"	"	
Nickel	16.2	0.124	"	"	"	"	"	"	
Selenium	ND	0.494	"	"	"	"	"	"	
Silver	ND	0.124	"	"	"	"	"	"	
Zinc	164	12.4	"	"	"	"	"	"	

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11/09/17 09:29

Soil 02@2'
1710322-03 (Soil)

Summit Scientific

Total Mercury by EPA Method 7471

Date Sampled: **10/30/17 09:19**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Mercury	ND	0.0618	mg/kg dry	1	1710315	10/30/17	10/31/17	EPA 7471	

Hexavalent Chromium by EPA 7196

Date Sampled: **10/30/17 09:19**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.300	mg/kg dry	1	1710337	10/31/17	11/01/17	EPA 7196	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/30/17 09:19**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	1.39	0.0100	mmhos/cm	1	1710324	10/30/17	10/31/17	SM 2510B	
% Solids	80.9		%	"	1710334	10/31/17	11/01/17	% calculation	
pH	7.89	0.100	pH Units	"	1710325	10/30/17	10/30/17	EPA 9045	

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Project: Saulcy 4-1
Project Number: [none]
Project Manager: Blake Ford

Reported:
11/09/17 09:29

Soil 03@2'
1710322-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **10/30/17 09:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1710335	10/31/17	11/01/17	8015M	

Date Sampled: **10/30/17 09:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		98.0 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **10/30/17 09:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1710336	10/31/17	11/01/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **10/30/17 09:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		89.5 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.6 %	21-167		"	"	"	"	

Semivolatile Organic Compounds by EPA Method 8270D SIM

Date Sampled: **10/30/17 09:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Acenaphthene	ND	0.00500	mg/kg	1	1710320	10/30/17	11/01/17	EPA 8270D SIM	

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Extraction Oil & Gas
570 17th St. Suite 550
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Project: Saulcy 4-1

Project Number: [none]
Project Manager: Blake Ford

Reported:
11/09/17 09:29

Soil 03@2'
1710322-04 (Soil)

Summit Scientific

Semivolatile Organic Compounds by EPA Method 8270D SIM

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Anthracene	ND	0.00500	mg/kg	1	1710320	10/30/17	11/01/17	EPA 8270D SIM
Benzo (a) anthracene	ND	0.00500	"	"	"	"	"	"
Benzo (b) fluoranthene	ND	0.00500	"	"	"	"	"	"
Benzo (k) fluoranthene	ND	0.00500	"	"	"	"	"	"
Benzo (a) pyrene	ND	0.00500	"	"	"	"	"	"
Chrysene	ND	0.00500	"	"	"	"	"	"
Dibenz (a,h) anthracene	ND	0.00500	"	"	"	"	"	"
Fluoranthene	ND	0.00500	"	"	"	"	"	"
Fluorene	ND	0.00500	"	"	"	"	"	"
Indeno (1,2,3-cd) pyrene	ND	0.00500	"	"	"	"	"	"
Naphthalene	ND	0.00500	"	"	"	"	"	"
Pyrene	ND	0.00500	"	"	"	"	"	"

Date Sampled: **10/30/17 09:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 2-Methylnaphthalene-d10		79.4 %	30-150		"	"	"	"	
Surrogate: Fluoranthene-d10		53.7 %	30-150		"	"	"	"	

Total Metals by EPA Method 6020 - Dry Weight Basis

Date Sampled: **10/30/17 09:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Arsenic	1.28	0.221	mg/kg dry	1	1710314	10/30/17	10/30/17	EPA 6020A	
Barium	203	0.442	"	"	"	"	"	"	
Cadmium	0.271	0.111	"	"	"	"	"	"	
Chromium	20.3	0.553	"	"	"	"	"	"	
Copper	14.9	0.553	"	"	"	"	"	"	
Lead	11.3	0.221	"	"	"	"	"	"	
Nickel	18.5	0.111	"	"	"	"	"	"	
Selenium	ND	0.442	"	"	"	"	"	"	
Silver	ND	0.111	"	"	"	"	"	"	
Zinc	51.8	11.1	"	"	"	"	"	"	

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: Saulcy 4-1
Project Number: [none]
Project Manager: Blake Ford

Reported:
11/09/17 09:29

Soil 03@2'
1710322-04 (Soil)

Summit Scientific

Total Mercury by EPA Method 7471

Date Sampled: **10/30/17 09:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Mercury	ND	0.0553	mg/kg dry	1	1710315	10/30/17	10/31/17	EPA 7471	

Hexavalent Chromium by EPA 7196

Date Sampled: **10/30/17 09:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	0.300	mg/kg dry	1	1710337	10/31/17	11/01/17	EPA 7196	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **10/30/17 09:22**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.576	0.0100	mmhos/cm	1	1710324	10/30/17	10/31/17	SM 2510B	
pH	8.55	0.100	pH Units	"	1710325	10/30/17	10/30/17	EPA 9045	
% Solids	90.4		%	"	1710334	10/31/17	11/01/17	% calculation	

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: Saulcy 4-1

Project Number: [none]
Project Manager: Blake Ford

Reported:
11/09/17 09:29

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 1710335 - EPA 3550A

Blank (1710335-BLK1)

Prepared & Analyzed: 10/31/17

C10-C28 (DRO)	ND	50	mg/kg								
<i>Surrogate: o-Terphenyl</i>	13.1		"	12.5		105	30-150				

LCS (1710335-BS1)

Prepared & Analyzed: 10/31/17

C10-C28 (DRO)	549	50	mg/kg	499		110	73-134				
<i>Surrogate: o-Terphenyl</i>	13.8		"	12.5		110	30-150				

Matrix Spike (1710335-MS1)

Source: 1710312-01

Prepared: 10/31/17 Analyzed: 11/01/17

C10-C28 (DRO)	570	50	mg/kg	499	186	76.9	50-148				
<i>Surrogate: o-Terphenyl</i>	14.8		"	12.5		119	30-150				

Matrix Spike Dup (1710335-MSD1)

Source: 1710312-01

Prepared: 10/31/17 Analyzed: 11/01/17

C10-C28 (DRO)	508	50	mg/kg	499	186	64.5	50-148	11.5	20		
<i>Surrogate: o-Terphenyl</i>	12.9		"	12.5		103	30-150				

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: Saulcy 4-1

Project Number: [none]
Project Manager: Blake Ford

Reported:
11/09/17 09:29

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

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

Batch 1710336 - EPA 5030 Soil MS

Blank (1710336-BLK1)

Prepared: 10/31/17 Analyzed: 11/01/17

Naphthalene	ND	0.010	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0380</i>		<i>"</i>	<i>0.0400</i>		<i>95.0</i>		<i>23-173</i>		
<i>Surrogate: Toluene-d8</i>	<i>0.0403</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>		<i>20-170</i>		
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0404</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>		<i>21-167</i>		

LCS (1710336-BS1)

Prepared: 10/31/17 Analyzed: 11/01/17

Naphthalene	0.00411	0.010	mg/kg					66-138		
Benzene	0.0638	0.0020	"	0.100		63.8		58-130		
Toluene	0.0788	0.0050	"	0.100		78.8		61-134		
Ethylbenzene	0.0933	0.0050	"	0.0992		94.1		74-139		
m,p-Xylene	0.187	0.010	"	0.200		93.6		73-137		
o-Xylene	0.0906	0.0050	"	0.0980		92.4		73-141		
Xylenes (total)	0.277	0.010	"					0-200		
Gasoline Range Hydrocarbons	1.85	0.50	"					30-150		
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0344</i>		<i>"</i>	<i>0.0400</i>		<i>86.1</i>		<i>23-173</i>		
<i>Surrogate: Toluene-d8</i>	<i>0.0384</i>		<i>"</i>	<i>0.0400</i>		<i>95.9</i>		<i>20-170</i>		
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0376</i>		<i>"</i>	<i>0.0400</i>		<i>94.1</i>		<i>21-167</i>		

Matrix Spike (1710336-MS1)

Source: 1710322-02

Prepared: 10/31/17 Analyzed: 11/01/17

Naphthalene	0.00384	0.010	mg/kg		ND			10-158		
Benzene	0.0653	0.0020	"	0.100	ND	65.3		30-131		
Toluene	0.0778	0.0050	"	0.100	ND	77.8		30-134		
Ethylbenzene	0.0913	0.0050	"	0.0992	ND	92.0		22-153		
m,p-Xylene	0.186	0.010	"	0.200	ND	93.3		10-159		
o-Xylene	0.0931	0.0050	"	0.0980	ND	95.0		31-151		
Xylenes (total)	0.279	0.010	"		ND			30-160		
Gasoline Range Hydrocarbons	1.80	0.50	"		ND			30-160		
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0362</i>		<i>"</i>	<i>0.0400</i>		<i>90.6</i>		<i>23-173</i>		
<i>Surrogate: Toluene-d8</i>	<i>0.0392</i>		<i>"</i>	<i>0.0400</i>		<i>98.0</i>		<i>20-170</i>		
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0387</i>		<i>"</i>	<i>0.0400</i>		<i>96.8</i>		<i>21-167</i>		

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: Saulcy 4-1

Project Number: [none]
Project Manager: Blake Ford

Reported:
11/09/17 09:29

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 1710336 - EPA 5030 Soil MS

Matrix Spike Dup (1710336-MSD1)

Source: 1710322-02

Prepared: 10/31/17 Analyzed: 11/01/17

Naphthalene	0.00378	0.010	mg/kg		ND		10-158	1.57	42	
Benzene	0.0632	0.0020	"	0.100	ND	63.2	30-131	3.27	34	
Toluene	0.0783	0.0050	"	0.100	ND	78.3	30-134	0.615	30	
Ethylbenzene	0.0912	0.0050	"	0.0992	ND	91.9	22-153	0.0658	24	
m,p-Xylene	0.183	0.010	"	0.200	ND	91.8	10-159	1.67	68	
o-Xylene	0.0913	0.0050	"	0.0980	ND	93.2	31-151	1.95	38	
Xylenes (total)	0.274	0.010	"		ND		30-160	1.77	30	
Gasoline Range Hydrocarbons	1.81	0.50	"		ND		30-160	0.731	30	
Surrogate: 1,2-Dichloroethane-d4	0.0356		"	0.0400		89.1	23-173			
Surrogate: Toluene-d8	0.0382		"	0.0400		95.5	20-170			
Surrogate: 4-Bromofluorobenzene	0.0382		"	0.0400		95.6	21-167			

Batch 1710343 - EPA 5030 Water MS

Blank (1710343-BLK1)

Prepared & Analyzed: 11/01/17

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	11.1		"	13.3		83.5	37-154			
Surrogate: Toluene-d8	13.2		"	13.3		99.0	45-149			
Surrogate: 4-Bromofluorobenzene	13.3		"	13.3		99.8	45-146			

LCS (1710343-BS1)

Prepared & Analyzed: 11/01/17

Benzene	22.0	1.0	ug/l	33.3		66.2	51-132			
Toluene	26.6	1.0	"	33.3		79.9	51-138			
Ethylbenzene	30.9	1.0	"	33.1		93.4	58-146			
m,p-Xylene	61.6	2.0	"	66.5		92.7	57-144			
o-Xylene	31.0	1.0	"	32.7		94.8	53-146			
Surrogate: 1,2-Dichloroethane-d4	11.5		"	13.3		86.1	37-154			
Surrogate: Toluene-d8	12.9		"	13.3		97.1	45-149			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.7	45-146			

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: Saulcy 4-1

Project Number: [none]
Project Manager: Blake Ford

Reported:
11/09/17 09:29

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 1710343 - EPA 5030 Water MS

Matrix Spike (1710343-MS1)

Source: 1710311-01

Prepared & Analyzed: 11/01/17

Benzene	22.1	1.0	ug/l	33.3	ND	66.2	34-141			
Toluene	27.0	1.0	"	33.3	ND	80.9	27-151			
Ethylbenzene	31.3	1.0	"	33.1	ND	94.7	29-160			
m,p-Xylene	63.7	2.0	"	66.5	ND	95.8	20-166			
o-Xylene	31.6	1.0	"	32.7	ND	96.6	33-159			
Surrogate: 1,2-Dichloroethane-d4	11.8		"	13.3		88.2	37-154			
Surrogate: Toluene-d8	12.8		"	13.3		96.0	45-149			
Surrogate: 4-Bromofluorobenzene	12.8		"	13.3		95.8	45-146			

Matrix Spike Dup (1710343-MSD1)

Source: 1710311-01

Prepared & Analyzed: 11/01/17

Benzene	21.9	1.0	ug/l	33.3	ND	65.6	34-141	0.956	32	
Toluene	26.5	1.0	"	33.3	ND	79.5	27-151	1.68	25	
Ethylbenzene	30.8	1.0	"	33.1	ND	93.2	29-160	1.54	50	
m,p-Xylene	61.9	2.0	"	66.5	ND	93.0	20-166	2.88	36	
o-Xylene	31.1	1.0	"	32.7	ND	95.1	33-159	1.53	26	
Surrogate: 1,2-Dichloroethane-d4	12.3		"	13.3		92.5	37-154			
Surrogate: Toluene-d8	12.8		"	13.3		96.1	45-149			
Surrogate: 4-Bromofluorobenzene	12.8		"	13.3		96.3	45-146			

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: Saulcy 4-1

Project Number: [none]
Project Manager: Blake Ford

Reported:
11/09/17 09:29

Semivolatile Organic Compounds by EPA Method 8270D SIM - Quality Control
Summit Scientific

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

Batch 1710320 - EPA 5030 Soil MS

Blank (1710320-BLK1)

Prepared: 10/30/17 Analyzed: 10/31/17

Acenaphthene	ND	0.00500	mg/kg								
Anthracene	ND	0.00500	"								
Benzo (a) anthracene	ND	0.00500	"								
Benzo (b) fluoranthene	ND	0.00500	"								
Benzo (k) fluoranthene	ND	0.00500	"								
Benzo (a) pyrene	ND	0.00500	"								
Chrysene	ND	0.00500	"								
Dibenz (a,h) anthracene	ND	0.00500	"								
Fluoranthene	ND	0.00500	"								
Fluorene	ND	0.00500	"								
Indeno (1,2,3-cd) pyrene	ND	0.00500	"								
Naphthalene	ND	0.00500	"								
Pyrene	ND	0.00500	"								
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0297</i>		"	<i>0.0333</i>		<i>89.2</i>	<i>30-150</i>				
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0271</i>		"	<i>0.0333</i>		<i>81.2</i>	<i>30-150</i>				

LCS (1710320-BS1)

Prepared: 10/30/17 Analyzed: 10/31/17

Acenaphthene	0.0251	0.00500	mg/kg	0.0333		75.2	48-131				
Anthracene	0.0250	0.00500	"	0.0333		75.0	48-135				
Benzo (a) anthracene	0.0241	0.00500	"	0.0333		72.3	37-142				
Benzo (b) fluoranthene	0.0263	0.00500	"	0.0333		79.0	35-139				
Benzo (k) fluoranthene	0.0239	0.00500	"	0.0333		71.8	30-139				
Benzo (a) pyrene	0.0257	0.00500	"	0.0333		77.2	41-132				
Chrysene	0.0228	0.00500	"	0.0333		68.3	30-136				
Dibenz (a,h) anthracene	0.0281	0.00500	"	0.0333		84.2	24-127				
Fluoranthene	0.0212	0.00500	"	0.0333		63.7	50-139				
Fluorene	0.0248	0.00500	"	0.0333		74.5	50-130				
Indeno (1,2,3-cd) pyrene	0.0277	0.00500	"	0.0333		83.2	26-139				
Naphthalene	0.0246	0.00500	"	0.0333		73.8	40-135				
Pyrene	0.0225	0.00500	"	0.0333		67.6	39-141				
<i>Surrogate: 2-Methylnaphthalene-d10</i>	<i>0.0270</i>		"	<i>0.0333</i>		<i>80.9</i>	<i>50-150</i>				
<i>Surrogate: Fluoranthene-d10</i>	<i>0.0255</i>		"	<i>0.0333</i>		<i>76.5</i>	<i>50-150</i>				

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: Saulcy 4-1

Project Number: [none]
Project Manager: Blake Ford

Reported:
11/09/17 09:29

Semivolatile Organic Compounds by EPA Method 8270D SIM - Quality Control
Summit Scientific

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

Batch 1710320 - EPA 5030 Soil MS

Matrix Spike (1710320-MS1)	Source: 1710274-01			Prepared: 10/30/17	Analyzed: 11/01/17						
Acenaphthene	0.0652	0.00500	mg/kg	0.0333	0.0390	78.7	27-140				
Anthracene	0.528	0.00500	"	0.0333	ND	NR	23-144				QM-07
Benzo (a) anthracene	0.332	0.00500	"	0.0333	0.377	NR	12-168				QM-07
Benzo (b) fluoranthene	0.0680	0.00500	"	0.0333	0.0560	36.0	10-170				
Benzo (k) fluoranthene	0.0590	0.00500	"	0.0333	ND	177	11-150				QM-07
Benzo (a) pyrene	0.0223	0.00500	"	0.0333	ND	66.9	11-162				
Chrysene	0.321	0.00500	"	0.0333	0.363	NR	10-167				QM-07
Dibenz (a,h) anthracene	0.0281	0.00500	"	0.0333	ND	84.4	10-128				
Fluoranthene	0.0279	0.00500	"	0.0333	ND	83.6	18-157				
Fluorene	0.0927	0.00500	"	0.0333	0.0843	25.2	37-133				QM-07
Indeno (1,2,3-cd) pyrene	0.0275	0.00500	"	0.0333	ND	82.5	10-161				
Naphthalene	0.0709	0.00500	"	0.0333	0.0656	16.1	10-157				
Pyrene	0.134	0.00500	"	0.0333	0.120	40.9	10-166				
Surrogate: 2-Methylnaphthalene-d10	0.0254		"	0.0333		76.3	50-150				
Surrogate: Fluoranthene-d10	0.0323		"	0.0333		96.8	50-150				

Matrix Spike Dup (1710320-MSD1)	Source: 1710274-01			Prepared: 10/30/17	Analyzed: 11/01/17						
Acenaphthene	0.0645	0.00500	mg/kg	0.0333	0.0390	76.5	27-140	1.12	15		
Anthracene	0.586	0.00500	"	0.0333	ND	NR	23-144	10.3	29		QM-07
Benzo (a) anthracene	0.365	0.00500	"	0.0333	0.377	NR	12-168	9.59	65		QM-07
Benzo (b) fluoranthene	0.0473	0.00500	"	0.0333	0.0560	NR	10-170	35.9	18		QM-07
Benzo (k) fluoranthene	0.0410	0.00500	"	0.0333	ND	123	11-150	36.0	32		QM-07
Benzo (a) pyrene	0.0277	0.00500	"	0.0333	ND	83.2	11-162	21.7	27		
Chrysene	0.359	0.00500	"	0.0333	0.363	NR	10-167	11.2	88		QM-07
Dibenz (a,h) anthracene	0.0395	0.00500	"	0.0333	ND	119	10-128	33.7	20		QM-07
Fluoranthene	0.0265	0.00500	"	0.0333	ND	79.6	18-157	4.94	31		
Fluorene	0.0890	0.00500	"	0.0333	0.0843	14.3	37-133	3.99	16		QM-07
Indeno (1,2,3-cd) pyrene	0.0380	0.00500	"	0.0333	ND	114	10-161	32.2	22		QM-07
Naphthalene	0.0860	0.00500	"	0.0333	0.0656	61.3	10-157	19.2	24		
Pyrene	0.172	0.00500	"	0.0333	0.120	154	10-166	24.6	57		
Surrogate: 2-Methylnaphthalene-d10	0.0280		"	0.0333		83.9	50-150				
Surrogate: Fluoranthene-d10	0.0287		"	0.0333		86.1	50-150				

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: Saulcy 4-1

Project Number: [none]
Project Manager: Blake Ford

Reported:
11/09/17 09:29

Total Metals by EPA Method 6020 - Dry Weight Basis - Quality Control
Summit Scientific

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

Batch 1710314 - EPA 3050B

Blank (1710314-BLK1)

Prepared & Analyzed: 10/30/17

Arsenic	ND	0.200	mg/kg wet							
Barium	ND	0.400	"							
Cadmium	ND	0.100	"							
Chromium	ND	0.500	"							
Copper	ND	0.500	"							
Lead	ND	0.200	"							
Nickel	ND	0.100	"							
Selenium	ND	0.400	"							
Silver	ND	0.100	"							
Zinc	ND	10.0	"							

LCS (1710314-BS1)

Prepared & Analyzed: 10/30/17

Arsenic	36.1	0.200	mg/kg wet	40.0	90.1	56.9-110
Barium	38.9	0.400	"	40.0	97.4	59.3-113
Cadmium	1.94	0.100	"	2.00	96.9	63.1-113
Chromium	37.4	0.500	"	40.0	93.4	57.4-110
Copper	37.4	0.500	"	40.0	93.5	64.6-110
Lead	19.9	0.200	"	20.0	99.6	64-110
Nickel	38.5	0.100	"	40.0	96.2	63.2-110
Selenium	3.57	0.400	"	4.00	89.2	55.2-110
Silver	1.97	0.100	"	2.00	98.5	53.1-114
Zinc	33.9	10.0	"	40.0	84.8	62-110

Duplicate (1710314-DUP1)

Source: 1710306-01

Prepared & Analyzed: 10/30/17

Arsenic	0.803	0.233	mg/kg dry	0.858	6.62	20
Barium	145	0.465	"	144	0.318	20
Cadmium	0.136	0.116	"	0.135	0.354	20
Chromium	16.0	0.581	"	16.0	0.106	20
Copper	14.1	0.581	"	14.1	0.110	20
Lead	11.1	0.233	"	11.3	1.33	20
Nickel	14.5	0.116	"	14.4	0.724	20
Selenium	0.128	0.465	"	0.130	1.50	20
Silver	0.0658	0.116	"	0.0691	4.96	20
Zinc	42.8	11.6	"	42.6	0.607	20

Summit Scientific

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: Saulcy 4-1
Project Number: [none]
Project Manager: Blake Ford

Reported:
11/09/17 09:29

Total Metals by EPA Method 6020 - Dry Weight Basis - Quality Control
Summit Scientific

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

Batch 1710314 - EPA 3050B

Matrix Spike (1710314-MS1)

Source: 1710306-01

Prepared & Analyzed: 10/30/17

Arsenic	43.0	0.233	mg/kg dry	46.5	0.858	90.5	75-125			
Barium	192	0.465	"	46.5	144	101	75-125			
Cadmium	2.30	0.116	"	2.33	0.135	93.0	75-125			
Chromium	59.1	0.581	"	46.5	16.0	92.7	75-125			
Copper	55.4	0.581	"	46.5	14.1	88.8	75-125			
Lead	31.0	0.233	"	23.3	11.3	84.9	75-125			
Nickel	57.8	0.116	"	46.5	14.4	93.4	75-125			
Selenium	4.22	0.465	"	4.65	0.130	87.8	75-125			
Silver	2.24	0.116	"	2.33	0.0691	93.4	75-125			
Zinc	83.3	11.6	"	46.5	42.6	87.6	75-125			

Matrix Spike Dup (1710314-MSD1)

Source: 1710306-01

Prepared & Analyzed: 10/30/17

Arsenic	43.3	0.233	mg/kg dry	46.5	0.858	91.3	75-125	0.833	25
Barium	198	0.465	"	46.5	144	116	75-125	3.39	25
Cadmium	2.57	0.116	"	2.33	0.135	105	75-125	11.2	25
Chromium	63.5	0.581	"	46.5	16.0	102	75-125	7.24	25
Copper	59.5	0.581	"	46.5	14.1	97.6	75-125	7.14	25
Lead	33.0	0.233	"	23.3	11.3	93.4	75-125	6.21	25
Nickel	61.8	0.116	"	46.5	14.4	102	75-125	6.73	25
Selenium	3.63	0.465	"	4.65	0.130	75.2	75-125	15.0	25
Silver	2.48	0.116	"	2.33	0.0691	104	75-125	10.3	25
Zinc	87.2	11.6	"	46.5	42.6	96.0	75-125	4.55	25

Summit Scientific

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: Saulcy 4-1

Project Number: [none]
Project Manager: Blake Ford

Reported:
11/09/17 09:29

Total Metals by EPA Method 200.8 - Quality Control
Summit Scientific

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

Batch 1710331 - EPA 200.8

Blank (1710331-BLK1)

Prepared & Analyzed: 10/31/17

Calcium	ND	0.0500	mg/L							
Iron	ND	0.0100	"							
Magnesium	ND	0.0500	"							
Potassium	ND	0.0500	"							
Sodium	ND	0.0500	"							

LCS (1710331-BS1)

Prepared & Analyzed: 10/31/17

Calcium	5.66	0.0500	mg/L	5.00	113	85-115			
Iron	5.23	0.0100	"	5.00	105	85-115			
Magnesium	5.55	0.0500	"	5.00	111	85-115			
Potassium	5.34	0.0500	"	5.00	107	85-115			
Sodium	5.46	0.0500	"	5.00	109	85-115			

Duplicate (1710331-DUP1)

Source: 1710320-01

Prepared & Analyzed: 10/31/17

Calcium	74.1	0.0500	mg/L	77.5			4.50	20
Iron	0.240	0.0100	"	0.287			17.7	20
Magnesium	24.1	0.0500	"	24.6			1.93	20
Potassium	5.50	0.0500	"	5.81			5.45	20
Sodium	69.1	0.0500	"	69.8			1.01	20

Matrix Spike (1710331-MS1)

Source: 1710320-01

Prepared & Analyzed: 10/31/17

Calcium	82.6	0.0500	mg/L	5.00	77.5	102	75-125	
Iron	5.76	0.0100	"	5.00	0.287	110	75-125	
Magnesium	29.6	0.0500	"	5.00	24.6	101	75-125	
Potassium	10.7	0.0500	"	5.00	5.81	97.7	75-125	
Sodium	75.3	0.0500	"	5.00	69.8	110	75-125	

Matrix Spike Dup (1710331-MSD1)

Source: 1710320-01

Prepared & Analyzed: 10/31/17

Calcium	82.9	0.0500	mg/L	5.00	77.5	107	75-125	0.323	25
Iron	5.53	0.0100	"	5.00	0.287	105	75-125	4.24	25
Magnesium	29.9	0.0500	"	5.00	24.6	106	75-125	0.900	25
Potassium	10.6	0.0500	"	5.00	5.81	95.4	75-125	1.08	25
Sodium	75.2	0.0500	"	5.00	69.8	109	75-125	0.0700	25

Summit Scientific

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: Saulcy 4-1

Project Number: [none]
Project Manager: Blake Ford

Reported:
11/09/17 09:29

Total Mercury by EPA Method 7471 - Quality Control
Summit Scientific

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

Batch 1710315 - EPA 7471A

Blank (1710315-BLK1)										
					Prepared: 10/30/17 Analyzed: 10/31/17					
Mercury	ND	0.0500	mg/kg wet							
LCS (1710315-BS1)										
					Prepared: 10/30/17 Analyzed: 10/31/17					
Mercury	0.497	0.0500	mg/kg wet	0.500		99.4	80-120			
Duplicate (1710315-DUP1)										
					Source: 1710306-01 Prepared: 10/30/17 Analyzed: 10/31/17					
Mercury	0.0121	0.0581	mg/kg dry		0.0121			0.192	20	
Matrix Spike (1710315-MS1)										
					Source: 1710306-01 Prepared: 10/30/17 Analyzed: 10/31/17					
Mercury	0.541	0.0581	mg/kg dry	0.581	0.0121	90.9	80-120			
Matrix Spike Dup (1710315-MSD1)										
					Source: 1710306-01 Prepared: 10/30/17 Analyzed: 10/31/17					
Mercury	0.568	0.0581	mg/kg dry	0.581	0.0121	95.6	80-120	4.91	20	

Summit Scientific

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Extraction Oil & Gas
 570 17th St. Suite 550
 Denver CO, 80202

Project: Saulcy 4-1

Project Number: [none]
 Project Manager: Blake Ford

Reported:
 11/09/17 09:29

Hexavalent Chromium by EPA 7196 - Quality Control
Summit Scientific

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

Batch 1710337 - 3060A Mod

Blank (1710337-BLK1)		Prepared: 10/31/17 Analyzed: 11/01/17								
Chromium, Hexavalent	ND	0.300	mg/kg wet							
LCS (1710337-BS1)		Prepared: 10/31/17 Analyzed: 11/01/17								
Chromium, Hexavalent	19.5	0.300	mg/kg wet	19.9		97.7	85-115			
Duplicate (1710337-DUP1)		Source: 1710285-01 Prepared: 10/31/17 Analyzed: 11/01/17								
Chromium, Hexavalent	ND	0.300	mg/kg dry		ND				20	
Matrix Spike (1710337-MS1)		Source: 1710285-01 Prepared: 10/31/17 Analyzed: 11/01/17								
Chromium, Hexavalent	23.4	0.300	mg/kg dry	25.0	ND	93.7	85-115			
Post Spike (1710337-PS1)		Source: 1710285-01 Prepared: 10/31/17 Analyzed: 11/01/17								
Chromium, Hexavalent	0.472		mg/kg	0.498	0.00	94.7	85-115			

Summit Scientific

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: Saulcy 4-1

Project Number: [none]
Project Manager: Blake Ford

Reported:
11/09/17 09:29

Anions by EPA Method 300.0 - Quality Control
Summit Scientific

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

Batch 1711008 - General Preparation

Blank (1711008-BLK1)

Prepared & Analyzed: 11/01/17

Sulfate	ND	0.300	mg/L						
Fluoride	ND	0.100	"						
Chloride	ND	0.100	"						
Bromide	ND	0.100	"						

LCS (1711008-BS1)

Prepared & Analyzed: 11/01/17

Sulfate	15.4	0.300	mg/L	15.0	103	90-110
Bromide	10.6	0.100	"	9.99	106	90-110
Chloride	2.94	0.100	"	3.00	98.1	90-110
Fluoride	2.14	0.100	"	2.00	107	90-110

Duplicate (1711008-DUP1)

Source: 1710313-01

Prepared & Analyzed: 11/01/17

Fluoride	ND	0.100	mg/L	ND		10
Bromide	ND	0.100	"	ND		10
Sulfate	837	300	"	830		0.840 20
Chloride	281	100	"	283		0.709 20

Matrix Spike (1711008-MS1)

Source: 1710313-01

Prepared & Analyzed: 11/01/17

Fluoride	1990	100	mg/L	2000	ND	99.6 90-110
Bromide	10200	100	"	9990	ND	102 90-110
Sulfate	16500	300	"	15000	830	104 90-110
Chloride	3340	100	"	3000	283	102 90-110

Summit Scientific

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: Saulcy 4-1

Project Number: [none]
Project Manager: Blake Ford

Reported:
11/09/17 09:29

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

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

Batch 1710324 - General Preparation

Blank (1710324-BLK1)

Prepared: 10/30/17 Analyzed: 10/31/17

Specific Conductance (EC) ND 0.0100 mmhos/cm

LCS (1710324-BS1)

Prepared: 10/30/17 Analyzed: 10/31/17

Specific Conductance (EC) 0.752 0.0100 mmhos/cm 0.750 100 90-110

Duplicate (1710324-DUP1)

Source: 1710285-01

Prepared: 10/30/17 Analyzed: 10/31/17

Specific Conductance (EC) 2.55 0.0100 mmhos/cm 2.54 0.393 20

Batch 1710325 - General Preparation

LCS (1710325-BS1)

Prepared & Analyzed: 10/30/17

pH 9.18 0.100 pH Units 9.16 100 95-105

Duplicate (1710325-DUP1)

Source: 1710285-01

Prepared & Analyzed: 10/30/17

pH 9.67 0.100 pH Units 9.58 0.935 20

Batch 1710334 - General Preparation

Duplicate (1710334-DUP1)

Source: 1710322-02

Prepared: 10/31/17 Analyzed: 11/01/17

% Solids 85.6 % 85.7 0.117 20

Summit Scientific

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Extraction Oil & Gas
 570 17th St. Suite 550
 Denver CO, 80202

Project: Saulcy 4-1

Project Number: [none]
 Project Manager: Blake Ford

Reported:
 11/09/17 09:29

Total Dissolved Solids by 160.1 - Quality Control
Summit Scientific

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

Batch 1711001 - General Preparation

Blank (1711001-BLK1)

Prepared: 10/31/17 Analyzed: 11/01/17

Total Dissolved Solids ND 8.00 mg/L

Duplicate (1711001-DUP1)

Source: 1710313-01

Prepared: 10/31/17 Analyzed: 11/01/17

Total Dissolved Solids 2500 8.00 mg/L 2510 0.239 20

Summit Scientific

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Extraction Oil & Gas
570 17th St. Suite 550
Denver CO, 80202

Project: Saulcy 4-1

Project Number: [none]
Project Manager: Blake Ford

Reported:
11/09/17 09:29

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.
- D-09 Results in the diesel organics range are primarily due to overlap from a heavy oil range product.
- 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